PRADO

AUTOMAÇÃO INDUSTRIAL

PRADO

AUTOMAÇÃO INDUSTRIAL

(11) 94242-8989

☎ (11) 5666-6461

DSP 0501

Chapter I Characteristic

1. Totally independent from PC platform;
2. Directly read files from U Disk;
3. Easily process G code or PLT file with super size;
4. Strong system and process file examining function;
5. Easy to update system program;
6. It supports high micro step which makes precise and fast process possible;
7. Support to process part of the file;
8. Reliable data protection and recover function;
9. Friendly operating interface

Chapter II Cautions

1. Don’t use this product in strong magnetic filed or interfere environments;
2. Don’t PnP U Disk while it is running a file;
3. Protect it from water, moist, dust and fire:
4. Protect it from metal materials getting into the cover;
5. Forbad to open the cover, there is no any user maintainable parts inside;
6. Plug U Disk and other lines gentle

Chapter III Application of Host Progam

1. Host Program Setup

Host program are on the CD which include: USB drive, ZHBUSBHandHost.exe, Manual, label file, menu file, Initial program and normal program.

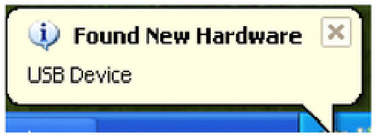
1. Hardware requirements: Main-board: PIII 450;
   OS: Win2000 or XP

2. Host Program Setup

1） Insert CD into computer driver, and copy all files in the CD and save them in a pointed folder in computer, such as: C:\RZNC-0501 Host Program;

2)Connect the Controller to the computer with USB cable;

3)It shows: “Find new hardware” on the right bottom on the window as View 3-1, click on the clue;

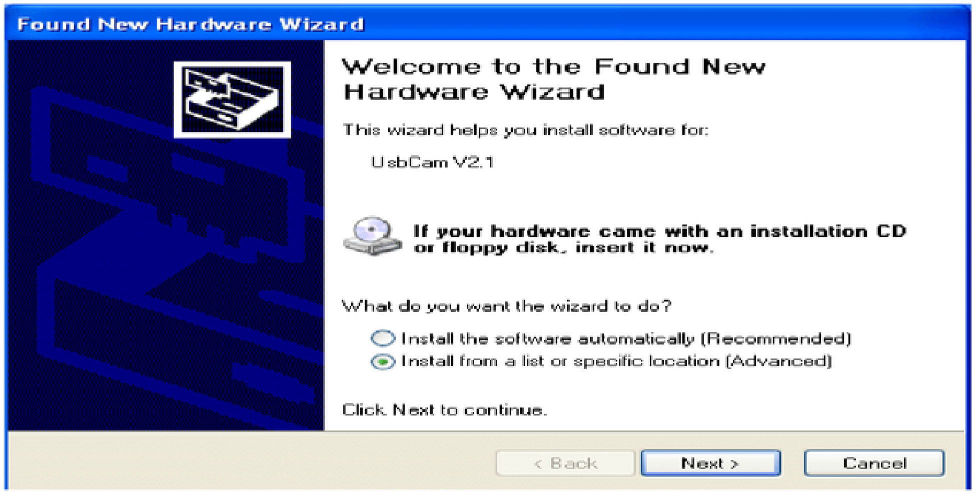


Found New Hardware

USB Device

View 3-1

2） It appears setup information, select the second item, which is setup from list or special location, then click on “Next” button (as View 3-2);



Found New Hardware Wizard

Welcome to the Found New Hardware Wizard

This wizard helps you install software for:

UsbCam V2.1

If your hardware came with an installation CD or floppy disk, insert it now.

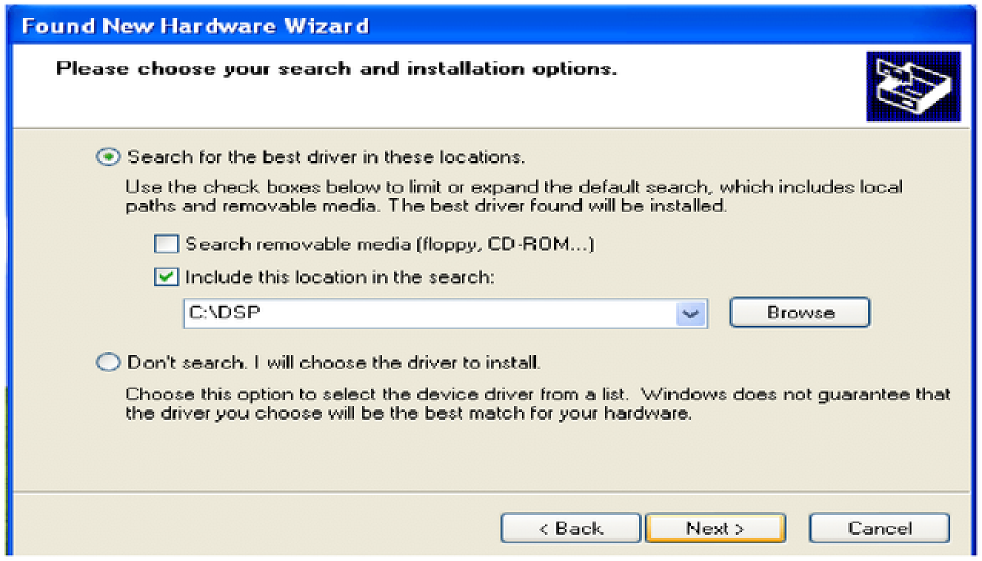
What do you want the wizard to do?

○ Install the software automatically (Recommended)
● Install from a list or specific location (Advanced)

Click Next to continue.

View 3-2

3） Choose “include this location in the search” then click on “Browse” icon, then find the location, such as: C:\RZNC-0501 Host Program, and click on “Next” button to begin to setup (as View 3-3);


Found New Hardware Wizard

Please choose your search and installation options.

● Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

☐ Search removable media (floppy, CD-ROM...)

☑ Include this location in the search:

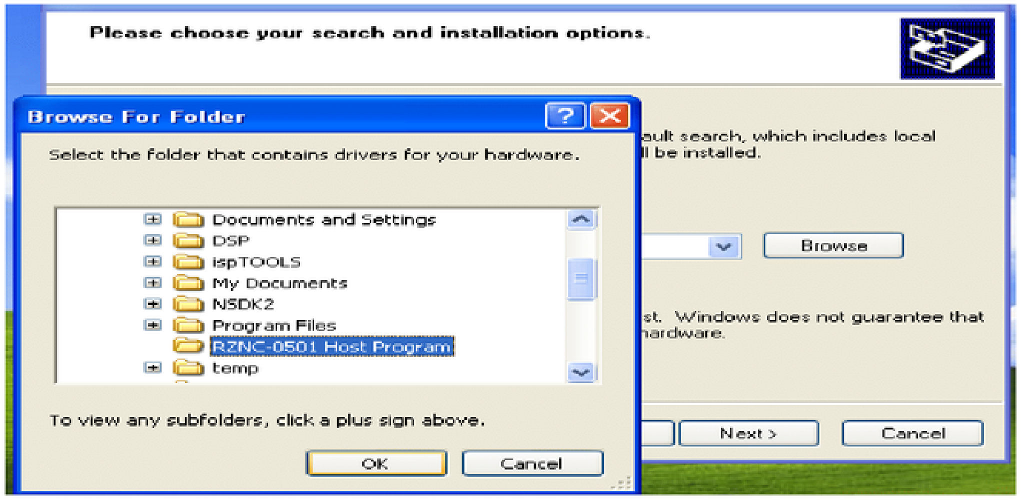
C:\DSP

○ Don't search. I will choose the driver to install.

Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

Browse
< Back
Next >
Cancel

View 3-3-1


Please choose your search and installation options.

