HK-4D-U101 four-axis dispenser motion control system manual
V3.0

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Catalog

Chapter 1 Overview

Hengkong Technology's automatic dispensing motion control system has four motor control axes, which can support gantry-type three-axis, three-axis + rotary axis, three-axis +2Y-axis automatic dispensing motion control, basically meet the existing gantry-type automatic point The need for glue control methods. The handheld programmer used adopts 480 * 272 pixel 16 million color true color 5-inch LCD screen, which makes the programming menu more abundant. The industrial field bus communication connection is used between the motherboard and the handheld programmer, with higher speed and stronger anti-interference. The hand-held programmer can store dispensing processing files and system configuration files. In the use of multiple devices, the hand-held programmer can be used to copy the dispensing processing files or system configuration files to each other (you can also use U disk to copy). Adopting ARM+DSP control scheme, with powerful computing ability, very low speed refresh time, excellent motion control acceleration and deceleration performance, can support high-precision high-speed three-dimensional linear, three-dimensional circular arc movement. The motion control motherboard has 32M storage space, which can store 150 dispensing processing files, and each file can store 1900 dispensing processing programming points. It can support work without a handheld programmer connection. The dispensing processing files can be used with digital tubes and keys Way selection.

1.1 Hardware

1. Motor shaft output: 4-axis output, respectively XYZ three-dimensional coordinate axis, A-axis rotation axis, Y2 expansion axis to achieve dual Y-axis function, can be realized with rotary axis or dual Y-axis dispensing machine control.

2. Acceleration and deceleration characteristics: each axis acceleration and deceleration acceleration is set independently.

3. Pulse output frequency: 1MHz for linear interpolation, 500KHz for circular interpolation (including 3-axis spatial circular interpolation).

4. Programmable input and output: 16 programmable inputs and 8 programmable outputs, all with optocoupler isolation, each output current up to 500mA.

5. Support 3-digit digital tube interface, can quickly choose to switch 150 dispensing files from 0-149.

6. small keyboard for needle, which can easily realize the correction of error caused by needle change even when there is no handheld programmer.

7. Function keys: 'run/pause', 'stop', 'return to home', 'glue out test', 'single step', 'single step' and 'glue out test', 'single step', 'automatic needle pair' six function keys with corresponding indicator control output; with 'emergency stop' button input.

8. with RS-232, can be customized to customers with special needs special program.

9 U disk read and write function: the use of FAT32 file system, no longer subject to more than 2G U disk can not be formatted into the FAT format restrictions.

10. Storage space: 32MB for motherboard, can store 150 dispensing files, 1900 programming points per file; 4MB for handheld programmer, can store system parameters and dispensing files, especially useful for copying dispensing files to each other in multiple machines.

11. Handheld programmer screen: 480 * 272 pixel, 16 million color true color 5" LCD screen, which makes the operation menu interface more informative.

12. Working voltage: DC 24V, Current 5A.

13. Working environment: temperature 0℃-45℃, humidity 40%-80%.

14. Storage environment: temperature -40℃--60℃, humidity 0%--95%.

1.2 Software

1. 3D spatial linear interpolation, 3D spatial circular interpolation.

2. Double Y function, no need to do home position action when switching Y axis.

3. with A-axis rotation axis, the rotation axis can follow the tangent line with XY path.

4. Corner processing can set the priority of speed and path coincidence to achieve a smooth transition of the corner.

5. DXF file conversion function, you can export the CAD made dispensing path map to DXF file to the dispensing file.

6. 20 times of "undo" and "redo" for programming point editing, which can effectively prevent misoperation.

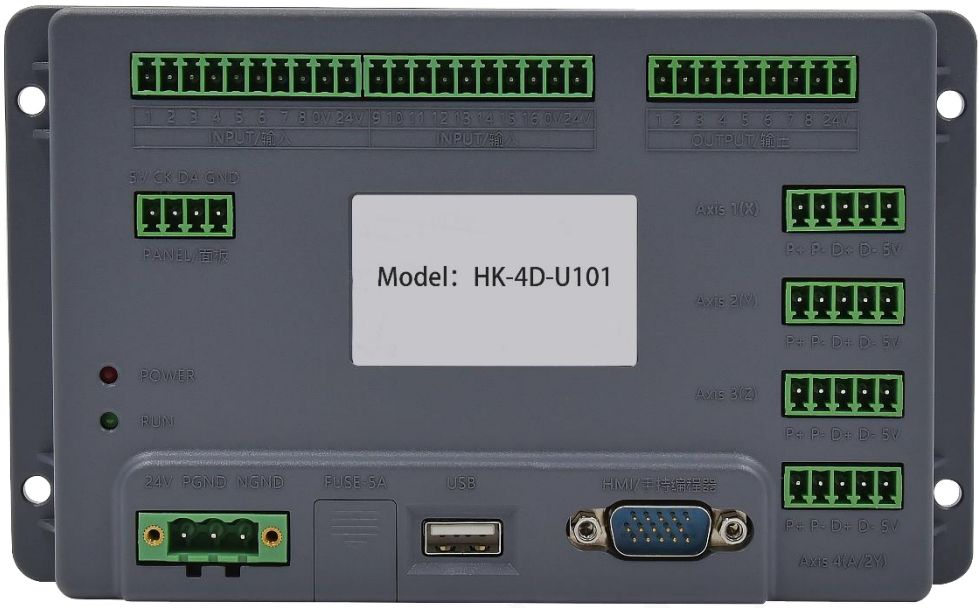
7. Dispensing parameters can be set in the way of programming points, so that different dispensing parameters can be set for different areas in the same dispensing process.

8. When returning to the home position, each axis will be captured at the same time after each axis returns to the home position to reduce the error of returning to the home position.

9. With full spelling Chinese input method.

1.3 Accessories

1. Motherboard:：



HK-4D-U101 Motherboard:（174*mm X104*mm X70*mm）

2. Handheld programmer(242mm * 142mm * 26mm):

3. Program group selection and needle calibration panel (107mm * 40mm), circuit board (70mm * 40mm).

4. Connection cable (length can be specified).

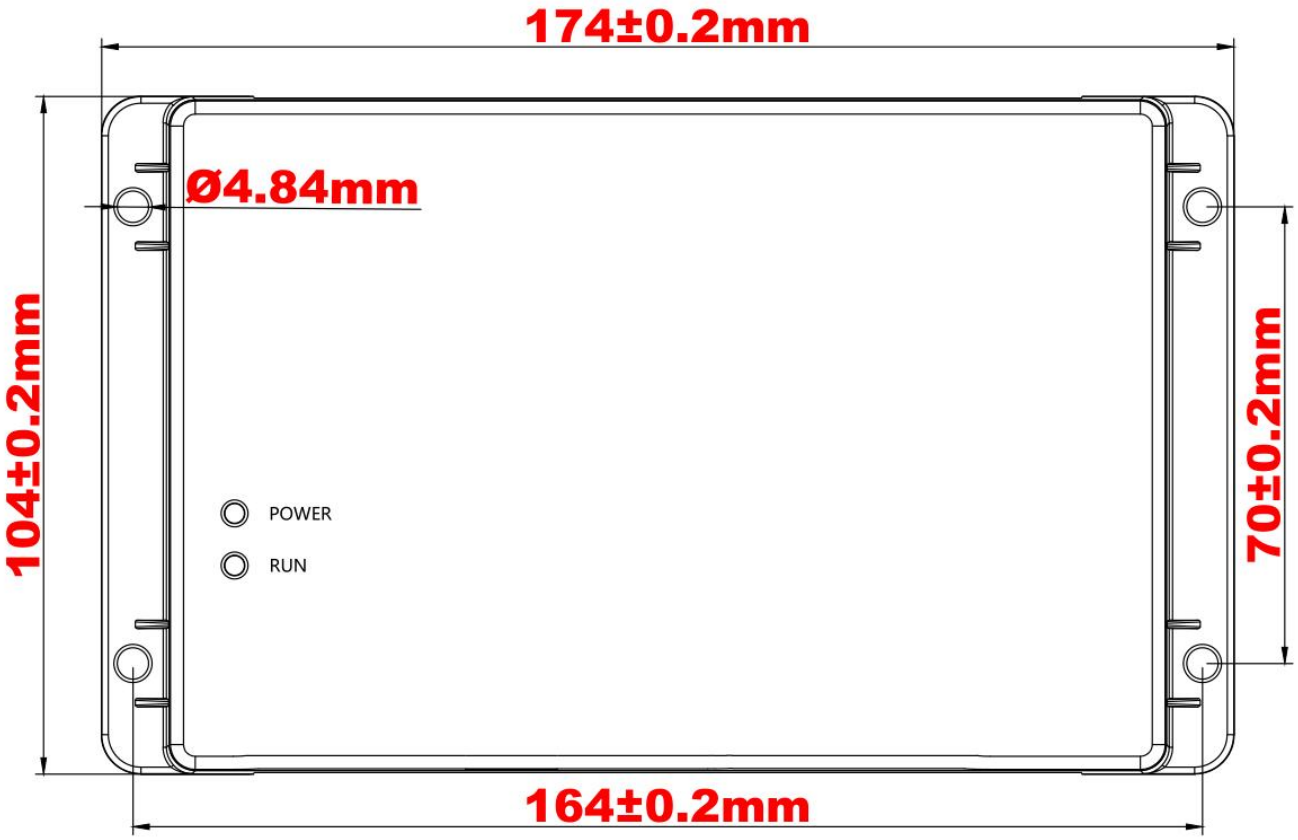
name	Quantity	Unit	Length (m)
DB15 extension cable	1	Article	1.5
USB extension cable	1	Article	0.75
DB15 Extension cord (elbow)	1	Article	0.75

DB15 extension cable

USB extension cable

DB15 Extension cord (elbow)

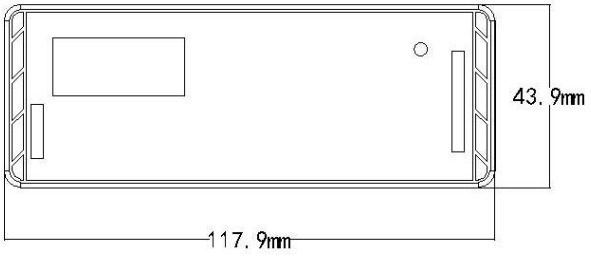
1.4 Motherboard bottom plate installation dimension drawing



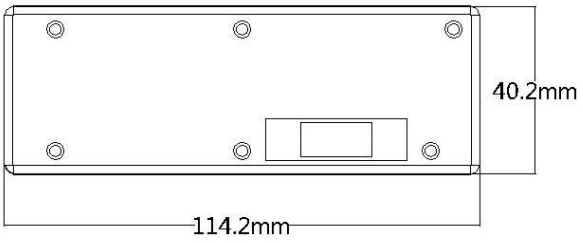
HK-4D-U101 Dimensions

1.5 LED size

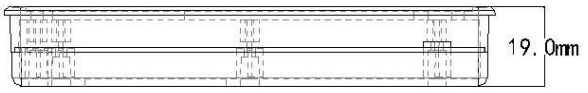
Top shell size



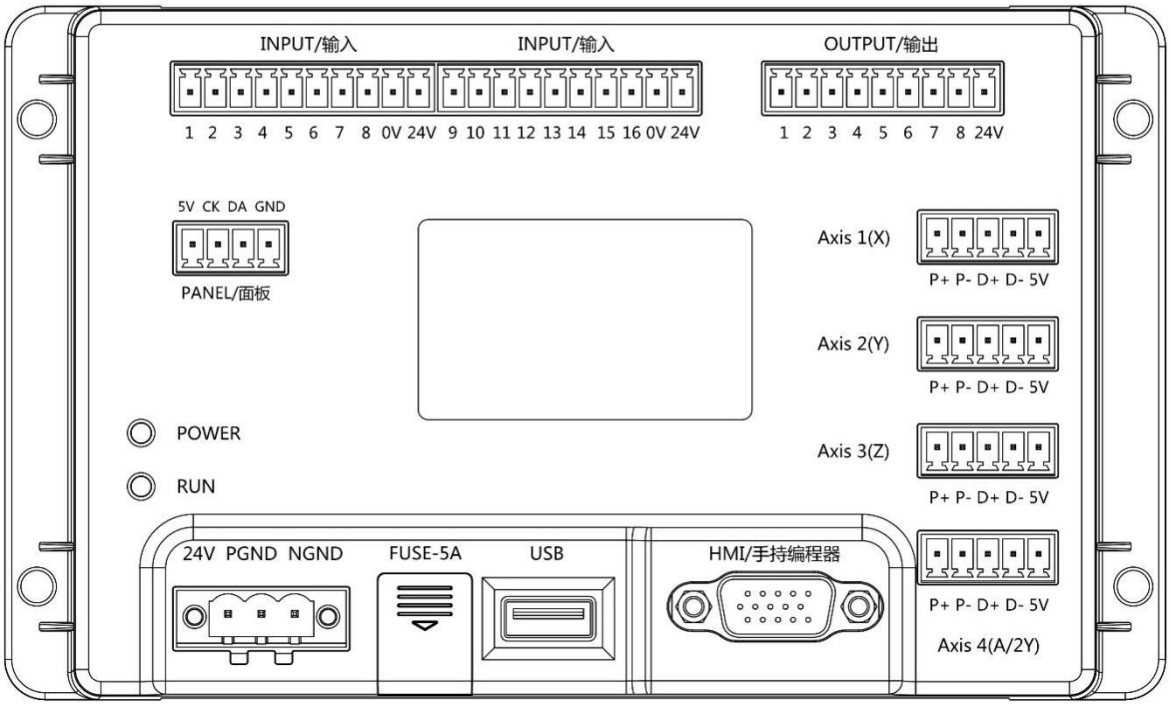
Lower shell size



Height



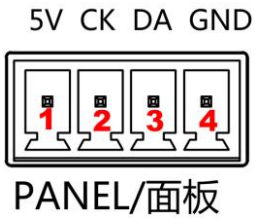
1.6 System interface and wiring diagram



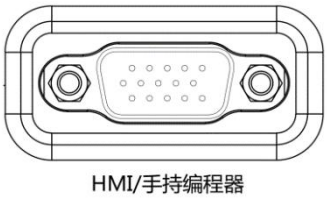
HK-4D-U101 interface diagram

Special interface definition and description:

PWRIN Definition and description of power input pin			
NO.	Name	Function	Wiring description
1	24V	24V Power input	Connect 24V switching power supply VCC(DC V+)
2	PGND	0V	Connect 24V switching power supply 0V (DC V-)
3	NGND	GND	Connect 24V switching power supply FG (⏚)



PANEL panel pin definition and description			
NO.	Name	Function	Wiring description
1	5V	5V power supply for pin panel	Connect program group and pin panel power VCC/5V
2	CK	Clock signal	Connect the program group and the clock cable to the needle panel CK
3	DA	Data signal	Connect program group and pin panel data cable DA
4	GND	To the needle panel ground	Connect the program group and the pin panel ground 0V/GND

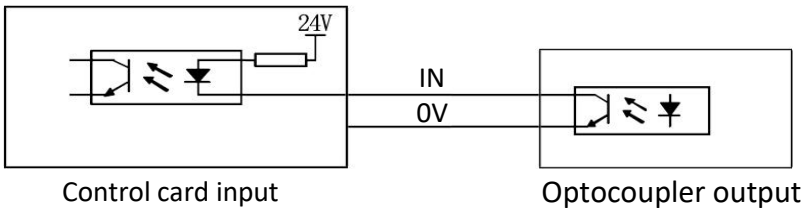


Connect the handheld programmer interface directly to the DB15 extension cable

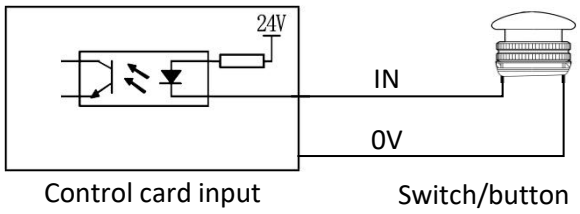
Input port definition and description:

Input / Input pin definition and function description			
NO.	Name	Function	Wiring description
1	Input No. 1	X axis origin signal	X axis origin sensor signal pin OUT
2	Input No. 2	Y axis origin signal	Y-axis origin sensor signal pin OUT
3	Input No. 3	Z axis origin signal	Z axis origin sensor signal pin OUT
4	Input No. 4	A/2Y axis origin signal	A/2Y axis origin sensor signal pin OUT
5-8	Input 5-8	Programmable fast input	Can be connected to buttons, pin signals, etc. (support capture)
9-16	Input 9-16	Programmable ordinary input	Can be connected to input signals such as buttons and sensors (capture not supported)

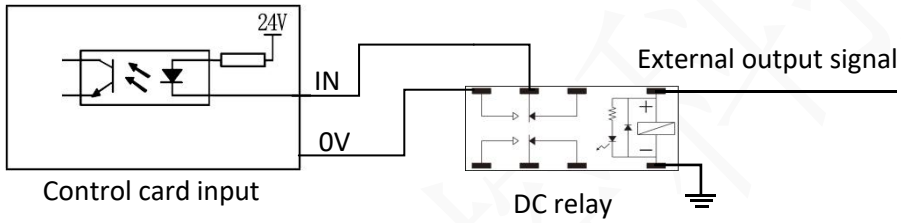
Typical wiring of input port: Optocoupler



Typical input wiring: switch signal wiring



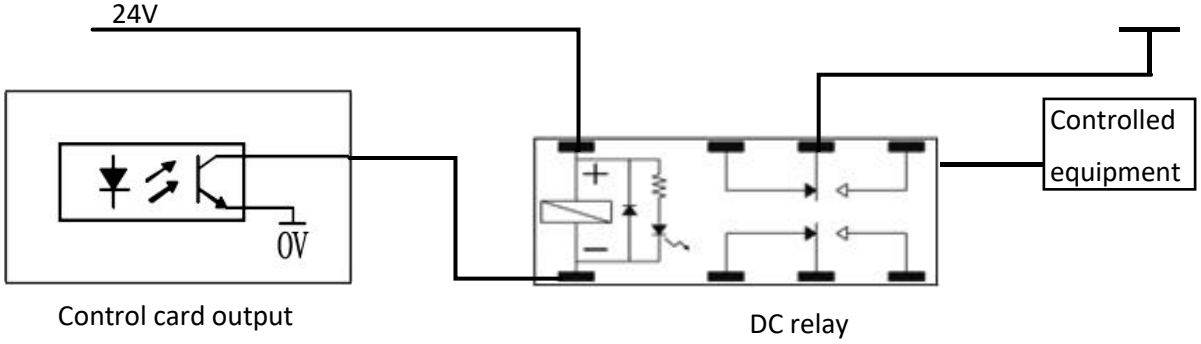
Typical wiring of input port: relay transfer mode



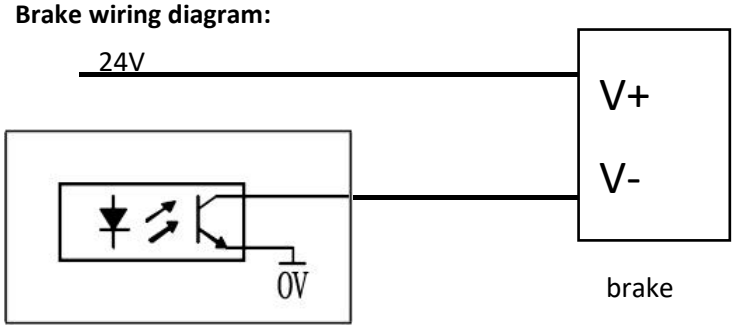
Definition and description of output port:

Output / output port pin definition and function description			
NO.	Name	Function	Wiring description
1-8	1-8 output	Quick output	Optocoupler output, can be used to control peripheral devices
8	Brake signal	Brake control signal	The default is the brake control signal, which can be configured as a common output port

Typical wiring of output port: relay transfer mode



Brake wiring diagram:

