

Read this manual before operation

- The content include of electric connections and operating steps
- Read the manual to operate the systems

# RDC6685U(-DFM)

Control System manual

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When using this system, please make sure the operation is correct and the usage is safe. Some signs or text will be used to remind you to pay attention to the dangerous matters and some important information.

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**Warning:**

Danger.n the process of use, if the operation is improper or the use is wrong, which may lead to the injury of the personnel, please do not operate the personnel and related personnel easily, until ensure the correct operation method and use method is correct before use.

**Cautious:**

Represents the potential risk of the product. In the process of use, if the use method is wrong or improper operation, it may cause damage to the product or some parts. Please do not use it until you have made sure that the operation method is correct and the usage is correct.

**Important:**

Represents important information to be paid attention to during the use of the product. Please do not ignore this information, this information will provide effective operational help.



This sign indicates laser radiation, which is usually posted on products with laser output. Please be careful with laser and pay attention to safety when using this kind of equipment.

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Remove all cargo from package and keep packing material and wiring parts. Please take care of the safety of the goods when unpacking them. After taking out the goods, please check whether the parts are complete and intact. If any missing parts or damaged parts are found, please contact ruida technology immediately. Do not install or debug the equipment if any obvious damage is found.

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# Section 1 Overview

## CONTENTS:

- Briefing
- Description of Controller Model
- List of controller functions



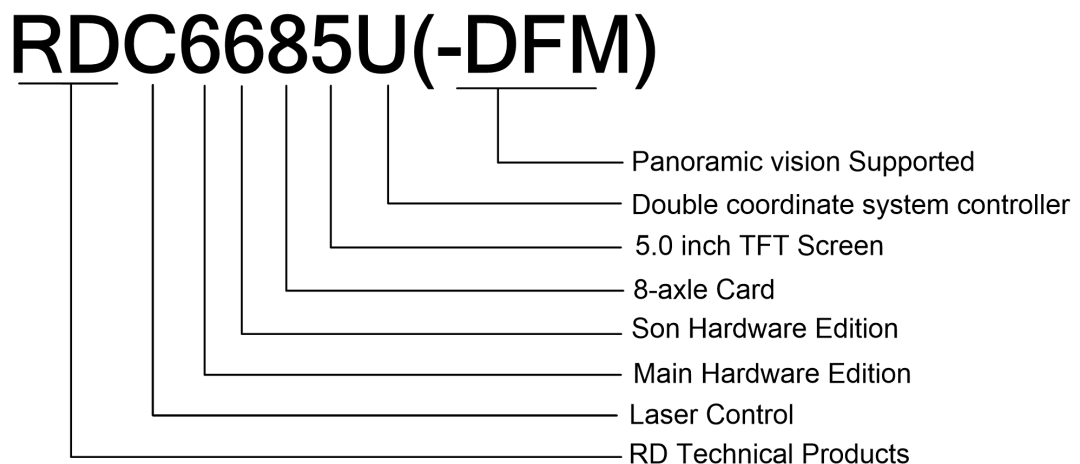
## 1.1 Briefing

RDC6685U(-DFM) system is the latest generation of dual X / Y coordinate system controller developed by Ruida technology. The control system has better hardware stability and better anti-voltage and anti-static interference characteristics. The HMI based on 5-inch color screen has more friendly operation interface and more powerful functions. RDC6685U is a common dual coordinate system controller, and RDC6685U-DFM is a panoramic vision dual coordinate system controller.

The system uses double coordinate system control technology to realize the synchronous start of the double head, and asynchronous cutting, independent of each other and processing separately. At the same time, the system provides automatic collision prevention function. The software system adopts optimized graphics management and allocation algorithm, which greatly improves the balanced distribution of double head tasks, and makes the cutting efficiency of single equipment increase by more than 90%.

The system also provides the functions of automatic feeding, ultra long format segmentation and cutting, which provides a perfect solution for the large graphics, large batch and high efficiency processing tasks in garment, leather, cloth and other processing industries.

## 1.2 Description of Controller Model



## 1.3 List of Controller Functions

		RDC6685U(-DFM)
<b>Power Feature</b>		Only one-way 24V (3A and above drive capability)
<b>Laser Port Feature</b>		4-way laser port, digital and analog supported
<b>USB Feature</b>	Copying Speed	Very Quick
	Compatibility	Support all USB disks with different capacities
<b>Memory Feature</b>	Capacity	256M
	Fault Tolerance	Capable of checking defective track and formatting and good in fault tolerance
<b>General IO Feature</b>	Input Port	16 channel limit input and 16 channel general input
	Output Port	21-ways (300mA high current for each, OC output, reverse current protection included)
<b>Controller Software Feature</b>	Parameter Backup Logics	YES
	Online Update HMI Program	YES
	Online Update Mainboard Program	YES
	Double coordinate system machining support	YES
	Panoramic vision	Optional
<b>Display Feature</b>	Online Modification Laser Power/Speed	YES
	Offline Modification Layer parameters	YES
	File dynamic/static preview	YES
	Modification Factory/User's para on display	YES
	Display type	5 inch TFT display
<b>Motion-axle Feature</b>	Soft Spacing	YES
	Hard Spacing	YES
	Auxiliary axis movement	YES
	Feeding Feature	Single/double direction for option
	Automatic split head -double head array machining	YES
	Key move step or continuity	Configurable
	Power on and reset each axis	Configurable
	Axles	8
<b>Encryption</b>		Motherboard integrated time system, authorization code

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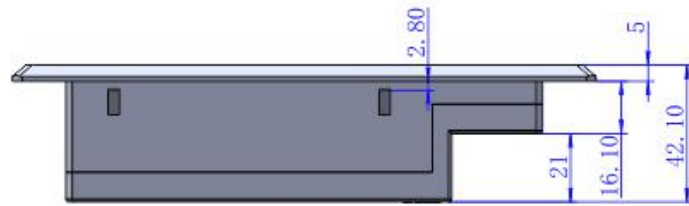
<b>Feature</b>		hardware encryption
<b>Communicate Mode</b>		10/100MHZ Ethernet or USB2.0, communication mode is automatically checked

# Section 2 Installation Size

## CONTENTS:

- Installation Size of  
MainBoard
- Size of Panel





# Section 3 Object Pictures and Interfaces

## CONTENTS:

- Object Pictures of MainBoard
- Object Pictures of Panel
- Electric connection
- Lamp instruction
- Interpretation of dual Y /dual X coordinate





### 3.1 Object Pictures of MainBoard

For more detailed pin description, see the Chapter 4: Description of Interface Signal for MainBoard.

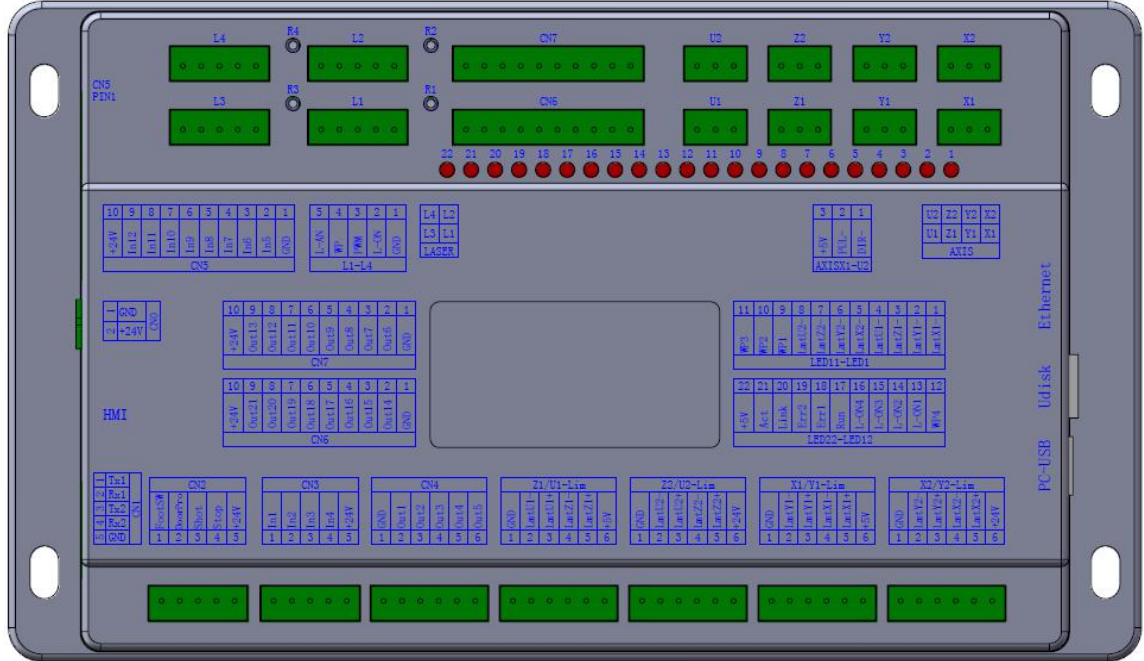


Figure: 3.1-1 Object Picture of MainBoard

### 3.2 Object Pictures of Panel



Figure: 3.2-1 Object Picture of Panel

### 3.3 Electric connection

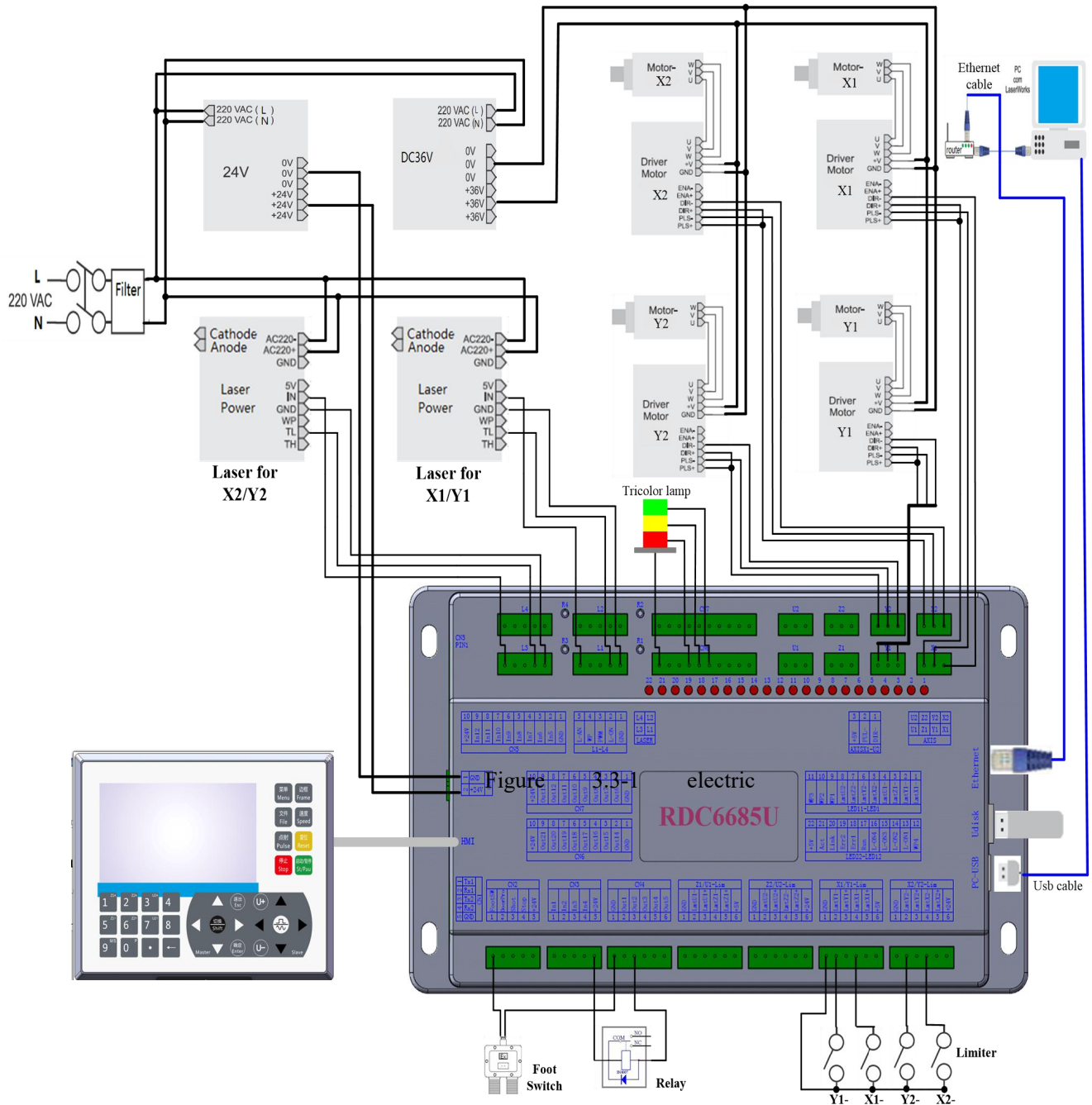


Figure 3-3-1

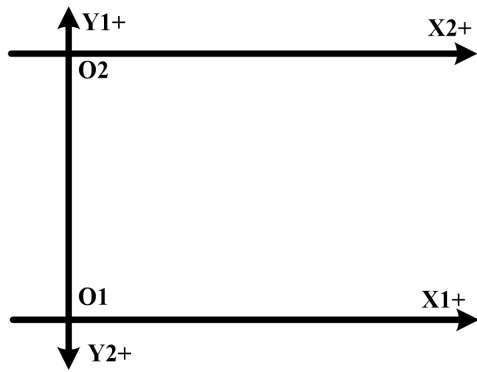
### 3.4 Lamp instruction

RDC6685U(-DFM) have 22 red lamps:

