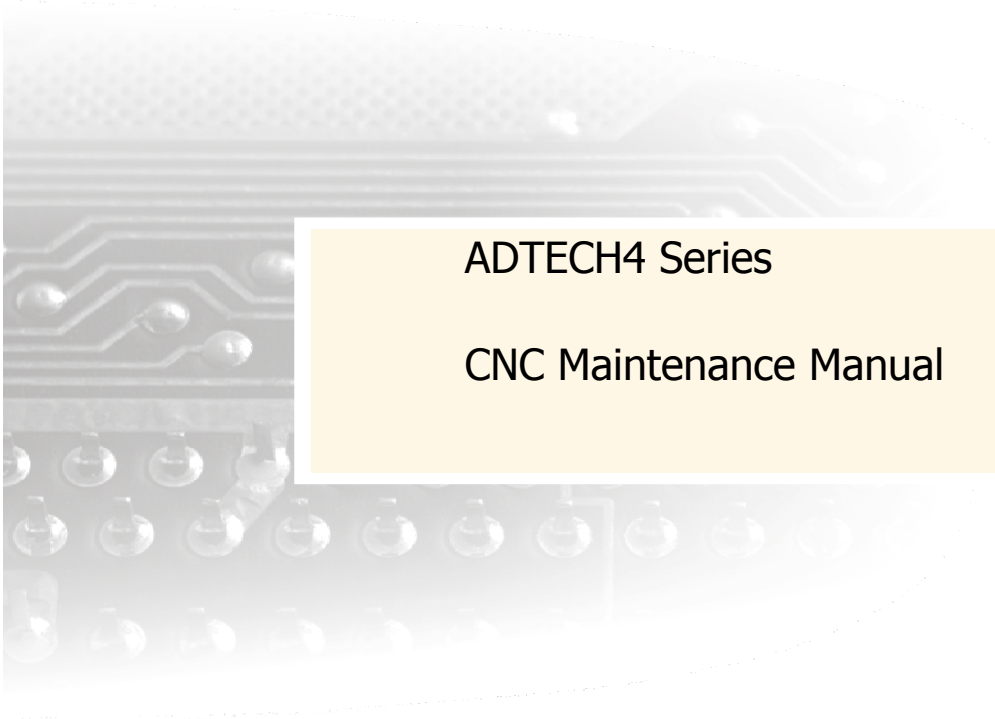
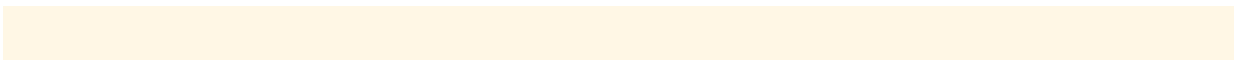


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ADTECH4 Series

CNC Maintenance Manual

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## Instructions Basic Information

This manual Adtech from Shenzhen Technology Co., Ltd. organized the compilation .

The manual is written primarily by: Tang Xiaobing .

The manual was first published in 20213 on August 27 , the version number A0101, item number XT20101227

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Adtech (Shenzhen) CNC Technology Co., Ltd.

## **Precautions**

### **※ Transportation and storage**

The packaging boxes shouldn't be stacked more than six layers

Do not climb onto, stand on or put heavy objects on the packaging box

Do not drag or convey the product with a cable connected to the product

Do not impact or scratch the panel and display

Keep the packaging box away from moisture, insulation and rain

### **※ Unpacking and checking**

Unpack and check whether the product is the one you ordered

Check whether the product is damaged during transporting

Check whether the parts are complete and intact according to the packing list

If the model doesn't match, any accessories are missing or damaged, please contact us immediately

### **※ Wire connection**

The personnel for wire connection and checking should be qualified

The product must be grounded reliably (resistance < 4Ω) and do not use neutral wire to replace the earth wire

The wires must be connected properly and firmly to avoid failures and accidents

The surge absorption diode must be connected to the product properly, or else it will damage the product

Please cut off the power supply before inserting/removing the plug or opening the enclosure

### **※ Checking and repairing**

Please cut off the power supply before repairing or replacing the components

Check the failure if short circuit or overload occurs, and restart after eliminating all failures

Do not connect/cut off the power supply frequently; wait for at least one minute before restarting

### **※ Others**

Do not open the enclosure without permission

Please cut off the power supply if it won't be used for a long time

Prevent dust and iron powder from entering the controller

If non-solid state relay is used for output, please connect freewheeling diode to relay coil in parallel. Check whether the connected power supply is qualified to avoid burning out the controller

The lifetime of the controller depends on the environment temperature. If the temperature of processing field is too high, please install cooling fan. The allowable temperature range of the controller is 0°C-60°C

Avoid using in the environment with high temperature, moisture, dust or corrosive gas

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Install rubber cushion if the vibration is severe

※ **Maintenance**

Under normal condition (environment: daily average 30°C, load rate 80%, running rate 12 hours every day), please perform daily and periodic checking according to the items below.