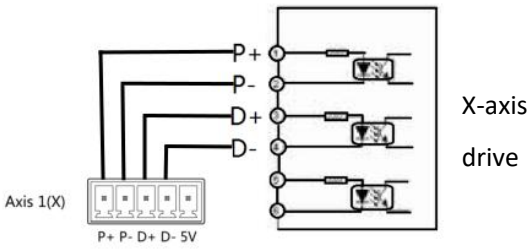


Control card brake signal port

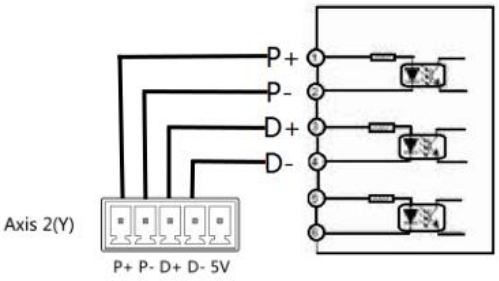
Definition and description of motor port:

Motor signal pin definition and function description			
NO.	Name	Function	Wiring description
1	P+	Pulse signal+	Motor pulse positive signal, differential signal type
2	P-	Pulse signal-	Motor pulse negative signal, differential signal type
3	D+	Direction signal+	Motor direction positive signal, differential signal type
4	D-	Direction signal-	Motor direction negative signal, differential signal type
5	5V	5V DC power	5V DC power

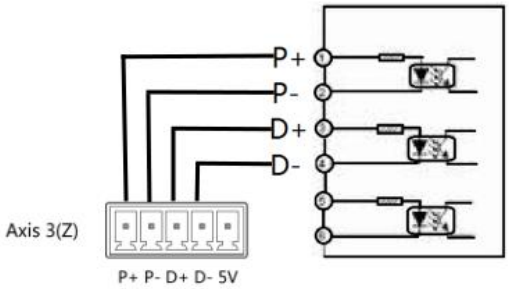
Differential wiring diagram:



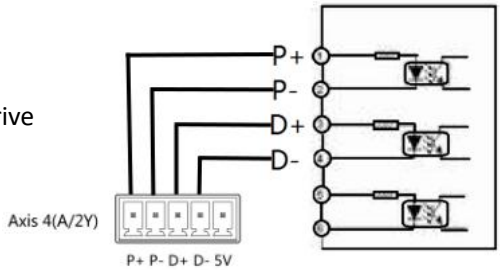
X-axis drive



Y-axis drive

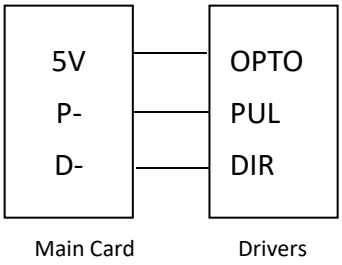


Z-axis drive

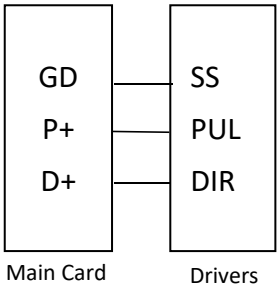


A/2Y-axis drive

Common anode wiring diagram：



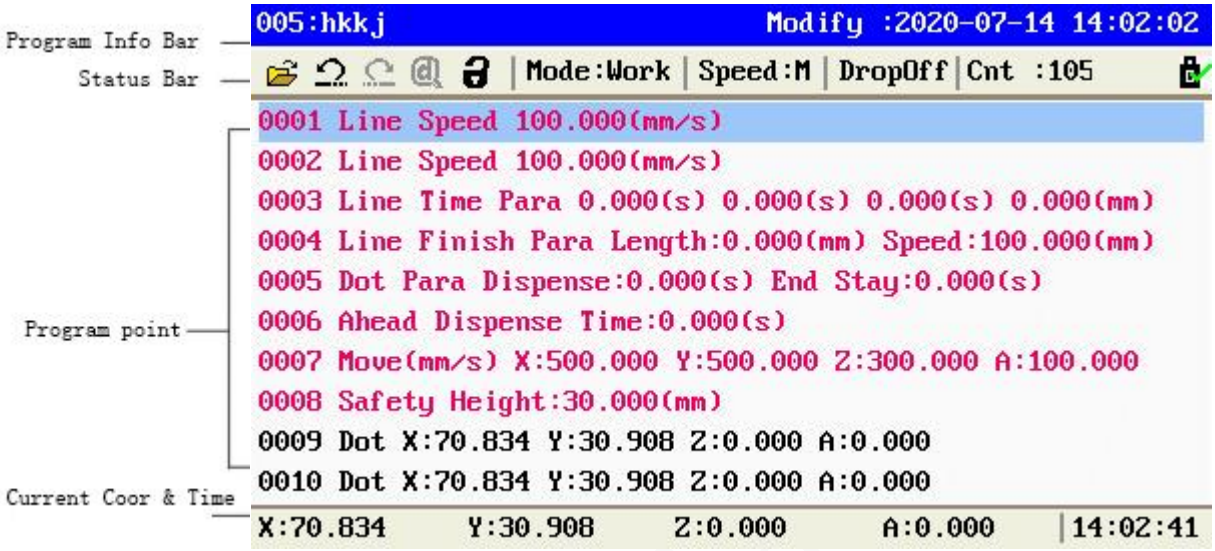
Common cathode wiring diagram：



Chapter 2 Main interface and key description

2.1 Main interface description

1. Description of main interface content distribution



2. 005:hkkj Dispensing file serial number and file name, "005" is the serial number, "hkkj" is the file name.

3. Modify :2020-06-23 16:01:07 The time when the dispensing file was last modified.

4.  Open the dispensing file icon, and use the "Table" button to switch the cursor to the icon.

5.  The "Undo" and "Redo" status indication icons can reach 30 times of "Undo" and "Redo". If the icon is gray, there is no operable "Undo" or "Redo".

6.  It means that the dispensing file has been edited and needs to be "debugged". If the icon is gray, the file has been "debugged".

7.  The file is not locked ,  The file has been locked,  The machine is locked.

8. Mode:Work The running mode is divided into three modes: "work", "no glue" and "constant speed"; "work" mode is the normal dispensing processing mode; "no glue" mode is that the movement speed and path of the machine are the same as the "work" mode , But there is no glue; the "uniform speed" mode means that the machine's running path is the same as the "working" mode, but it runs at the speed of the "uniform speed" mode, and no glue is output. It is mainly used for path testing.

9. Speed:F Manual movement speed, divided into "fast", "medium" and "slow" speed, press "speed" key to

switch in turn.

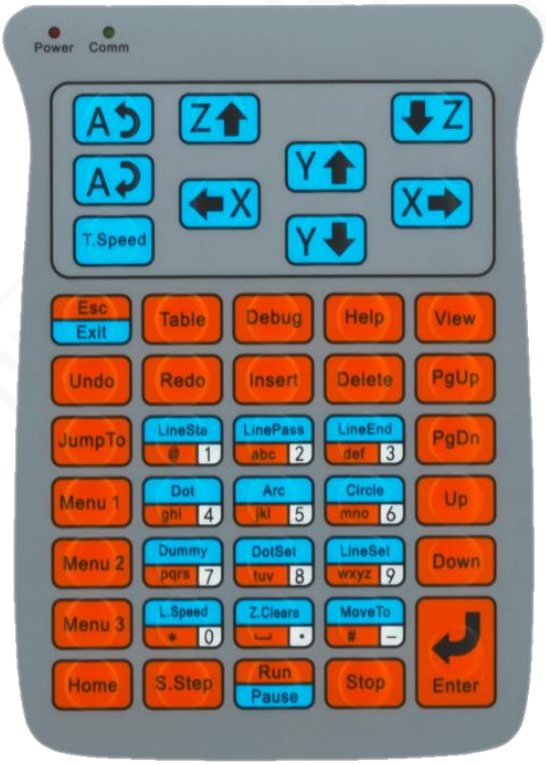
10. DropOff Quickly set the idle glue switch option when idle, select 1 to turn on the idle glue dispensing mode, and select 2 to turn off the idle glue mode.

11. Cnt :105/0 Work piece counter, the previous value is the work piece count value, the latter value is the set number of work pieces to be processed, if the work piece count value reaches the set value of the work piece to be processed, it will prompt that the work piece count is full; if there is no work piece count limit, it will be The number of processed work pieces is set to "0".

12. U disk insertion， No U disk is inserted or the U disk cannot be recognized.

13. 拼音 Pinyin input、123 Digital input、abc Enter lowercase letters、ABC Input capital letters, press the "#" key in the character input state to switch the input method.

2.2 Handheld programmer key description



1. A The fourth axis named A axis counter clockwise rotation by manual.

2. A The fourth axis named A axis clockwise rotation by manual.

3. Z axis up by manual.
4. Z axis down by manual
5. Y axis front by manual
6. Y axis back by manual
7. X axis left by manual
8. X axis right by manual
9. T. Speed Switch manual speed “slow, middle, fast”
10. Esc Operation of exiting the menu or canceling the input dialog
11. Table Cursor switch between “dispensing programming point” area and “short menu bar” area, or transform plane when previewing.
12. Debug Analysis of the current dispense file whether its programmed point accord with the dispense programming rules, if yes, then the icon  will become gray.
13. Help Press this key can pop up some help information of the current page, press any key to exit
14. View Preview the glue out path graphic in current dispense program file in XY, XZ, YZ plane position, press Table to change plane, press other any key to exit
15. Undo Redo Undo and redo to the edition of programming points, up to 30 times, for preventing misuse effectively.
16. Insert In front of the cursor point of the selected insert a blank dispense program point.
17. Delete Delete the programming point of selected in main page, or in the menu state used for deleting something.
18. JumpTo Jump to the special programming point address by manual input.
19. Menu 1 Into Menu 1, for the dispense point of action, displaying as black.
20. Menu 2 Into Menu 2, for dispense point of parameters setting, displaying as red.

21. 

Into Menu3, for device of parameters setting and some application operation

22. 

Perform to home.

23. 

Perform step dispense test.

24. 

Dispense working run or pause.

25. 

Dispense working stop.

26. 

Cursor up a page in main page state, or up a page in menu state.

27. 

Cursor down a page in main page state, or down a page in menu state.

28. 

Cursor up a line in main page state, or up a line in menu state, or up a line in input dialog.

29. 

Cursor down a line in main page state, or down a line in menu state, or down a line in input dialog.

30. 

Start point of dispense line program in main page, or input ‘1’ ,characters in input dialog.

31. 

Middle point of dispense line program in main page , or input ‘2’ , ‘abc’ in input dialog.

32. 

Finish point of dispense line program in main page , or input ‘3’ ,’ def’ in input dialog.

33. 

Dispense dot program in main page, or input ‘4’, ‘ghi’ in input dialog.

34. 

Arc point of dispense line program in main page, or input ‘5’, ‘jkl’ in input dialog.

35. 

Dispense circle program in main page, or input ‘6’, ‘mno’ in input dialog.

36. 

Dispense dump point (dump point is just like the dispense dot, only move to the point coordinate, but no more action, mainly used to other expect dispensing ,such as clear needle, etc) program in main page, or input ‘7’, ‘pqrs’ in input dialog.

37. 

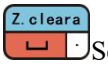
Set parameters of dispense dot program in main page, or input ‘8’ ,’tuv’ in input dialog.

39. 

Set parameters of dispense line program in main page, or input ‘9’, ’wxyz’ in input dialog.

40. 

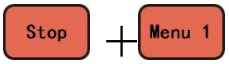
Set parameters of dispense line speed program in main page, or input ‘0 ’ in input dialog.

41. 

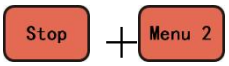
Set Z height parameters in main page, or input space character or decimal point in input dialog.

42. 

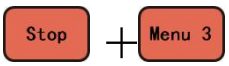
Move the needle to the programming point of cursor selected in main page when there is coordinate occurred, or switch IME or input negative value symbol in input dialog.

43. 

Enter Menu 4, which is the parameter setting of the lower layer of the device, etc. It is recommended not to be open to users.

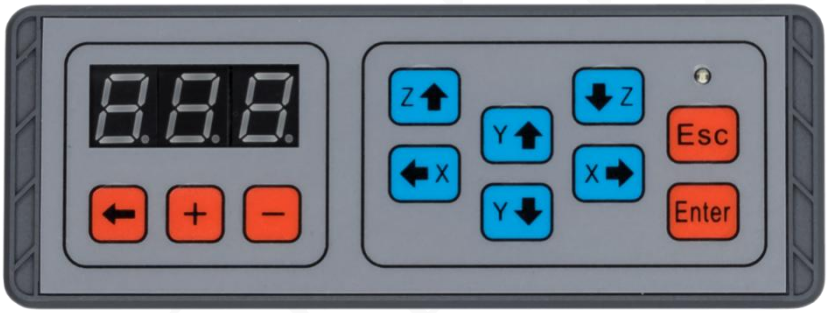
44. 

Enter menu 5, menu 5 is the parameter default value setting, it is recommended not to be open to users.

45. 

Enter menu 6, menu 6 is to enter the "menu display and hide" setting interface, it is recommended not to open to users.

2.3 Program selection and adjustment key description



1. 
The current file selected is dispense file 123.

2. 
Move the decimal point bit of the current dispense file No., there is ‘+’,’-’ operation follow with the decimal point bit.

3. 
Plus 1 on the bit of decimal point in the dispense File No.

4. 
Minus 1 on the bit of decimal point in the dispense File No.

5. 

Z axis move up by manual when adjusting needle point.

6. 

Z axis move down by manual when adjusting needle point.

7. 

Y axis move front by manual when adjusting needle point.

8. 

Y axis move back by manual when adjusting needle point.

9. 

X axis move left by manual when adjusting needle point.

10. 

X axis move right by manual when adjusting needle point.

11. 

Enter or confirm the adjustment operation for needle point, when enter the adjustment to the needle point position, LED on the back of the film began flashing, press manual key then press confirm key to finish the operation.

12. 

Cancel the adjustment operation.

Chapter 3 The basic method of programming

3.1 Unit symbol interpretation

1. Length unit (mm) = (millimeter)
2. Time unit (s) = (second)
3. Speed unit (mm/s) = (millimeter per second)
4. Acceleration unit (mm/(s*s)) = (speed of increment of millimeter per second for one second)

3.2 Appointment for dispense program finish

To improve the readability of the dispensing program, programming points can be kept a 'Non program' line between the lines, if there are two consecutive lines of 'Non program', then means here is the end of the program or subroutine return, its useful is the same as 'Program end or return'.

3.3 Run mode of dispense program

The running of dispense program is according to the sequence from address 0001 begin, and down to execute action or parameter setting of each program point until the program end or press 'stop' , emergency' key. Among those program points expect the point of dispense dot, dispense line, dispense arc, dispense circle and clue, also have the order such call, array, jump, delay, pause, etc.

As using program point method in dispense parameters setting, so we can achieve use different dispense parameters in different dispense area in one processing file. Such as following program points:

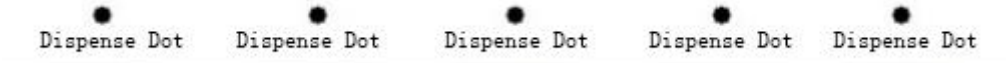
```
0001  Line Dispense Speed 100.000(mm/s)
0002  Line start  X : 0.000  Y: 0.000  Z : 46.451
0003  Line end   X : 36.928  Y : 14.081  Z : 46.451
0004  Line Dispense Speed 100.000(mm/s)
0005  Line start  X : 36.928  Y: 46.191  Z : 46.451
0006  Line end   X : 36.928  Y : 96.801  Z : 46.451
0007  Line Dispense Speed 100.000(mm/s)
0008  Line start  X : 36.928  Y: 46.191  Z : 46.451
0009  Line end   X : 36.928  Y : 96.801  Z : 46.451
```

Then the line of 0002-0003 dispense with a speed of 100 mm/s, the line of 0005-0006 dispense with a speed of 200 mm/s, the line of 0008-0009 dispense with a speed of 300 mm/s.

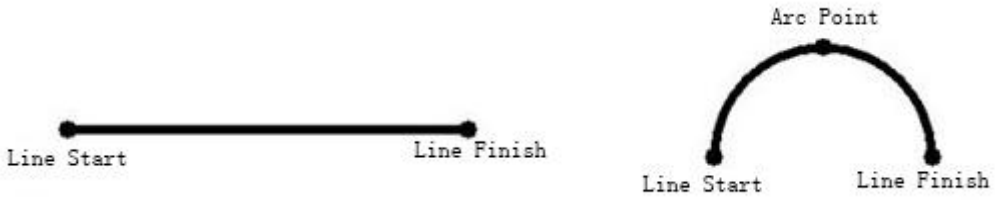
3.4 The basic composition of the dispensing path

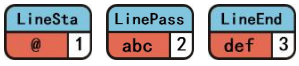
The basic dispensing path including dispense dot, dispense line in three-dimensional, dispense arc in three-dimensional, dispense circle in XY plane, glue circle in XY plane, glue rectangle in XY plane, etc. Among them there are some shortcut keys for the normal path so that no need to select in menu. the basic graphic for dispense processing is as follows.

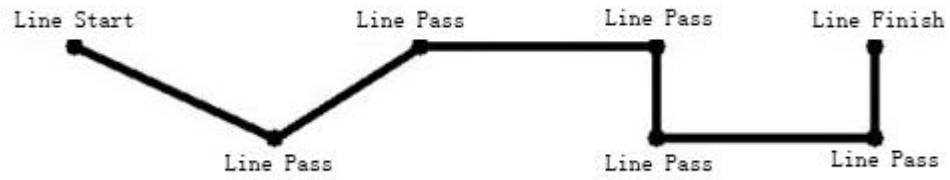
1. Dispense dot 

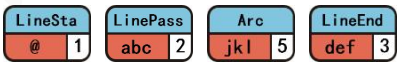


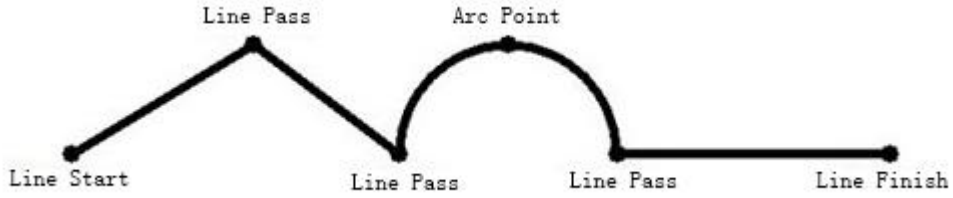
2. Single dispense line and arc 

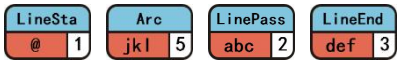


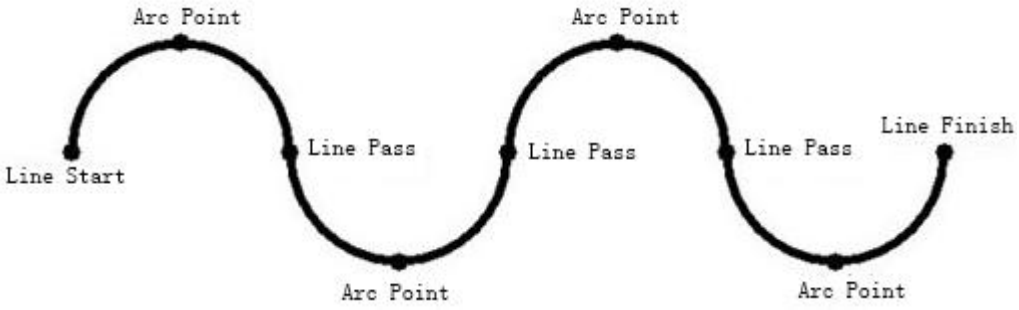
3. Continuous dispense line 



4. The continuous line segment and arc combination dispensing 



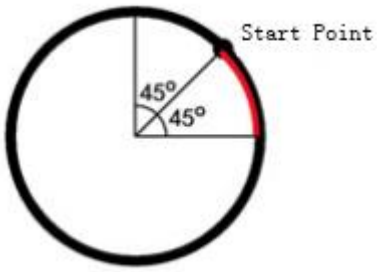
5. Continuous arc dispensing 



6. Dispense circle 

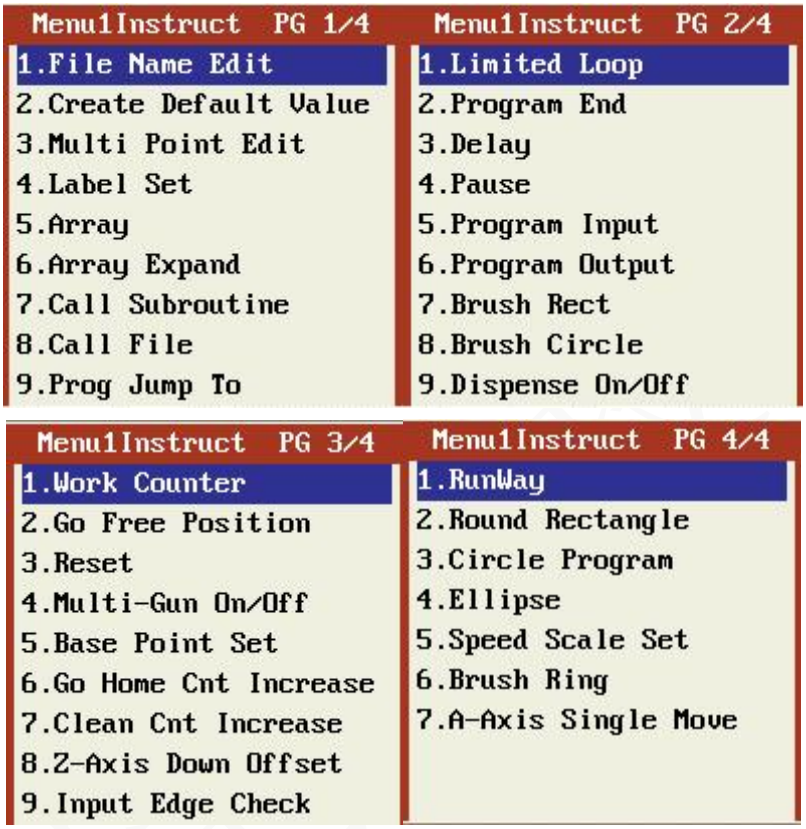
The starting position of the circular dispensing can be setting by angle unit, 12 o'clock position is 0 degrees, clockwise rotation. As following the starting point is the 45 degrees for dispensing, in actually use if the initial angle is set to 45 degrees, the inertia of the machine is the smallest so strongly recommend that the start angle is set to 45 degrees.