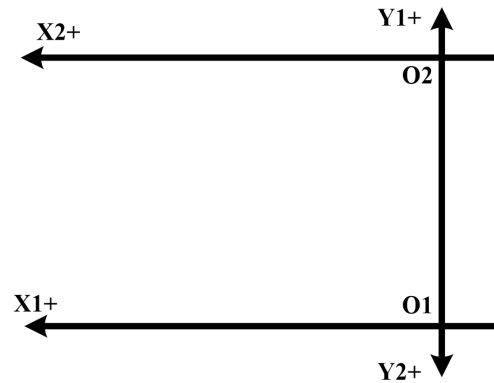
NUMBER	NAME	SENSE
1	LmtX1-	X1 axis negative limit
2	LmtY1-	Y1 axis negative limit
3	LmtZ1-	Z1 axis negative limit
4	LmtU1-	U1 axis negative limit
5	LmtX2-	X2 axis negative limit
6	LmtY2-	Y2 axis negative limit
7	LmtZ2-	Z2 axis negative limit
8	LmtU2-	U2 axis negative limit
9	WP1	Indication for water protect 1
10	WP2	Indication for water protect 2
11	WP3	Indication for water protect 3
12	WP4	Indication for water protect 4
13	L-ON1	Light output indication for laser1
14	L-ON2	Light output indication for laser2
15	L-ON3	Light output indication for laser3
16	L-ON4	Light output indication for laser4
17	Run	the normal running status
18	Err1	System fault indicator1
19	Err2	System fault indicator2
20	Link	Ethernet connection
21	Act	Ethernet communication
22	+5V	+5V power supply

### 3.5 Interpretation of dual Y/dual X coordinate

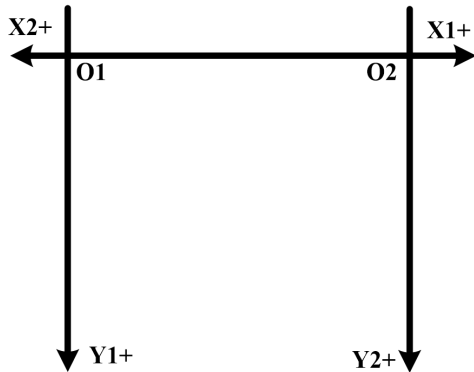
The system can choose double beam or double cantilever, which is to say dual Y or dual X. For each model, the coordinate system is fixed. The coordinate system  $X1/Y1$  is the main coordinate system, and the coordinate system  $X2/Y2$  is the secondary coordinate system. As follows:



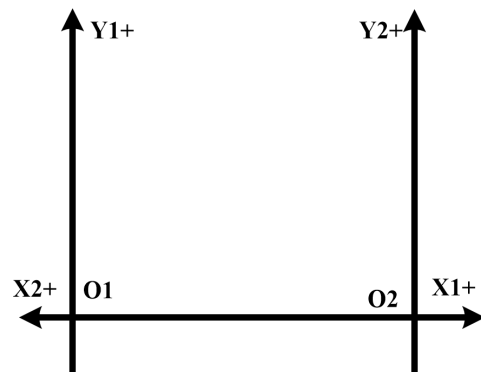
Example 1 for Dual Y



Example 2 for Dual Y



Example 1 for Dual X



Example 2 for Dual X

# Section 4 Description of Interface Signal for MainBoard

## CONTENTS:


- Interface of Main Power Source CN0
- Panel Signal-Cable Interface HMI
- Udisk Interface
- PC-USB Interface
- Ethernet Interface
- Extended Com port CN1
- General Input Port
- General Output Port
- 8-axle Spacing Input Interface
- 8 axle Motor Driver Interface
- Laser Power Control Interface L1-L4



## 4.1 Interface of Main Power Source CN0

Pin	Symbols	Definitions
1	GND	24V power ground (input)
2	+24V	24V power positive (input)

 Caution	The control system uses a single 24 V power supply, in order to leave a certain margin, it is recommended to choose the 24V power supply above 3A.
--	--

## 4.2 Panel Signal-Cable Interface HMI

The panel signal-cable is a pin-to-pin cable, which is included in the factory shipper bill.

## 4.3 Udisk Interface


Udisk is a USB-AM interface. The controller may visit the u-disk by this interface.

## 4.4 PC-USB Interface

PC-USB is a USB-BM interface. The controller may communicate with PC by this port.

## 4.5 Ethernet Interface

Using this interface, the mainboard can communicate with PC by 10/100MHZ Ethernet.

 Caution	Pin to Pin Ethernet parallel line is recommended.
--	---

## 4.6 Extended Communication Port CN1

Pin	Symbols	Definitions
1	TX1	The TX for the first RS232 port



2	RX1	The RX for the first RS232 port
3	TX2	The TX for the second RS232 port
4	RX2	The RX for the second RS232 port
5	GND	Power ground (output)

## 4.7 General Input

### (一) Definition of CN2

Pin	Symbols	Definitions
1	FootSW	Input port of foot switch. The connection method is: when the pedal is stepped down, the low-level signal will be inputted to this port; when the pedal is released, the port will be disconnected or the high-level signal can be inputted to this port; when the stepped-down pedal is held for not less than 100 ms, if the machine lies idle, it can be started for work; if the machine is in the working state, the work will be suspended; of the machine is in the suspension, the work will be restarted, that is to say, the function of the pedal switch is the same as that of the "Start/Pause" key. If the interval time to the first stepping-down of the pedal should be less than 100ms when the pedal is stepped down once again, the second stepping-down of the pedal will be considered invalid by the mainboard.
2	DrProc	Input from protective port. If the machine needs to be protected in the special state (such as door open protection), the protective signal can be inputted from this pin. This pin can be enabled and prohibited. This signal is not inquired by the mainboard if this pin is prohibited; if this pin is enabled, when the input is high-leveled or this input port is suspended, the machine will be protected, the work suspended and the laser closed.
3	Shot	Input for manual laser on/off. Low level is to open laser and high level or no-connection is to close laser.
4	Stop	Stop key input, used to stop the running work(Low level valid)
5	+24V	24V Power positive (output)

### (二) Definition of CN3

Pin	Symbols	Definitions
1	In5	Reserved input5
2	In6	Reserved input6
3	In7	Reserved input7
4	In8	Reserved input8
5	+24V	24V Power positive (output)

(三) Definition of CN5

Pin	Symbols	Definitions
1	GND	Power ground (output)
2	In9	Reserved input9
3	In10	Reserved input10
4	In11	Reserved input11
5	In12	Reserved input12
6	In13	Reserved input13
7	In14	Reserved input14
8	In15	Reserved input15
9	In16	Reserved input16
10	+24V	24V Power positive (output)

## 4.8 General Output

(一) Definition of CN4

Pin	Symbols	Definitions
1	GND	Power ground (output)
2	Out1	Reserved Output
3	Out2	Adsorption signal
4	Out3	Pressing signal for Y axes
5	Out4	Reserved Output
6	Out5	Reserved Output


(二) Definition of CN7

Pin	Symbols	Definitions
1	GND	Power ground (output)
2	Out6	Reserved Output

3	Out7	Reserved Output
4	Out8	Reserved Output
5	Out9	Reserved Output
6	Out10	Reserved Output
7	Out11	Wind for X1Y1
8	Out12	Pen1
9	Out13	Pen2
10	+24V	24V Power positive (output)

### (三) Definition of CN6

Pin	Symbols	Definitions
1	GND	Power ground (output)
2	In9	Wind for X2Y2
3	In10	Pen3
4	In11	Pen4
5	In12	Tricolor lamp: System running
6	In13	Tricolor lamp: System stand by
7	In14	Tricolor lamp: System fault
8	In15	Reserved Output
9	In16	Reserved Output
10	+24V	24V Power positive (output)

 Prompt	All outputs are isolated through the optocoupler, and 300mA current for each, OC gate output, each can directly drive the 5V/24V relay.
---	---

## 4.9 8-axle Spacing Input Interface


There are 4 groups of limit interfaces for 8 axes, with the label number of: X1/Y1-Lim, X2/Y2-Lim, Z1/U1-Lim, Z2/U2-Lim. Take pin X1/Y1-Lim as an example

X1/Y1-Lim:

Pin	Symbols	Definitions
1	GND	Power ground (output)
2	LmtY1-	The spacing from axle Y1- and Y1 to 0 coordinate
3	LmtY1+	The spacing from axle Y1+ and Y1 to max. coordinate
4	LmtX1-	The spacing from axle X1- and X1 to 0 coordinate

5	LmtX1+	The spacing from axle X1+ and X1 to max. coordinate
6	+5V	5V Power positive (output)

The spacing polarity is optional, that is to say, when the motion axle reaches the spacing position, it will trigger a low-level signal so as to make the corresponding LED (under the cover) light; when the motion axle leaves the spacing position, it will trigger a high-level signal or disconnect the spacing signal so as to make the spacing indicator go out, but when it leaves the spacing, the corresponding indicator will light and the spacing polarity become positive. The mistaken setting of spacing polarity will result that the spacing can't be detected when the system is reset so as to lead to the collision of axles.

 <b>Prompt</b>	1.All axis limit input port is compatible with 5V /12V/24V logic level input
	2.On the limit signal terminal, the sixth pin of X1/Y1-Lim and the sixth pin of Z1/U1-Lim are both +5V, while the sixth pin of X2/Y2-Lim and the sixth pin of Z2/U2-Lim are both +24V

## 4.10 8-axle Motor Driver Interface

The functions of the eight axes are as follows:

No	Axes name	Function
1	X1	X-axis of principal coordinate system
2	Y1	Y-axis of principal coordinate system
3	Z1	Z-axis of principal coordinate system(for automatic split)
4	U1	Feeding axes
5	X2	X-axis of secondary coordinate system
6	Y2	Y-axis of secondary coordinate system
7	Z2	Z-axis of secondary coordinate system(for automatic split)
8	U2	Reserved

The interfaces of the above eight motion axles are the same. The AXIS-X interface is exemplified.

Pin	Symbols	Definitions
1	DIR	Directional signal
2	PUL	Pulse signal
3	+5V	5V Power positive (output)

The polarity of directional signal for driver pulse signal can be set. Where a certain axle is reset,

it will move to the opposite direction of machine origin, which means the polarity of directional signal for this axle is not correct. In such a case, the connection between this axle and the motor driver can be broken first (otherwise the mainboard can not be detected to the spacing so as to lead to the collision of this axle), and then such a polarity can be corrected after this axle is reset completely. Upon the correction, the reset key can be pressed against to reset the mainboard.

And, the Pulse signal can be falling edge valid or rising edge valid. The default setting is falling edge valid.

## 4.11 Laser Power Control Interface L1-L4

This control system has four independent and adjustable digital laser power control interfaces.


The function for each laser show as below:

Laser channel	Symbols	Definitions
1	L1	The first laser control interface corresponding to the main coordinate system (X1 /Y1)
2	L2	The second laser control interface corresponding to the main coordinate system (X1 /Y1)
3	L3	The first laser control interface corresponding to the second coordinate system (X2 /Y2)
4	L4	The second laser control interface corresponding to the second coordinate system (X2 /Y2)

Signals of the four interfaces are similar and the first digital interface (L1) is hereby exemplified:

Pin	Symbols	Definitions
1	GND	Power ground (output)
2	L-ON1	Laser-enabled control interface 1. When the laser is the RF laser, this pin will not be used; 2. When the laser is a glass tube, if the used laser is outputted in the low-level form, this pin will be connected with the laser power enable end and used to control the ON/Off of laser.
3	LPWM1	Power control interface of laser/laser tube 1. When the laser is the RF laser, this pin will be connected with the laser RF-PWM end; 2. When the laser is a glass tube, this pin will be connected with the laser power PWM end and used to control the power of the laser.
4	WP1	The input port of water protector for the first laser power source. When the water protector 1 is enabled, the mainboard will detect the input port of water protector 1. If this port is of low level, it will be deemed normal; if this port is of high level, the mainboard will

		<p>forcibly close the laser to suspend the work in progress and the system will warn. If the water protector 1 is not enabled, the mainboard will not detect the input port of water protector 1 and so the water protector 1 can be unconnected.</p> <p>Water protection input must be 24V logic level.</p>
5	L-AN1	<p>The analog signals for Laser Power. If Glass Tube is used, this pin is recommended to control the power of the Laser.</p>

 <b>Prompt</b>	<ol style="list-style-type: none"> <li>1. Please correctly select the laser type in the factory parameters.</li> <li>2. The input port of water protection must use 24 V logic level input</li> </ol>
--	---