Browse For Folder

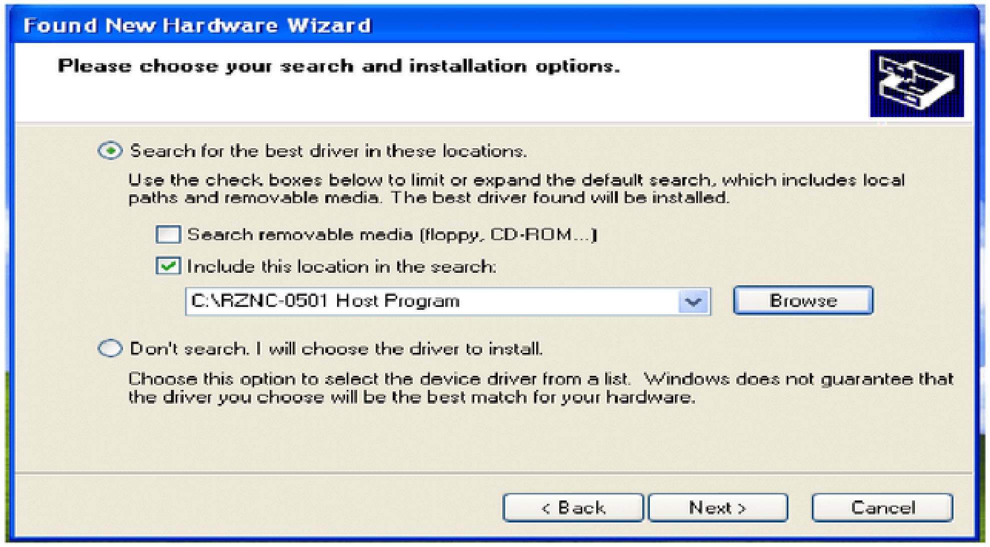
Select the folder that contains drivers for your hardware.

- ⊞ Documents and Settings
- ⊞ DSP
- ⊞ ispTOOLS
- ⊞ My Documents
- ⊞ NSDK2
- ⊞ Program Files
- RZNC-0501 Host Program
- ⊞ temp

To view any subfolders, click a plus sign above.

OK
Cancel
ault search, which includes local
ll be installed.
Browse
st. Windows does not guarantee that
hardware.
Next >
Cancel

View 3-3-2


Found New Hardware Wizard

Please choose your search and installation options.

● Search for the best driver in these locations.

Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.

☐ Search removable media (floppy, CD-ROM...)

☑ Include this location in the search:

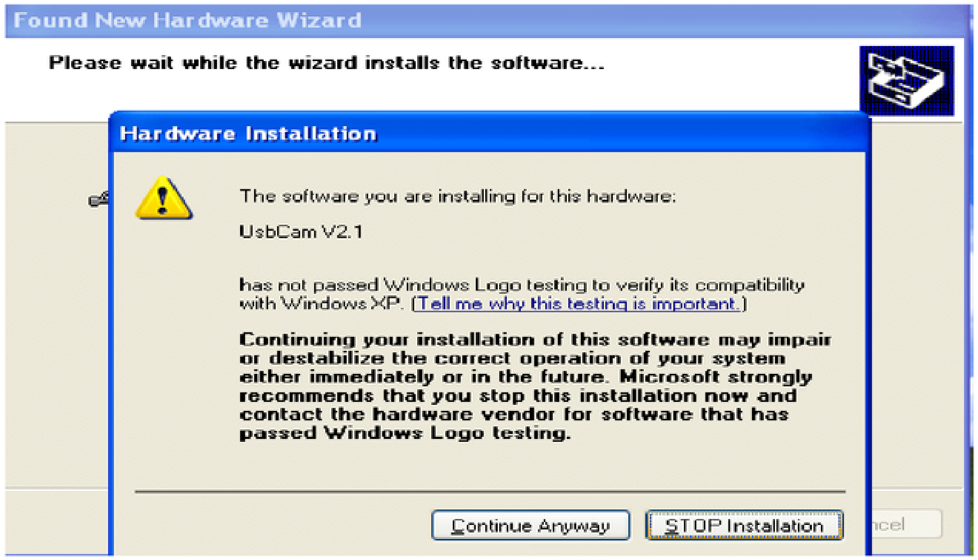
C:\RZNC-0501 Host Program

○ Don't search. I will choose the driver to install.

Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.

Browse
< Back
Next >
Cancel

4) It begins to setup driver program, click on “Continue Anyway” when it clews “The program does not pass Microsoft Logo testing to verify its capability with Windows XP.”, (as View 3-4);


Found New Hardware Wizard
Hardware Installation
Continue Anyway
STOP Installation

Please wait while the wizard installs the software...

The software you are installing for this hardware:

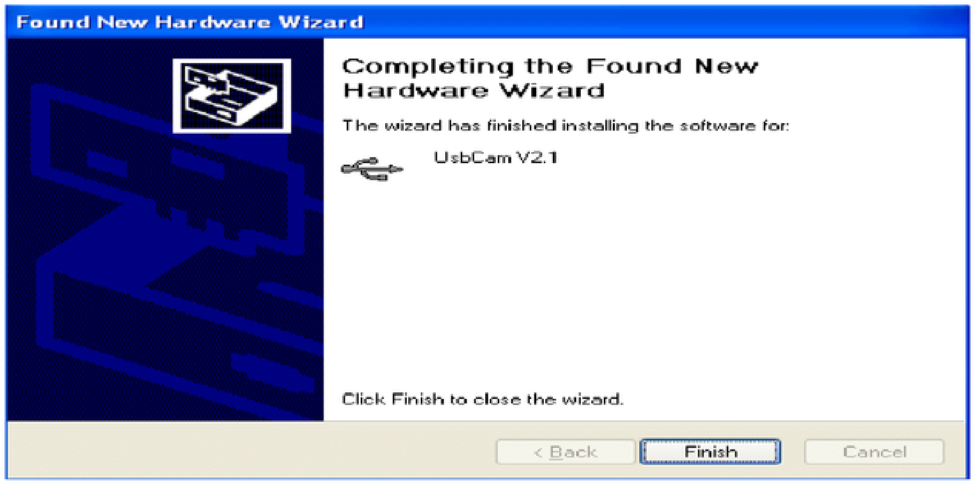
UsbCam V2.1

has not passed Windows Logo testing to verify its compatibility with Windows XP. (Tell me why this testing is important.)

Continuing your installation of this software may impair or destabilize the correct operation of your system either immediately or in the future. Microsoft strongly recommends that you stop this installation now and contact the hardware vendor for software that has passed Windows Logo testing.

View 3-4

7) It clews setup finished, click on “Finished”, (as View 3-5);


Found New Hardware Wizard
< Back
Finish
Cancel

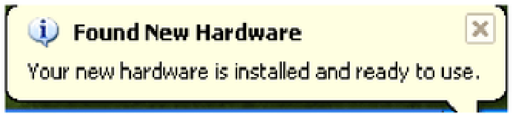
Completing the Found New Hardware Wizard

The wizard has finished installing the software for:

UsbCam V2.1

Click Finish to close the wizard.

View 3-5-1



Found New Hardware

Your new hardware is installed and ready to use.

View 3-5-2

Chapter Ⅳ Application of Controller

Controller is the motion control system which changes motion data into related electric signals then control the movements of the axes. Controller adopts panel and U Disk to get files, which makes it is easy to control.

一） Buttons function and operating means

Buttons on panel are as follows: (View 4-1)

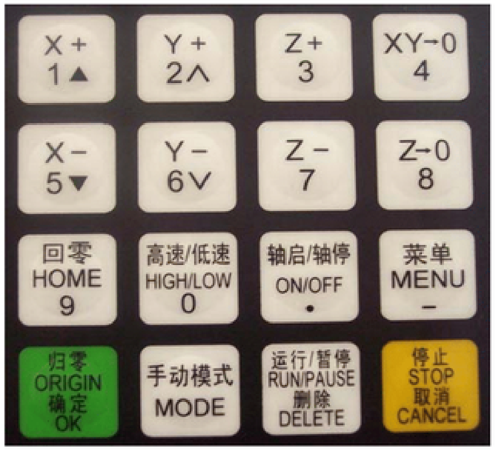

X+ 1▲
Y+ 2∧
Z+ 3
XY-0 4
X- 5▼
Y- 6∨
Z- 7
Z-0 8
回零 HOME 9
高速/低速 HIGH/LOW 0
轴启/轴停 ON/OFF •
菜单 MENU –
归零 ORIGIN 确定 OK
手动模式 MODE
运行/暂停 RUN/PAUSE 删除 DELETE
停止 STOP 取消 CANCEL