You can also set beyond the point of circular dispensing, that is, the needle after a turn off the glue can also take a set of arc length, this function can make the starting point and finish point have more uniform glue, as following the figure is set to 45 degrees, the red is go beyond the point of view of the path.



Chapter 4 Menu 1

Menu 1 is for dispensing action programming and commonly used dispensing file operations. The programming points generated by Menu 1 are usually dispensing operations, which are displayed in black. Menu 1 includes the following.



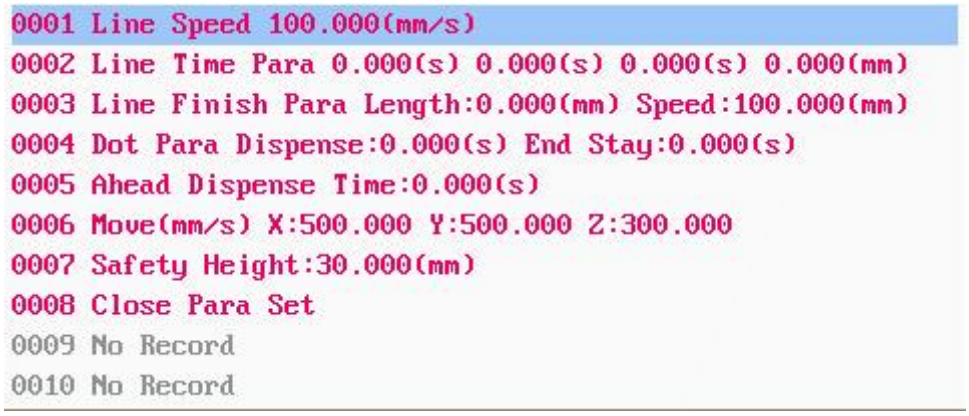
4.1 Page 1 1. File's Name Edit

As follow picture, press 

to switch IME.

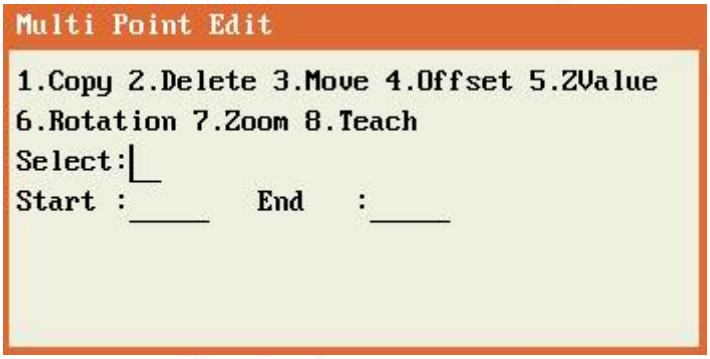
4.2 Page 1 2. Greate Default Value

As follow picture, the default parameters have 7 common dispense parameters, each parameter can also generate in menu 2, after generate and selected in main face, we can modify it one by one. The function descriptions of each parameter are located in menu 2.



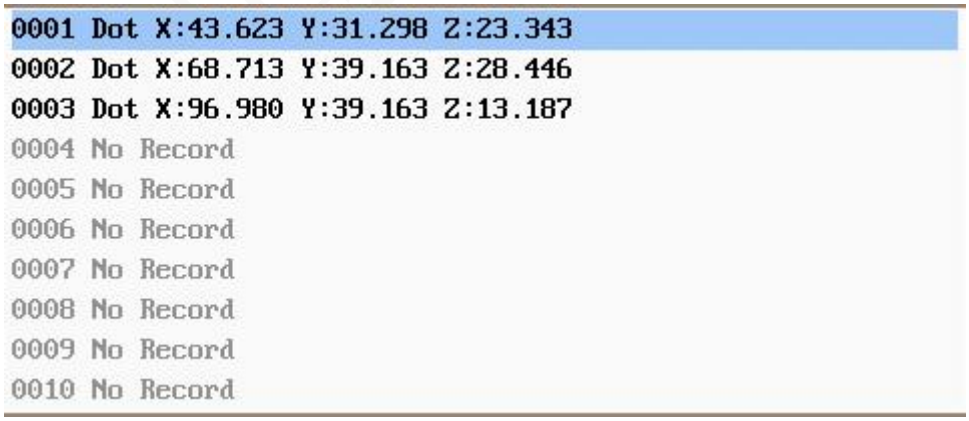
4.3 Page 1 3. Multi Point Edit

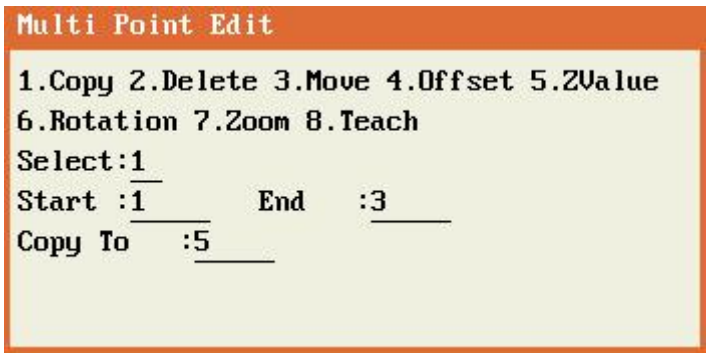
As shown in the figure, editing multiple programming points has the following operation items. If it is a single Y-axis mode, there is no "9. Change Y ".

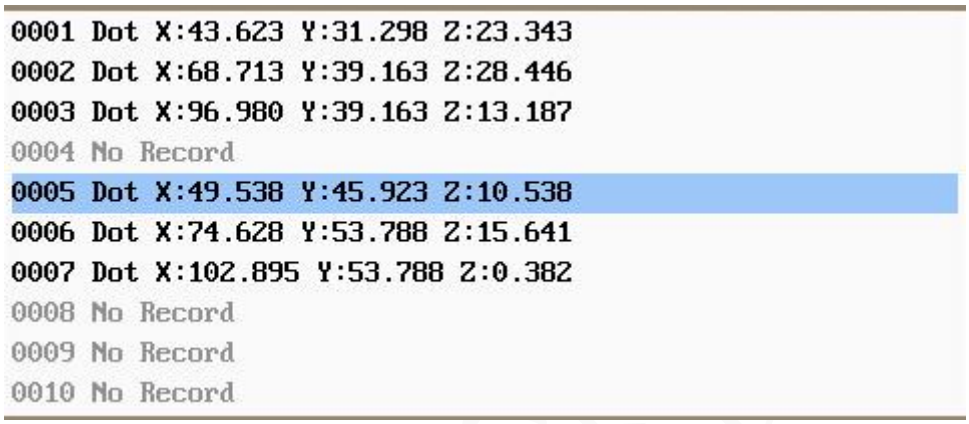


1. **Copy**

As shown in the following three pictures, copy the 0001-0003 programming point to the 0005 programming point, and the third picture is the result of the first picture performing the second picture operation.

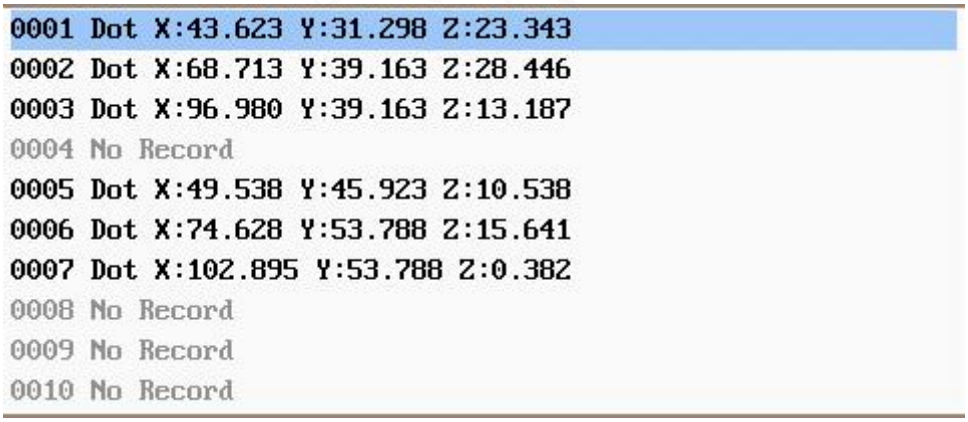


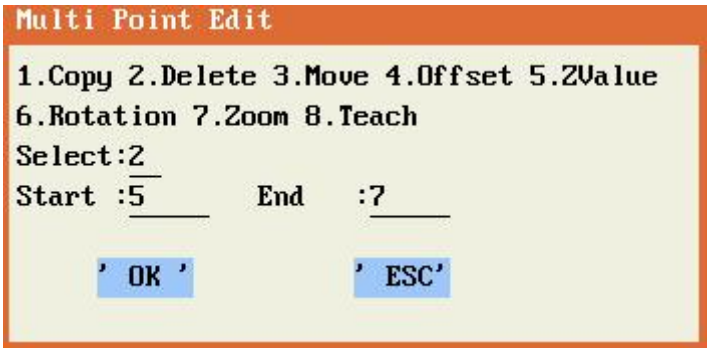


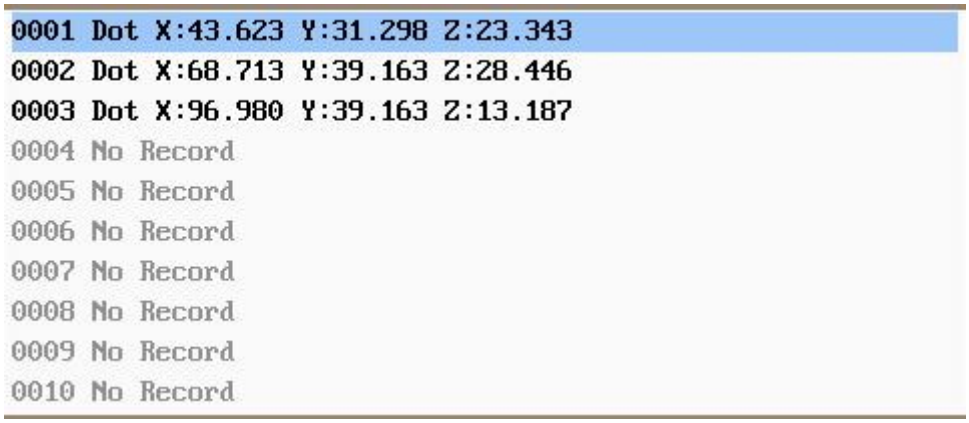


2. **Delete**

As shown in the following three pictures: Delete 0005-0007 programming point, the third picture is the result of the first picture performing the second picture operation.

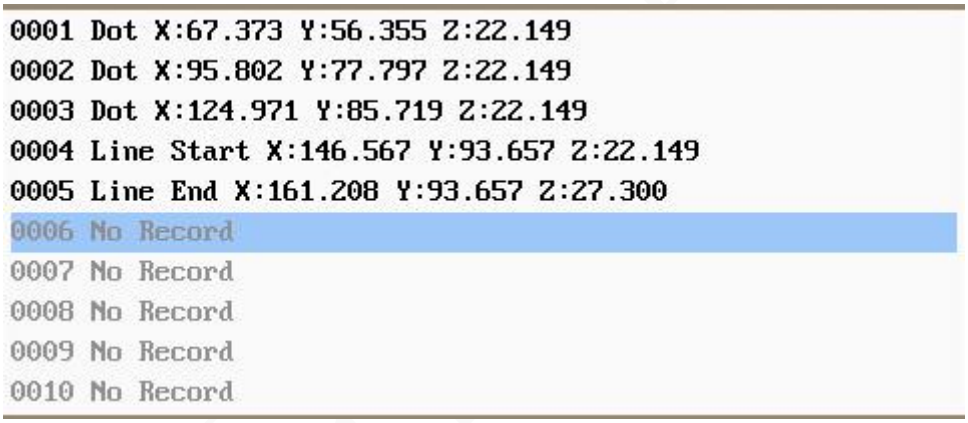


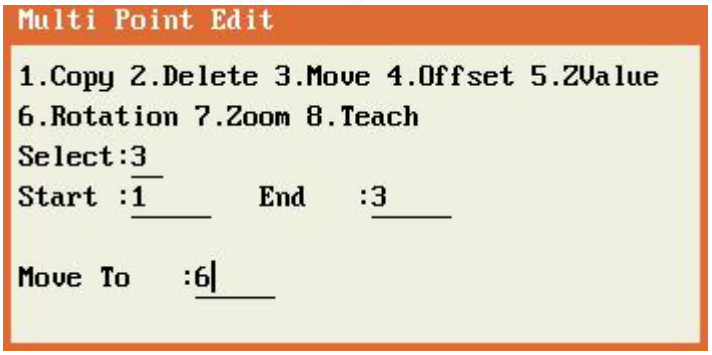


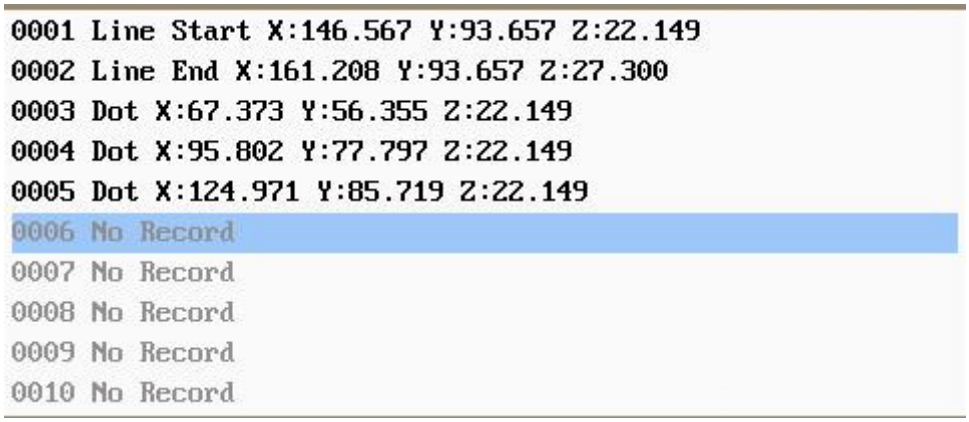


3. **Move**

As shown in the following three pictures: move the programming point 0001-0003 behind the programming point 0005, this function is mainly used to adjust the order of each segment of the dispensing process, the third picture is the first picture to perform the second picture operation the result of.

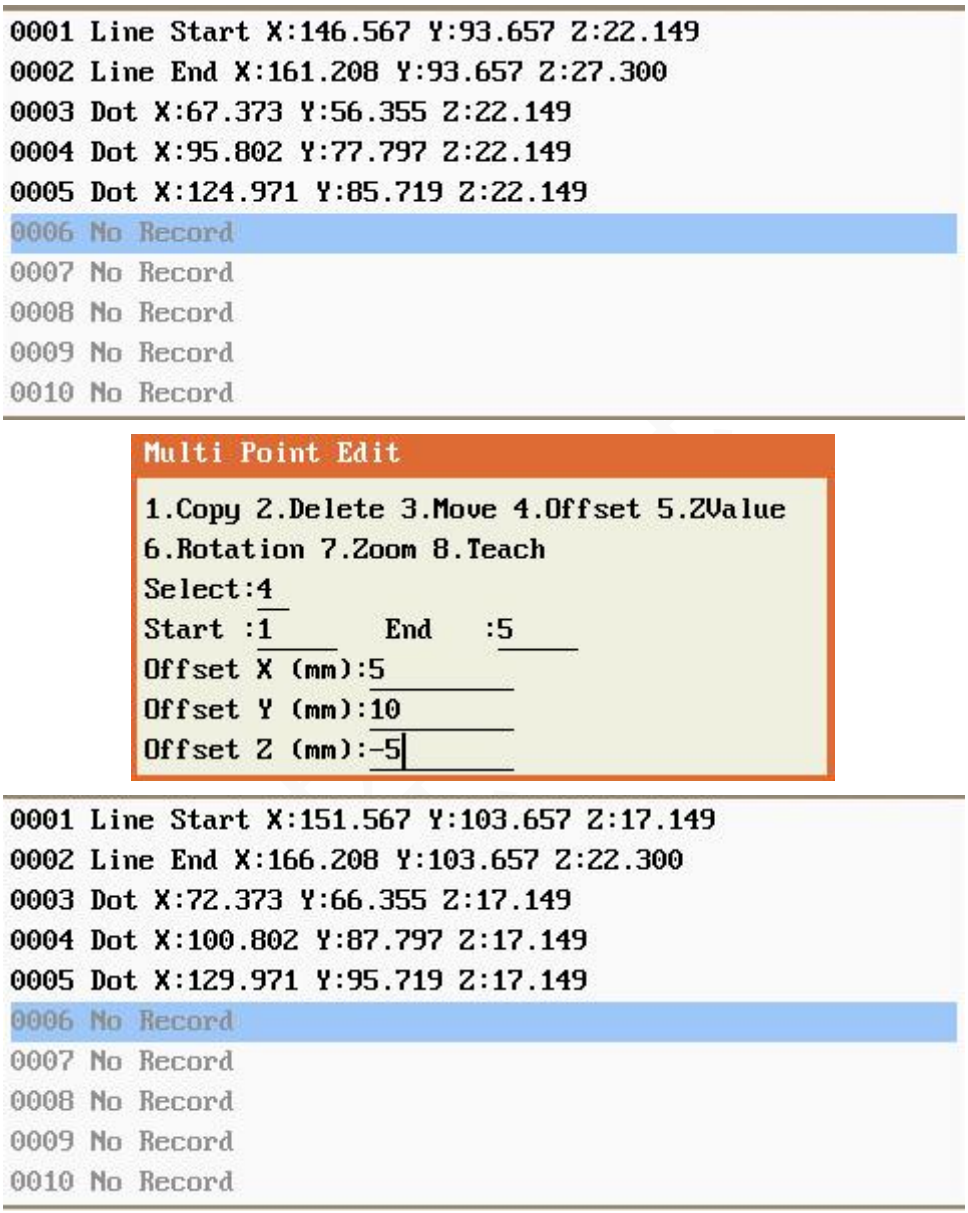






4. **Offset**

As shown in the following three figures, the coordinates of the programming points 0001-0005 are shifted. The third figure is the result of the first figure performing the second figure operation.