# Section 5 Examples of Laser Power Interface

## CONTENTS:

- Brief
- Examples of Glass  
Tube Laser Power
- Examples of  
RF-Laser

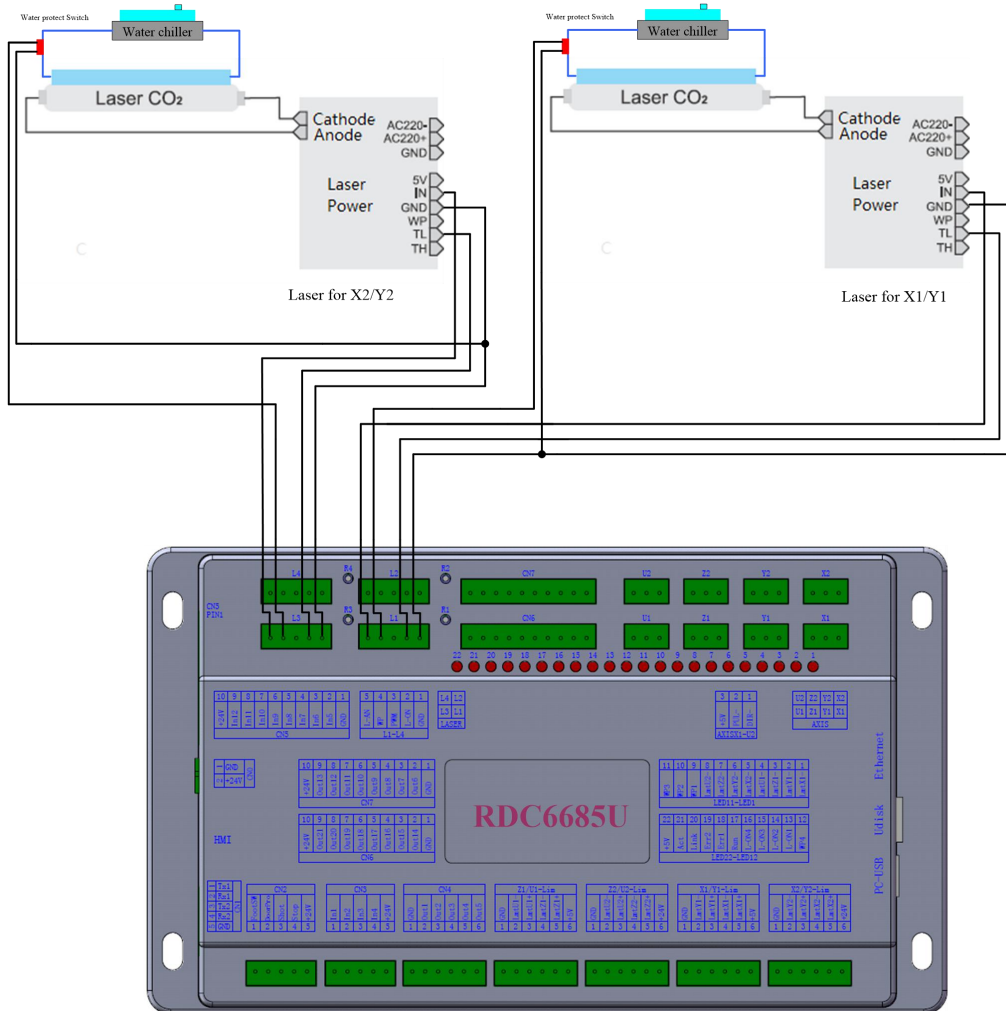
## 5.1 Brief

This control system has two independent and adjustable digital laser power control interfaces, which can be used to control glass tube laser power and RF-laser.

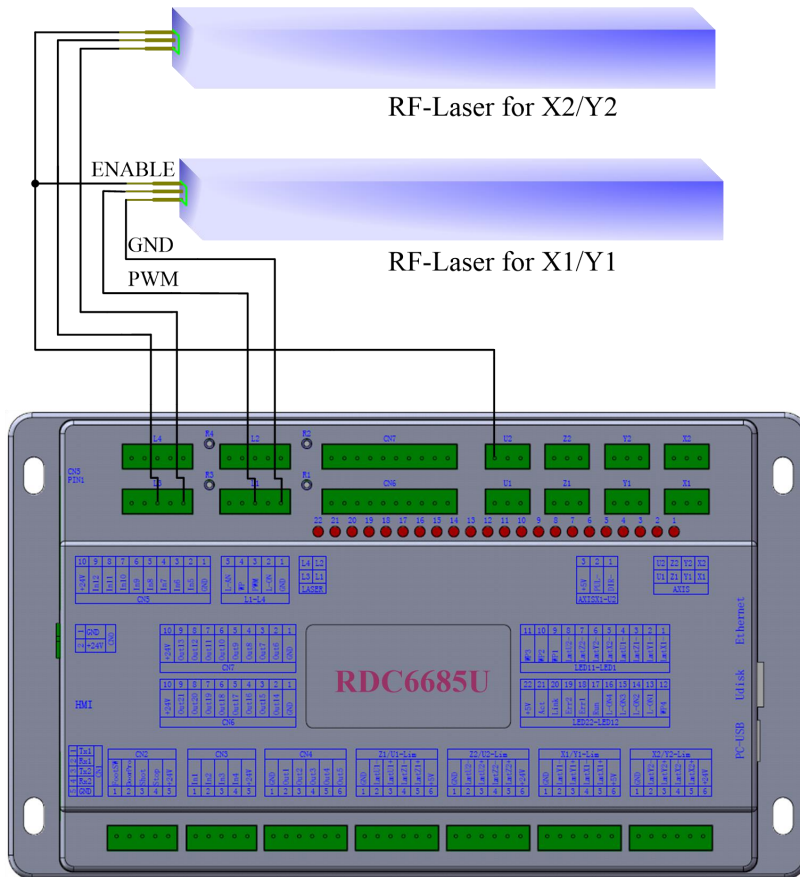
*Please correctly select the laser type in the factory parameters, or, the laser control is incorrect.*



## 5.2 Examples of Glass tube Laser Power



### 5.3 Examples of RF-Laser



# Section 6 Examples of Driver Interface for Step-servo Motor

## CONTENTS:

- Brief
- Examples of Motor Driver Connection

## 6.1 Brief

The input signal end of step-servo motor driver employs the light-coupled isolation technology. For the step-by-step impulse signal, some isolate the side OC diode from cutoff to conduction (e.g. the valid falling edge of pulse signal inputted from the diode minus end) and some do so from conduction to cutoff (e.g. the valid rising edge of pulse signal inputted from the diode minus end).

***When it is indicated whether the pulse signal of motor driver is the valid rising edge or the valid falling edge, it will be subject to the pulse signal inputted from the minus end of side OC diode.***

Some input signals of motor driver are independent and some are internally of common anode, so some have 4 external leading-out wires and some 3 wires (only the pulse and directional signals are counted) as shown in Figure 6.1-1 and 6.1-2.

RDC6685U(-DFM) Controller has four groups of 3-wires motion driver interface, each interface has one direction signal, one pulse signal, and one 5V positive output, the direction signal and the pulse signal are all OC output.

***RDC6685U(-DFM) controller must be common anode with the motor driver. The polarity of the direction signal can be changed in the factory parameters, and the valid edge of the pulse signal can also be changed.***

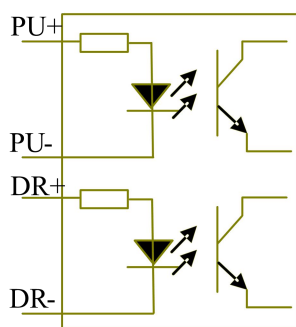


Figure: 6.1-1 Four Inputs, Independent Input Signal of Driver

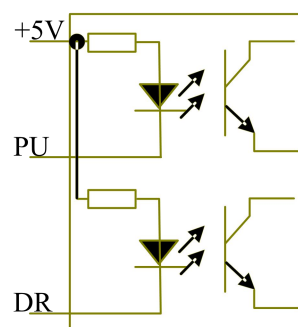
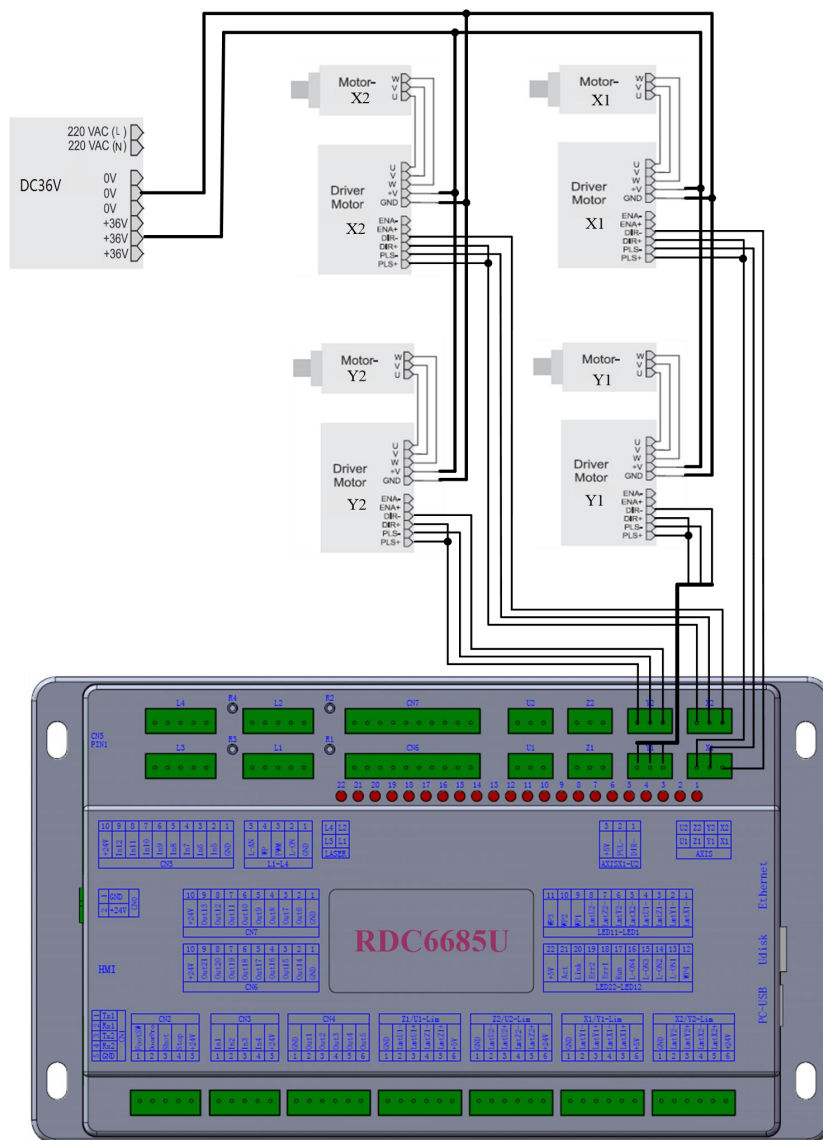


Figure: 6.1-2 Three Inputs, Common-anode Input Signal of Driver

## 6.2 Examples of Motor Driver Connection



# Section 7 Examples of IO-port Wiring

## CONTENTS:

- Input and Output Connecting

## 7.1 Input and output port wiring example

◆ The 4 water protection inputs are 24V logic level; all other inputs are compatible with 5V/12V/24V logic level.

◆ All the output signals of the controller adopt optocoupler isolation technology, OC gate output, and its maximum driving capacity is 300mA, which can directly drive 5V/24V relay, luminous indicator, buzzer alarm equipment, etc.

Input and output port wiring example:

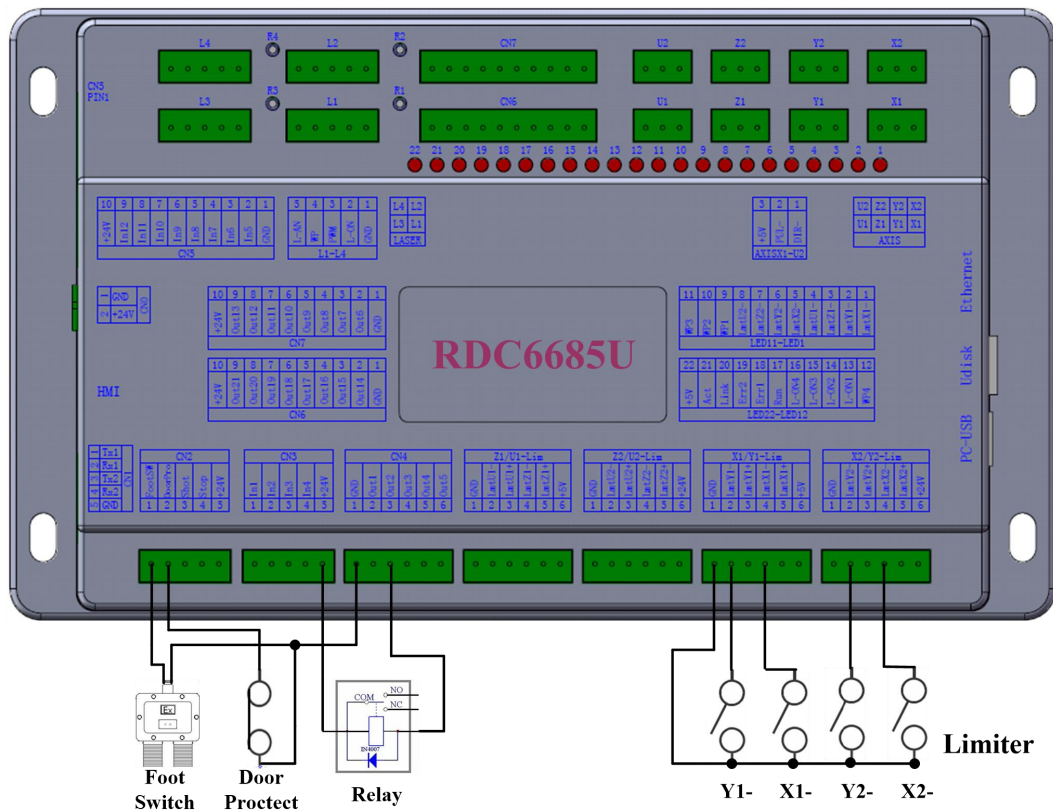


Figure 7.1-1 example of input and output





# Section 8 Operating Instruction of Panel

## CONTENTS:

- Brief
- The main interface
- Speed Setting
- Set the layer parameters
- Menu Key
- Controller setting
- Functions
- File Management
- Password input and Settings
- Prompt and alarm Information

## 8.1 Brief

### 8.1.1 Overview

RDC6685U-HMI control panel (hereinafter referred to as "panel") is a 5.0 inch TFT LCD screen based human-machine interface, with beautiful interface, man-machine friendly, smooth control, cost-effective features. The panel can depict the motion track of the controller in real time, which makes the user understand the current processing graphics at a glance, supports file management, file preview, user and manufacturer parameter modification, and supports multi-language interface switching and other functions.