Daily checking	Daily	Confirm environment temperature, humidity and dust Whether there is abnormal vibration or sound Whether the vent hole is blocked by yarn
Periodic checking	1 year	Whether the fixed parts are loose Whether the terminal block is damaged

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## 1. Foreword

CNC4640/4620 numerical control system is economic embedded system developed by Adtech (Shenzhen) CNC Technology Co., Ltd. for milling machines and machining centers, where CNC4640 is four axes motion controller and CNC4620 is two axes motion controller.

### Instructions and reading convention of the Manual

Before using this CNC system, please read this Manual carefully to operate properly.

Terminology note and reading convention in this Manual:

CNC4640 and CNC4620 are control systems with different axes and same hardware functions. The programs developed on this platform contain M series software for milling machines and L series software for lathes. Different software have different functions and masks.

M series are system for milling machine motion. The 'M' or "M series" mark indicates specific interface or function for milling machine software system.

L series are system for lathe motion. The 'L' or "L series" mark indicates specific interface or function for lathe software system.

"CNC system", "NC controller" and "CNC46XX" mentioned in this Manual all refer to CNC4640/4620;

The articles marked with "Caution" prompt users to pay special attention for operation or setting, or else this operation may fail or certain action can't be performed.

System technical characteristics

2.1 System technical parameters

Function	Name	Specification	
Control axis	Control axes	4 axes (CNC4640 series) 2 axes (CNC4620 series)	
	Simultaneous control axes	4 axes linear interpolation (CNC4640 series) 2 axes linear interpolation (CNC4620 series) 2 axes arc interpolation	
Input instruction	Minimum setting unit	0.001mm	
	Minimum moving unit	0.001mm	
	Maximum instruction value	±9999.999mm	
Feeding	Fast feeding speed	X axis, Y axis, Z axis, A axis: 9999 mm/min (maximum)	
	Feeding speed range	Per minute	1~9999mm/min
		Per rotation	1~500rpm
	Automatic acceleration/deceleration	Yes	
	Feeding speed rate	10~150%	
Manual	Continuously manual feeding,	Yes	
	Returning to reference point manually	All control axes return to reference point simultaneously (allow setting order of priority)	
	Single step/handwheel function	Yes	
Interpolation	Positioning, linear interpolation, arc interpolation	G00, G01, G02/G03	
Operating mode	MDI, auto, manual, single step, edit	Yes	
Testing function	Test run, single program section, handwheel	Yes	
Coordinate system and pause	Pause (sec/ms)	G04 X/P_	
	Coordinate system setting	G92 (M series)	

Function	Name	Specification
		G50 (L series)
	Automatic coordinate system setting	Yes
Safe functions	Soft & hard limit check	Yes
	Emergency stop	Yes
Program storage	Program storage capacity, storage quantity	Capacity: 60MB
		100 work areas No limit on processing file quantity
Program edit	Program edit	Insert, modify, delete, cancel
	Program No., sequence No., address, character retrieval	Yes
	Decimal point programming	Yes
Display	800×480 pixels 7" LCD	
	Position screen, program edit Tool compensation setting, alarm display Handwheel test, diagnosis screen Parameter setting, graphic simulation	Yes
M, S, T function	Auxiliary function	M code
	Principal axis function	S0-S15 (gear position control)
		S15-S99999 (analog)
Tool function	T code	
Compensation	Tool compensation memory	30 tools length, radius compensation
	Reverse clearance compensation	Yes
Other functions	Measurement centered Automatic tool regulator	Yes
	Specify arc radius R/center position	Yes
	Electronic gear ratio	Yes

## 2.2 System function

### 2.2.1 Self-diagnosis

Diagnose CPU, memory, LCD, I/O interface, parameter state, coordinates and processing program comprehensively every time the system is started or reset; diagnose power supply, principal axis, limit and I/O ports in real-time during operating.