5. **Z value**

The Z-axis coordinate value of the programming point within the editing range becomes the specified coordinate value. The main function of this function is to make several programming points dispense on the same plane.

6. **Rotation**

Rotate the dispensing pattern of the programming point within the editing range, mainly if the fixture is deformed and rotated, you can use this function to correct it without reprogramming.

7. **Zoom**

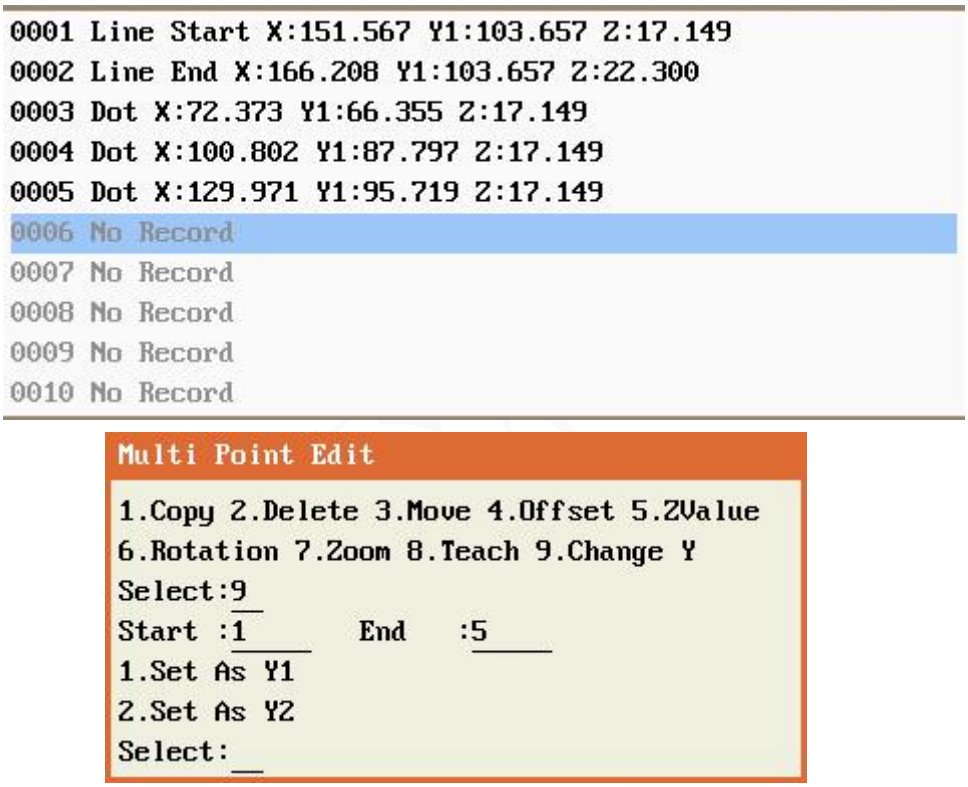
Enlarge or shrink the dispensing graphics of the programming points within the editing range, mainly after the DXF file is used to generate the dispensing file. This function can be used to correct the processing size deviation from the actual size due to the accuracy of the machine.

8. **Teach**

This function can shift the dispensing point of the input address range according to the relative displacement of the starting point coordinate and the coordinate value to which the glue gun moves.

9. **Change Y**

As shown in the following three figures: the 0001-0005 programming point is changed from Y1 dispensing processing to Y2 dispensing processing, and the third graph is the result of the first graph performing the second graph operation.

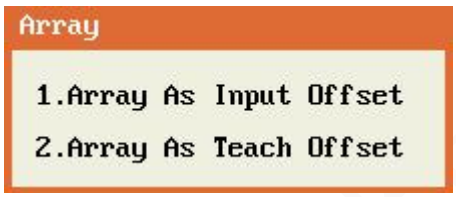


4.4 Page 1 4. Label Set

The label can be used for calling arrays, loops, calling subroutines, program jumps, and general input programming. It can also be used to annotate dispensing programming to improve programming readability.

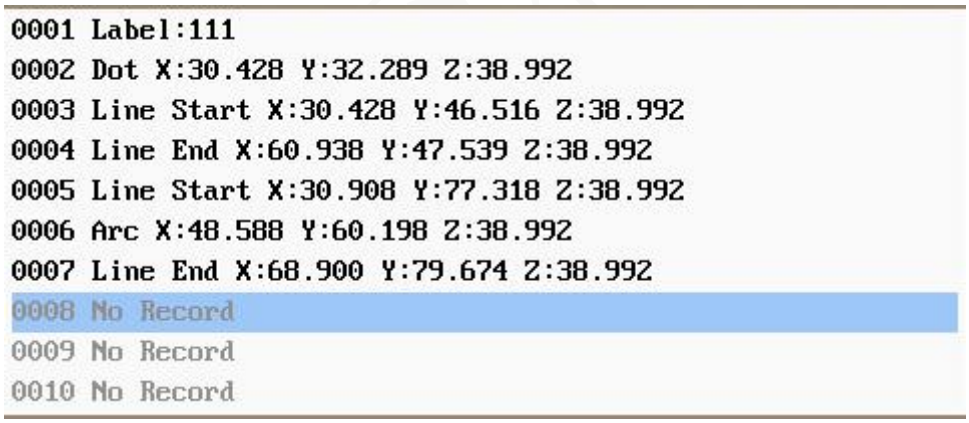
4.5 Page 1 5. Array

For example, when placing multiple horizontally and vertically arranged work pieces on the dispensing jig plate, and the horizontal and vertical distances are the same, array dispensing can be used. As long as a work piece is processed for dispensing, then the array can be used to achieve the entire work piece The machining process greatly improves the programming efficiency. There are two ways to program array dispensing:

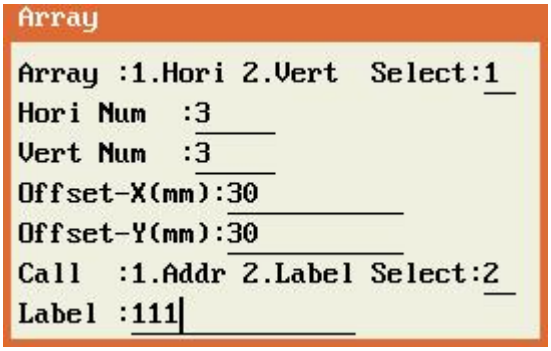


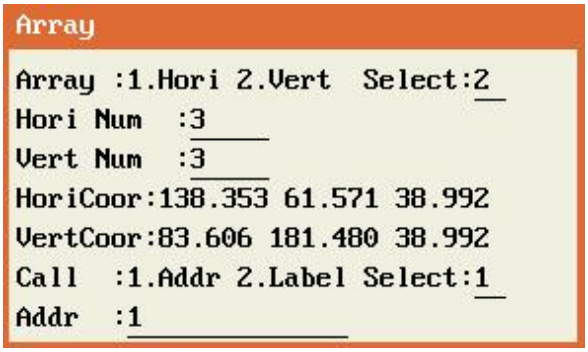
For example, when the fixture plane of the work piece is consistent with the XY plane, and the horizontal and vertical directions are parallel to the X and Y axis directions, the first array method can be used, or the second array method can be used. If the fixture plane of the work piece is not consistent with the XY plane, or the horizontal and vertical directions are not parallel to the X and Y axis directions, the second array method is used.

Dispensing programming as shown below.

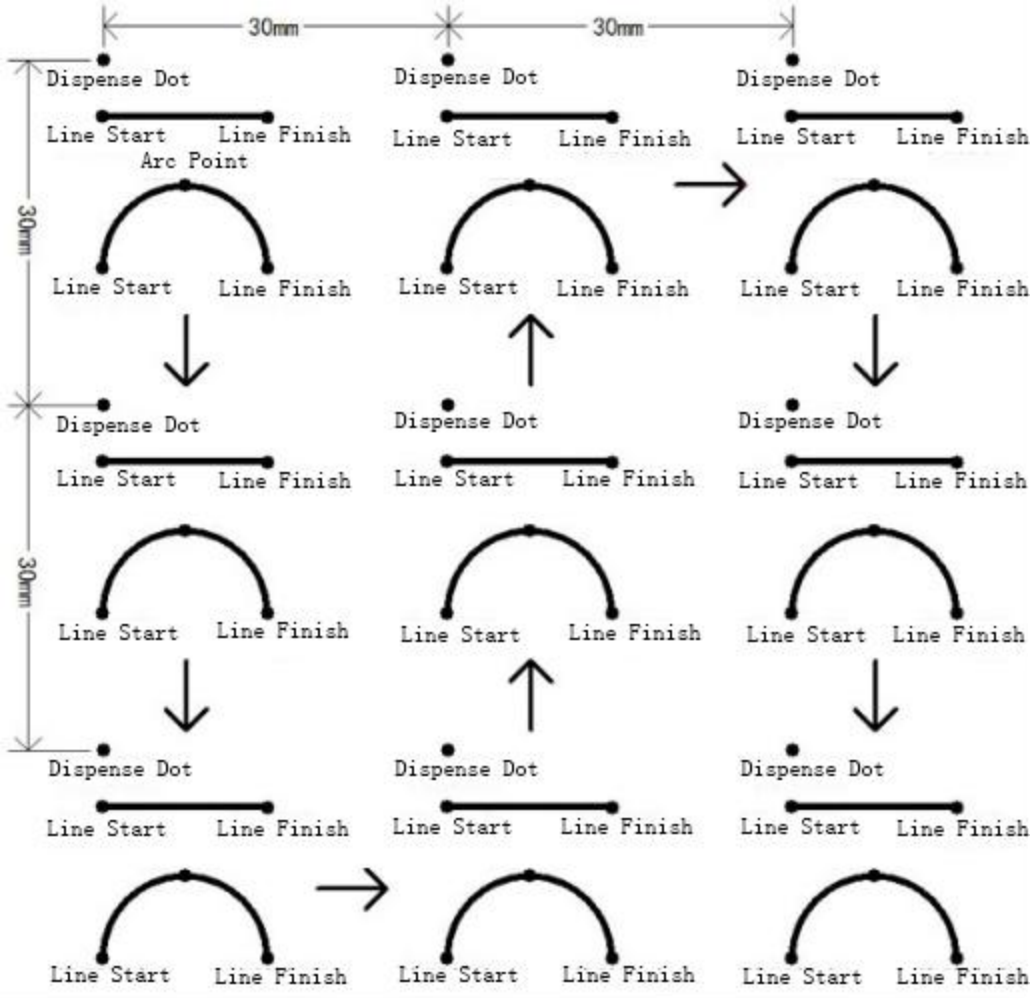


Leveling fixture programming method (left), tilting fixture programming method (right).





The resulting dispensing processing shape is as follows.



4.6 Page 1 6. Array Expand

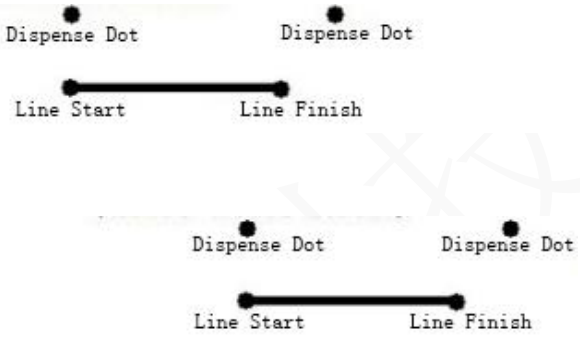
Select the array dispensing programming point with the cursor on the main interface, and perform the array expansion operation to generate the programming point with the same effect as the array dispensing, and remove the array dispensing programming point. Use this function when the fixture plate is not very regular The dispensing path of each work piece can be modified one by one.

4.7 Page 1 7. Call Subroutine

For example, if you place multiple work pieces in the same direction but have no regular positions on the jig plate, you only need to program a work piece for dispensing processing, and then call this subroutine at the starting point coordinates of each work piece. It can be the address of the subroutine or the label of the subroutine. Dispensing programming as shown below.

```
0001 Call Pro 30.704 12.521 50.781 Call Addr:0006
0002 Call Pro 30.704 12.521 50.781 Call Label:111
0003 No Record
0004 No Record
0005 Label:111
0006 Dot X:0.000 Y:0.000 Z:50.781
0007 Dot X:40.812 Y:0.000 Z:50.781
0008 Line Start X:0.000 Y:12.521 Z:50.781
0009 Line End X:30.704 Y:12.521 Z:50.781
0010 Program End
```

The resulting dispensing process is as follows.



4.8 Page 1 8. Call File

Calling a file is similar to calling a subroutine in terms of usage and function. It turns the called subroutine into calling a dispensing processing file number, and the dispensing processing programming point in the subroutine becomes the dispensing processing programming point of the called file.

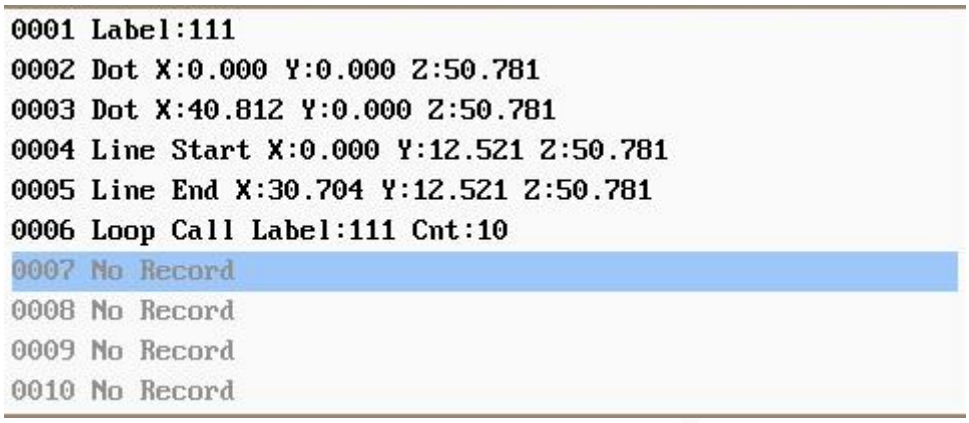
4.9 Page 1 9. Program Jump To

When the execution reaches this programming point, the program jumps to the specified address or label for execution, generally used for loops and so on. Programming as shown in the figure below. when the program point No. 0007 is executed, the program jumps to "0001 label: cyclic dispensing" and continues to execute the dispensing action in the range 0002-0006.

```
0001 Label:111
0002 Dot X:0.000 Y:0.000 Z:50.781
0003 Dot X:40.812 Y:0.000 Z:50.781
0004 Line Start X:0.000 Y:12.521 Z:50.781
0005 Line End X:30.704 Y:12.521 Z:50.781
0006 Program Jump To Label:111
0007 No Record
0008 No Record
0009 No Record
0010 No Record
```

4.10 Page 2 1. Limited Loop

The function of limited number of cycles is similar to that of "program jump to", except that "program jump to" is an unlimited number of times, and the limited number of cycles is a limited number of jumps. Programming as shown in the following figure will dispense glue in the range of 0002-0006 The action is repeated 10 times.



4.11 Page 2 2. Program End

When the programming point is executed in the subprogram, the subprogram returns. When the programming point is not executed in the subprogram, the dispensing process ends. If there are more than two consecutive lines of "unprogrammed blank programming points", The function of the programming point is the same, that is, if there are more than two consecutive "No Record" blank programming points", the program ends.

4.12 Page 2 3. Delay

If the program execution reaches the delay programming point, the dispensing process stops for a certain time and then continues to execute the dispensing process programming point.

4.13 Page 2 4. Pause

If the program execution reaches the pause programming point, the dispensing process is suspended, wait for the "Run" key to be pressed, and then continue to execute the dispensing process programming point.

4.14 Page 2 5. Program Input

The function of input signal programming is that when the program reaches the programming point, if the input state of the specified input signal matches the programmed value, the program jumps to the specified address or label, and if it does not match, the program continues to execute.

As shown in the following figure, when the program reaches the programming point of 0002, it will detect the state of "general input 1". If the input signal is 0, the program will continue to detect the input signal after jumping to 0001, and continue until the input signal becomes 1. Execution, the use of this function can achieve some cooperation with other devices or as a pause button input. (Semaphore definition: if there is a signal, the semaphore is defined as 1, if there is no input signal, the semaphore is defined as 0)

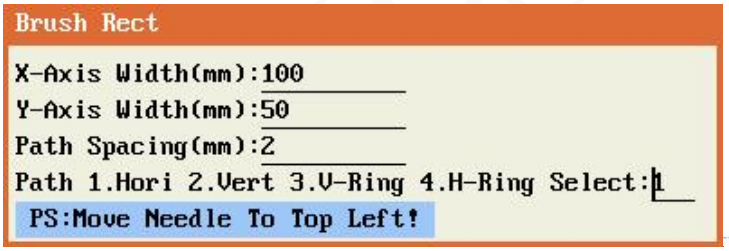
```
0001 Label:111
0002 When Input 1 <通用输入 01>= 0 Jump Label:111 Or Contin
0003 Dot X:0.000 Y:0.000 Z:50.781
0004 Dot X:40.812 Y:0.000 Z:50.781
0005 Line Start X:0.000 Y:12.521 Z:50.781
0006 Line End X:30.704 Y:12.521 Z:50.781
0007 Out  1 <通用输出 01> Is 1, Delay 1.500s Off
0008 No Record
0009 No Record
0010 No Record
```

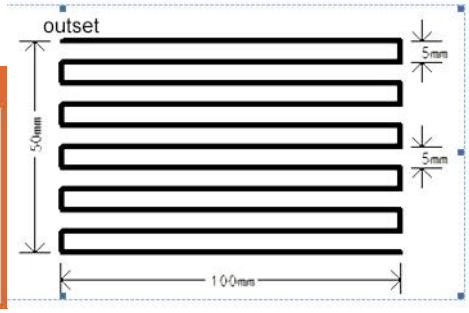
4.15 Page 2 6. Program Output

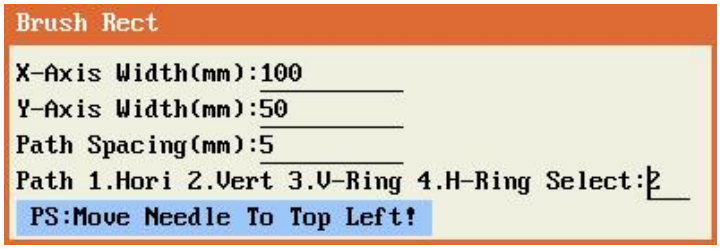
when the program is executed to the output signal programming point, the output signal specified by the programming point will output the corresponding set value, "1" is DC-24V output, "0" is DC-0V output.