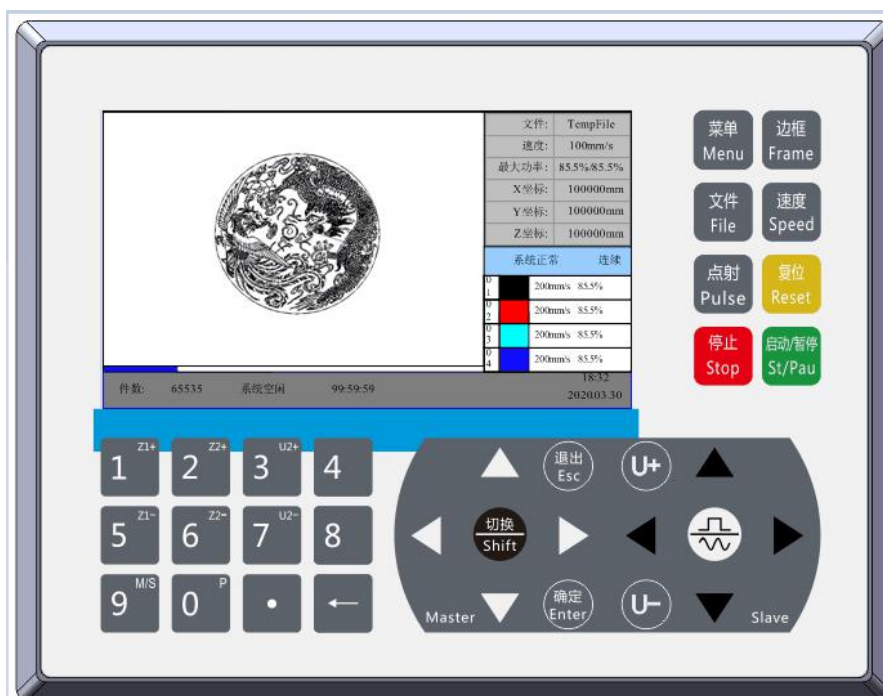






Figure 8.1.1-1 Object picture of

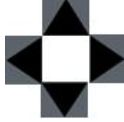

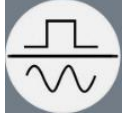


Panel Features:

- 5.0" TFT
- 854×480 resolution
- 64K color
- RS232 standard serial communication

## 8.1.2 Introduction to the Keys

-  Reset the whole system.
-  To start or pause the work.
-  Let the Laser to splash.
-  Stop working or motor axis motion.
-  User parameters, factory parameters, language settings, etc.
-  To track by the current file's frame.
-  The management of the memory and U disc files.
-  Special function switching.
-  Set the speed of the current running layer, or set the direction keys' move speed.
-  To stop work, or to exit to some menu.
-  Validate the change.
-  To move the X1 axes and Y1 axes or Up, down, left and right

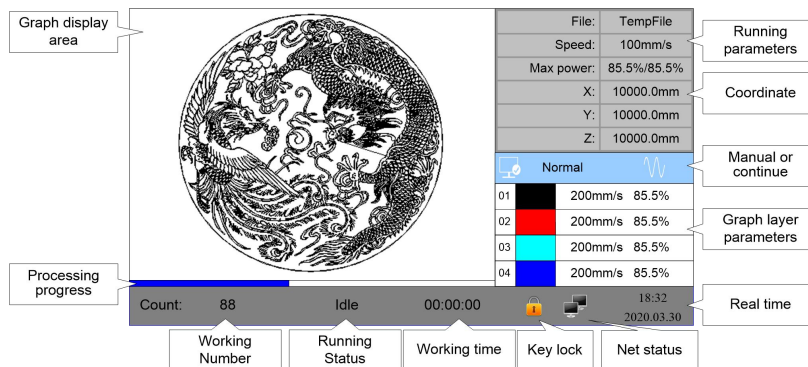
functions

- 
 To move the X2 axes and Y2
  - 
 Moving U1 axis.
  - 
 Point movement and continuous motion switching.
  - 
 Decimal point.
  - 
 Backspace.
- Digital key 0~9: Used to set parameters.

Note: The numeric keys (1, 5) (2, 6) (3, 7) reuse the Z1, Z2, U2 axis movement functions, respectively. In the main interface, directly press the corresponding numeric key to directly operate the corresponding axis. Number key 0 multiplex positioning key function




## 8.2 The main interface

When the system is powered on, the screen will show as below:



Figure

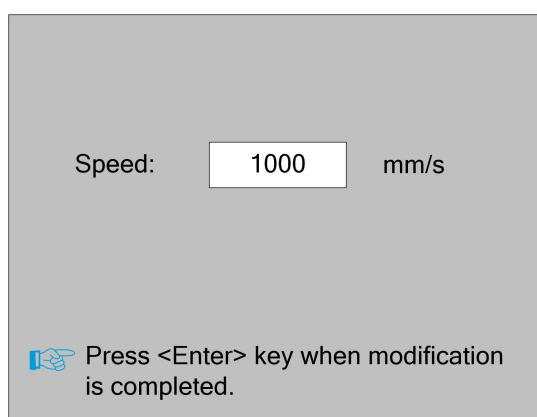
- Graph Display Area: To display the whole file's track, and display the running track.
- Running parameters: To display the running file's file number, speed, max power etc..
- Coordinate: To display the current coordinate of X,Y and Z axes.

- Graph layer parameters: To display the layers' information of the current file, such as max or min power, speed etc.. When system is idle, dblclick the layer, then users can change the layer's parameters and the changing would be saved.
- Running Status: To display the current status of the machine, such as Idle, Run, Pause, Finish, etc..
- Running Progress Bar: To display the progress bar of the current running file.
- Working Number: To accumulate the work number of the current file.
- File Dimension: To display the dimension of the current file.
- Net status: To display the connecting status of the Ethernet. When the network connection is successful, the icon  is displayed, otherwise the icon  is displayed.
- Key lock status: When the keyboard lock function is enabled, the icon  is displayed, any key press does not respond and prompt for the unlock password, enter the correct unlock password before unlocking.
- Real-time time: used to display the current time

When work is Idle or finished, all keys can be pushed, users can select a file to run, set some parameters, preview to a select file etc. But, when work is running or paused, some keys don't respond when they are pushed.

## 8.3 Speed Setting

Push the <Speed> key when the screen is on the main interface, it will show as below:







Figure

Press the number key and backspace key to set and modify the parameters. After modifying, press the **<Enter>** key to save the parameters. Press the **<Esc>** key to cancel the modification parameters. The interface disappears and returns to the main interface.



## 8.4 Set the layer parameters

After selecting a file to preview on the main interface, If there is layer information in the layer parameter area, show as below:

01		100mm/s 85.5%
02		100mm/s 85.5%
03		100mm/s 85.5%
04		100mm/s 85.5%



Figure

User can push <Enter> key to let the cursor move to the first layer show as below:

01		100mm/s 85.5%
02		100mm/s 85.5%
03		100mm/s 85.5%
04		100mm/s 85.5%

Figure


And then "Up and down" Keys can be pushed to select the intent layer, on that time, user can push <Enter> key to check the selected layer's parameters, show as below:

Layer 0:  


Speed(mm/s):

Power1(%):  (Max)  (Min)

Power2(%):  (Max)  (Min)

 Press <Enter> or numeric keys to set the para.  
Press <Esc> to return to the previous menu.

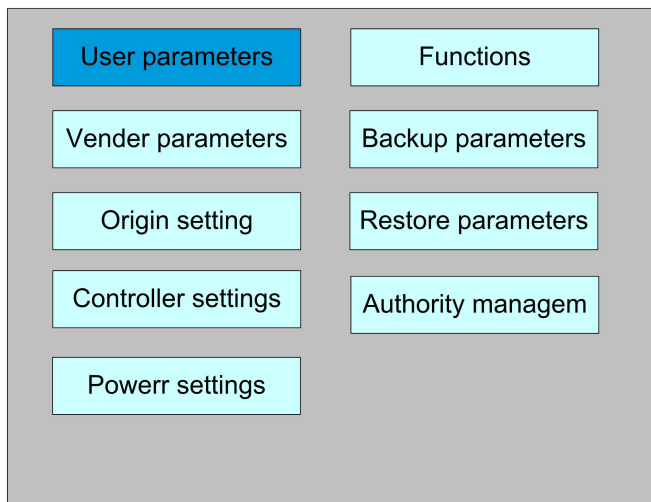
Figure

At this point, the "blue selection block" stays on the layer number entry, and then press the <Enter> key to enter the selection layer mode, while the "blue selection block" becomes  , press the "up/down" key to select other layers, and then press the <Enter> key to exit the layer selection mode. Then press the "up/down" key to move the "selection block" to the layer parameter entry to be modified. Press the number key and the backspace key to set and modify the parameters. After setting the parameters, move the "selection block" to the "write parameters" entry. Press the <Enter> key to save the current layer parameters, otherwise the parameters will not be saved. Press

the <Esc> key interface to disappear and return to the main interface.

## 8.5 Menu Function

Push the < Menu> key when the screen is on the main interface, it will show as below:

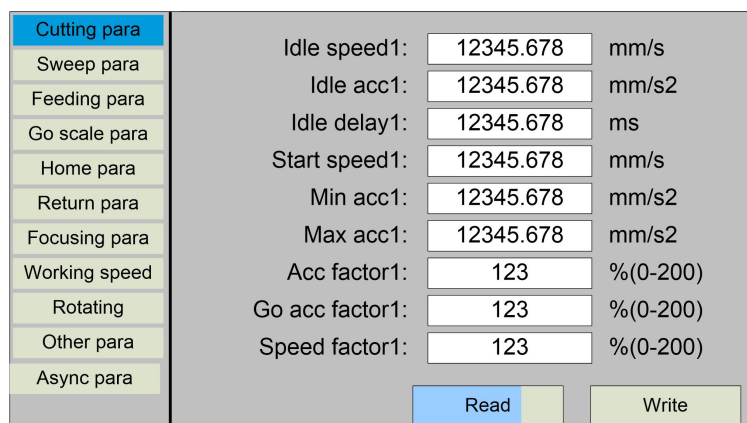


Figure

Press the <Esc> key to return to the previous menu.

### 8.5.1 User parameters

In the menu interface, select "User parameters" entry and press the <Enter> key ,it will show as below:

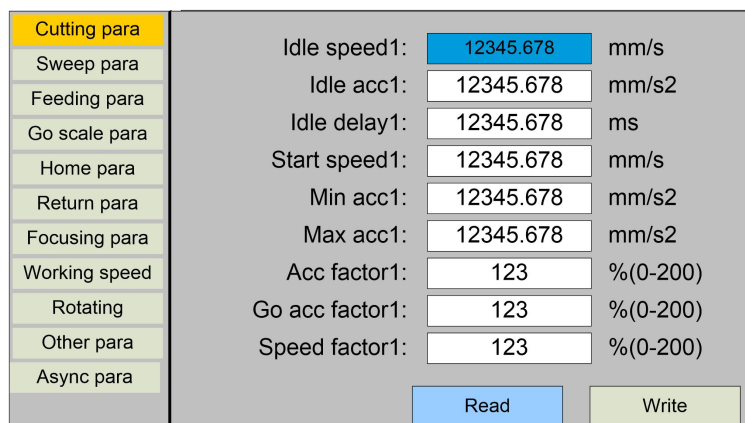


Figure


At this point, the panel automatically reads the motherboard parameters and displays them, while displaying the progress of the read parameters in the "Read Parameters" entry. When all the

parameters are read out, the user can press the "up/down" key to move the "blue selection block" to select a parameter category such as "carving", "feeding" and so on. The right parameter area displays the corresponding parameters. If the user does not need to modify the parameters, press the <Esc> key to return to the menu interface.

If the user needs to modify the parameters, press the <Enter> button, and the "blue selection block" switches to the first parameter in the parameter area, as shown in the following interface:



Figure

At this point, the user can press the "up/down" key to select a parameter, press the number key to modify the numerical parameters (such as "Idle speed"), for non-numerical parameters (such as "Scan mode"), when the "blue selection block" stops on the parameter, press the <Enter> key to enter the modification mode (the "blue selection block" right side becomes ), press the "up/down" key. Modify the parameters. After the modification, press the <Enter> key to exit the modification mode. When the current page parameters have been modified, move the "blue selection block" to the "Write" entry and press the <Enter> key. The panel saves all the parameters on the motherboard and takes effect, and displays the save progress on the "Write" entry. If the user wants to verify that the parameters are saved successfully, he can move the "blue selection block" to the "Read" entry and press the <Enter> key, then the panel reads the motherboard parameters again and displays them. When pressing the "left/right" key, the Blue Select Block switches back to the parameter category, as shown in Figure 8.5.1-1, where the user can select another parameter category to modify or press <Esc> to return to the menu interface.