### 2.2.2 Compensation

Automatic reverse clearance compensation

Automatic tool length compensation

Automatic tool radius compensation

Automatic tool radius biasing and automatic tool tip transition

### 2.2.3 Abundant instruction system

Scaling instruction

Mirror processing instruction

Tool biasing instructions

Program cycle, program skip, program shift, program transfer, different end processing modes, macro definition and program management instructions

Fixed-point instructions: starting point, setting point, etc.

Linear, arc and spiral interpolation instructions

Six workpiece coordinate systems, nine extension coordinate systems and one reference point

### 2.2.4 Full Chinese menu operation & full screen edit

4640/4620 CNC system uses cascading menu structure and full Chinese operation to ensure simple operation and visibility.

### 2.2.5 Abundant error-correction functions

Point out the nature and correct the errors in operation.

### 2.2.6 Program exchange between CNC system and PC

Perform CAD/CAM/CAPP auxiliary programming with abundant software in PC, and then transmit CNC program to the system through communication interface (USB disk, RS232 interface), or transmit the programs from the system to PC.

## 2.3 System operating condition

Operating voltage	24V DC (with filter)
Operating temperature	0°C—45°C
Optimum operating temperature	5°C—40°C
Operating humidity	10%—90% (no condensing)
Optimum operating humidity	20%—85%
Storage temperature	0°C—50°C
Storage humidity	10%—90%
Operating environment	No excessive dust, acid, alkali, corrosive and explosive gases, no strong electromagnetic interference