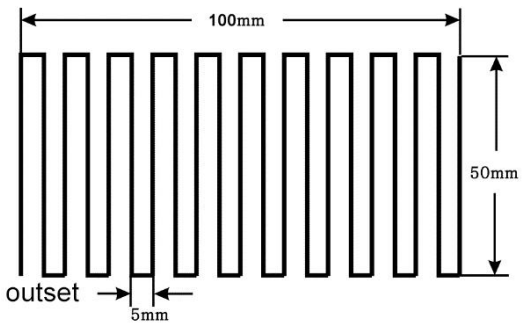
4.16 Page 2 7. Brush Rect

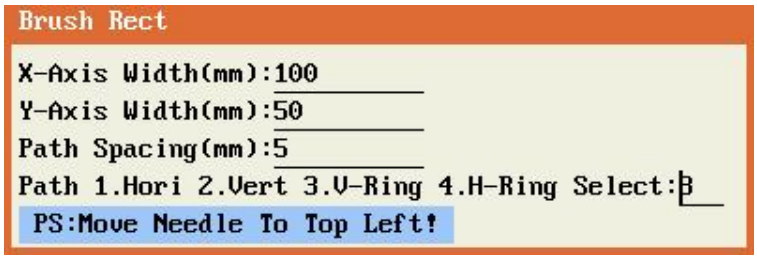
The starting point of the square glue is the upper left corner of the square, and the parameters are the glue length, the glue width and the path spacing. In actual programming applications, the glue length and glue width can be obtained by subtracting the coordinate values of the needle, and the starting point coordinate is the square paint The current coordinates at the time of glue programming confirmation. As shown below. programming on the left can get the dispensing path on the right.

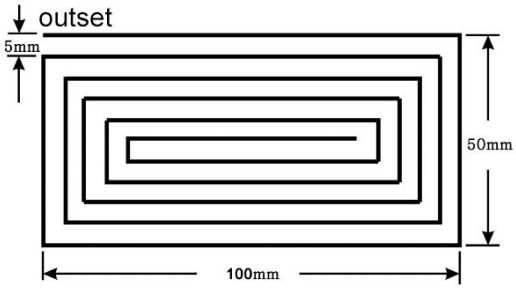






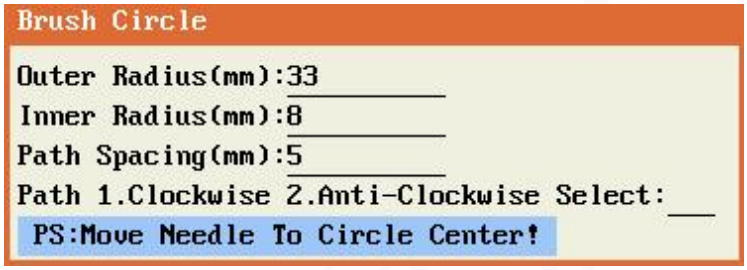


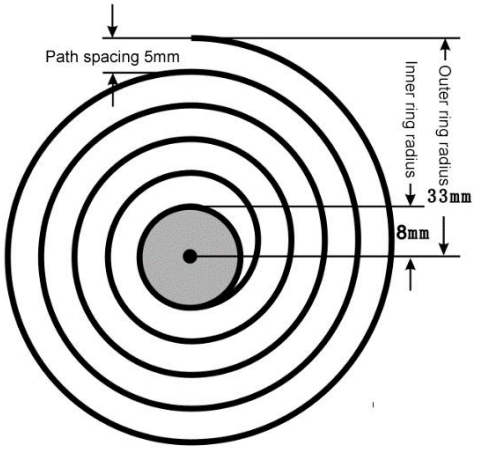




4.17 Page 2 8. Brush Circle

The output path of the circular and circular glue is spiral. When programming, move the needle to the center of the circle to be circularly glued. You can set the circle radius, path radius of the circle, circle, and glue. As shown below. programming on the left can get the dispensing path on the right.





4.18 Page 2 9. Dispense On/Off

When the program point is reached, the dispensing control signal will be output accordingly. The program point can be placed between the line segment dispensing, to achieve the special glue application of opening and closing glue in the line segment.

4.19 Page 3 1. Work Counter

When the program point is reached, the workpiece counter increases the corresponding setting value, and then compares whether the count value overflows the limit value, if it overflows, it stops. This function is mainly used for piece counting for cyclic processing.

4.20 Page 3 2. Go Free Position

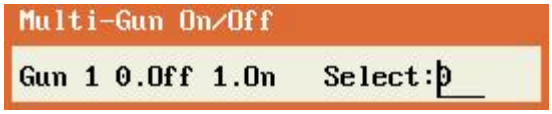
When this command is executed, the needle will return to the coordinates of the idle stop position. This programming point is generally used to clean the needle mouth during dispensing.

4.21 Page 3 3. Reset

This programming point allows the machine to perform the homing action.

4.22 Page 3 4. Multi-Gun on/off

When the number of glue guns (1-7) is set in the third item on page 3/4 of menu four, the activation/deactivation of each glue gun can be manually controlled under this menu, where the setting of "1" means enable, set "0" means disable, default is all 0. As shown in the figure.



4.23 Page 3 5. Base Point Set

This function is used to verify whether the position of the dispensing needle has shifted after multiple uses. The method of use is to set a reference point on the Y axis, and then perform the "Move to Cursor" operation to see if the needle coincides with the reference point. If it coincides, it indicates that the remaining dispensing position can be reached correctly. If it does not coincide, it indicates that the dispensing needle is offset. Need to recalibrate the needle point.

4.24 Page 3 6. Go Home Cnt(Count) Increase

Each time the command is executed, the system automatically resets the count value by 1 and compares it with the value of the number of automatic resets set in menu two. If they are equal, the system resets to the original point.

4.25 Page 3 7. Clean Cnt(Count) Increase

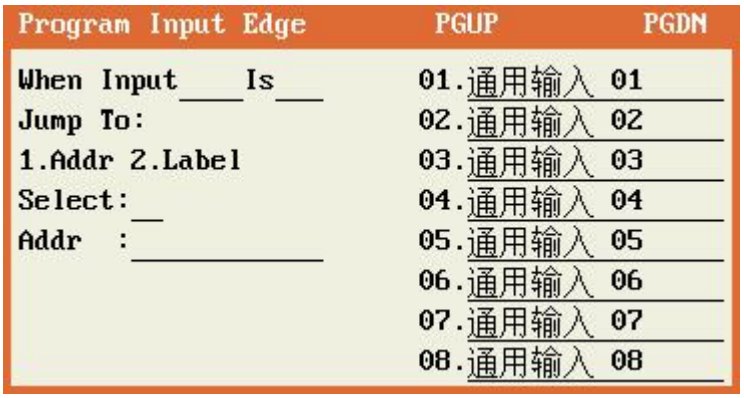
Each time the command is executed, the system cleans the needle count value by one and compares it with the number of cleaning needle intervals set in menu two. If they are equal, the cleaning needle position is executed to perform the cleaning action.

4.26 Page 3 8. Z-axis Down Offset

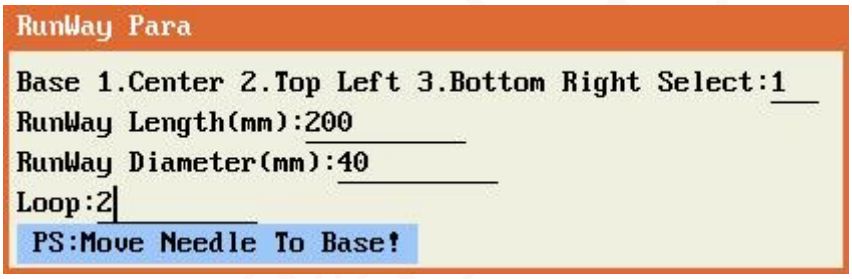
In this interface, you can specify the offset of the Z axis position. The method of use is to set the offset value and press the "ENTER" key to automatically insert the words "Z-axis offset: XX (mm)". When the program runs this instruction, the Z-axis offset to the specified value.

4.27 Page 3 9. Input Edge Check

This function is generally used in conjunction with PLC. When the edge of the input signal is detected, the specified program can be jumped to the specified program address.



4.28 Page 4 1. Runway Program



Setting the track-shaped movement track can be set by the following steps.

Step 1.set the reference point, the setting options of the reference point are "1. Center , 2.Top Left, 3. Bottom Right", one of three selection methods;

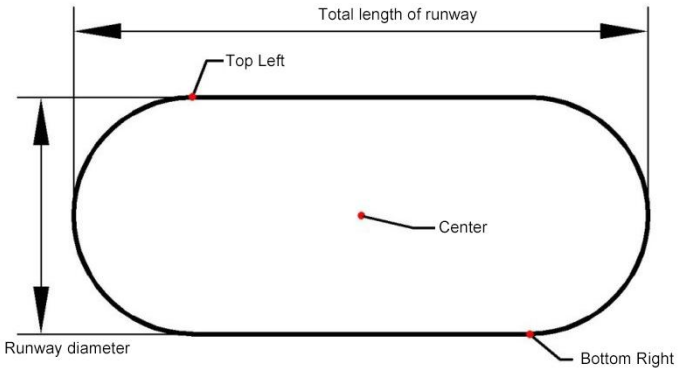
Step 2. Set the total length of the runway in mm;

Step 3. Set the length of the runway diameter in mm;

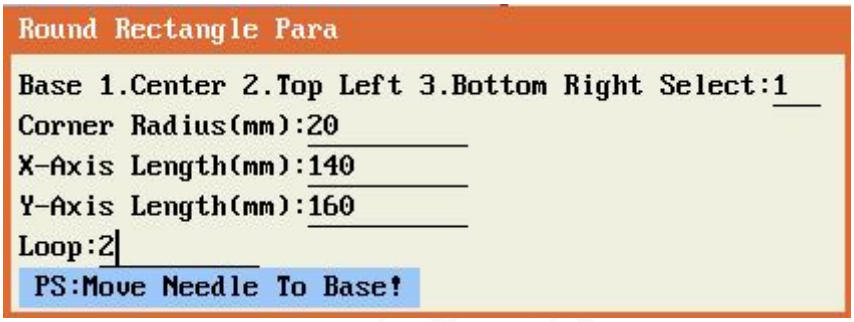
Step 4.Set the number of runways for the runway;

Step 5. Perform the offset operation on the preliminary edited runway graphics. First move the cursor to the runway programming command line, then press the "Preview" button to pop up the preview graphical interface, and then press the "ENTER" button to pop up the "offset operation interface". There are two types of offset operation modes,"1. Coordinate offset or 2. Teaching offset", and you can choose one of them to operate.

The position of each parameter point can refer to the following figure.



4.29 Page 4 2. Rounded Rectangle para



The movement path of the rounded rectangle can be set by the following steps.

Step 1. set the corner radius (inscribed circle radius);

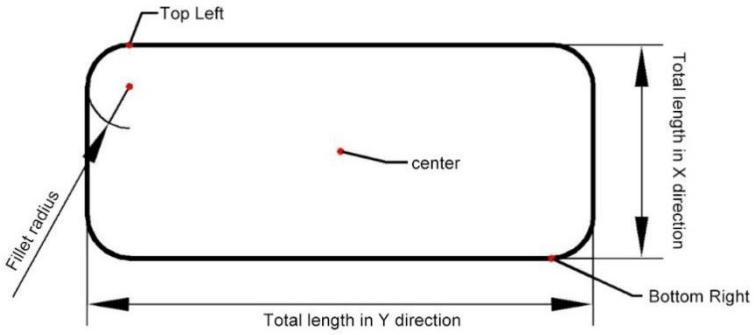
Step 2. set the reference point. The setting options of the reference point are "1. Center , 2.Top Left, 3. Bottom Right", and one of the three selection methods is optional. ;

Step 3. Set the total length of the runway in mm;

Step 4. Set the length of the runway diameter in mm;

Step 5. Set the number of running laps;

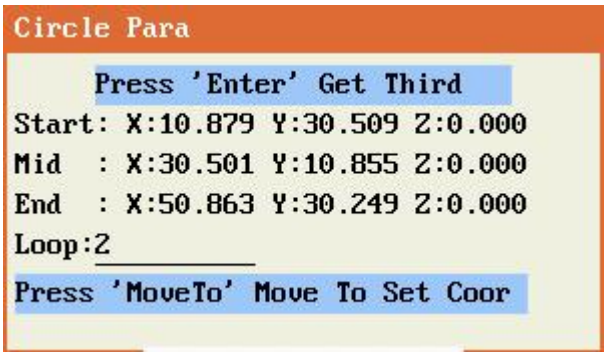
Step 6. Perform the offset operation on the pre-edited runway graphics: first move the cursor to the runway programming command line, then press the "Preview" button to pop up the preview graphical interface, and then press the "ENTER" button to pop up the "Offset Operation" interface. There are two types of offset operation modes: "1. Coordinate offset, 2. Teaching offset", you can choose one of them to operate.

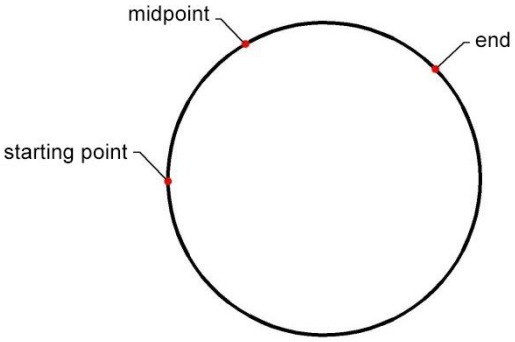


Sketch map of rounded rectangle points

4.30 Page 4 3. Circle Program

Setting the full circle path can be confirmed by obtaining three points on the circle. If you need to run to the starting point of the full circle after editing, you need to move the cursor to the position of the circle command program, and then press the "Move to cursor" key system It will automatically run to the starting point.

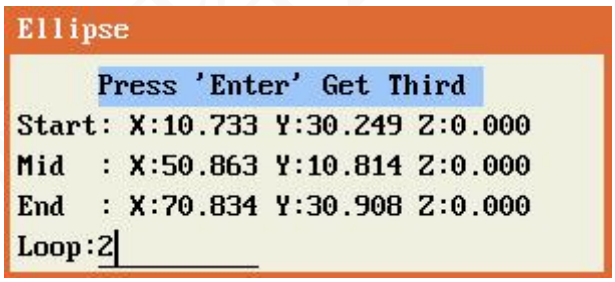


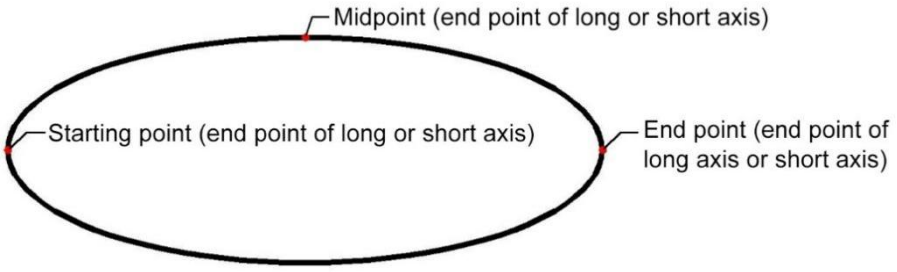


Schematic diagram of full circle points

4.31 Page 4 4. Ellipse Program

Setting the ellipse trajectory can be confirmed by obtaining the starting point, middle point, and end point on the ellipse. If you want to run to the starting point of the ellipse after editing the ellipse, you need to move the cursor to the ellipse command program position, and then press the "Move to Cursor" key The system will automatically run to the starting point.

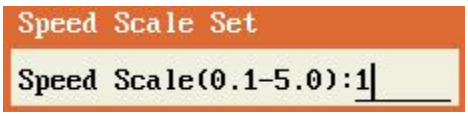




Schematic diagram of ellipse points

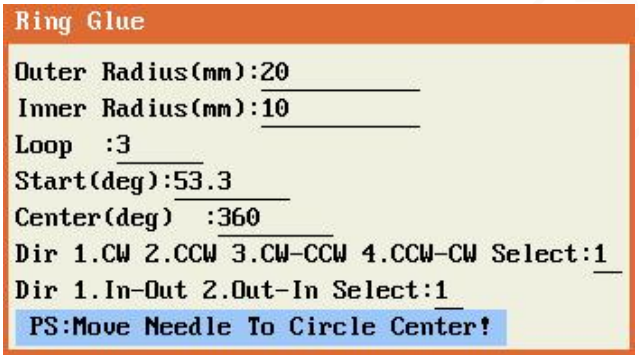
4.32 Page 4 5. Speed scale set

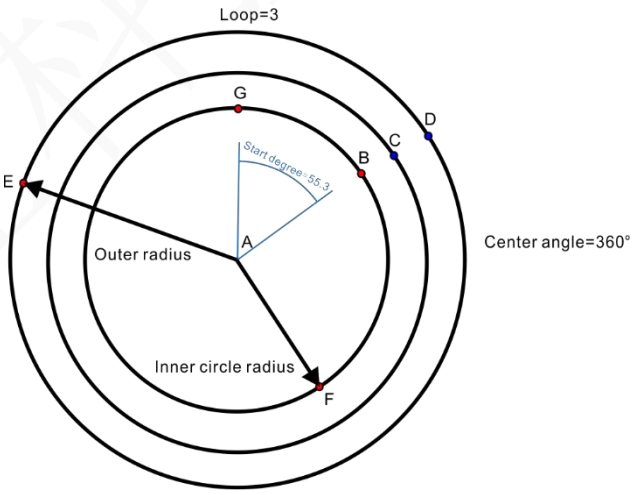
This function is used to change the dispensing speed during operation. The dispensing speed is multiplied by this factor on top of its own speed.



4.33 Page 4 6. Brush Ring

This function is mainly used to program the gluing of concentric circles/rings/sectors etc. To use this function, move the needle to the center of the circle. Note that the radius of the outer circle cannot be smaller than the radius of the inner circle. The number of circles parameter is the total number of circles/arc to be drawn (0 is invalid, 1 is only one circle, 2 is the inner and outer circle, >2 is the inner and outer circle radius subdivided into x equal parts). The starting angle (0-360) is the center of the circle directly above as the starting point, the center of the circle angle (0-360) to the starting angle as the starting point, draw the arc of the center of the circle angle of 360 when the circle. The rotation direction can be selected as clockwise rotation or counterclockwise rotation, and the radial direction can be selected from inside to outside or from outside to inside direction.





4.34 Page 4 7. A-Axis Single Move

Before using this function, you need to select "2. Single Y-axis with A-axis mode" option in item 9 "Set 2Y-axis /A-Axis" on page 2/5 of menu 4, and if you want to modify the A-axis angle, you can select the A-axis programming command line by moving the cursor and press "The "Modify Coordinate Value" pop-up box will appear. If you want to restrict the A-axis to move with negative angle, you need to set the "A-axis negative Set" in the 4/5 page of menu 4, the factory default allows negative angle.

Chapter 5 Menu 2

Menu 2 is mainly the programming point for setting the dispensing parameters. The programming point generated by Menu 2 is displayed in dark red. Menu 2 includes the following.

5.1 Page 1 1. Manual Adjust Set

The function of the needle point is that when the needle is replaced, the processing error caused by the needle offset can be corrected by calibrating the needle point operation. There are two ways to set the needle point. One is to use the first point coordinate of the glue as the needle Point; one is to set the coordinates as the needle point, if the coordinates are used as the needle point, then manually move the needle to the position to be set, just confirm.

5.2 Page 1 2. Manual Exce Ad just

After entering the calibration needle point menu, the needle automatically moves to 3mm above the needle point coordinates (to prevent collision), and then manually move the needle to the needle point and press the ENTER key to complete the calibration needle point operation; after the operation is completed, all The coordinate value of the dispensing process will compensate the error of the needle offset to ensure that the processing accuracy remains unchanged.

This function can also use the dedicated calibration needle point keyboard without a handheld programmer.

As long as the machine is in the idle state, press the "ENTER" key of the calibration needle point keyboard to enter the needle point operation. The LED on the mask will flash, then press the manual movement key on the keyboard to move the needle to the needle alignment point, and then press the "OK" key to complete the calibration needle alignment operation, the LED will turn off after exiting.

5.3 Page 1 3. Z-Axis Down Limit

Set this value to limit the downward movement of the glue gun to prevent the glue gun from moving down and colliding with the work piece or jig when manually.