Other interface operations are similar, and the interface is displayed as follows:



Cutting para			
Sweep para	X start speed:	12345.678	mm/s
Feeding para	Y start speed:	12345.678	mm/s
Go scale para	X Acc:	12345.678	mm/s <sup>2</sup>
Home para	Y Acc:	12345.678	mm/s <sup>2</sup>
Return para	Line shift speed:	12345.678	mm/s
Focusing para	Scan mode:	Normal	
Working speed	Facula size:	00.0	%
Rotating	Engraving factor:	100	(0-100)%
Other			
		Read	Write

Figure

Cutting para			
Sweep para	Delay before feed:	12345.678	s
Feeding para	Delay after feed:	12345	ms
Go scale para	Progressive feeding:	No	
Home para	Progressive feeding comp:	12345.678	mm
Return para	Last feeding:	Yes	
Focusing para			
Working speed			
Rotating			
Other			
		Read	Write

Figure

Cutting para			
Sweep para			
Feeding para			
Go scale para	Go scale mode:	Close laser	
Home para	Go scale blank:	12345.678	mm
Return para			
Focusing para			
Working speed			
Rotating			
Other			
		Read	Write

Figure

Cutting para			
Sweep para	X1Y1 home speed:	12345.678	mm/s
Feeding para	Z1 home speed:	12345.678	mm/s
Go scale para	U1 home speed:	12345.678	mm/s
Home para	Auto home X1:	Yes	
Return para	Auto home Y1:	Yes	
Focusing para	Auto home Z1:	Yes	
Working speed	Auto home U1:	Yes	
Rotating			
Other			
		Read	Write

Figure

Cutting para			
Sweep para			
Feeding para	Return position1:	Origin	
Go scale para	Docking point X1:	12345.678	mm
Home para	Docking point Y1:	12345.678	mm
Return para	Return position2:	Origin	
Focusing para	Docking point X2:	12345.678	mm
Working speed	Docking point Y2:	12345.678	mm
Rotating			
Other			
		Read	Write

Figure

Cutting para			
Sweep para			
Feeding para			
Go scale para	Focus depth:	12345.678	mm
Home para	Material thickness:	12345.678	mm
Return para	Enable focus:	No	
Focusing para			
Working speed			
Rotating			
Other			
		Read	Write

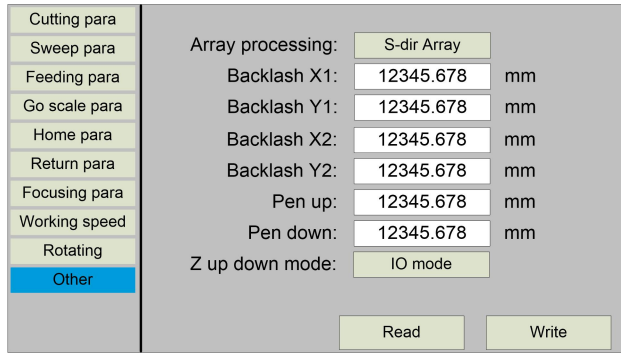
Figure

Cutting para			
Sweep para			
Feeding para			
Go scale para	Z1 work speed:	12345.678	mm/s
Home para	U1 work speed:	12345.678	mm/s
Return para	Z2 work speed:	12345.678	mm/s
Focusing para	U2 work speed:	12345.678	mm/s
Working speed			
Rotating			
Other			
		Read	Write

Figure

Cutting para			
Sweep para			
Feeding para			
Go scale para	Enable roating:	No	
Home para	Circle pulse:	12345.678	
Return para	Diameter:	12345.678	mm
Focusing para			
Working speed			
Rotating			
Other			
		Read	Write

Figure



Figure

### 8.5.2 Vender parameters

In the menu interface, select "Vender parameters" entry and press the <Enter> key ,it will show as below:

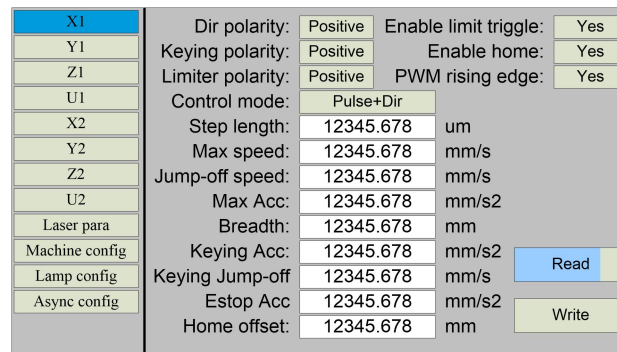
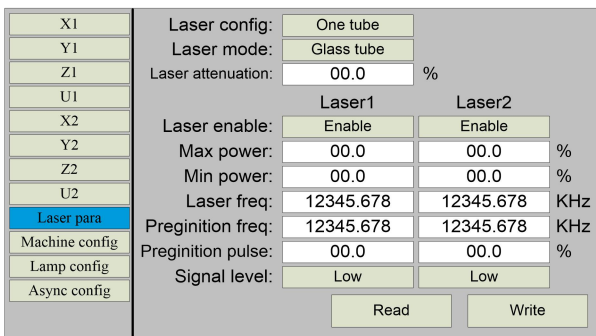
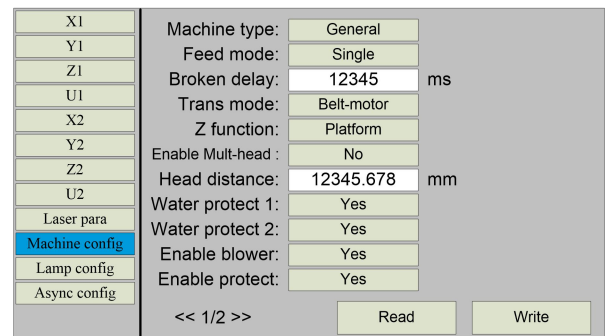


Figure 8.5.2-1

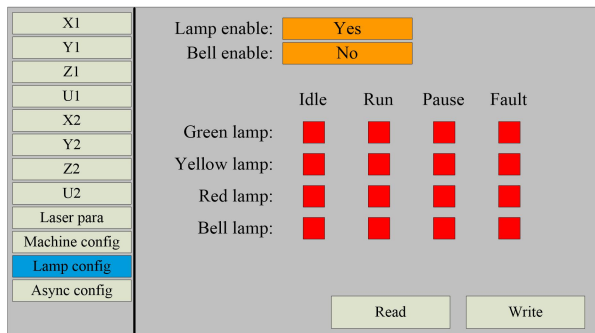
The interface parameters of X2,Y1,Y2,Z1,Z2,U1 and U2 axes are the same as those of X1 axis parameters.



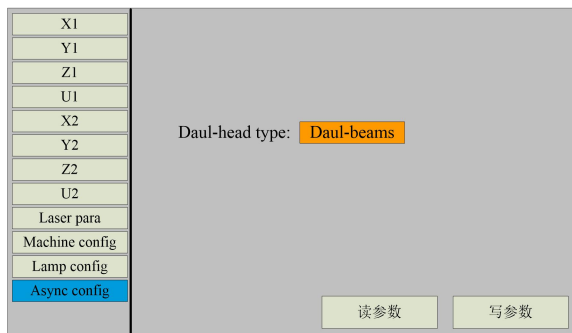
Figure



Figure



Figure

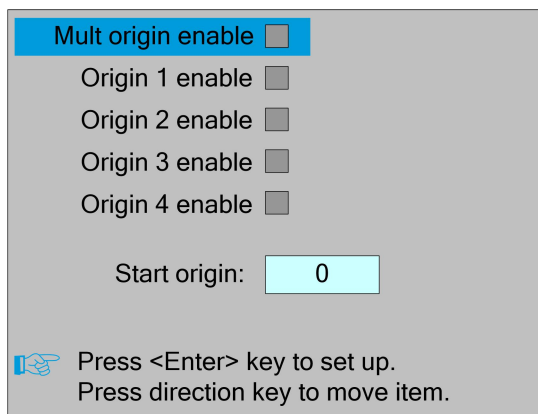


Figure

The operation and settings of the factory parameters are the same as the user parameters.

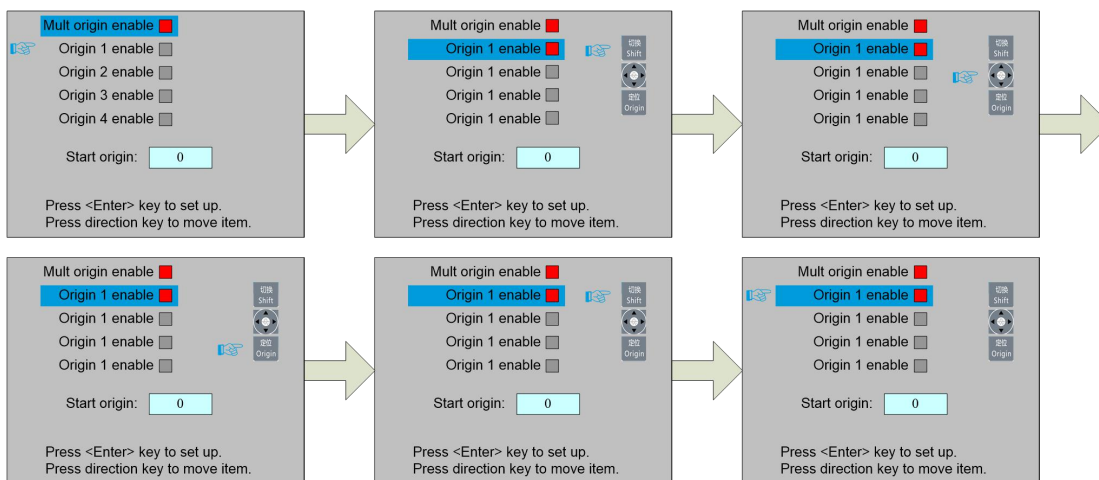
### 8.5.3 Origin Setting

In the menu interface, select "Origin setting" entry and press the **<Enter>** key ,it will show as below:



Figure

At this point, the "blue selection block" defaults to select the "Mult origin enable" entry, press the **<Enter>** key to enable or disable(the right small square shows red when enabled), when enabled, the little finger to "Origin 1 enable" entry means to start setting the origin point 1, first move the "blue selection block" to this entry and press the **<Enter>** key to enable the location point 1 entry, then press **<Shift>** key, then press the direction key to change the X/Y axis coordinate value, then press **<Origin>** key to set the current coordinate value to the location point 1, and finally press **<Shift>** key to return to the current interface operation. The operation process interface is as follows:




Figure

Other origins are set in the same way.

When the "Select Block" stops on the "Start origin" entry, press the **<Enter>** key to enter the modification, press the "Up/Down" key to modify, after the modification, press the **<Enter>** key, the parameters automatically take effect, and press the **<Esc>** key to return to the menu interface.


Each item introduced as below:

- **Multiple Origins Enable:** “Yes” or “No” can be selected. If you select “No”, the system will use the single-origin logic. You can press the **<Origin>** key and set the origin, and only this origin can become valid. If you select “Yes”, the system will use the multiple- origin logic and the **<Origin>** key on the keyboard become invalid. In such a case, the parameter of each origin must be set in the menu as follows.
- **Origin Enable1/2/3/4:** after the multiple-origin logic is enabled, the four origins can independently be prohibited and enabled.
- **Start Origin:** there are such five digits as 0~4 for option, which are the origins to be used for the next figure. Origin 0 means the origin set by the **<Origin>** key on the panel in the single- origin logic. 1~4 means the serial number of the origins in the multiple- origin logic. Start origin can be modified to any one of origin 1~4, so as to control the start location of next work (the premise is that the origin is enabled), but it can't be modified to origin 0.

 <b>Prompt</b>	<p>Once the multiple- origin logic is selected and if the serial number of the next origin is 1 and four origins are enabled, when the memory file function is started or the processing file is uploaded into the PC and this file selects “Take the Original Origin as current Origin”, the work started for each time will use different origins. The rotation order of origin is 1-&gt;2-&gt;3-&gt;4-&gt;1-&gt;2.....</p>
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### 8.5.4 Backup parameters

In the menu interface, select the "Backup Factory Parameters" entry, press the <Enter> button and then pop up the password input interface. The password input operation refers to Section 8.9. If the password is input correctly, the system will backup all the current user parameters and factory parameters. Interface prompt "Backup parameter is successful".