图 4-1

4. 1. 1 Function

Button	Function
X+ 1 ▲	Positive movement of Z axis, Menu upward , figure 1 inputting
Y+ 2 ∧	Positive movement of Y axis, accelerate process speed, figure 2 inputting, different property selecting in Menu
Z+ 3	Positive movement of Z axis, figure 3 inputting, rise spindle speed in process
XY- 0 4	Working origin of X axis and Y axis setting, figure 4 inputting
X- 5 ▼	Negative movement of X axis; Menu downward, figure 5 inputting
Y- 6 ∨	Negative movement of Y axis; slowdown process speed; figure 6 inputting different property selecting in Menu
Z- 7	Negative movement of Z axis, figure 7 inputting, spindle speed adjusting in process
Z- 0 8	Z axis origin setting ; figure 8 inputting

回零 HOME 9	Axes home to machine tool origin, figure 9 inputting
高速/低速 HIGH/LOW 0	Manual moving mode, high speed or low speed selection, figure 0 inputting
轴启/轴停 ON/OFF ·	Spindle startup/stop, decimal point inputting
菜单 MENU –	Menu setting entering, negative symbol inputting, multi process state checking,
归零 ORIGIN 确定 OK	All axes go working origin: confirm of motions /inputting/operating
手动模式 MODE	Manual move, continue, step and distance modes selection
运行/暂停 RUN/PAUSE 删除 DELETE	Cut process running/pause/inputted words delete
停止 STOP 取消 CANCEL	High/low speed parameter adjust, Cut process stop/selections, inputting and operating cancel

4．1．2 compound buttons

There are some compound buttons for special applications. The operating mode is: press the first button and hold then press the second button, release the two buttons at same time. Their functions are as following:

1. “菜单 MENU –” + digit button, switch working coordinate;
2. “菜单 MENU –” + “轴启/轴停 ON/OFF ·” button, C.A.D function;
3. “运行/暂停 RUN/PAUSE 删除 DELETE” +digit button, stop point process;
4. “运行/暂停 RUN/PAUSE 删除 DELETE” + “高速/低速 HIGH/LOW 0” button, advanced process;
5. “归零 ORIGIN 确定 OK” + “停止 STOP 取消 CANCEL”, help information;

4．1．3 Operating Means

If it is single button, press the needed button till the wanted function works then release it; if they are compound buttons, press the first button and then the second one and release both at the same time.

II) Home Operating

Home is the machinery origin, Goto home operating refers to make all axes go back machinery origin. Home position depends on home sensor. Normally there are 3 sensors in an engraving machine. Goto home operating sets up the relationship between the machine and the working coordinates. And many system function applications rely on this operating, such as: stop point save, power off reboot and so on.

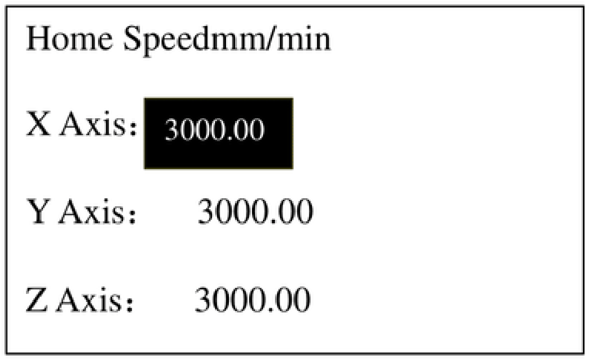
4．2．1Goto home settings

Goto home parameter include **Home Speed** and **Home Direction**; and those parameter should be adjusted in Menu.

Home Speed refers to that 3 axes home speed, normally Z axis home speed should be lower than that of X and Y axes.

Home Direction refers to which direction the axes go when it is under home process. It depends on the motor direction and Home sensor’s location and sensor’s property.

Entering Menu, cursor is on “Machine Setup” item, press 归零 ORIGIN 确定 OK button, press X− 5 ▼ move the cursor to “Home Setup” item, repress 归零 ORIGIN 确定 OK button to enter it, the cursor is on “Home Speed” item automatically, press 归零 ORIGIN 确定 OK to enter and set 3 axes speed, detailed as following:



Home Speedmm/min

X Axis: 3000.00

Y Axis: 3000.00

Z Axis: 3000.00

图 4-1

Input the value in cursor. If it inputted wrong number, press 运行/暂停 RUN/PAUSE 删除 DELETE to delete the previous number and then repress the right ones. After having finished the input, press 归零 ORIGIN 确定 OK to confirm and save the new speed for X axis. The Cursor moves to the Y axis speed item automatically, if it is unnecessary to change the value, press 停止 STOP 取消 CANCEL to move to the Z axis speed item. If it is necessary to change the speed, the same operating with X axis. When you finish all settings, it will go to former menu.

Press X− 5 ▼ to move the cursor to “**Home Direction**” item, press 归零 ORIGIN 确定 OK to enter the setting, it displays as following:

Set Home Direction

X Axis：

Y Axis： -Dir

Z Axis： +Dir

图 4-2

The cursor is on X axis home direction item automatically, press Y+ 2∧ and Y− 6∨ to change the current setting, press X− 5▼ to move the cursor to next line. Press 归零 ORIGIN 确定 OK to confirm and save the changes and it goes back the former menu, press 停止 STOP 取消 CANCEL to give up the changes and goes back the former menu.

4. 2. 2 Home operation modes

There are several home operation modes as follows:

1) When it has been supplied power, it appears on the screen: "Goto Home?", actually it is a question which needs your answer, press 归零 ORIGIN 确定 OK means "Yes", then Z axis moves first, When Z axis arrives its home, then X and Y move. Press 运行/暂停 RUN/PAUSE 删除 DELETE means "No", 3 axes do not move to their homes. Press any other buttons, only Z axis goes to home, X and Y don't go home;

2) When it is in Manual state, press 回零 HOME 9 and 3 axes will go home;

When it is going home, press 停止 STOP 取消 CANCEL button to stop the operation.

4. 3 Menu Setup

4. 3. 1 Entering

When it has finished home operating, it is in Manual state, it appears as following:

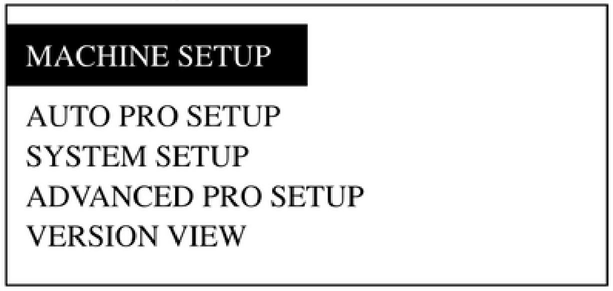
1X 888.00 MANL

1Y 888.00 F0

1Z 88.00 Low
Continuous

View 4-3

Press 回零 HOME 9 to enter the menu, there are 5 parameters in Menu. It appears as following:

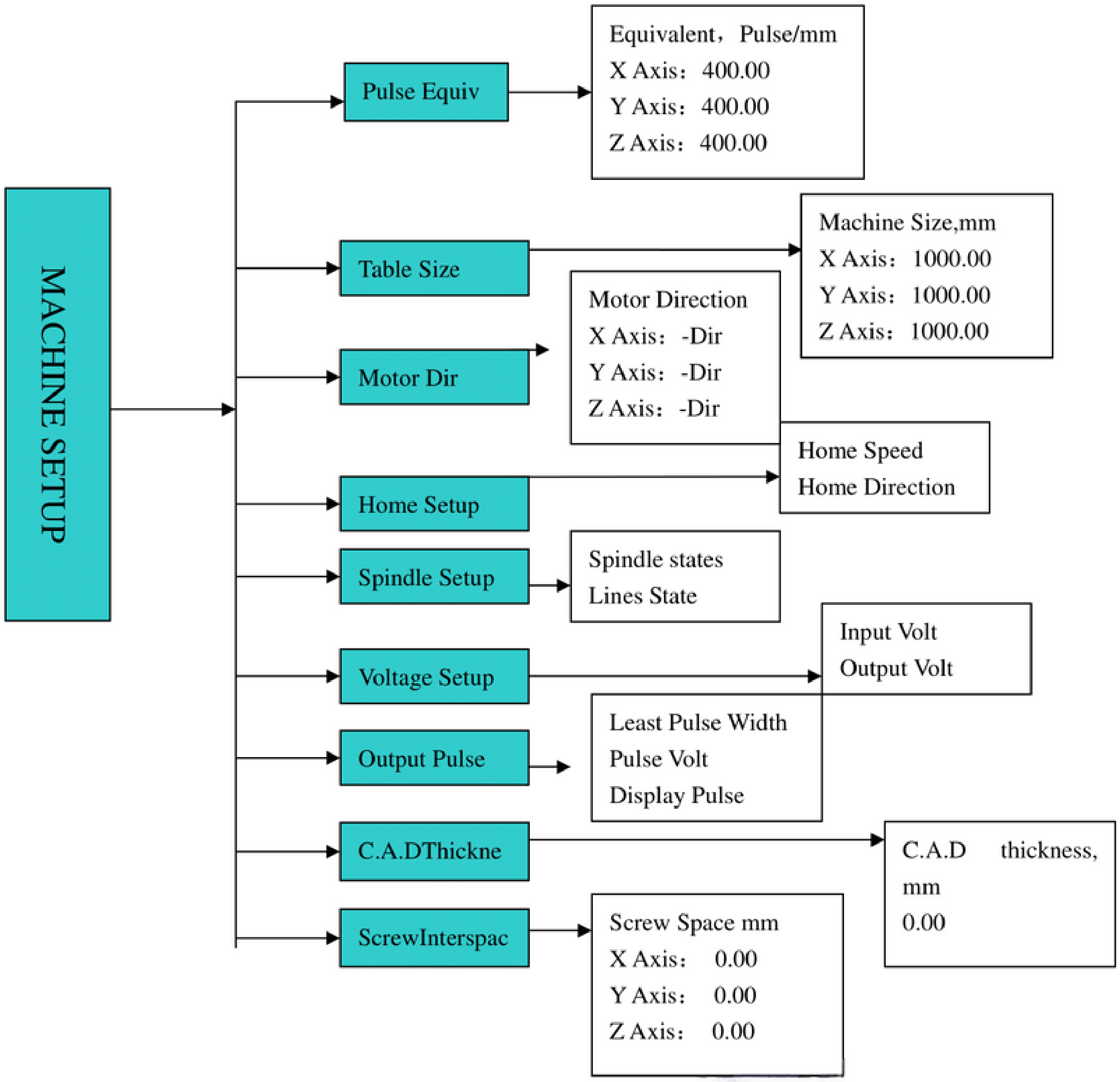


MACHINE SETUP
AUTO PRO SETUP
SYSTEM SETUP
ADVANCED PRO SETUP
VERSION VIEW

View 4-4

4.3.2Machine Setup

Machine setup parameter should connect to the engraving machine hardware, such as: drivers, I/O terminals. If these parameters are wrong, then it leads to wrong motions, even damage to the machine and operators. So we strongly commend users don’t change these items, if it is necessary to change them, please turn to authorized experts.


MACHINE SETUP
Pulse Equiv
Equivalent，Pulse/mm
X Axis：400.00
Y Axis：400.00
Z Axis：400.00
Table Size
Machine Size,mm
X Axis：1000.00
Y Axis：1000.00
Z Axis：1000.00
Motor Dir
Motor Direction
X Axis：-Dir
Y Axis：-Dir
Z Axis：-Dir
Home Setup
Home Speed
Home Direction
Spindle Setup
Spindle states
Lines State
Voltage Setup
Input Volt
Output Volt
Output Pulse
Least Pulse Width
Pulse Volt
Display Pulse
C.A.DThickne
C.A.D thickness, mm
0.00
ScrewInterspac
Screw Space mm
X Axis： 0.00
Y Axis： 0.00
Z Axis： 0.00

4.3.2.1Pulse Equivalent

Pulse Equivalent means the pulse number when the axis moves 1mm. Its unit is: pulse/mm.

Pulse Equivalent=（360degree/Step angel）*Mircostep/Screw

When it is in Pulse Equivalent item, the cursor is on X axis value, if it is necessary to change it, input the value directly, then press 归零 ORIGIN 确定 OK to save the new value, the cursor moves to the next line till it goes back the former menu. If it does not need to change, press 停止 STOP 取消 CANCEL to exit and go back former menu. X+ 1▲ and X− 5▼ buttons are in value state, pressing them can not move the cursor.

If the pulse equivalent in the controller is different from that of the engraving machine. The processed file size is different from the one you set.

4. 3. 2. 2Table Size

Table size refers to the valid motion size of 3 axes. Because the system applies the table size as the soft limit, you should set the table size just as the number it really is. Otherwise it will show: “Over the limit” or it slash the beam.

when it is in Table Size item, the cursor is on X axis value, if it is necessary to change it, input the value directly, then press 归零 ORIGIN 确定 OK to save the new value, the cursor moves to the next line till it goes back the former menu. If it does not need to change, press 停止 STOP 取消 CANCEL to exit and go back former menu. X+ 1▲ and X− 5▼ buttons are in value state, pressing them can not move the cursor.

If the file exceeds the table size, the system will alert when it check the data. Then you must change your file size or operate it in an other engraving machine with bigger table size.

4. 3. 2. 3 Motor Direction

Motor direction changes the motor moving direction. This setting affect all motion direction of 3 axes. So after changing this item, you must change other direction settings.

when it is in Motor direction item, the cursor is on X axis direction, if it is necessary to change it, press Y+ 2∧ or Y− 6∨ to change property then press X+ 1▲ and X− 5▼ buttons to move the cursor to next line. If it does not need to change, press 停止 STOP 取消 CANCEL to exit and go back former menu.

4.3.2.4 Home Setup (Details are in 4.2.1)

4.3.2.5 Spindle Setup

The system offers the spindle control function. If the connection borad and the converter have been connected well, the spindle speed can be changed during process.

It goes like this: move cursor to "Spindle Setup" item then press 归零 ORIGIN 确定 OK to enter. Then it shows the value of spindle state, the default value is 2. if it needs to change, input the value directly then press 归零 ORIGIN 确定 OK to save. And it will show the line state. Set the lines state according to the C↓onverter. Means Multicast ↑OFF state, means ON state, Y+ 2∧ or Y− 6∨ to change property then press X+ 1▲ and X− 5▼ buttons to move the cursor to next line, press 归零 ORIGIN 确定 OK to confirm all changes. If it does not need to change, press 停止 STOP 取消 CANCEL to exit and go back former menu.

4.3.2.6 Voltage Setup

Voltage Setup refers to the terminals property, which is the I/O sensors works at high or low voltage. Down arrow symbol means it is high voltage, while up arrow symbol means it is low voltage. It divides to two parts: input voltage and output voltage.

Input Voltage: the front 4 are: X, Y, Z home sensor and C.A.D property. Press Y+ 2∧ or Y− 6∨ to change its property, and press X+ 1▲ and X− 5▼ buttons to move the cursor to next line, press 归零 ORIGIN 确定 OK to confirm all changes. If it does not need to change, press 停止 STOP 取消 CANCEL to exit and go back former menu.

It is the same operating mode to the output Voltage if it needs to change.

4.3.2.7 Output Pulse

Output pulse refers to pulse parameters, such as: Least Pulse Width, Pulse voltage, and Display.

4.3.2.8 C.A.D thickness

Cutter Adjust Device(C.A.D) is to set Z axis working origin. Users must set its thickness, otherwise the Z axis working origin is not correct. If you have used this function, you need not to press XY−0 4 to clear.

It must have physical connection between the machine and connection board. C.A.D function process needs compound buttons: “菜单 MENU −” + “轴启/轴停 ON/OFF ·”

Its operating mode goes like this: Press 菜单 MENU − button and then 轴启/轴停 ON/OFF ·, then free them at the same time. Then Z axis goes down slowly, when it reach the Cutter Adjust Slot, it will go up. Then Z axis working origin set.

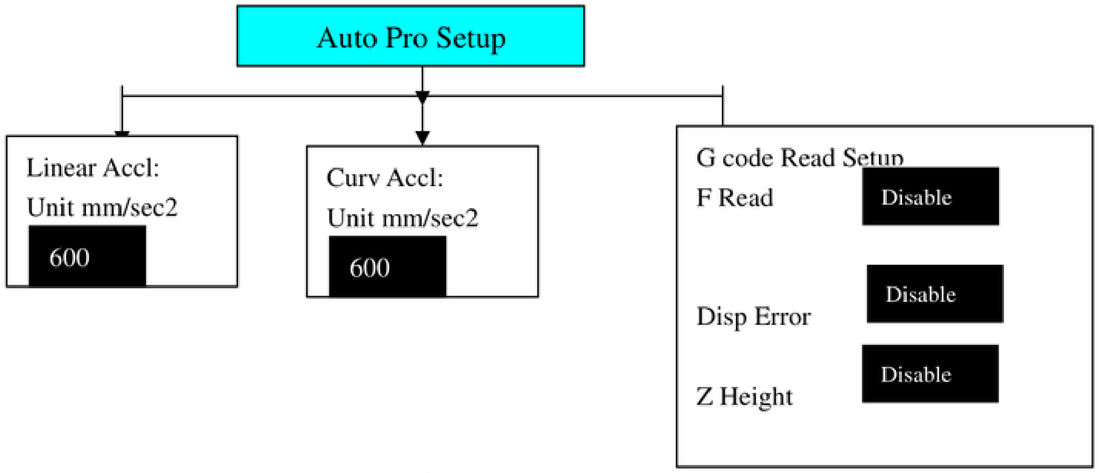
4.3.2.9 Screw Interspaces

Screw Interspaces refers to the screw offset if it needs. Its value cannot exceed 1mm.