5.4 Page 1 4. Free Coor Set

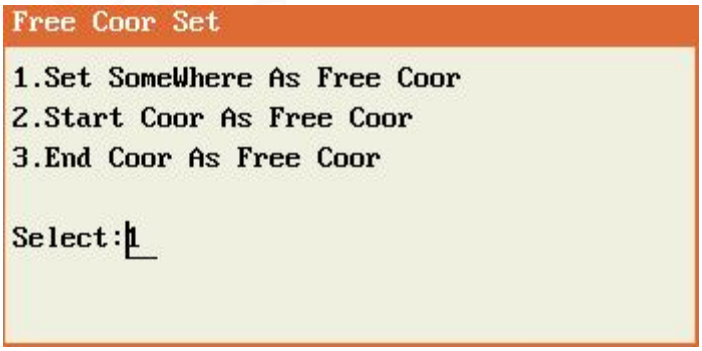
The idle stop point refers to the stop position after the dispensing process. The following three options can be set.

1. Use the set coordinates as the idle stop point;

2. Take the point above the starting point of dispensing as the free stop;

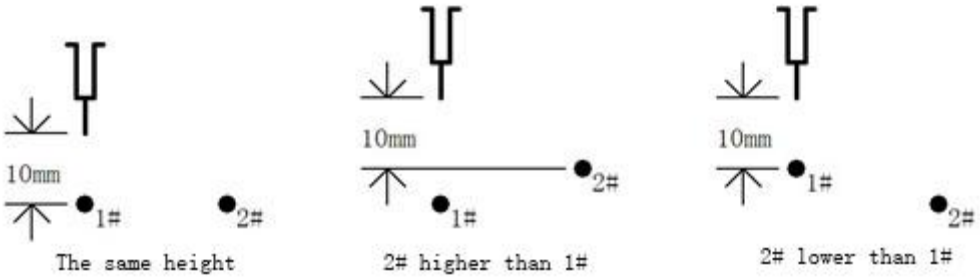
3. Take the top of the dispensing end as the free stop point;

For general dispensing processing, you can choose 2 or 3 options. The working efficiency will be higher; but if you need needle cleaning or timed dispensing when idle, you need to select item 1, so that the coordinate can be set to the needle cleaning or timing glued. Glue.



5.5 Page 1 5. Safaty height Set

The height of this setting is the height that the glue gun will increase when the glue gun is moved to the next dispensing processing point after dispensing. To improve efficiency, the setting value should not be too large, as long as it does not touch the height of the work piece. For example, the set lifting height is 10mm. If the height between the two processing points is not on the same plane, the height shall prevail. The height of the glue gun when moving from 1# single point dispensing to 2# single point dispensing is as shown in the figure below. Show:



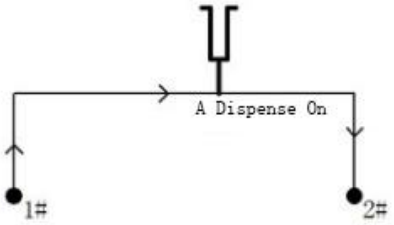
5.6 Page 1 6.Move Speed Set

The air-moving speed refers to the moving speed from the completion of a section of glue processing to the next section of glue processing during the processing. The translation speed and the up and down movement speed are set independently. The speed directly affects the processing efficiency, but when set Also refer to the actual performance and load weight of the machine to see if it can withstand it.

5.7 Page 1 7. Ahead Time Set

Since the glue has a certain viscosity, it takes a certain time from the opening of the dispensing valve to the dispensing of the glue. In order to improve work efficiency, this process is placed in the process of air movement. If the advance dispensing time is set to 0.1 seconds, then according to The set moving speed and acceleration calculate the position where the dispensing signal is turned on during the moving process, but in order to prevent the glue from dripping out too quickly, the advance dispensing time should be set according to the viscosity of the glue, and should not be too large.

As shown in the figure below, the glue gun moves from the 1# dispensing to the 2# dispensing. If the advance dispensing time is set to 0.1 seconds, the glue gun needs to be moved from point A to 2# dispensing according to the air movement speed and acceleration. Seconds, the dispensing valve is at point A instead of moving to dispensing point 2#.

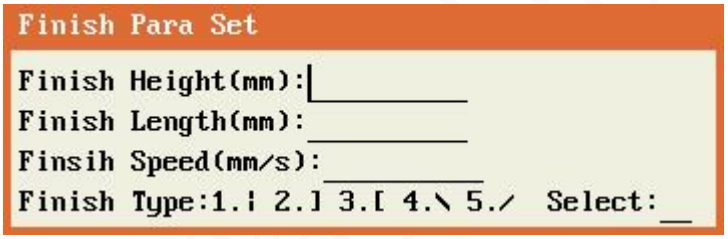


5.8 Page 1 8. Lime Speed Para

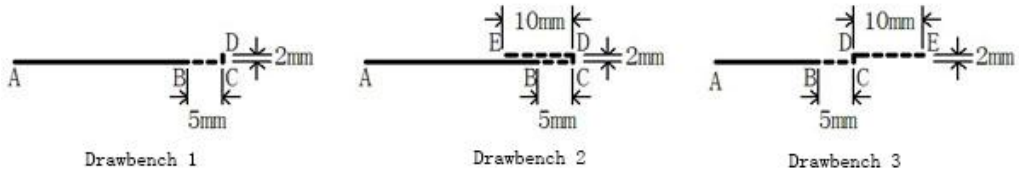
The line segment dispensing speed refers to the speed at which the glue gun moves during glue application, including line segment dispensing, arc dispensing, circular dispensing, and glue dispensing. The setting of the speed can refer to the requirements of the viscosity of the glue, the pressure, and the amount of glue.

5.9 Page 1 9. Finish Para(Parameters) Set

The drawing action is to solve the problem of tailing caused by the viscosity and hysteresis of the glue. This setting is effective for line segment dispensing, arc dispensing, circular dispensing, and square dispensing. The setting items are as follows.



According to the parameters set in the above figure, the following figure is a schematic diagram of the wire drawing action at the end of the line dispensing.



Points A and C are the line start point and line end point of the line dispensing. The solid line is the path taken when the valve is opened, and the dotted line is the path taken after the valve is closed, because the distance for closing the glue in advance is 5mm. So when you reach point B, the dispensing signal is turned off. Before the point C, go at the dispensing speed of the line segment, after point C, go at the drawing speed, and after the drawing action is finished, lift at the speed parameter and the height of the glue gun.

5.10 Page 2 1. Time Para(Parameters) Set

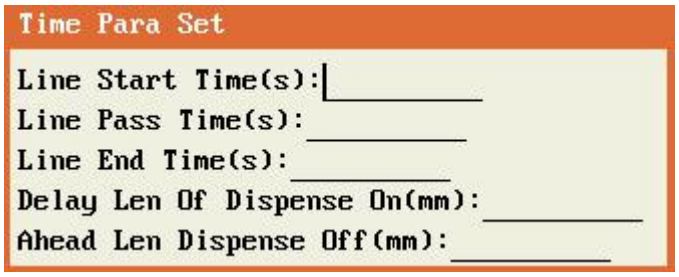
In the parameter setting of the dispensing time of the line segment.

“Line Start Time（s）” refers to the time that the needle moves to the starting point of the dispensing and opens at the dispensing point after the dispensing valve is opened. It mainly solves the problem of lag in

dispensing, similar to the function of opening the glue in advance.

"Line End Time(s)" refers to stopping after the line segment is dispensed and then lifting, which is a supplement to the drawing action.

This setting is also effective for arc dispensing, circular dispensing, and glue application.



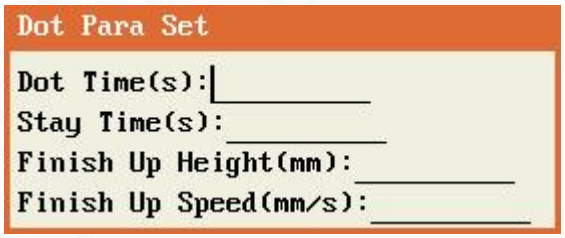
5.11 Page 2 2. Dot para(Parameters) Set

In single point dispensing parameter setting.

"Dot time(s)" refers to the time when the dispensing valve opens at the single dispensing point.

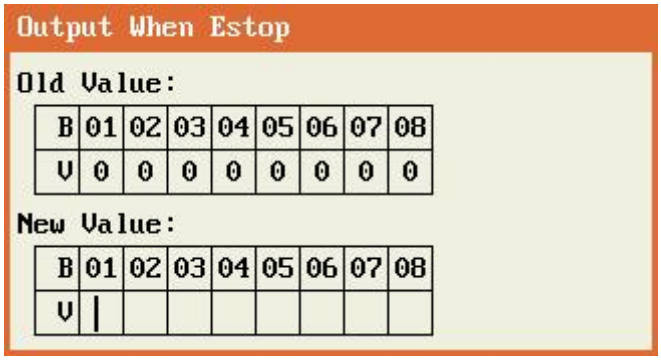
"Stay time(s)" refers to the end of the dispensing time at the single point of dispensing, and the remaining time after closing the dispensing valve. This is mainly to solve the problem of lagging in the glue collection and prevent drawing.

"Finish Up height(mm)" means that after a single point of dispensing, first lift a certain height at a slower speed " Finish Up speed", and then raise it to the glue gun lift height at an air movement speed, mainly to solve the problem of drawing. The value can be set to 0.



5.12 Page 2 3. Output When Edstop (Emergency Stop)

Set the output signal of general output during emergency stop, "1" is output 24V, "0" is output 0V.



5.13 Page 2 4. Output When Init (Initialization)

Set the output signal of general output when starting up, "1" is output 24V, "0" is output 0V.

5.14 Page 2 5. Drop Time Set

This function is mainly used to prevent the glue from curing at the needle mouth when the glue that is easy to dry is idle and not working. If this function is not enabled, the glue time or interval time can be set to 0. As shown in the figure below, the dispensing signal will automatically turn on for 1 second every 10 seconds in the idle state.

5.15 Page 2 6. unifrom Speed Set

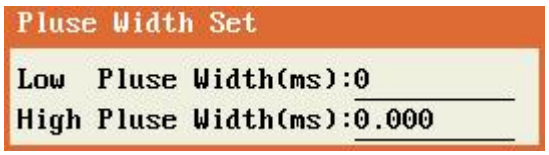
The set speed is the speed used in the "no Dot" and "uniform speed" operating modes.

5.16 Page 2 7. Work Counter Set

"Counter value" and "limit value" can be set in the work piece counter setting. During the operation, "counter value" will increase the corresponding set value every time the "work piece counter" programming point is executed, such as "counter value" exceeds the "limit value ”It indicates that the work piece count has overflowed and the machining cannot be continued until the count value is newly set. If the work piece count limit is not used, set the "limit value" to 0.

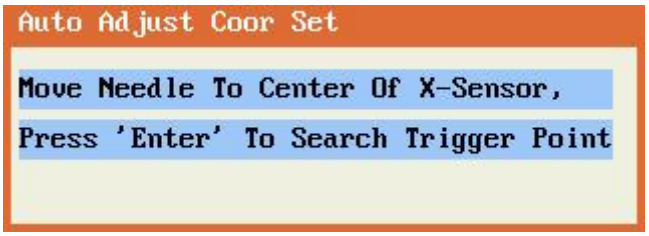
5.17 Page 2 8. Pluse Width Set

This function is mainly to control the time of glue dispensing in the dispensing process. Among them, the low-level pulse width time means no glue will be discharged in this period of time, and the high-level pulse width time means the glue will be discharged at this end time.



5.18 Page 2 9. Auto Adjust coor Set

This function is to batch modify the running speed of dispensing within a certain programming address.



Move the needle to the center of the automatic needle sensor at the right height. After pressing "ENTER", the needle will move left, right, back and forth, up and down to search for the X, Y, Z direction sensor trigger point, and get the needle point coordinates.

5.19 Page 3 1. Auto Adjust Option

Automatically calibrate the alignment point, the needle moves to the last alignment point coordinates, and then performs left/right, backward/forward, and up/down movement to search the X, Y, and Z direction sensor trigger points to get the new alignment point coordinates. By comparing the last and the newly obtained pair of needle point coordinates, the X, Y, and Z coordinate difference values are obtained respectively. Shift all the hole programming points by the difference value to get the new programming point coordinates.

5.20 Page 3 2. Drop coor Set

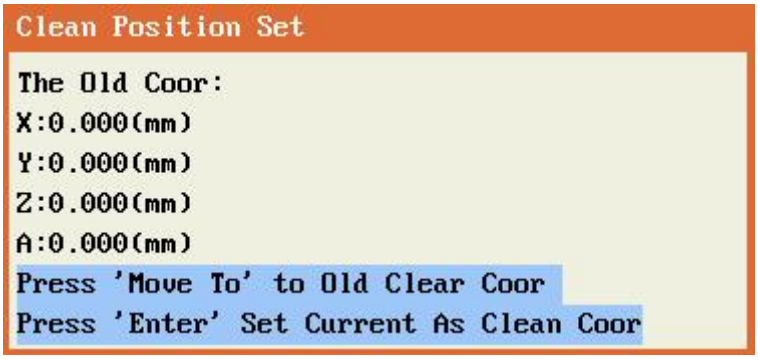
This function allows you to set the position of the idle drip glue, manually move the needle to the specified position and press Enter to set successfully.

5.21 Page 3 3. Auto Go Home Cnt(Count) Set

This function allows you to set the number of intervals for automatic reset, or set to 0 if the function is not enabled.

5.22 Page 3 4. Clean Position Set

This function can set the number of intervals of automatic reset. If the function is not enabled, it is set to 0.



5.23 Page 3 5. Clean Para(Parameters) Set

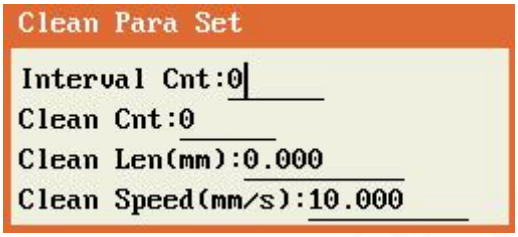
This function can set the operation parameters of the cleaning needle. If this function is not enabled, the interval times can be set to 0.

Interval Cnt(Count): indicates how many times the dispensing interval will go to the cleaning position for cleaning action;

Clean Cnt(Count): indicates how many times the needle reciprocates during the cleaning process;

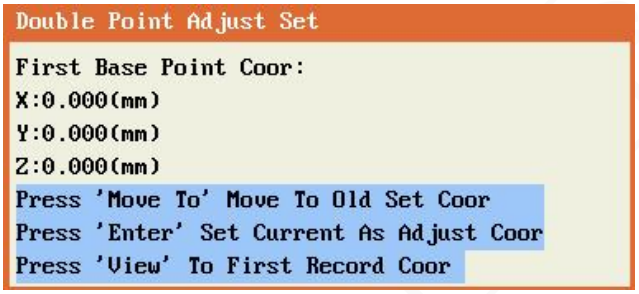
Clean Len(mm): indicates the distance of the needle reciprocating movement during the cleaning process;

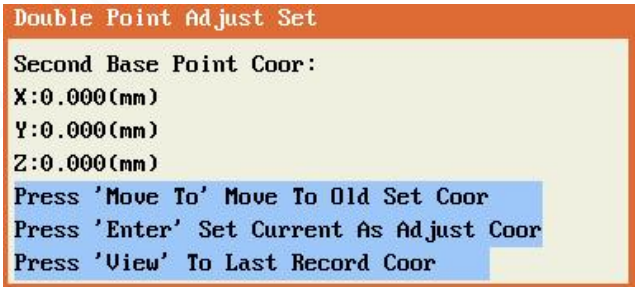
Clean speed(mm/s): indicates the speed of the reciprocating movement of the needle during the cleaning process.



5.24 Page 3 6. Double Point Set

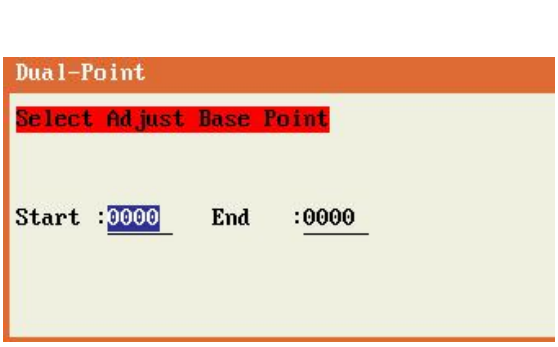
Set two datum points for double point calibration to calibrate the coordinate points.





5.25 Page 3 7. Dual-Point

Select the start address and the end address, note that the programming point positions of the two addresses cannot be the same, confirm the two programming points and then move the device to the start address position first, then manually adjust the position to the actual position and then move to the end address to repeat the operation. Finally, the angular deviation of the front and back positions of the two programming points will compensate for the modification of all programming point positions.



5.26 Page 3 8. Line To Line Auto Arc

The automatic arc radius uses the path-first mode of the line wiring segment to force the chamfering operation, and when the radius is set to 0, the speed-first mode is used by default.

5.27 Page 3 9. Dot Disp Times Se

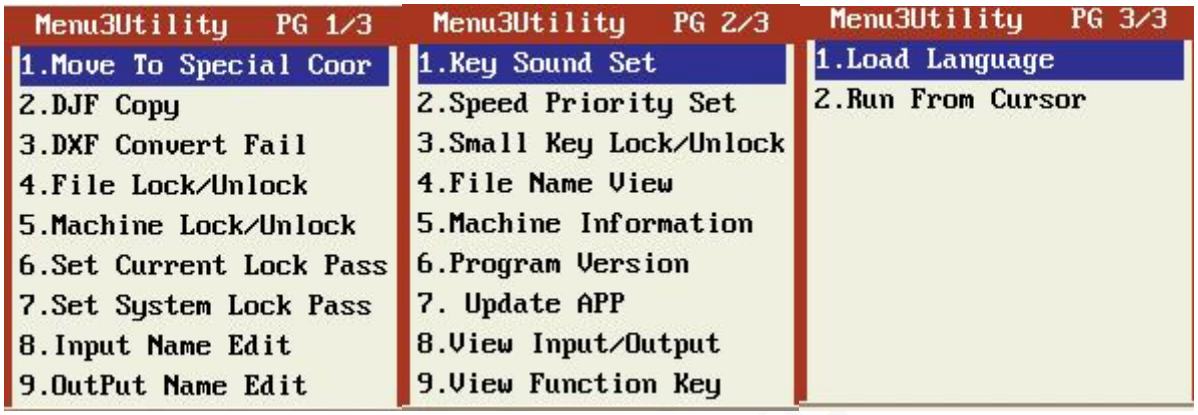
This function is used to set the number of gluing times at a single point, and the timing high and low pulse width mode must be enabled before using this function.

5.28 Page 4 1. Close Para(Parameters) Set

It is only used in single Y with A mode to avoid collision between vertical up and down rotating axes and products or jigs, so it uses oblique leaning action to avoid obstacles.

Chapter 6 Menu 3

Menu 3 is mainly a menu for setting or operating the machine, and no programming point is generated. Menu 3 includes the following.



6.1 Page 1 1.Move To Special Coor

After entering this menu, input the coordinate value to which the needle moves, and then press the "ENTER" key, the needle will move to the entered coordinate position.

6.2 Page 1 2. DJF copy

This function can realize the use of U disk or handheld programmer for storage, and realize the copying of the dispensing processing files between different machines. Then copy to other dispensers. Copying with a handheld programmer is more suitable for on-site use. Copying with a U disk can not only copy between dispensers but also store to a computer backup. The file copy operation includes the following options.

1.From Machine To HandPad

This operation is to copy the currently opened dispensing processing file to the handheld programmer.

2. From Machine To Udisk

This operation is to copy the currently opened dispensing processing file to the root directory of the U disk, and the stored file name extension is "DJF". (Note: U disk must be formatted as FAT32 format)

3. From HandPad To Machine

Copy the dispensing processing file stored in the handheld programmer to replace the currently opened dispensing processing file of the dispenser.

4. From Udisk To Machine

Copy the dispensing processing file in the root directory of the USB flash drive to replace the currently opened dispensing processing file of the dispenser. (Note: U disk must be formatted as FAT32 format)

5. Copy Between Machine

This function is to copy and replace the glue processing files between different numbers in the dispenser. It is mainly used for the backup of the glue processing files. When the misprogramming operation occurs and the undo function cannot be used to restore, the backed up files can be used.