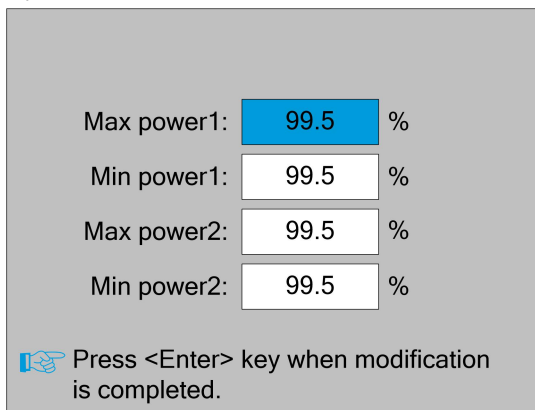
 Prompt	After the manufacturer regulates all parameters of the machine well (including all manufacturer parameters and user parameters), this function can be used to store the well-regulated parameters to help users to recover the original parameters (including all manufacturer parameters and user parameters) through selecting "Recover Para" when they regulate parameters improperly.
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### 8.5.5 Restore parameters

In the menu interface, select the "Restore Factory Parameters" entry, press the <Enter> button and then pop up the password input interface. The password input operation refers to Section 8.9. If the password is input correctly, the system will restore all the current user parameters and factory parameters with the factory parameters set before. Interface prompt "recovery parameter is successful".

### 8.5.6 Max/Min Power Setting

Push the < Power> key when the screen is on the main interface, it will show as below:

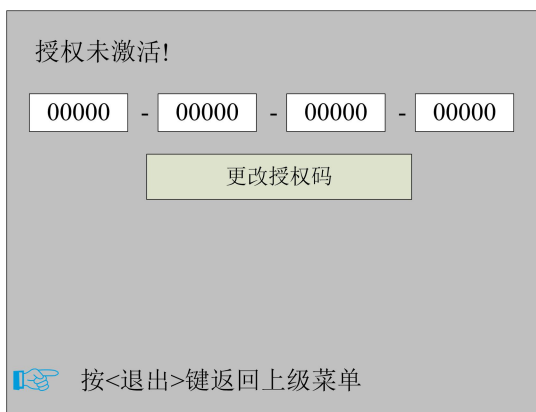


Figure

At this point, the "blue selection block" stays on the first parameter to indicate that the parameter is selected, press the number key and the backspace key to set and modify the parameter. Press the arrow button to move the "select block" to select other parameters for modification. When the parameters are modified, press the **<Enter>** key to save the parameters, press the **<Esc>** key to cancel the parameters, the interface disappears and returns to the main interface.

### 8.5.7 Permission Settings

When the current product is not authorized, select the "authority management +" item in the menu interface, and press the [OK] key to pop up the following interface:



Figure

At this time, press [OK], the blue selection box selects the first parameter box, and press [OK] again to display the soft keyboard, as shown in the figure:



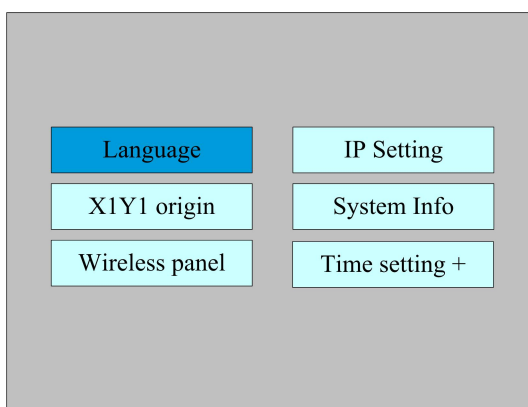
Figure

Select the corresponding character through the "up, down, left, and right" direction keys, and press the OK key to confirm. If the operation is incorrect and the input is incorrect, just press [Exit] and select [OK] to enter the setting. After inputting, press **【Exit】** key, the soft keyboard disappears, the red selection box selects the current modification parameter box,

and press the arrow keys to select other parameter boxes, the parameter setting operation is the same as above. After all the parameters are set, move the red selection box to change the authorization code and press [OK] to set successfully. Press Exit to return to the upper operation interface.

## 8.6 Controller setting

Select the "Controller Settings" entry under the menu interface, press the **<Enter>** button, and then pop up the controller settings interface as follows:



Figure

Press the **<Esc>** key to return to the previous menu.

### 8.6.1 Language

Select the "Language" entry under the controller setting interface, press the **<Enter>** button, and then pop up the language settings interface as follows:

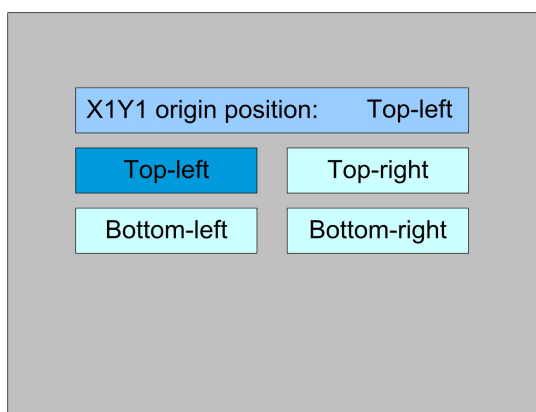


Figure

Press the direction key to select a language and press the <Enter> key to set up the function and automatically return to the menu interface.

## 8.6.2 Screen origin


Select the "Screen origin" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:



Figure

The display screen's origin position is set here, and different screen origin positions are selected to adjust the display graphics position in different X or Y directions.

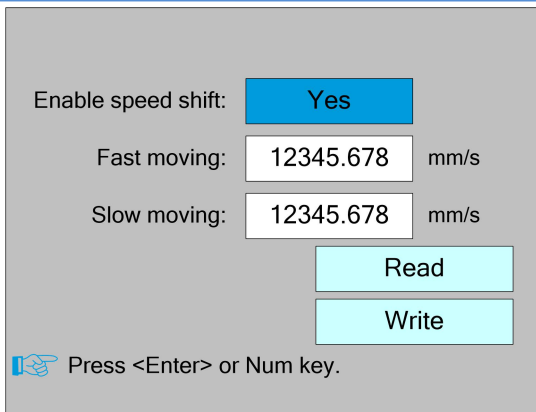
Press the direction key to select a item and press the <Enter> key to set up the position and press the <Esc> key return to the main interface.

 Caution	This item is only used to preview the file on the screen, and it is no meaning to the machine's movement.
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## 8.6.3 Wireless panel

Select the "Wireless panel" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:



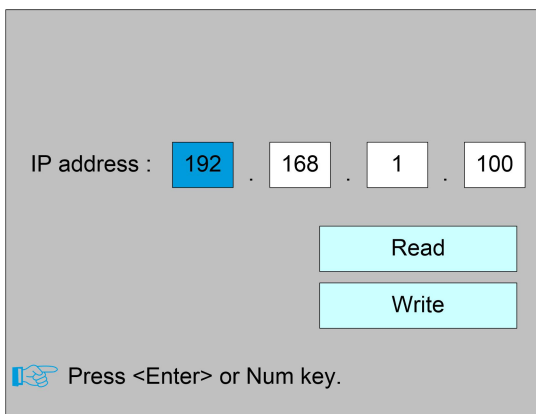


Figure

When modifying the first parameter, press the <Enter> key to enter the modification mode ("blue selection block" right side becomes ), press the "Up/Down" key to modify, and then press the <Enter> key to exit the modification mode. Press the direction key to select other parameters and press the number key to modify the parameters. After the modification, move the "selection block" to the "Write " entry and press the <Enter> key. The parameter setting takes effect. Press the <Esc> key to return to the previous menu.

### 8.6.4 IP Setting

Select the "IP setting" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:

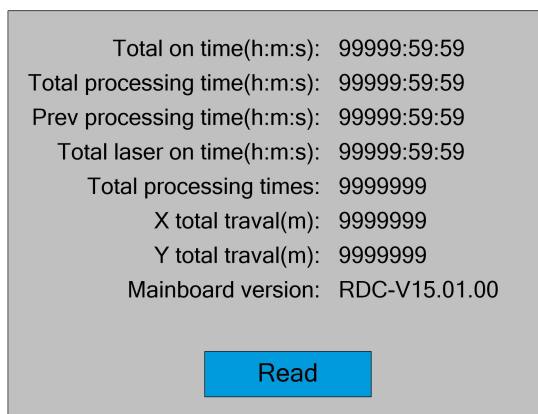


Figure

Press the direction key to select a parameter, then press the number key to modify the parameter. After the modification, move the "selection block" to the "Write" entry and press the <Enter> key. The parameter setting takes effect. Press the <Esc> key to return to the menu at the previous menu.

## 8.6.5 System Info

Select the "System Info" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:

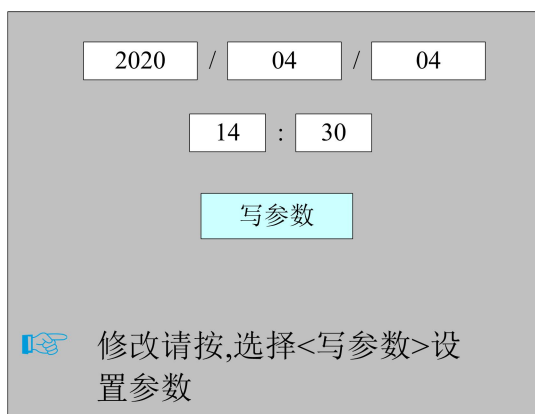


Figure

Press the <Enter> key to read motherboard information. Press the <Esc> key to return to the previous menu.

## 8.6.6 Time Settings

Select the "System Info" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:

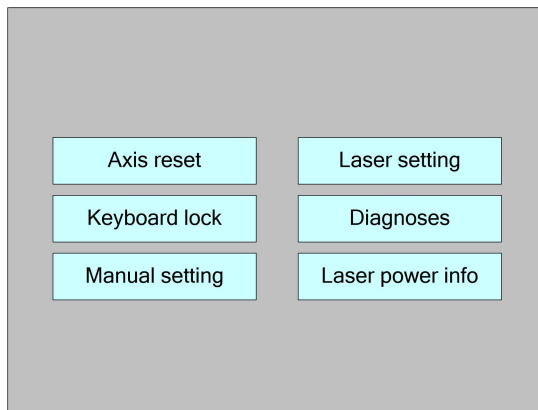


Figure

The operation method is the same as that of other interfaces. Use the arrow keys and numeric keys to modify the parameters. When the motherboard is in an unencrypted state, pressing the write parameter will pop up a pop-up message "Modification time succeeded", otherwise a prompt message "Prohibit modification time" will pop up ".

## 8.7 Funtions

In the menu interface, select "Function" entry and press the <Enter> key ,it will show as below:

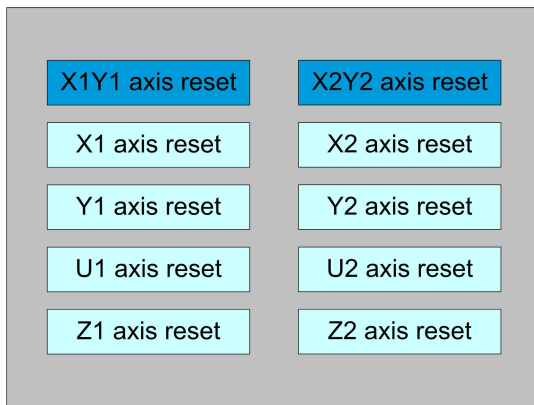


Figure

Press the <Esc> key to return to the previous menu.

### 8.7.1 Axis reset

Select the "Axis reset" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:



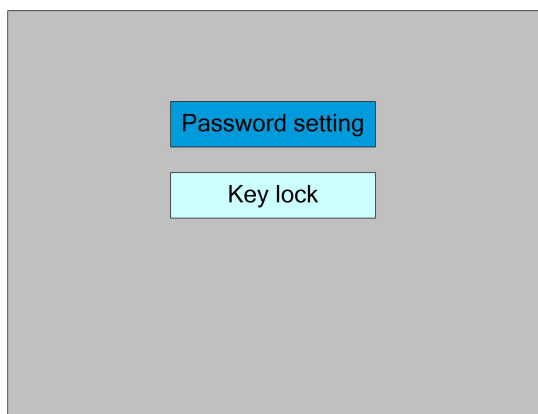
Figure

Press the direction key to select an entry and press the <Enter> key, the system performs the axis reset, and prompts "Resetting...".

Press the <Esc> key to return to the previous menu.

## 8.7.2 Keyboard lock

Select the "Keyboard lock" entry under the controller setting interface, press the <Enter> button, and then pop up the interface as follows:



Figure

- Password setting

This entry allows you to set the default password for keyboard locking and use the new password for keyboard locking after setting up successfully.

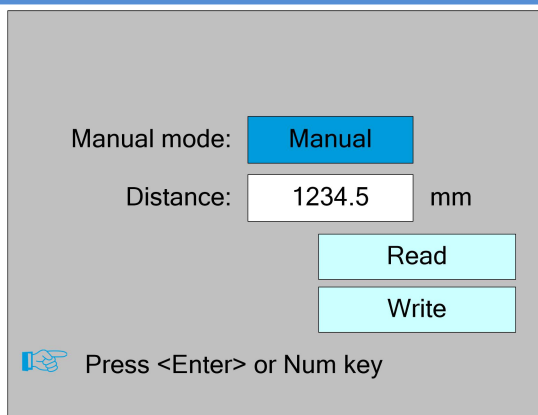
- Key lock

This item can lock the keys. After entering the correct password, the keys automatically lock and return to the main interface. When any key is pressed, the interface prompts the input password to unlock the keys.


Please refer to section 8.9 for password input and password settings. Press the <Esc> key to return to the previous menu.