2. Operating panel

3.1 LCD/keypad

Control panel

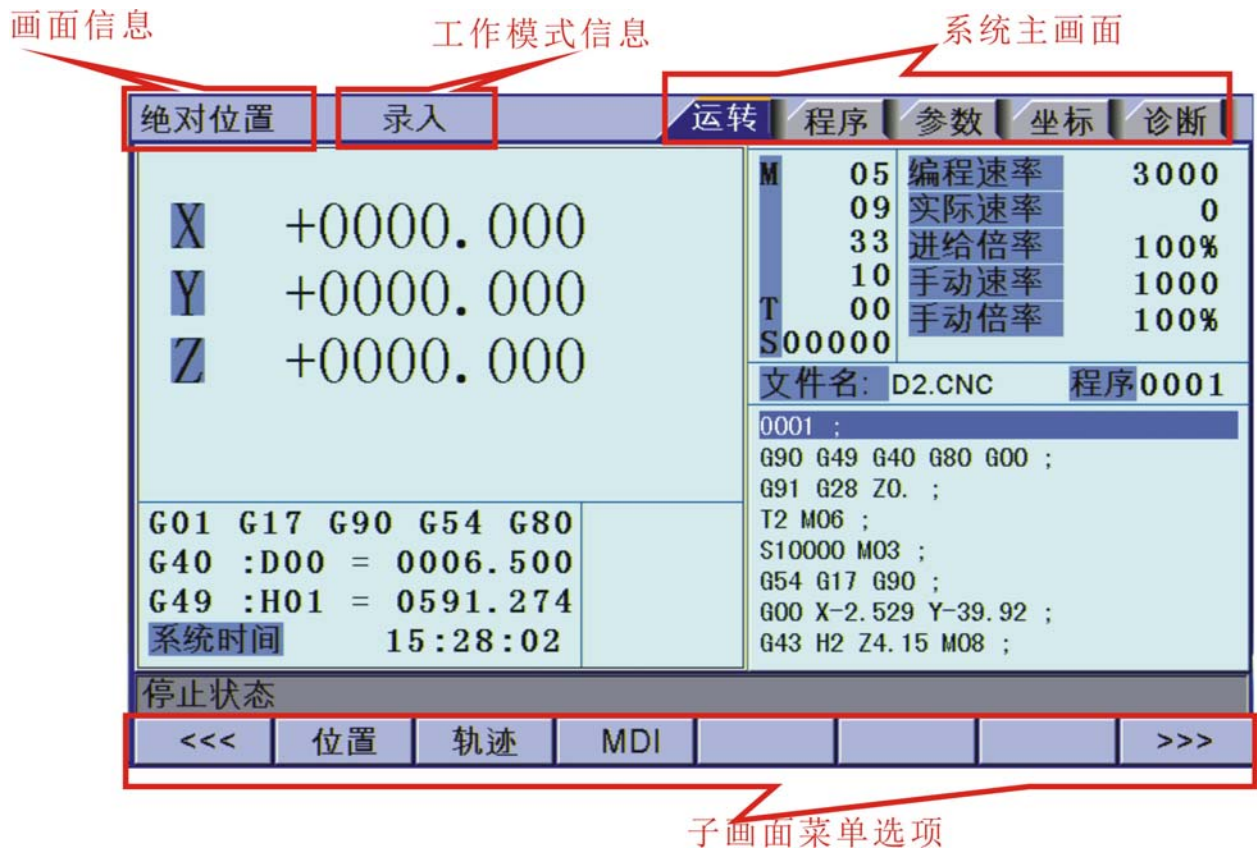


系统 Principal 画面菜单 Main screen of the system 系统子画面菜单 Button Submenu buttons of the system  
 axis 手动移动 Manual moving of axis Number 字编辑 inputNumber edit & input  
 系统工作 model 切换区 System working mode switch section

Note:

Press the Menu button operation sprite corresponding sub- menu prompts content.  
 Manually move and edit the input shaft keys reuse in different modes have different definitions .  
 Operating mode switching area for work mode switching systems , through different modes of operation to enhance security and system operating experience performance. Hand wheel and single- step mode button to switch through repetition .

LCD unit



画面信息 Screen info / 工作 model 信息 Working mode info / 系统 Principal 画面 System main screen

绝对位置 Absolute position / 录入 Edit / 运转 Monitor / 程序 Program / 参 Number Parameter / 坐标 Coordinates / 诊断 Diagnosis

编程速率 Programming rate

实际速率 Actual rate

进给倍率 Feeding ratio

手动速率 Manual rate

手动倍率 Manual ratio

文件名 File name: /程序 Program:

系统时间 System time

Stop 状态 Stopped

位置 Position

轨迹 Track

Submenu options

Fig. 3.2 CNC4640 LCD Screen Diagram

Note:

Screen info shows the in formation of current window

Working mode info shows currently selected working mode

System main screen shows current main screen.

The submenu options are used to switch submenus with left triangle, F1~F6 and right triangle. The right arrow is used to turn pages, and the left arrow is used to close the submenus in next level and previous menu.

3.1 ADTCNC49 series systems LCD / Keypad



3.3 System menus

CNC46XX system uses cascading menu structure. You can press the following keys to operate the menus.



Button corresponding to the contents to be displayed in the lower end of the LCD display .

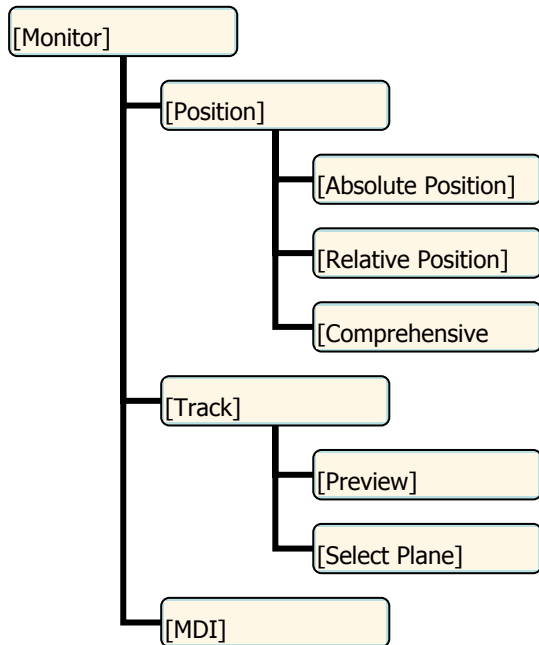
The leftmost button : Return to the previous menu from a submenu

Rightmost button : Cycle flip key sibling menu to display additional menu content

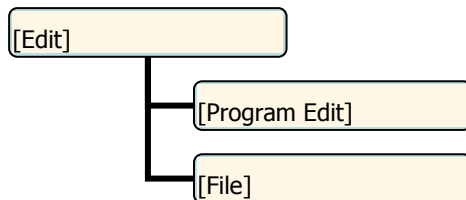
The main menu includes [ operating system ], [ edit ], [ parameters ], [ coordinate ], [ diagnosis ] .