6.3 Page 1 3. DXF Convert file

Save the AutoCAD graphic file as AutoCAD 2010 DXF format file, save it to the root directory of the U disk, and then operate this function to convert the graphic file into a glue file.

Only supports "point", "straight line", "circle", "circle", "polyline", such as the more copied graphics, such as "spline curve", "ellipse", etc., need to be converted into "multi-segment" line".

Since the Y axis direction of AutoCAD and the dispenser coordinate system is exactly opposite, the value of the maximum Y axis stroke in CAD is taken as the 0 coordinate of the Y axis of the dispenser.

6.4 Page 1 4. File Lock/unlock

When the current file is not locked, the icon displayed in the status bar is  , and the parameter settings of the current file and the machine can be modified; the icon displayed in the status bar is  when the current file is locked, then the current file cannot be modified, but The parameter settings of the machine can be modified.

6.5 Page 1 5. Machine lock/unlock

In the unlocked state, the setting parameters of the machine can be modified. Whether the current file is locked is related to the current file's own lock/unlock setting; in the locked state, the icon displayed in the status bar is  , at this time all the dispensing files and the machine's All parameter settings are locked.

6.6 Page 1 6. Set Current Lock Pass

The password set in this menu should be used for "page 1. 4. File Lock/unlock ".

6.7 Page 1 7. Set system Lock Pass

The password set in this menu should be used for the operation of “Page 5. Machine lock/unlock”.

6.8 Page 1 8. Input name Edit

The default name of the programmable universal input port is " GP input 01"-" GP l input 16". In order to improve the readability of the program, each programmable universal input port can be named according to the function of the application, so that programming more convenient.

6.9 Page 1 9. Output name Edit

The default name of the programmable universal output port is "GP output 01"-" GP output 8". In order to improve the readability of the program, each programmable universal output port can be named according to the function of the application, so that programming more convenient.

6.10 Page 2 1. Key sound set

This menu can set whether the key tone of the handheld programmer is turned on or off.

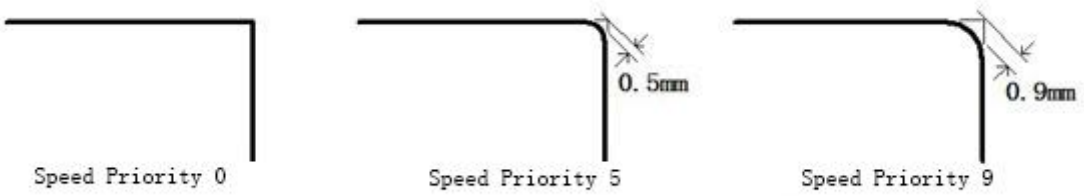
6.11 Page 2 2. Speed priority Set

In the actual movement of the machine, such as a single motor shaft at the corner, it is actually a process of forward and reverse rotation. In order to reduce mechanical vibration and prevent loss of synchronization, the speed must be reduced to close to the forward and reverse rotation 0, which means that the machine must be decelerated at the corner.

But for the dispensing, if the speed is inconsistent, it will lead to the inconsistency of the amount of glue. In order to solve this problem, the corner becomes a small circular transition at the corner when the accuracy allows, so that the speed at the corner and the speed of the straight line can be made It is more consistent to solve the inconsistency of glue volume, but this is achieved at the expense of path accuracy, so when setting this value, both speed and path accuracy should be referenced and an appropriate value should be taken.

The value of the speed priority level is 0-9. The larger the value, the more uniform the speed but the larger the

path error. If it is 0, the path is completed without error, but the speed at the inflection point will be reduced. The following figure shows the priority and Relationship diagram of path error:



6.12 Page 2 3. Small Key lock/unlock

The small keyboard refers to the special keyboard for calibrating the needle point. The function of this function is to lock this keyboard away from the handheld programmer if you want to prevent misoperation.

6.13 Page 2 4. File name View

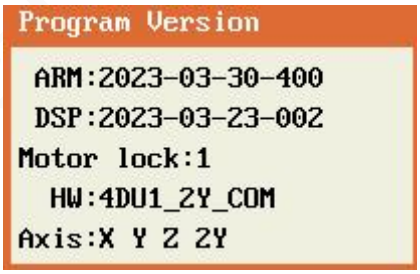
Since there are many dispensing files (150), if it is more troublesome to open and search one by one, you can use this function to browse through pages to find the number of the file you want to open and then open it. You can also press the "Delete" button to delete the selected file.

6.14 Page 2 5. Machine Information

Display device information, such as machine model.

6.15 Page 2 6. Program Version

Display program version information, such as the following figure.



ARM: March 30, 2023; program code 400.

DSP: March 23, 2023; version 002.

HW: 4DU1_2Y motherboard model information.

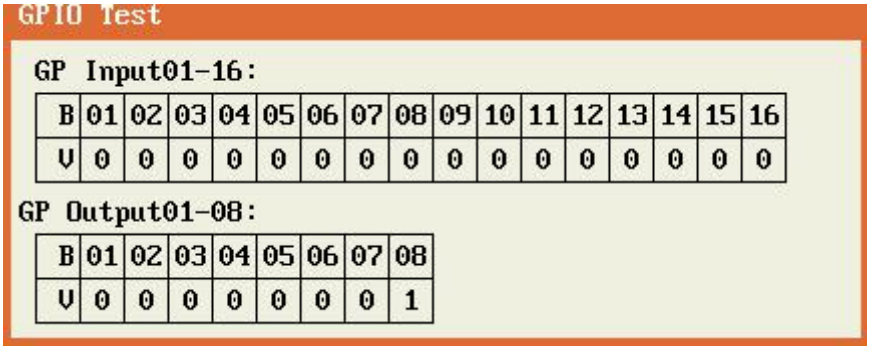
Axis: X Y Z 2Y axis name information.

6.16 Page 2 7. Update App

Just put the application files in the root directory of the U disk in FAT32 format, insert the U disk and enter the menu operation to update. If the U disk can be read normally after being inserted, the U disk insertion icon

displayed on the far right of the status bar is  .

6.17 Page 2 8. View Input/Output



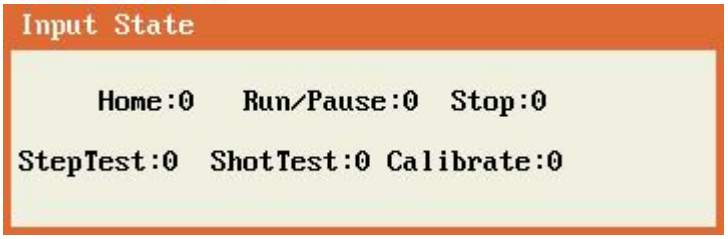
01-04 of " GP Input" are the origin signals of the X, Y, Z, A/Y2 axes, respectively, the value is "1" when there is an input signal, and the value is "0" when there is no input signal.

05-08 of " GP Input" is a programmable fast input port, the value is "1" when there is an input signal, and the value is "0" when there is no input signal.

09-16 of " GP Input" is a programmable ordinary input port, the value is "1" when there is an input signal, and the value is "0" when there is no input signal.

It can be tested from 01-08 points of "Universal Output". When the input value is "1", the corresponding output light is on and the test port is normal, otherwise it is abnormal. When the input value is "0", the corresponding output turns off and the test port is normal, otherwise it is not normal.

6.18 Page 2 9. View Function Key



View the input status of the keys. The key is not pressed, the status value is 0; the key is pressed, the status value is 1.

6.19 Page 3 1. Load language

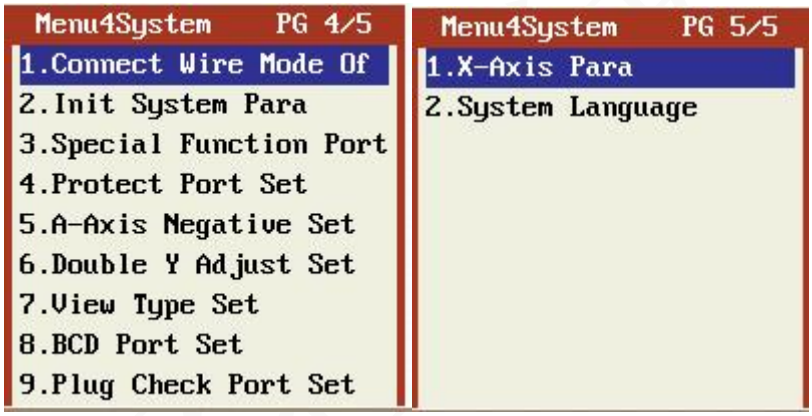
The English or Vietnamese language pack can be updated at the time of English/Vietnamese version.

6.20 Page 3 2. Run From Cursor

When you select this function, you can choose to run the program from a specified location, by selecting the cursor to the target location and pressing the "Run" button.

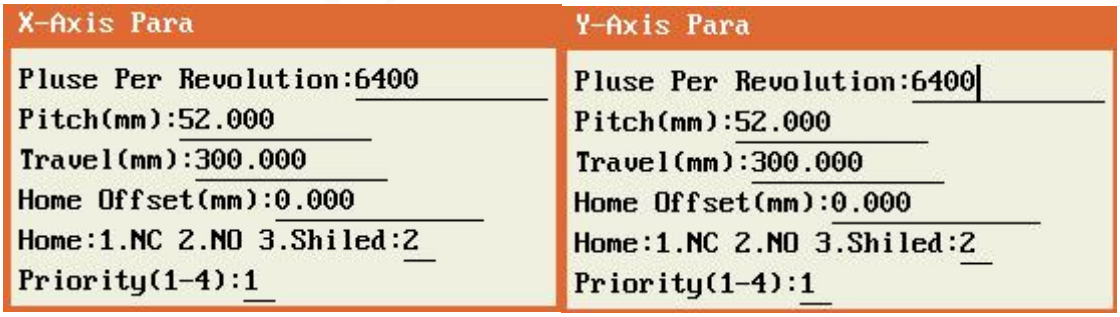
Chapter 7 Menu 4

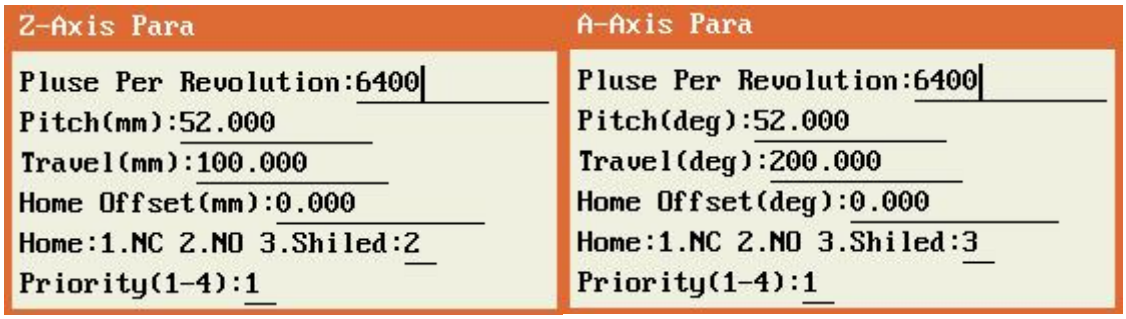
Use "Stop" + "Menu 1" to enter Menu 4. Menu 4 is the manufacturer's menu for setting the machine parameters. It is not recommended to be open to users. Menu 4 includes the following:



7.1 Page 1 1-4. XYZA para(Parameters) Set

The motor shaft parameter setting options are as follows.





Pulses per revolution: refers to the number of pulses per revolution of the drive motor, that is, the number of subdivisions of the motor.

Pitch(mm): refers to the travel of the motor for each revolution, that is, the circumference of the pulley or the pitch of the screw.

Travel(mm): The longest distance that the axis can move.

Home offset(mm): The origin offset value can be 0 or positive and negative values, that is, the value set after the origin position is captured and then offset as the 0 coordinate.

NC(Normally closed0/NO(normally open): When the motor shaft is not triggered to the origin, the output of the origin capture sensor is low level or the micro switch is the sensor is closed state is normally closed, otherwise it is normally open.

Shield: If shielding is selected, the axis does not use homing or limit function.

Priority: optional 1-4, the smaller the number, the higher the reset priority.

7.2 Page 1 5. Time Limited Pass Set

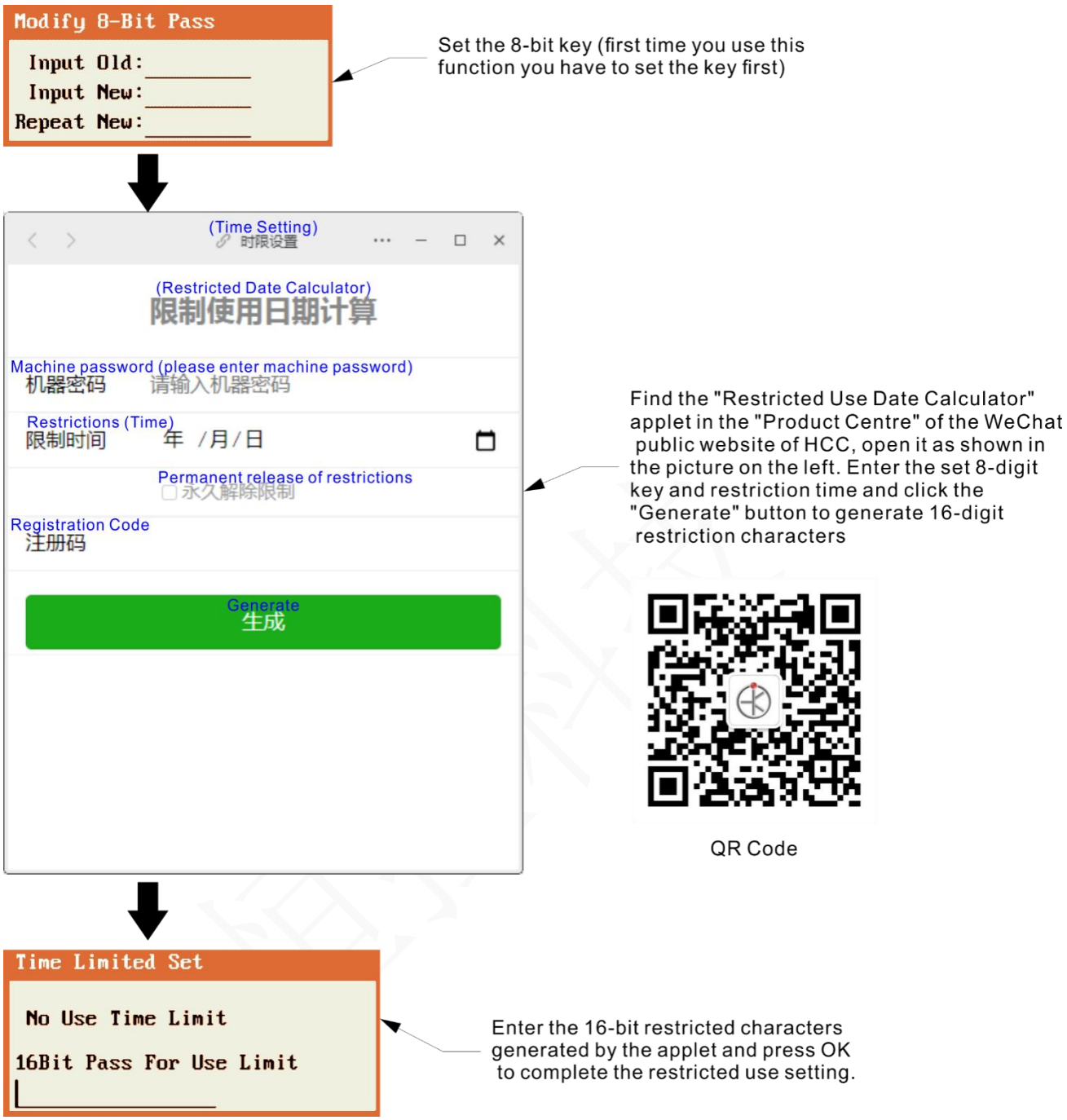
Set the key before using the restricted time setting.

7.3 Page 1 6. Date/Time Set

Because the use time limit needs to refer to the machine's clock, if the use time limit is set, then the password to use the time limit must be entered to modify the time of the machine.

7.4 Page 1 7. Time Limited Set

Before using this function, first in menu 4, page 1, item 7 "Modify 8-Bit pass", and then use the WeChat public number "hengkong technology" bottom left corner of the product center, cell phone online calculations set to generate 16-bit restricted access password.



7.5 Page 1 8. Machine Name Edit

The edited device name will be displayed on "Page 3 of Menu 3 5. Machine Information".

7.6 Page 1 9.Company name Edit

The edited company name will be displayed on "Page 2 of Menu 3 5. Machine Information".

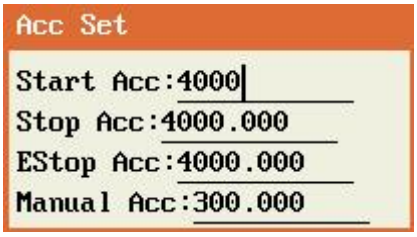
7.7 Page 2 1. Start/stop speed Set

In motion control applications, there is an acceleration and deceleration process for the motor operation to

improve work efficiency. The start and stop speeds can not be 0, but they cannot be too large. The larger the load, the smaller the start/stop speed needs to be. It is generally recommended to be 20mm/s for the phenomenon of step loss or large mechanical noise.

7.8 Page 2 2. Acc(Accelerated) Set

Each acceleration includes the following:



In actual use, manual acceleration can be set smaller, generally between 100-500. Manual acceleration can be set to have an obvious start acceleration process during manual operation. It is easier to achieve small distance movement when the speed is high, taking into account the speed And move a small distance.

The control card supports asymmetric acceleration and deceleration. The start acceleration and stop acceleration can be set to different values. In practical applications, the stop acceleration is generally set to be greater than the start acceleration. The setting of the acceleration should be based on the comprehensive consideration of the driving capacity of the motor, the size of the load, the mechanical performance, etc., with no loss of steps and excessive vibration as the standard.

7.9 Page 2 3. Max Speed Set

Set the maximum allowable value of each speed during user programming, which can prevent the user from setting a speed greater than the machine design requirements and causing lost steps. It includes the following:

The maximum speed of the XY axis here refers to the maximum allowable plane movement speed of the air movement in the dispensing application programming, the maximum speed of the Z axis refers to the maximum allowable movement speed of the vertical movement in the dispensing application programming, and the maximum speed of the dispensing refers to the application application programming The maximum allowable dispensing speed of the line segment.

7.10 Page 2 4. Home Speed Set

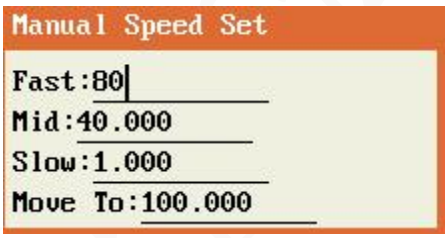
The origin capture is to record the position where the origin signal is triggered when the motor shaft moves.

In order to have the same trigger position each time, it must be triggered in the same direction each time, so when the motor shaft position is not in the direction of the origin capture, it must first move to the origin capture The origin is captured in the direction.

The "moving speed" here refers to the speed of the motor shaft moving from the non-origin capture direction to the capture direction. This speed can be higher, and the general setting range is 50-150mm/s. "Capture speed" refers to the movement of the motor shaft to trigger the origin The speed of the signal, in order to improve the accuracy, this speed should not be too high, the general setting range is 20-60mm/s.

7.11 Page 2 5. Manual Speed Set

The speed of manual movement is divided into three speeds: fast, medium and slow. Press the "Speed" key to cycle. Normally, the speed is set to 80mm/s, the medium speed is set to 40mm/s, and the slow speed is set to 1mm/s; moving to the cursor speed corresponds to the speed setting of "Move to Cursor" on the shortcut key.