## 8.7.3 Manual setting

Select the "Manual setting" entry under the functions interface, press the <Enter> button, and then pop up the interface as follows:



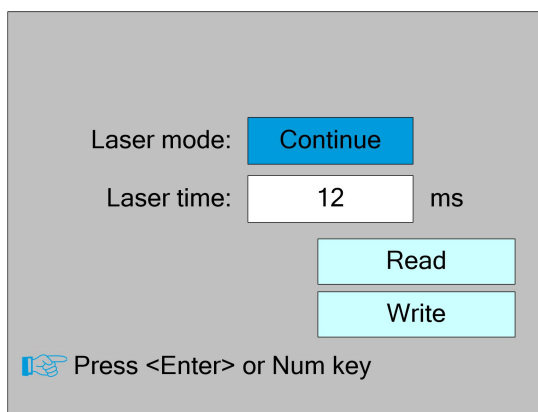
Figure

Manual mode has “Continue” and “Manual”, press the <Enter> key to enter the modification mode ("blue selection block" right side becomes ) , press the "up/down" key to modify, after the modification, press the <Enter> key to exit the modification mode. After all modifications, move the “Select block” to the Write Parameters entry and press the <Enter> key. The parameter settings take effect. Press <Esc> key to return to the previous menu.

When “Continue” item is selected, then the “Manual” item is not valid, on that time, push the direction keys to move the corresponding axes, and when the pushed key is loosed, then the corresponding axes will finish moving. When the Mode item is “manual”, then pushing the direction key one time, the corresponding axes will move a fixed length, unless the scope is overstepped.

### 8.7.4 Laser Setting

Select the "Laser setting" entry under the funtions interface, press the <Enter> button, and then pop up the interface as follows:



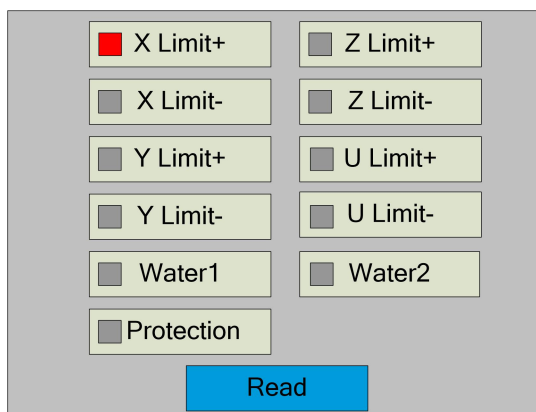
Figure

The operation method is the same as manual setting.

When "Continue" item is selected, then the "Laser time" item is not valid, on that time, push the Laser key to splash the enabled lasers, and when Laser key is loosed, then the lasers will finish splashing. When the Laser mode item is "Manual", then pushing the Laser key one time, the enabled lasers will splash a fixed time.

### 8.7.5 Diagnose

Select the "Diagnose" entry under the funtions interface, press the **<Enter>** button, and then pop up the interface as follows:



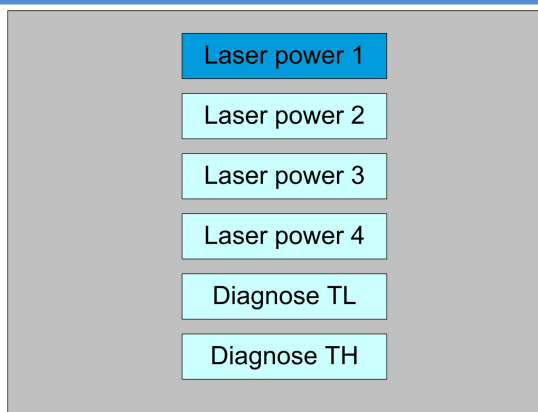
Figure

The interface displays the hardware IO information of the system, and reads the hardware information of the system by pressing the **<Enter>** key. When the hardware signal is triggered, the small box on the left side of the corresponding entry will show red. Otherwise, it will show gray. Press the **<Esc>** key to return to the previous menu.

### 8.7.6 Laser power infomation

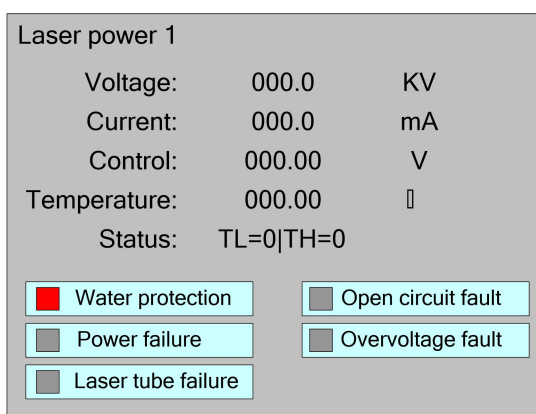
Note: laser power information function is effectively configured on PC software.

Select the "Laser power info" entry under the funtions interface, press the **<Enter>** button, and then pop up the interface as follows:



Figure

When the "blue selection block" stops at the items 1, 2, 3 and 4 of the laser power supply, press the <Enter> key to view the information of each power supply. The interface is as follows:



Figure

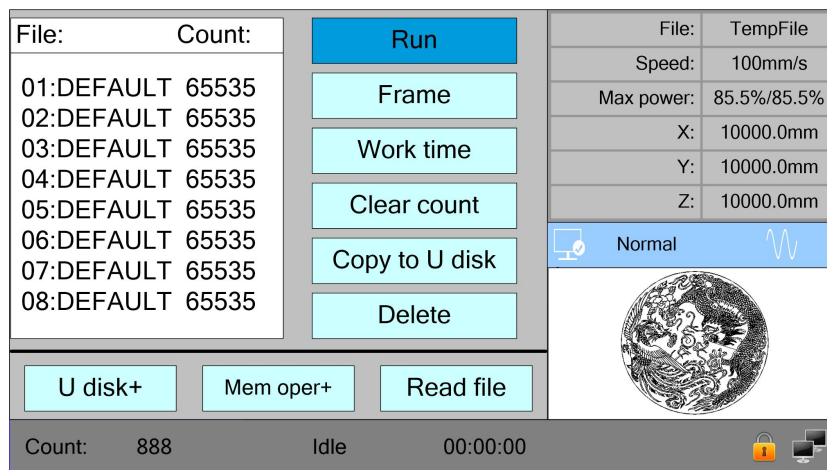
When the "blue selection block" stops at the "diagnostic TL" and "diagnostic TH" entries, press the <Enter> key to check whether the IO of the laser power supply is abnormal, and if so, an alarm will be generated.

Press the <Esc> key to return to the previous menu.

## 8.8 File Management

### 8.8.1 Memory File

Push the <Menu> key when the screen is on the main interface, it will show as below:



Figure

When showing this menu, the system would read the memory file firstly, the file name and the work times would be listed in the area, and the selected file is previewed in the bottom right area. **<Up >/<Down >** keys could be used to move the cursor on the file name list. When the cursor is on a target file name, presses the **<Enter >** key, the selected file will be previewed on the main interface, and then if **<Esc >** key is pushed, the preview will disappear.

**<Left >/<Right >** keys could be used to move the cursor left and right.

Press the **<Esc >** key to return to the previous menu.

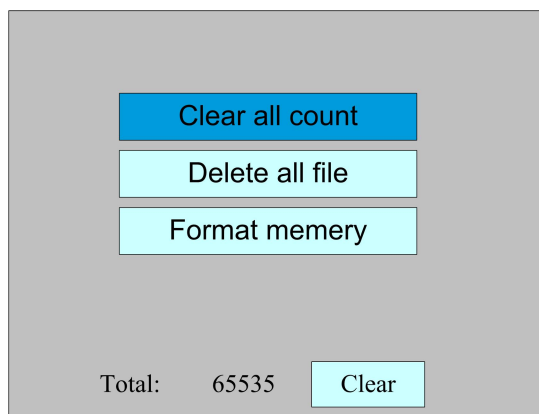
The items on the right and bottom are as follows:

- **Run:** To run the selected file;
- **Track:** To track the selected file, and the track mode is optional;
- **Work time:** To forecast the running time of the selected file, and the time is accurate to 1ms;
- **Clear count:** To clear the running times of the selected file;
- **Copy to U disk:** To copy the selected file to U disk;
- **Delete:** To delete the selected file in the memory;
- **U disk:** read the U disk file list;
- **Memory operation:** the other operation of the memory files;
- **Read mem file:** read the memory file list;



## 8.8.2 Memory operation

Select the "Memory Operation" entry in the above interface and press the <Enter> button, then the pop-up menu appears as follows:



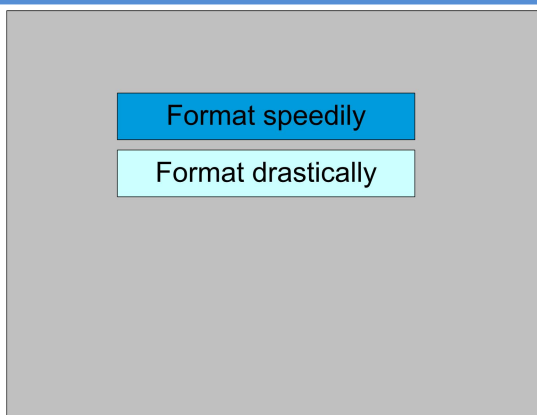
Figure

- **Clear all count:** To clear the running times of every file in the memory
- **Delete all file:** To delete all memory files
- **Format memery:** To format memory speedily, and then all the files in memory will be deleted.
- **Total:** the total running times of all the files.

Methods of operation are the same as above. Press the <Esc> key to return to the previous menu.

## 8.8.3 Format memery

Select the "Format Memory" entry in the above interface and press the <Enter> button, then the pop-up menu appears as follows:



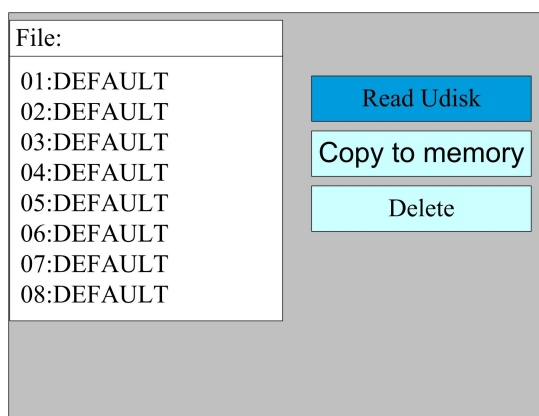
Figure

- **Format speedily:** To format memory speedily, and then all the files in memory will be deleted.
- **Format drastically:** To format memory drastically, and then all the files in memory will be deleted.

Methods of operation are the same as above. Press the **<Esc>** key to return to the previous menu.


### 8.8.4 U disk file

If the “U disk” entry in figure 8.8-1 is pressed, the system will show as figure 8.8-4, and the operation method is all the same as figure 8.8-1.



Figure

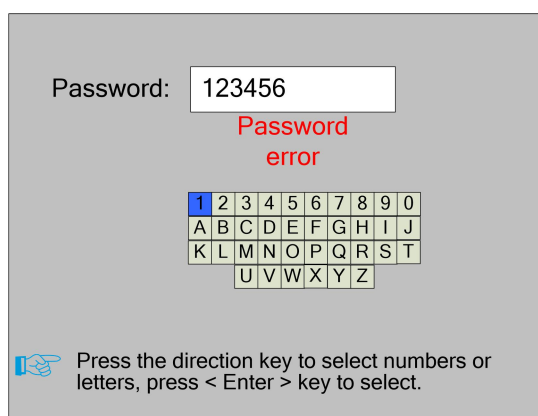
- **Read Udisk:** read the file list in the Udisk;
- **Copy to memory:** copy the target Udisk file to the memory;
- **Delete:** delete the selected Udisk file;

 <b>Prompt</b>	<p>This system supports such file formats of Udisk as FAT32 and FAT16, but it can identify them when the files are put under the root directory of Udisk. The file name of more than 8 characters will automatically be cut out by the system. The file name that has only English letters and digits will not show when they are copied to the mainboard. The files copied from the mainboard to Udisk will be placed under the root directory of Udisk.</p>
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## 8.9 Password input and settings

### 8.9.1 Password Input

When you enter certain interfaces or perform certain operations, you need to enter the password. The interface is as follows:



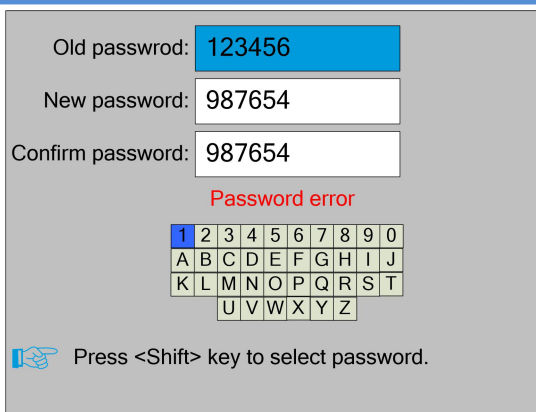
Figure

You can enter the password directly by pressing the number key, or you can select a number or letter by pressing the direction key, select by pressing the **<Enter>** key, and press the **<Enter>** key when you enter six passwords. If the password is correct, you can go to the next interface or perform the operation, otherwise you can display a "password error" and re-enter.

Press the **<Esc>** key to return to the previous menu.

### 8.9.2 Password Setting

The password settings interface is shown in the following figure:



Figure

At this point, you can enter the password directly by pressing the number key, or you can press the **<Shift>** key to use the keypad, press the direction key to select a number or letter, press the **<Enter>** key to select, and then press the **<Shift>** key to return to the password selection. If the password is entered correctly, the new password will become effective, otherwise the "password error" will be displayed.