Each main menu is subdivided into a number of sub-menus , detailed framework in the following figure :

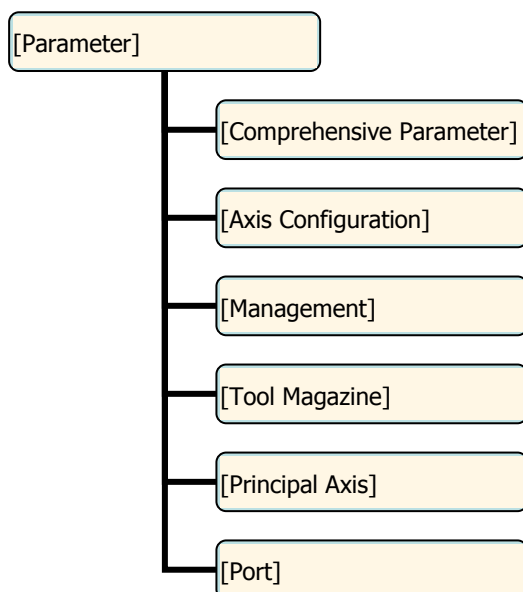
### 3.3.1 Autorun submenu



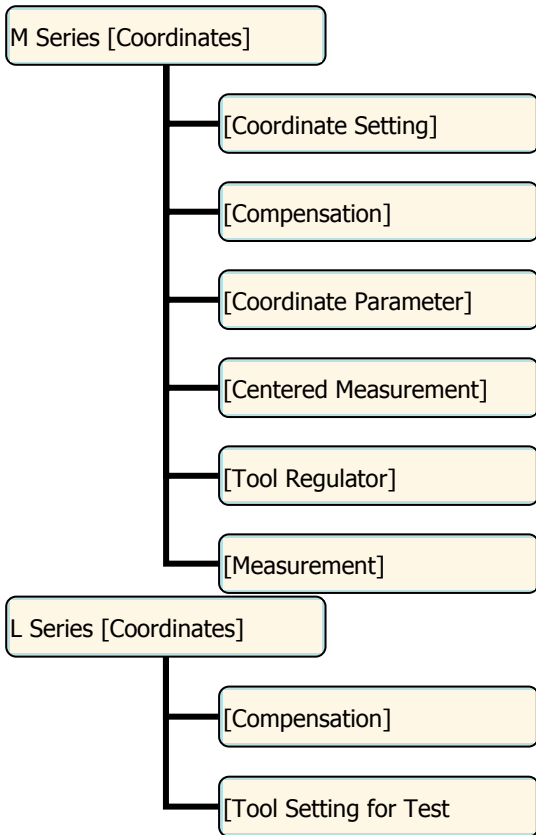
### 3.3.2 Program Edit submenu

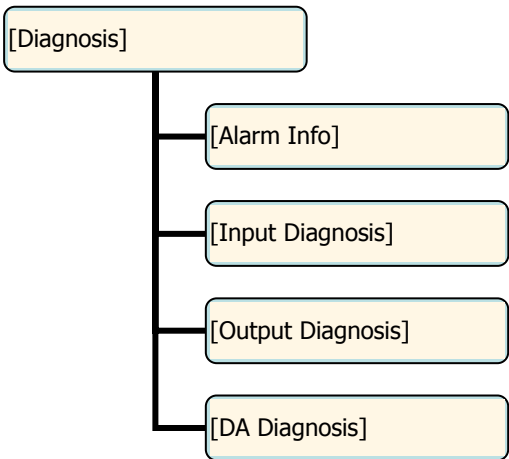


### 3.3.3 parameters submenu



### 3.3.4 Work coordinate sub-menu





## 3.4 Operating keys

The keys of CNC46XX system are defined below:

Key	Purpose
[RESET]	Cancel alarm, reset CNC
Address/number keys	Enter letters, numbers, etc.
[EOB], [CAN]	Confirm or cancel operation
[EOB], [CAN], [DEL]	Program edit (insert, delete, modify)
Mode switch key	Select operating mode
Cursor moving key	Four keys are available: Up/Down: adjust ration, move cursor between subsections; Left/Right: move cursor to left/right
Page key	Up/Down: Turn pages
Menu keys	Select the menus
Principal axis positive rotation	Press it to rotate the principal axis positively, and press it again to stop rotating
Principal axis reverse rotation	Press it to rotate the principal axis reversely, and press it again to stop rotating
Coolant	Coolant on/off
Lubricant	Lubricant on/off
[BDT]	Block delete on/off
[SBK]	Single block function on/off
[PAUSE]	Pause automatic running
[START]	Start automatic running