Operating Steps are: move cursor to “Screw Interspaces” item, press 归零 ORIGIN 确定 OK to enter the item, cursor is on X axis value automatically. If it needs to change the value, input the value by pressing related buttons and then press 归零 ORIGIN 确定 OK to save the changes, the cursor moves to the next line till goes back former menu. If it does not need to change, press 停止 STOP 取消 CANCEL till it goes back former menu. X+ 1▲ and X− 5▼ buttons are in value state, pressing them can not move the cursor.

4.3.3 Auto Pro Setup

Auto pro setup deals with acceleration and code read properties. It goes like as following:



4.3.3.1 Linear Acceleration

Linear Acceleration promotes to line motion ability. Its default value is 600mm/sequae second. If it needs to change the value, input the value directly and press 归零 ORIGIN 确定 OK to save. Then the cursor moves to the next line till goes back the former menu. If it unnecessary to change it, press 停止 STOP 取消 CANCEL till it goes back former menu. X+ 1▲ and X− 5▼ buttons are in value state, pressing them can not move the cursor. If the auto process speed is less than 10meters/minute, the acceleration is about 300—600mm/sec2; if the speed is more than 10meters/min, you should adjust the acceleration value.

4.3.3.2 Curve Acceleration

Curve Acceleration promotes to curve motion ability. Its default value is 600mm/sequae second. If it needs to change the value, input the value directly and press 归零 ORIGIN 确定 OK to save. Then the cursor moves to the next line till goes back the former menu. If it unnecessary to change it, press 停止 STOP 取消 CANCEL till it goes back former menu. X+ 1▲ and X− 5▼ buttons are in value state, pressing them can not move the cursor. If the auto process speed is less than 10meters/minute, the acceleration is about 300—600mm/sec2; if the speed is more than 10meters/min, you should adjust the acceleration value.

4.3.3.3 G code Read Setup

G code read Setup means refers to the rules of reading G code file. Because there are many special code data.

Entering the settings, the cursor is on " F Read Disable" item, if it needs to execute the F code in the file, then press Y+ 2∧ or Y− 6∨ to change its property, then "Disable" changes into "Enable". "Disable" means to ignore the F code while "Enable" will execute the code. Then move X+ 1▲ or X− 5▼ to move the cursor to next item.

Display Error refers to display the wrong G code file, so that user can correct it.

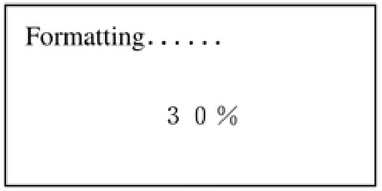
Z height refers to the raising of Z axis when it finishes working. "Enable" means that Z axis raises to the set height after it finishes all work. "Disable" means that Z axis raises as the file asks. Press 归零 ORIGIN 确定 OK to confirm and goes back former menu, while press 停止 STOP 取消 CANCEL to cancel the change and goes back former menu.

4.3.4 System Setup

System Setup deals with function configure, file format, I/O checking, buttons check and system update.

Function Configure is to set system functions: such as it needs **Power Off protection** function or not, press 归零 ORIGIN 确定 OK means it needs Power off protection, while 停止 STOP 取消 CANCEL means it does not need this function; **default language**, **set home switch**, Enable means there is a home sensor for the mentioned axis, press Y+ 2 ∧ or Y− 6 ∨ to change Enable to Disable, which means the mentioned axis gets no home sensor. if there are home sensors, **GoHome Types** when the system gets power supply in which mode the system will take. **Z axis value changing and saving**. Emergent Stop sensor, Hard limit sensors and so on. Press 归零 ORIGIN 确定 OK to enter and select the different function configure according to the clew.

Inner Format refers to format the flash disk. When you finish the system update, you must format inner file. Move the cursor to Inner Format item, and press 归零 ORIGIN 确定 OK, the screen appears as following:



Formatting......

30%

View 4-7

when it finished, it appears: “formatted” and press 归零 ORIGIN 确定 OK to go back former menu.

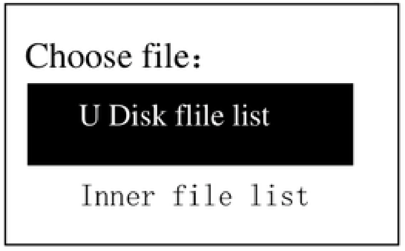
Input Self Check refers to the system checks Input terminals properties.

Output Self Check refers to the system checks Output terminals properties.

Buttons Check refers to check the buttons on the panel. After entering, press the buttons and the related ones will show the cursor. If you want to quit, press compound buttons: 归零 ORIGIN 确定 OK + 停止 STOP 取消 CANCEL。

The system does not support Noise Check.

System Auto Update if it needs to update the system, user should download the update file from our website to U disk. The insert the disk to the controller. Move the cursor to “System Auto Update” item, and press 归零 ORIGIN 确定 OK to get in, the screen appears:



Choose file:

U Disk flile list

Inner file list

View 4-8

Choose U disk file list, press 归零 ORIGIN 确定 OK to get in, it display all files in the U disk, move the cursor to the downloaded update file, press 归零 ORIGIN 确定 OK to start, the update file info appears on the screen, the user must move the cursor and read all info, then repress 归零 ORIGIN 确定 OK to operate next, the screen displays as following:

It is updating Normal program, please wait. . . . 40%	It is updating Initinal program, please wait. . . . 40%	It is updating Chinese Menu please wait. 40%
It is updating English Menu please wait. 40%	It is updating Chinese label please wait. 40%	It is updating English label please wait. 40%

Updated, press any button to continue. . . . . .

T confirm updating.

4. SETUP

It refers to special applications which includes: Multiple Setup, Stop Setup, File Maintenance, Tool Change Setup, and Password Setup.

4. 3. 5. 1Multiple Setup

If it needs to run a file for many times, there are two ways: one is to copy all files and save it as one file in G code making software, then download it to the controller; the other is to make a single file and run multiple function.

You must set the multiple parameters, such as: row number, column number, and their space, and pause time. Then press compound buttons: 运行/暂停 RUN/PAUSE 删除 DELETE + 高速/低速 HIGH/LOW 0, and select "Mutiple Process", press 归零 ORIGIN 确定 OK to begin to process.

Multiple Process operating steps are as following: when the cursor is on the "Mutiple Setup", press 归零 ORIGIN 确定 OK, it appears on the screen:

Row Column

Row Space Column

Pause Time

View 4-9

Press 归零 ORIGIN 确定 OK to enter, the cursor is on rows value. If it needs to modify, input the value directly. And the cursor moves to Column setting. then repress 归零 ORIGIN 确定 OK to save the change and it goes back the former menu.

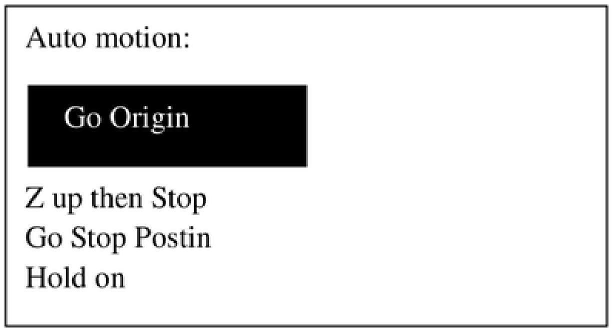
Press X− 5▼ 键 to move the cursor to “RowSpace ColumnSpace” item. The cursor is on Row space value, If it needs to modify, input the value directly. And the cursor moves to Column setting. then repress 归零 ORIGIN 确定 OK to save the change and it goes back the former menu. **Space here means the two center distance.**

Press X− 5▼ to move the cursor to “Pause Time” item, press 归零 ORIGIN 确定 OK to enter. Pause time refers the pause time when it finish one work. Input the value directly. Repress 归零 ORIGIN 确定 OK to save the change and it goes back the former menu. If it does not to modify, press 停止 STOP 取消 CANCEL to quit and goes back former menu. If you input a negative number, when it finish a work, it needs to press any button then it begin to work.