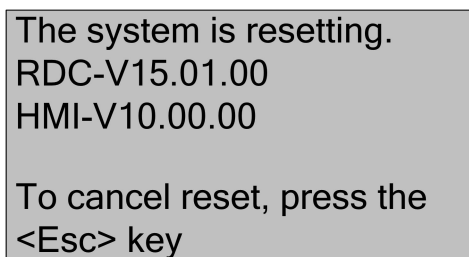
Press the **<Esc>** key to return to the previous menu.

## 8.10 Prompt and alarm information

In the process of user operation or system operation will pop up some hints and alarm information, such as reset, water protection failure, hard limit protection, border crossing and so on.

- Prompt

The system pop-up "The system is resetting.". show as below:

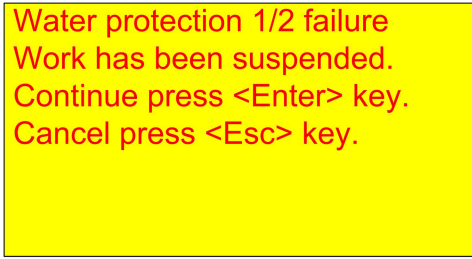


Figure

The user operates according to the interface prompts.

- Alarm Information

The system generates "water protection fault", show as below:



Water protection 1/2 failure  
Work has been suspended.  
Continue press <Enter> key.  
Cancel press <Esc> key.

Figure

At this point, the system performs related operations according to the <Enter> or <Esc> keys.

# Section 9

# Manufacturer/User

# Parameters Explanation

## CONTENTS:

- Manufacturer parameters
- User parameters

## 9.1 Manufacturer parameters

### (1) Motor parameters

There are eight motion axes in the system, which are X1/Y1/Z1/U1 and X2/Y2/Z2/U2. The parameters of each axis are the same, and the meaning of the parameters is as follows:

- **Direction Polarity:** Modification of direction polarity can move the motor to the opposite direction. The modification purpose can move this axle to the origin on resetting. If this axle moves far from the origin on resetting, it means the direction polarity of this axle is wrong in setting and should be modified.
- **Spacing Polarity:** it is used to set the high and low level mode of spacing signal. When the motion axle arrives at the spacing position and input a low-level signal to the mainboard, the spacing polarity at this time should be set to be minus.
- **scope:** it means the farthest distance that the motion axle can move, which is determined in accordance with the actual condition of the machine.
- **Distance from Origin to Hard Spacing:** if this axle enables hard-spacing protection, generally this value should be set to be 2~5mm; if it is set to be 0, when this motion axle moves to the smallest coordinate, i.e. 0, this spacing may be validate, which may wrongly triggers the hard-spacing protection and scam the machine. If the hard-spacing protection is not enabled, this value can be set to be 0~5mm.
- **Control Mode:** Double pulse or direction+single pulse are optional, in general, direction+single pulse is selected.
- **Motor Stepping:** it means the impulse equivalent, the absolute distance gone by the corresponding motion axle when a pulse is delivered to the motor. Prior to the correct setting of this value, a large rectangle can be cut with the machine (the larger the figure is, the smaller the difference is). The motor stepping can automatically be calculated according to the figure length and measuring length.
- **Hard-spacing Protection:** it is used for whether the hard-spacing protection of this axle is enabled.
- **PWM Rising edge valid:** To set the motor driver's pulse signal rising edge valid or falling edge valid. If this item is disabled, the pulse is falling edge valid, or, it's rising edge valid.
- **Reset Enable:** if the machine is provided with this axle, its "Reset Enable" should be opened; if no, its "Reset Enable" should be prohibited.
- **Takeoff Speed:** it means the speed of the motion axle in direct start from the idle

condition. If this value is excessively large, it will make the motor lose steps, jar and even squeak; if small, it will reduce the running speed of the whole figure. If the inertia of the motion axle is larger (the axle is heavier), you can set a smaller takeoff speed; if smaller (the axle is lighter), you can increase the takeoff speed. For example, the typical value is 5~30mm/s.

➤ **Maximum Speed:** it means the maximum limit of motion speed that this axle can bear. This parameter has something to do with the driving force of motor, the inertia of motion axle and its drive ratio. For example, the typical value is 200~500mm/s.

➤ **Maximum Acceleration:** it means the maximum acceleration of the motion axle in accelerated or decelerated motion. If the acceleration is set too large, it will make the motor lose steps, jar and even squeak; if too small, it will cause the reduction of acceleration so as to reduce the running speed of the whole figure. For the axles with larger inertia, such as Y axle corresponding to the beam, its typical setting range is 800~3000mm/s<sup>2</sup>; for the axles with smaller inertia, such as X axle corresponding to the car, its typical setting range is 8000~20000mm/s<sup>2</sup>.

➤ **Scram Acceleration:** if this axle enables the hard-spacing protection, when this axle moves to the spacing position, it will scam operation at the scam acceleration. This value can be 2~3 times of the maximum acceleration for this axle.

#### **Key parameters**

➤ **Key Move Takeoff Speed:** it means the starting speed to move this axle by way of the keys on the keyboard, which can't be higher than the takeoff speed.

➤ **Key Move Acceleration:** it means the acceleration to move this axle by way of the keys on the keyboard, which can't be higher than the maximum acceleration of this axle.

➤ **Key Polarity:** it is used to control the movement direction of the axle that is moved through manual operation of the keys. After the direction polarity is correctly set, if you press the directional keys on the operating panel, this axle will move to the opposite direction. In such a case the polarity of keys should be modified.

#### (2) Laser parameters

There are four laser channels in this system, and the parameters of each channel are the same.

The meaning of the parameters is as follows:

➤ **Laser Type:** glass tube, RF laser (not need pre-ignition pulse) and RF laser (needing pre-ignition pulse) available for option.

➤ **Laser Attenuation Quotiety**



- **Laser Enable:** When double lasers are used, then each laser can be respectively enabled or disabled.
- **Minimum Power**
- **Maximum Power**
- **Laser PWM Frequency**
- **Pre-generation Frequency**
- **Pre-generation pulse scale:** When the laser is RF-laser and it's need to pre-generate PWM, then set the Pre-generation Frequency and the Pre-generation pulse scale.
- **Water Protector Enabled:** When the water protector is enabled, the mainboard will detect the input port of water protector. If this port is of low level, it will be deemed normal; if this port is of high level, the mainboard will forcibly close the laser to suspend the work in progress and the system will warn. If the water protector is not enabled, the mainboard will not detect the input port of water protector and so the water protector can be unconnected.


Laser PWM Frequency is used to set the pulse frequency of control signal used by this laser, in general, glass tube is about 20KHZ, RF laser is about 5KHZ; the maximum/minimum power (%) is used to set the limit power of this laser, that is to say, during the operation, the maximum power set by the user can't be higher than that set here and the minimum power set by the user can't be less than that set here, either. When a laser's power is attenuated, then the laser attenuation quotiety may be set

### (3) Other manufacturer parameters

#### ***Machine configuration***

- **Machine Type:** Double cantilever(Dual X ) and double beam(Dual Y) models are optional. For the coordinate system of each model, see the previous section.
- **Feeding Mode:** it has single-way mode and two-way mode for option. If it is of single-way feeding, it is unnecessary to check the coordinates. Feeding can be conducted in the single-way mode; if it is of two-way feeding, the system will check the maximum and minimum coordinates. The odd sequence means feeding should be done to one direction and the even sequence means feeding done to the other direction. The initial direction for the first time can be changed through setting the directional polarity or modifying the plus and minus values of the feeding length.
- **Power-Off-Restart Delay:** it can be set to be 0~3000ms. After the power-off of the electricity grid, the power supply of the system will not drop to 0 at once. There is a delay

during this time. The delay value set here should basically consistent with the actual off-delay value. If the deviation of set value is larger, on the de-energizing for continuous engraving, either the figure processed for the second time is not closed with that before the cutoff, or it is coincided with that too much.

 Prompt	After the configuration parameters in the manufacturer parameters, such as directional polarity, control mode, laser type and laser PWM frequency, are modified, the system should be reset. Such a modification can function upon the resetting of the system.
---	---

#### ***Enable parameters***

- **Door Opening Protection:** If this item is enabled, then the door opening protection must be connected to the controller, or, the machine will not run.
- **Whether to enable the blower:** If using wind out port to control the blower by the graph layer parameter, this item must be enabled, or, the wind output is a signal for other using.
- **Y-axis pressing control:** When feeding, is it the Y-axis press, YU axis joint synchronous feeding machine

#### ***Double-head auto layout parameters***

- **Head distance N:** This is the distance between the two X axis when they all return to the absolute origin in the double-head auto layout machine.
- **Enable Double Header:** If enable the function of the double-head auto layout machine.

## 9.2 User parameters

### (1) Cutting parameters(Only affect cutting arts)

The controller has two coordinate systems. The cutting process parameters of each coordinate system can be set separately, and the parameters are exactly the same. Their meanings are as follows:

- **Idle Move Speed:** this parameter decides the highest speed of all non-lighting lines for the machine in the movement process.
- **Idle Move Acceleration:** it means the highest acceleration of all non-lighting lines. Idle stroke speed and idle stroke acceleration can be set higher to reduce the working time of the whole figure, but if they are set too high, it may cause the jarring of track, so comprehensive consideration should be given to the setting.
- **Idle Move Delay:** If this parameter is zero, then after idle moving there is no delay, or, there is delay and the speed will decrease to turn off speed.
- **Turning Speed:** it means the speed of turning at the acute-angle corner, which is also the highest speed in the whole cutting process.
- **Turning Acceleration:** it means the acceleration of turning at the acute-angle corner when cutting. If the two speeds are set too high, jarring will happen to the turning; if set too low, it will influence the cutting speed. This acceleration is the least value of the whole graph.
- **Cutting Acceleration:** it means the highest acceleration value in the whole cutting process.
- **Acc Factor:** This parameter indicates how speedy the cutting acceleration is changing.
- **G0 Acc Factor:** This parameter indicates how speedy the idle move acceleration is changing.
- **Speed Factor:** This parameter indicates the cutting speed of the arc of various curvatures.

● **Key Setting:** This is a button but not a parameter, this button is used to recommend some experiential cutting parameters.

### (2) Feeding parameters

- **Before-feeding Time Lag:** settable at 0~300s. The lagged time can facilitate user's feeding and picking on the feeding device.

➤ **After-feeding Time Lag:** settable at 0~9.9s. It can facilitate the feeding device's delaying in jarring after moving to the correct position and waiting for the 2<sup>nd</sup> work after the feeding axle stands still completely.

➤ **Last feeding:** If feeding when the last times work end.

### (3) Reset parameters

➤ **X1/Y1 Reset Speed:** it means the speed of X1/Y1-axle linkage reset to the origin

➤ **X2/Y2 Reset Speed:** it means the speed of X2/Y2-axle linkage reset to the origin

➤ **Z1 Reset Speed:**

➤ **Z2 Reset Speed:**

➤ **U1 Reset Speed:**

➤ **U2 Reset Speed:**

The above four parameters are used to set the single axis reset speed of Z1/Z2/U1/U2 respectively.


➤ **X1/Y1/Z1/U1/X2/Y2/Z2/U2 axle start-up reset(Auto home)**

You can select "Yes" or "No" in the field of the above eight parameters, which is used to confirm whether each axle can be reset on the startup.

### (4) Go scale parameters

➤ **Go scale Mode:** "Blanked Bordering" means idling to start border preview; "Outputted Border Cutting" can manually cut off the well-processed figure; "4-corner Dotting" means to emit the light at four corner points of the frame to make a point and turn off light. The size and position of this figure can be checked intuitively through the four points. The bordering speed is the speed value set on the keyboard when the system is idle. For light output, its minimum/maximum power is the corresponding value set on the keyboard when the system is idle (The lasering power on the 4-corner dotting means the well-set maximum power).

➤ **Go scale Blank:** It means whether to extend a certain length outside the actual frame of the figure on the preview/cutting of frame.

	<p>If the frame crosses the border, the interface will prompt it. If the Enter key is pressed at this time, the system will cut the border at the maximum/minimum coordinates first, and then border the figure. This bordering can be given up.</p>
---	--

### (5) Other user parameters

➤ **Back Position X1Y1/X2Y2:** The origin (the relative origin) and the machine's absolute origin can be selected. This parameter decides the parking position of X1Y1 or X2Y2's laser head after each work.

➤ **Backlash X1/X2:** The X1 or X2 axes' backlash, accurate to 1um.

➤ **Backlash Y1/Y2:** The Y1 or Y2 axes' backlash, accurate to 1um.

➤ **Z1/Z2 Work Speed:** It is used to set the split speed of Z axis when the two heads move mutually.

➤ **U1/U2 Work Speed:** It is used to set the feeding speed.

(6) Appropriate parameters

➤ **Double axis origin spacing:** when it is a double beam, it refers to the spacing when two Y-axes are docked at their respective origin points; when it is a double cantilever, it refers to the spacing when both X-axes are docked at their respective origin.

➤ **Safety distance between two axes:** when it is a double beam, it refers to the distance between two Y-axes moving in the same direction until the collision occurs; when it is a double cantilever, it refers to the distance between two X-axes moving in the same direction to the time of collision

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