7.12 Page 2 6. Update IME

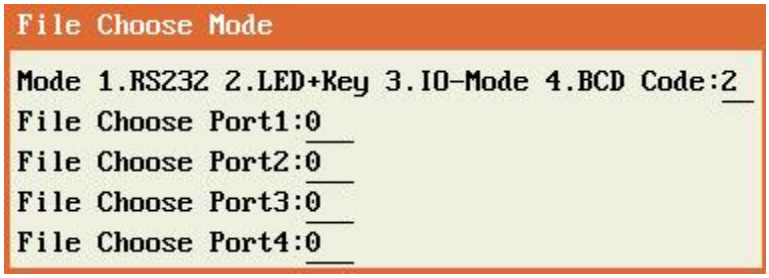
The Pinyin input method uses the GB2312 font library, which has about 7,000 commonly used Chinese characters. The Pinyin input method is generally updated when the motherboard is shipped from the factory, and there is no need to perform this operation.

7.13 Page 2 7. Update startup Screen

This version does not support the boot screen!

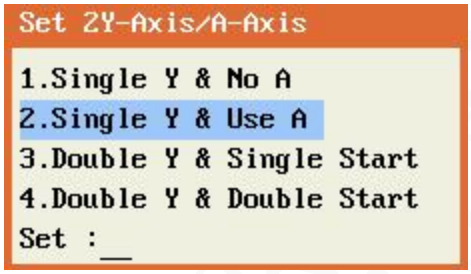
7.14 Page 2 8. File Choose Mode

The selection of the dispensing file program can use the digital tube plus button mode or dialing mode. For example, using the dialing mode can use the 1-digit, 2-digit, 3-digit dial. The unused high digits default to 0, and When using the dial, in order to prevent the serial number of the selected file from conflicting with the value of the dial, the function of opening the file by the handheld programmer will be blocked.



7.15 Page 2 9. Set 2Y- Axis /A-Axis

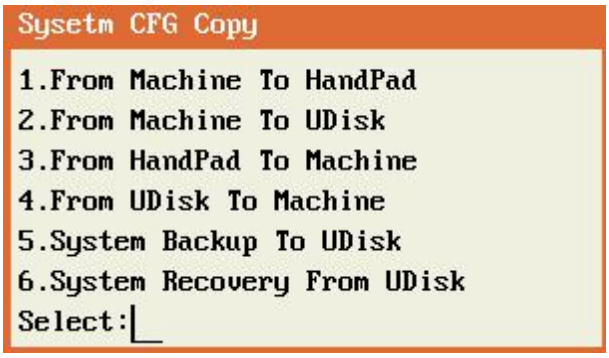
Can be set to single Y axis or dual Y axis working mode, the factory default is single Y axis. If set to dual Y axis usage mode, use the stop + Esc button to switch the Y axis, the Y axis in the coordinate value display column will be displayed as Y1 or Y2.



7.16 Page 3 1. System CFG Copy

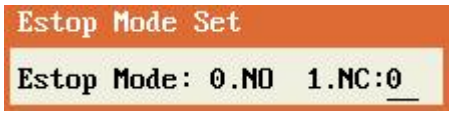
The function of this menu is to copy the system parameters set on a certain machine to the handheld programmer or U disk, and then copy it from the handheld programmer or U disk to other machines of the same model, without setting one by one.

The copied content includes various machine parameters and default parameters that need to be set at the factory.



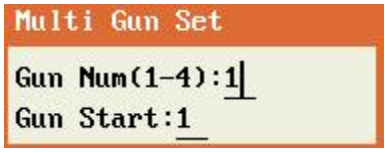
7.17 Page 3 2. Estop Mode Set

When the " Stop" prompt appears, press the "Esc" key to enter the emergency stop switch mode setting menu, so that when the emergency stop switch is damaged or you want to modify the emergency stop switch mode, you can quickly modify it.



7.18 Page 3 3. Multi-Gun Set

Here, set the number of glue guns installed in the system.

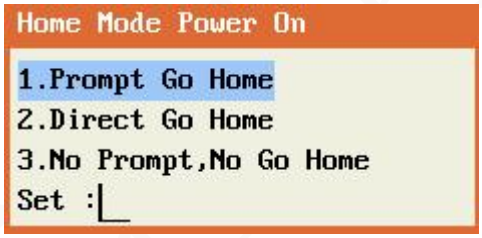


7.19 Page 3 4. Home Mode Power On

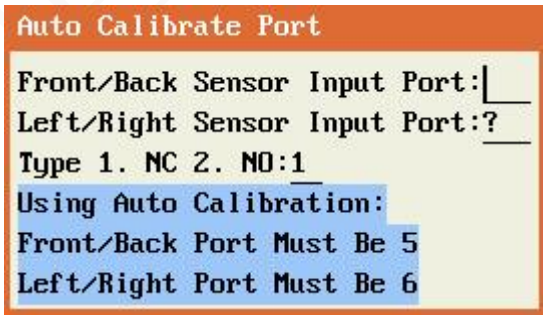
1. Prompt go home: Prompt to return to origin when powering on. Press the return to origin button to execute the return to origin operation.

2. Direct go home : perform the return-to-origin action directly after power-on.

3. No prompt, no go home: after power on, press the return to origin button to execute the return to origin operation.

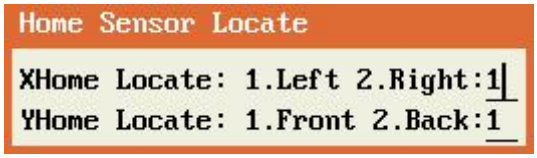


7.20 Page 3 5. Auto Calibrate Port Set



Automatic needle sensor setting: You can search for X and Y detection at one location at the same time; you can also detect X and Y at different locations; Z axis will select one of the sensors to detect.

7.21 Page 3 6. Home Sensor Locate Set



XHome Locate: If the left side is selected, the right side is the positive direction, and the left side is the positive direction when returning to the origin. If the right side is selected, the left side is the positive direction, and the right direction is searched for the origin sensor when returning to the origin.

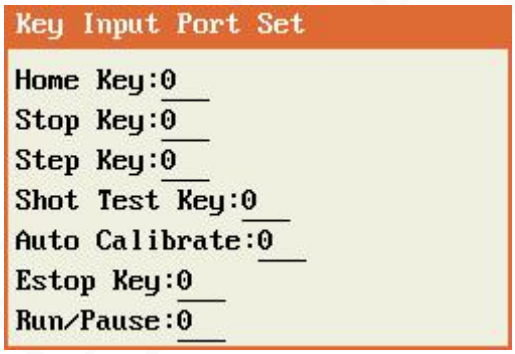
YHome Locate: if the platform is selected, the back of the table is in the positive direction, and the forward motion is searched for the origin sensor when returning to the origin; if the gantry is selected, the front of the table is in the positive direction, and the sensor is searched for the backward movement when returning to the origin.

7.22 Page 3 7. Z Height For Ad just

Set the safety height of the Z-axis when setting the needle.

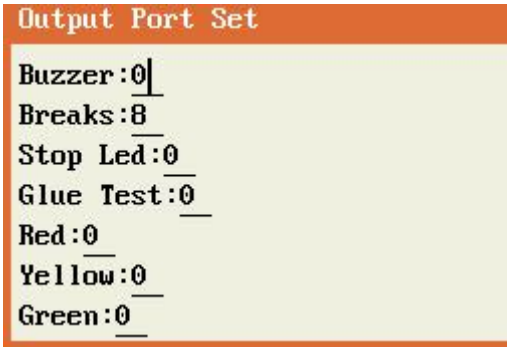
7.23 Page 3 8.Key Input Port Set

In this interface, you can set the input port used by the button, as shown below.



7.24 Page 3 9. Output Port Set

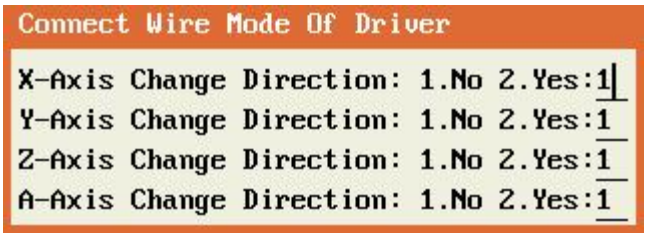
Under this interface, the dedicated function output port can be set, as shown in the following figure.



7.25 Page 4 1. Connect Wire Mode Of Driver

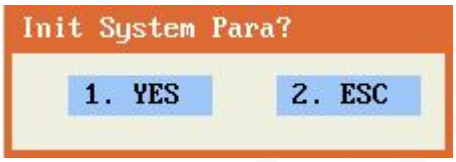
This function is to modify the direction directly by this function when the setting of the pulse direction of the

servo is reversed without resetting by the servo.



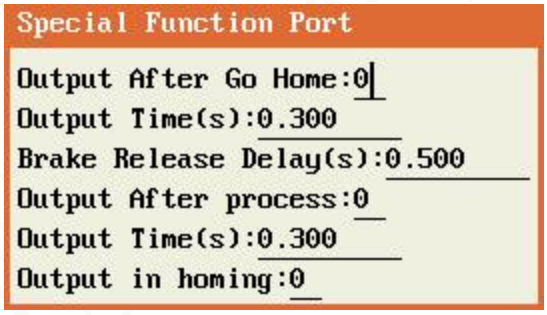
7.26 Page 4 2. Init(Initialization) System Para(Parameters)

The parameters are initialized. After initialization, all parameters are restored to the initial settings. Before initialization, please back up some important parameters such as the set port number and the parameters of each motor. After initialization, set them one by one.



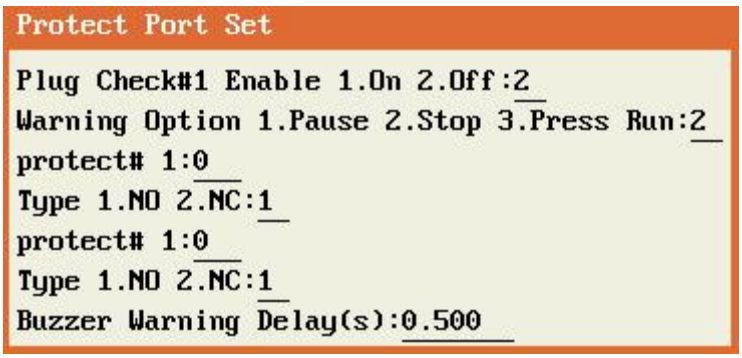
7.27 Page 4 3. Speccial function Port

In this interface, you can set the reset completion signal output port and the reset completion signal delay.



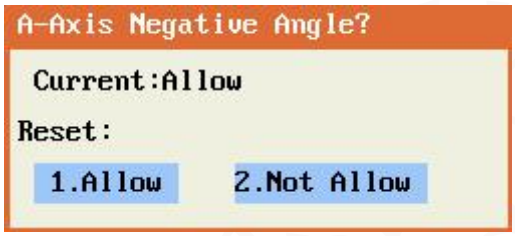
7.28 Page 4 4. Protect Port Set

In the process of dispensing, to prevent hitting objects or hurting people. During operation or returning to the origin, it can be detected by the raster signal. The trigger mode of the raster signal can be set in "Menu 2-Page 3-7. Warning On/Off Set ". When the raster input signal is set to 0, it means that the raster protection function is invalid.



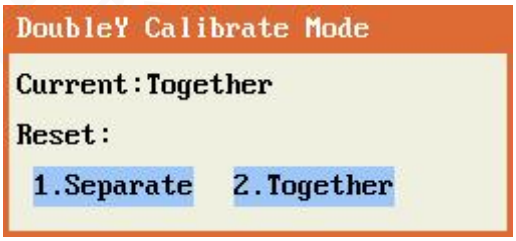
7.29 Page 4 5. A- Axis Negative Angle Set

In this interface, you can set whether the A axis allows negative angle rotation. The interface display content is shown in the following figure.



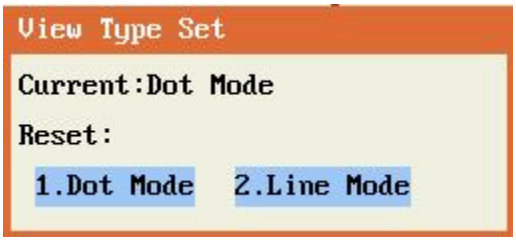
7.30 Page 4 6. Double Y Adjust Set

In this interface, you can set the needle alignment mode for dual Y machines. If you set the mode to needle alignment together, all points of dual Y axes will be offset and calibrated together after needle alignment, and if you set the mode to needle alignment separately, only the point coordinates of Y1 axis will be offset during Y1 needle alignment, and only the point coordinates of Y2 axis will be offset during Y2 axis.



7.31 Page 4 7. View Type Set

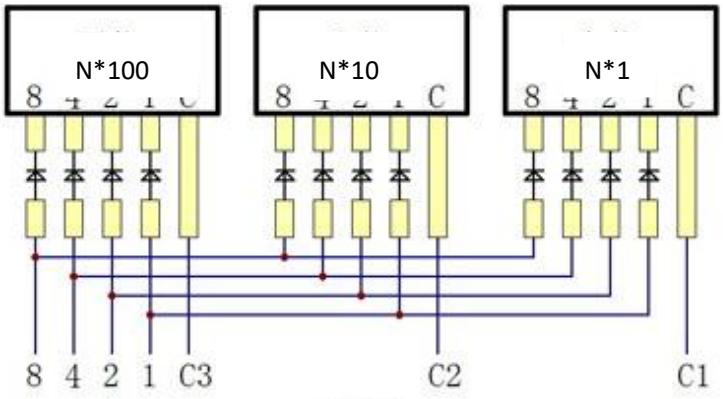
In this interface, you can set the preview mode, which is used in the programming preview interface, when you press the handheld "down" and "up" keys to view the programming points, you can choose to use the way to view each point in turn or to view each line segment only once to preview.



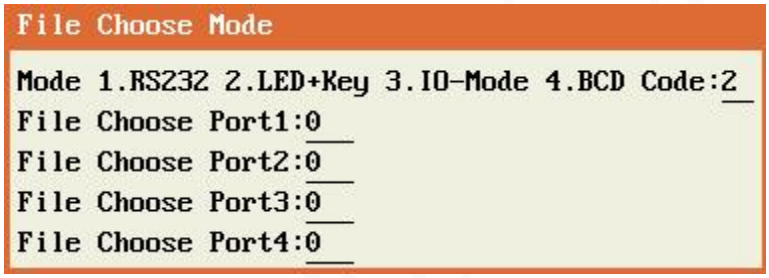
7.32 Page 4 8. BCD(Thumbwheel Switch) Port Set

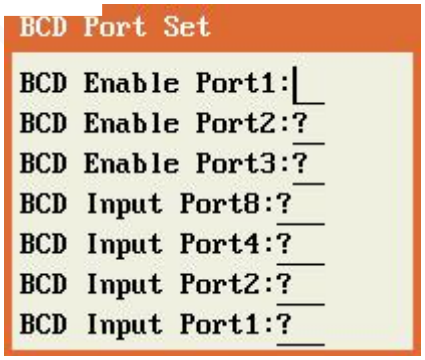
Under this interface, output enable and input port can be set, C3 corresponds to hundred enable, C2 corresponds to ten enable, C1 corresponds to single enable.

In the following figure, 8, 4, 2, 1 belong to input ports, corresponding to the port settings of inputs 8, 4, 2, 1, if not used, the corresponding port set to zero can be.



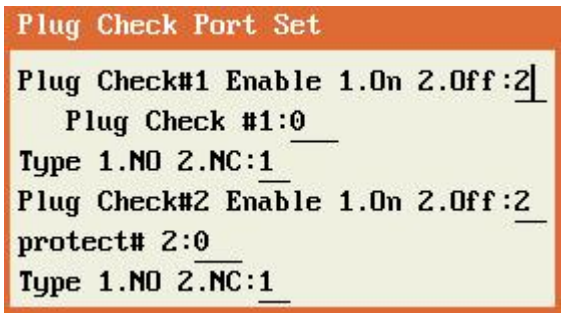
BCD(Thumbwheel Switch) Code Switch





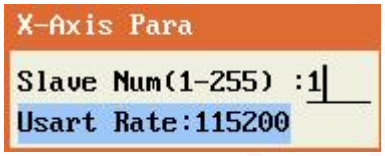
7.33 Page 4 9. Plug check Port Set

During the dispensing process, to prevent abnormal products from appearing due to blocked or unglued products that are not processed correctly. During the operation, the detection signal can be used to detect blocked or unblocked products. If you want to use the glue plugging detection function, you need to turn on the enable first, and then set the corresponding port number, the detection sensor can be set to normally open and normally closed mode. Please note that if the gluing detection enable is on, and the detection port is set to 0, it is equivalent to disabling the detection function.



7.34 Page 5 1. X-Axis Para(Parameters)

The system supports modbus RTU protocol, the board as a slave, the upper computer or PLC can read or monitor the parameters and processing information inside the board according to the register address table provided.

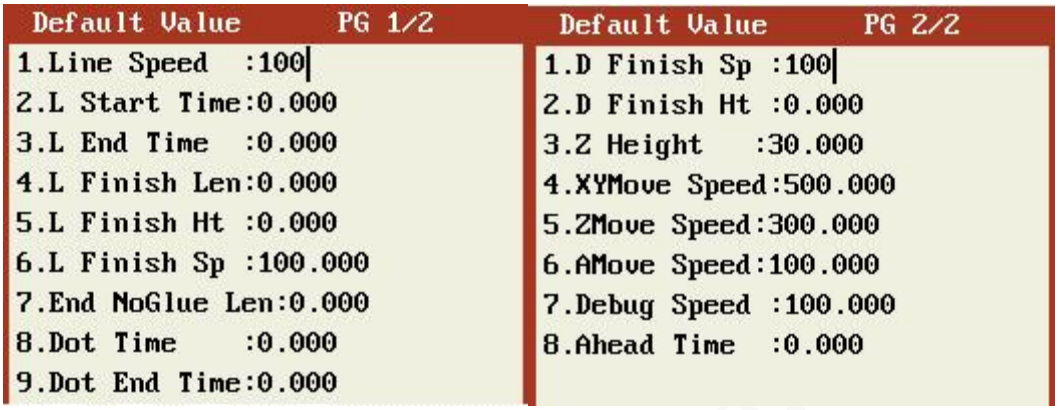


7.35 Page 5 2. System Language

The system language can be switched in this interface. Currently, it supports four types of text display: Simplified Chinese, English, Traditional Chinese and Vietnamese, and the system needs to be restarted after the language switch is completed.

Chapter 8 Default Parameter Setting Menu

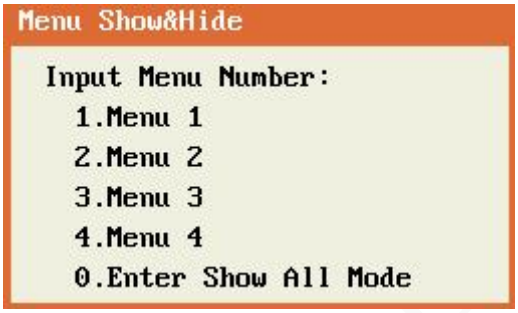
Use "Stop" + "Menu 2" to enter the default parameter setting menu. The content of this menu is not recommended for users. The default parameter setting menu includes the following:



The default value parameters are mainly the dispensing processing parameters in the dispensing application. If the above parameters are not set in the dispensing processing programming, the parameters set in the default values are used.

Chapter 9 Menu display and hiding

Use "Stop" + "Menu 3" to enter the "Menu Display and Hide" setting interface. The menu content is not recommended for users. The menu display and hiding interface includes the following.



Select the menu to be adjusted: press the number corresponding to the menu to enter the interface as shown in the figure below, press the "ENTER" key to select the function options to be displayed or hidden, press the "Help" button to quickly reverse the selection, press the "Preview" button Can be selected or cleared. After completing the settings, press the "Cancel" button to exit.

Enter all menu mode: After entering this mode, all the hidden functions set before will be displayed. If you need to exit, you can press "0" key to exit or restart the system after power off.