4.3.5.2Stop Setup

Stop Setup refers to the position 3 axes move to when it finishes the process. It includes: Stop Statue and Stop Position. If you select “Go Stop Position”, you must set stop position.

Press 归零 ORIGIN 确定 OK to enter settings, the cursor is on “ Stop statue” item, repress 归零 ORIGIN 确定 OK, and the screen displays:



Auto motion:

Go Origin

Z up then Stop

Go Stop Postin

Hold on

图 4-10

Press X+ 1▲ and X− 5▼ to move the cursor to wanted item, repress 归零 ORIGIN 确定 OK to select and goes back former menu.

Go Origin refers Z axis goes to its highest position, X and Y axes go back working coordinate origin.

Z up then Stop refers that Z axis goes to its highest position, while X and Y axes do not move.

Go Stop Position refers that 3 axes go to the set position.

Hold on refers that 3 axes stop at the finished position.

Stop Position: after select the item, press any button to enter setting according to the screen info:

```
1X     800. 00      SPOT

1Y     800. 00      SOFF

1Z     800. 00      LOW
Move to stop position
```

View 4-11

Move the 3 axes to the right position, when the moving stops, the "Spot" and "stop" switch fast, and the position is the stop position. If it needs to modify, you can move the 3 axes, and the last one is the stop position. Press 归零 ORIGIN 确定 OK to save change and go back former menu. Press 停止 STOP 取消 CANCEL to cancel the setting and go back former menu.

Stop position is Machinery coordinate position and has nothing to do with working coordinate.

4. 3. 5. 3File Maintenance

File includes: U disk file and Inner file. U disk file refers to files saved in U disk. The controller can run the file via U disk terminal. Inner file refers to files saved in controller. File maintenance means to View file, Copy file and Delete File.

View file: press 归零 ORIGIN 确定 OK to enter. Press X+ 1▲ and X− 5▼ to move cursor to target file, the screen display the file line Number and contents. press X+ 1▲ and X− 5▼ to change line number and contents. Press Y+ 2∧ to go to first line while Y− 6∨ to the last line. Press 停止 STOP 取消 CANCEL to quit view.

Copy file: it can copy and save U disk file or inner file to inner file. Press X+ 1▲ and X− 5▼ to move cursor. It will goes back former menu after copying.

Delete file: it can delete target file. The deleted file can not be recovered, so make sure whether you want to delete it or not. First, you should select file types, the move the cursor to the target file. Then press 归零 ORIGIN 确定 OK to delete. It will goes back former menu after the file being deleted.

4. 3. 5. 4Tool Change Setup

If it needs to change tools during process, you must set tool change setup firstly. Tool change position is machinery coordinate position.

Tool Change Position: Press 归零 ORIGIN 确定 OK to set change position, and the screen shows:

```
1X      800. 00      SPOT

1Y      800. 00      SOFF

1Z      800. 00      LOW
Go Cutter Position
```

Move the 3 n, when the moving stops, the “Spot” and “stop” switch fast, and the position is the tool change position. If it needs to modify, you can move the 3 axes, and the last one is the change position. Press 归零 ORIGIN 确定 OK to save change and go back former menu. Press 停止 STOP 取消 CANCEL to cancel the setting and go back former menu.

4. 3. 5. 5Password Setup

The system does not support this function now.

4. 3. 6 VERSION VIEW

Version includes: Initial version and Normal version. Move cursor to select, then press 归零 ORIGIN 确定 OK to enter. press 停止 STOP 取消 CANCEL to quit.

4. 4 Process

Process includes: Manual process, Auto process and Advanced process.

4. 4. 1Manual Process

Manual Process refers to control the engraving machine by pressing the buttons on panel. Users can change manual speed and grid. After the machine goes home, the system is in manual process, which shown as below:

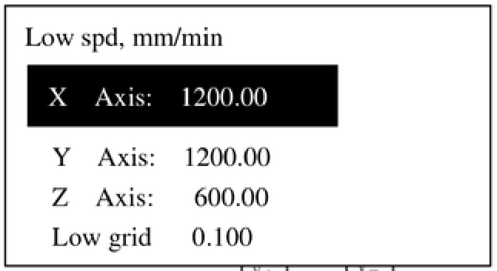
```
1X   100.00    MANL

1Y   100.00    SOFF

1Z   100.00    HIGH
Continuous
```

View4-18

4. 4. 1. 1Manual Speed Change and adjust

Manual Process speed can change between High speed and Low speed. 高速/低速 HIGH/LOW 0 button is the key. If it is in High speed now, press 高速/低速 HIGH/LOW 0, HIGH on the screen changes to LOW; if it is in Low speed , press 高速/低速 HIGH/LOW 0 LOW on the screen changes to High. Speed statue on the screen decides manual process speed.

Speed Adjust: In Manual process statue, press 停止 STOP 取消 CANCEL to set speed of current speed statue. The screen displays as below:



Low spd, mm/min

X Axis: 1200.00

Y Axis: 1200.00

Z Axis: 600.00

Low grid 0.100

The cursor is on X speed item, press X+ 1 ▲ and X− 5 ▼ to select the target item. Then press 运行/暂停 RUN/PAUSE 删除 DELETE to set the value. After finishing input the new value, press 归零 ORIGIN 确定 OK to save the value, while press 停止 STOP 取消 CANCEL to quit. If the input number is not correct, press 运行/暂停 RUN/PAUSE 删除 DELETE to delete the last value.

Low grid is the least feed. Its scope is from 0.05mm—1.0mm. When it is in Step mode, 3 axes will move as the grid distance.

The setting means of High speed is the same to Low speed.

4. 4. 1. 2Maunal Process Modes

In order to meet different requirements for manual moving, it offers three kinds of manual moving modes, there are Continuous moving mode, Step moving mode and Space moving mode. Users can switch moving modes by pressing 手动模式 MODE in manual state and check the moving mode at bottom of the screen.

(1) Continuous moving mode

In this mode, users press moving direction buttons (I①, I②, I③, II①, II② and II③) and machine tool will move as ordered direction till all buttons release. Its speed is determined by current speed mode. Attention: if the pressing time on buttons is too short (less than 0.5 second) and releases the button at once, the machine tool moves to and stops at nearest step point automatically. When this moving mode ends, the machine tool always stops at mesh point. This mode is suitable to adjust position of machine tool.

(2) Step moving mode

It always moves at low speed with a grid per second. Its step space is determined by current grid of speed statue. This mode is suitable to adjust cut position and machine tool position precisely.

(3) Distance moving mode

In this mode, users press moving direction buttons (X+ 1▲、Y+ 2∧、Z+ 3、X− 5▼、Y− 6∨、Z− 7) and machine tool moves to ordered location. The machine tool moves according to current speed mode and set spaces. The moving is not influenced by grid and stops precisely at ordered point not at grid point.

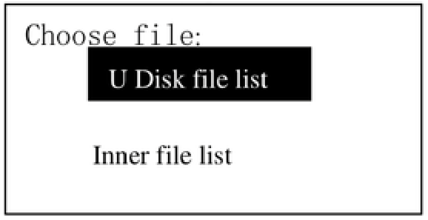
4. 4. 2Auto Process

Auto Process refers to run U Disk files and Inner files. Sometimes we call it file process. Before running any file, the machine and system parameters should be set correctly.

Auto process operating steps are:

1.Set working Origin When it is in manual state, move 3 axes to proper spot where it begins to run file. Then Press XY− 0 4 to clear X and Y axes working origin; and press Z− 0 8键 to clear Z axis working origin. If the C.D.A function has been applied, it does not need to press Z− 0 8 to clear Z origin.

2.Choose file:after origins have been set, press 运行/暂停 RUN/PAUSE 删除 DELETE, the screen displays as below:



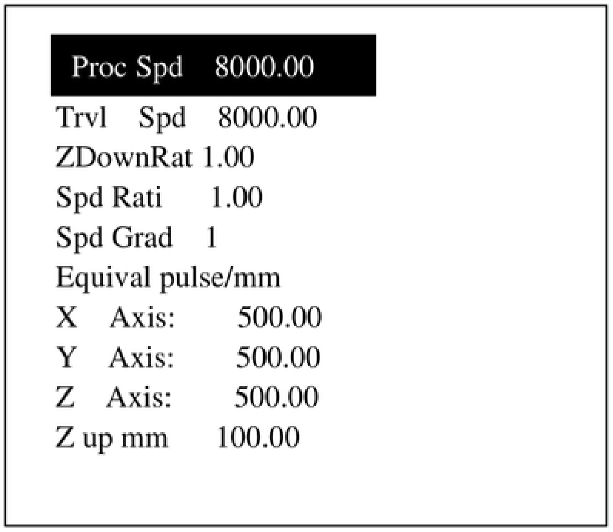
Choose file:

U Disk file list

Inner file list

Press X+ 1▲ and X− 5▼ to move the cursor and select the file list type, press 归零 ORIGIN 确定 OK to enter the selected file list. It will show the 1st, the 2nd, and the 3rd file names on the screen. Press X+ 1▲ and X− 5▼ to move cursor one by one, and press Y+ 2∧ and Y− 6∨ to jump two files each time. press 归零 ORIGIN 确定 OK and select target file. while Press 停止 STOP 取消 CANCEL to quit.

3.Process Parameter Settings: after pressing 归零 ORIGIN 确定 OK键 button, it needs to set process parameters, such as: process speed, travel speed, Z down ratio, process speed ratio, spindle speed grad, Z up height. And the screen display as below:



```
Proc Spd    8000.00
Trvl    Spd    8000.00
ZDownRat 1.00
Spd Rati       1.00
Spd Grad     1
Equival pulse/mm
X    Axis:        500.00
Y    Axis:        500.00
Z    Axis:        500.00
Z up mm      100.00
```

press X+ 1▲ and X− 5▼ to move cursor and select different item, press 运行/暂停 RUN/PAUSE 删除 DELETE to modify the value. press 归零 ORIGIN 确定 OK to save the new value, then move the cursor to next item. When it finishes all changes, press 归零 ORIGIN 确定 OK to confirm, the system begins to check the G code data. It starts to work after all G code data being checked.

Proc Spd: the engraving machine will process the file at this speed when it begins to relieving.

Trvl Spd: It travels at this speed when the machine does not relieve.

ZDownRat: Z axis goes down speed ratio. In order to protect the tools edge from damage, it needs to make the z axis goes down at a low speed. Its scope is: 0.1—1.0.

Spd Rati: Speed Ratio, it can reduce the process speed. So the real process speed is: Process Spd * Spd Ratio. Its range is: 0.1—1.0.

Spd Grad: Spindle Speed Grad. It means spindle speed when it begins to work.

Equivalent: It displays 3 axes' equivalents. here you can not change these value. If it needs to modify, you should enter the menu and set them.

Z Up mm: It refers to the Height that Z axis can go up. If the file Z axis up height is over this limit, it will adopt this value instead.

It is the same operating steps for inner files.

When it is running the file, the screen rolls the information of file line number, real process speed, speed ratio, remain time. press 手动模式 MODE to stop rolling and just show the current info. repress 手动模式 MODE to switch to next info.

4. **Process Adjust** When it is executing the file, **press** Y+ 2∧ **and** Y− 6∨ **to change the speed ratio**, each press on Y− 6∨, ratio drops 0.1till the ratio is 0.1. And speed value changes synchronically; each press on Y+ 2∧, speed ratio raise 0.1 till 1.0. **Press** Z+ 3 **and** Z− 7 **button to** adjust spindle speed if you have the hardware connected and got spindle set. Each pressing on Z+ 3, the spindle speed raises a grad till the highest. Each press on Z− 7, the spindle speed drops a grad till F1.

5. **Process Pause and position adjust** When it is processing, press "运行/暂停 RUN/PAUSE 删除 DELETE" to adjust three axes position, then repress "运行/暂停 RUN/PAUSE 删除 DELETE Pause", it clews "Original?", press "停止 STOP 取消 CANCEL" confirms your change and it processes form the new position. While press "归零 ORIGIN 确定 OK" denies the change and it processes from the original position;

6. **Process Stop and Stop Point saving**

When it is processing, press "停止 STOP 取消 CANCEL" stops processing, it clews to save stop point. The screen displays as below:

```
1X        0.000 RUN
1Y        0.000 SOFF
1Z        0.000 LOW
Save Stop pt?
```

If it needs to restart process form current position lately, then you should save it and press related digit button to save as X+ 1▲, which means save the stop point as NO.1 stop point. (There are 6 stop points totally). Then it displays on the screen as below:

```
1X        0.000 RUN
1Y        0.000 SOFF
1Z        0.000 LOW
Save Stop pt?1
```

Press 归零 ORIGIN 确定 OK to save the setting. Then 3 axes go back home origin.

If it needs to continue to process from the Stop Point1, press compound buttons: “运行/暂停 RUN/PAUSE 删除 DELETE + X+ 1 ▲”, it starts process from the stop point. The same operating steps to stop point2, stop point3 and so on. The condition for Stop point process is that the 3 axes must have homed before saving the stop point.

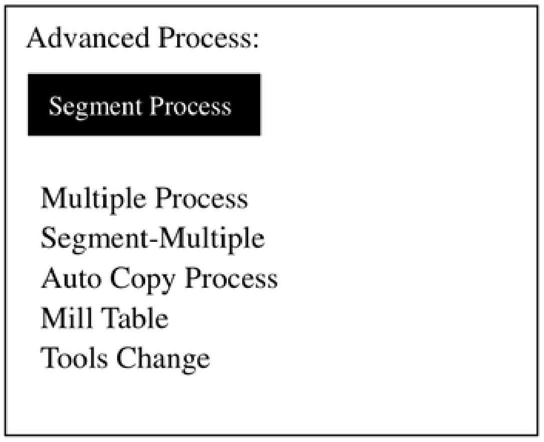
7. **Power Off Protection.** The system will automatically protect the process data when the power fall down suddenly. When it gets the power supply again, press “归零 ORIGIN 确定 OK” to go back machine origin, then it clews “PowerOff reboot?” press “归零 ORIGIN 确定 OK” to continue to process unfinished work, or “停止 STOP 取消 CANCEL” to give up.

4. 4. 3ADVANCED PROCESS

Advanced process is the function for special application, which includes: Segment Process, Multiple Process, Segment-multiple process, Auto Copy Process, Mill Table and Tools Change.

4. 4. 3. 1Advanced process call

Press compound buttons: 运行/暂停 RUN/PAUSE 删除 DELETE + 高速/低速 HIGH/LOW 0, it displays on the screen as below:



Advanced Process:

Segment Process

Multiple Process
Segment-Multiple
Auto Copy Process
Mill Table
Tools Change

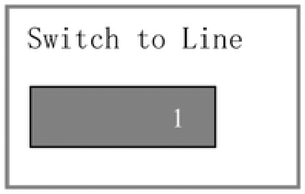
4. 4. 3. 1. 1Segment Process

Segment Process refers that user can select the beginning line and ending line to operate. That is we can process part of the file. The operating steps are:

1. Press 归零 ORIGIN 确定 OK to enter setting, press X+ 1 ▲ and X− 5 ▼ to move cursor select file list;

2. Press 归零 ORIGIN 确定 OK to enter the file list, press X+ 1 ▲ and X− 5 ▼ to select the target file;

3.According to the clew, select beginning line number, the first G code data displays on the screen. Press 运行/暂停 RUN/PAUSE 删除 DELETE, it display as below:

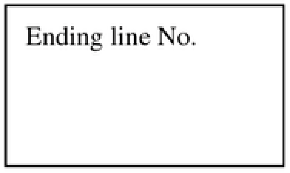


Switch to Line

1

Input the line number in cursor position. press 归零 ORIGIN 确定 OK to confirm beginning line number. If the value is not correct, press ▶/Ⅱ 删除 to modify;

4. It displays the G code data, repress 归零 ORIGIN 确定 OK, it displays as following:



Ending line No.

Press 运行/暂停 RUN/PAUSE 删除 DELETE it clews: Switch to Line. And input the ending line number in cursor. Press 归零 ORIGIN 确定 OK to confirm ending line number. If the value is not correct, press ▶/Ⅱ 删除 to adjust; Press Y+ 2∧ to select the 1st line and Y− 6∨ to select the last line.

5. Then set the process parameters, details are in Auto Process.

4. 4. 3. 1. 2Multiple Process

It needs to set multiple parameters in menu, then call this function here. Operating steps are:

1. press X+ 1▲ and X− 5▼ to move cursor on multiple item, press 归零 ORIGIN 确定 OK to enterit, then press X+ 1▲ or X− 5▼ to move cursor to select file list;

2. press 归零 ORIGIN 确定 OK to enter the file list, repress X+ 1▲ or X− 5▼ to move cursor and select target file;

3. Set process parameters, and following steps are similar with the auto process. It works as it set. Press 菜单 MENU − to view the multiple parameters, repress 菜单 MENU − to cancel the view.

4. 4. 3. 1. 3Segment-multiple Process

Segment-multiple Process is to process part of the file for many times. It meets the needs to run part of the file for many times. So it needs to set the segment parameters and multiple parameters first, then call this function here. Its operating steps are the same to multiple process.

4．4．3．1．4Auto Copy Process

Because it reads G code from U disk, it needs to check G code data each time. If it is a larger file, the checking will cost time. So if there is some file needs to be processed frequently, we can process this file once and save it for inner file. When next time, it needs to run this file, we can call it easily. Because this function takes a lot flash memory, you' d better not to change too much files into Auto Copy Process file. And if you reset the engraving machine and system parameters, you must to reset this operation.

Press X+ 1▲ and X− 5▼ to move cursor on "Auto Copy Process" item, press 归零 ORIGIN 确定 OK to enter, repress X+ 1▲ or X− 5▼ to select file list. press 归零 ORIGIN 确定 OK to enter file list, repress X+ 1▲ and X− 5▼ to select target file. Then set process parameters. Then press 归零 ORIGIN 确定 OK, it clews: **Inner file**, that is which file you like to save this file. Then press X+ 1▲ and X− 5▼ to move cursor and select file, press 归零 ORIGIN 确定 OK to confirm the file. It begins to save and it goes back Manual statue when it finishes operating.

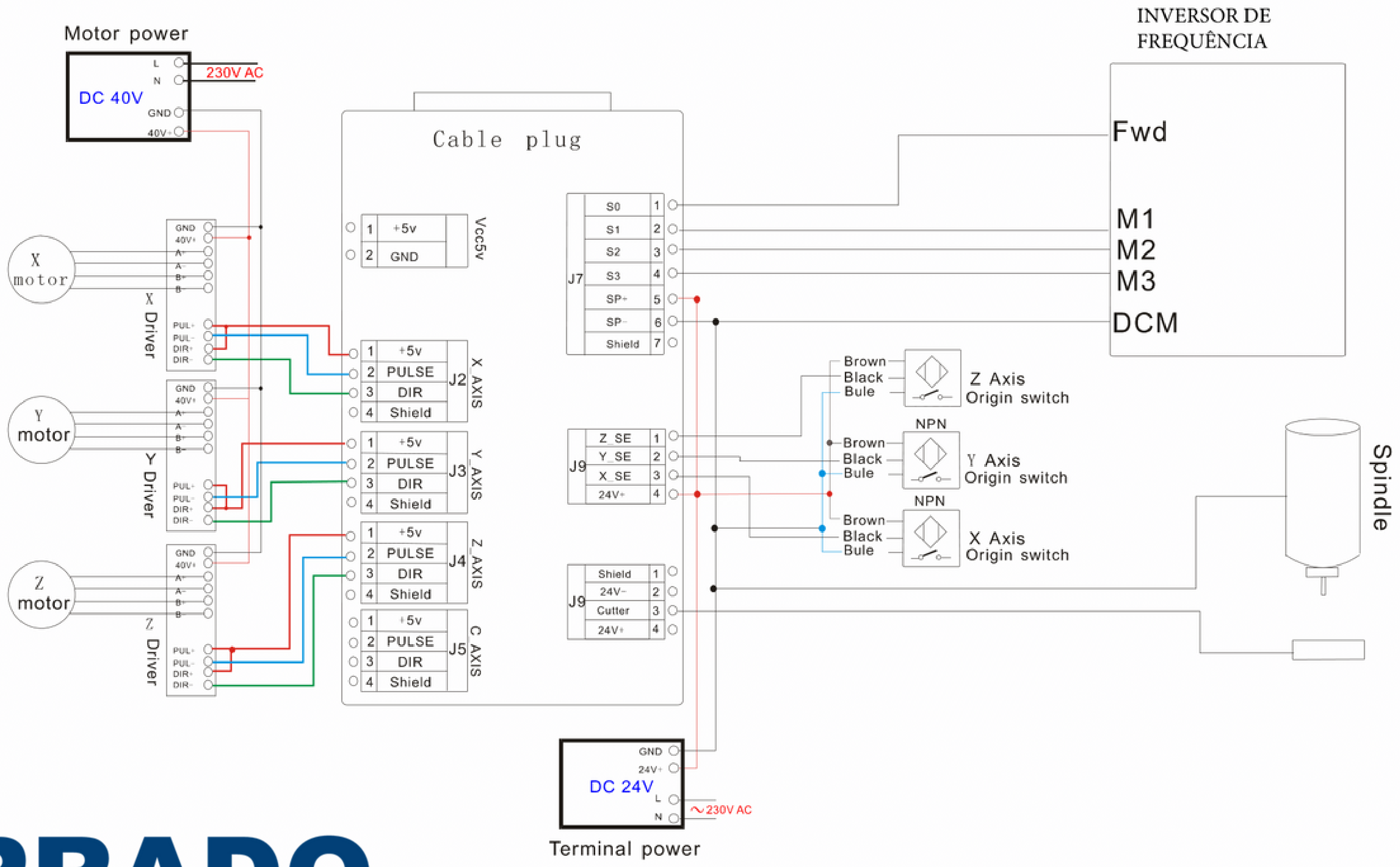
The operating steps of Auto Copy file are the same with auto process file. There is a * symbol before the Processed Auto Copy Process File.

4．4．3．1．5Tools Change

After having set the tool change position in menu, selecting this item and then the machine goes to the set position and wait for changing tool.

Chapter IV RZNC — 0501 Specifications (U disk)

Contents	Specification
Processor	160M DSP
File Memorizer	128M memorizer inside, it supports file with any size because of adopting mobile memorize technology
Display	LCD with 128 dot*64 dot
Communication Terminals	USB terminal and U Disk
File Format	G code , PLT files (optional)
Axes	3 axes
Help Function	Useful help information and guide
Languages	Chinese, English, Russia, France, Japanese(optional or customize)
Operating Interface	Friendly Buttons and Menu Drive
Drive System	Step Motors
Interpolation function	linear, curve
Cutter Adjusting function	Yes
Spindle Control Function	Yes
System Data Inspect Function	Yes
Processing Data Inspect Function	Yes
Processing Position Adjusting Function	Yes
Multi Working Coordinates	It has 9 working coordinates
Stop Point Reprocessing Function	Yes
Copy Processing Function	Yes
Data protection when power off	Yes
Working Temperature	0°C to +70°C
Humidity	＜90％ no dew no frost
Outer Voltage	5 V
Consumptions	2 W
Dimensions(mm)	156*110*38


Motor power
DC 40V
L
N
GND
40V+
230V AC
X motor
Y motor
Z motor
X Driver
Y Driver
Z Driver
GND
40V+
A+
A-
B+
B-
PUL+
PUL-
DIR+
DIR-
Cable plug
Vcc5v
1 +5v
2 GND
X AXIS
J2
1 +5v
2 PULSE
3 DIR
4 Shield
Y AXIS
J3
Z_AXIS
J4
C AXIS
J5
J7
S0 1
S1 2
S2 3
S3 4
SP+ 5
SP- 6
Shield 7
J9
Z_SE 1
Y_SE 2
X_SE 3
24V+ 4
J9
Shield 1
24V- 2
Cutter 3
24V+ 4
INVERSOR DE FREQUÊNCIA
Fwd
M1
M2
M3
DCM
Brown
Black
Bule
Z Axis Origin switch
NPN
Y Axis Origin switch
NPN
X Axis Origin switch
Spindle
DC 24V
GND
24V+
L
N
230V AC
Terminal power

PRADO

AUTOMAÇÃO INDUSTRIAL