#### 4.1 Returning to reference point manually

CNC machine tool has specific mechanical position, which is called as reference point and for tool exchange and coordinates setting. Generally, when the power supply is connected, the tool should be moved to the reference point. This operation is also called as home operation, which will make the CNC system confirm the origin of machine tool.

The home operation include program and mechanical mode:

For program home, the action completes when the coordinates of machine tool are 0, and won't check whether origin switch is in position;

For mechanical home, the external home sensor switch is used to locate the origin of the machine tool; two checking modes are available:

With the external sensor switch, the home operation completes when the sensing is successfully repeatedly.

The external sensor switch is used as deceleration switch, the servo home is enabled as home signal after sensing and then the sensing stops.

You can set the "Home mode" in [Parameter][Comprehensive Parameter], in which 0 (default) indicates program and 1 indicates mechanical. You can also press [SBK] key in home mode to switch among "Mechanical – Program – Mechanical..." quickly. This method doesn't conflict with parameter setting. You can select accordingly. To use servo home as the home signal, you need to set "Axis phase Z home enable" to "1" in [Parameter][Axis Configuration] in mechanical home mode, and the setting will take effect in next home checking.

Several methods are available for tool returning to reference point and the steps follow:

(1) Each axis returns to reference point separately

- Press the mode switch key [Home] to select home operation;
- Press the composite key [X-], [Y-], [Z-], [A-] in the numbers section to return the corresponding axis to reference point.

(2) The axes return to reference point simultaneously


- Press the mode switch key [Home] to select home operation;
- Press the [Start] key to return Z axis to reference point, and other axes return to reference point simultaneously. The automatic home sequence can be configured in the parameters.

(3) Reset machine tool position

- Press the mode switch key [Home] to select home operation;
- In [Absolute Position] and [Coordinate System] screen, press [X], [Y], [Z], [A] respectively to show the value of corresponding axis position, and then press the [Cancel] key to reset the machine tool position of current axis, i.e. current point is used as machine tool origin. After this operation, the system considers it as a home action. Therefore, when the program is running, the alarm of not home won't occur. If you press by mistake, it will switch the screen and cancel selection automatically.

(4) Reset relative position manually

- Press the mode switch key [Manual] to select manual operation;
- In [Relative Position] and [Coordinate System] screen, press [X], [Y], [Z], [A] respectively to show the value of corresponding axis, and then press the [Cancel] key to reset the relative position of current axis.

 **Note**

The tool also can return to reference point according to program instruction, i.e. returning to reference point automatically.

 **Caution:**

Generally, the system will perform home operation after connecting the power supply. If the power fails while the machine tool is moving, the system also will return to reference point when the power supply is connected again. Return to Z axis to prevent tool and workpiece from colliding, and damaging tool, workpiece and clamp.

4.2 Continuous feeding manually

Press the keys on the operation panel or handwheel to move the tool along every axis.


The operation follows:

- (1) Press the mode switch key [Manual] to select manual operation;
- (2) Press composite keys [X+], [X-]; [Y+], [Y-]; [Z+], [Z-]; [A+], [A-] in numbers area to move the tool along selected axis. The keypad follows:

keypad follows:



In manual mode, 5# key can be used to switch the manual speed and rapid traverse speed. The rapid traverse speed of every axis depends on comprehensive parameter 009-012 (rapid traverse speed setting). After switching to rapid traverse speed, the manual speed of the position interface will be highlighted, while the actual speed of the position interface is sampled from the moving speed of current axis. This value can truly reflect the moving speed of current axis (unit: mm/min);

 **Note**

Only single axis motion is available in manual mode.

4.3 Single step feeding

Single step mode is similar to manual mode, the operations are same, but only moves a specified pulse increment every time press the key.

The specific operation follows:


- (1) Press the mode switch key [Handwheel/Single step] (this key is composite, and you can press it repeatedly to switch the modes) to select the single step operation;
- (2) Press composite keys [X+], [X-]; [Y+], [Y-]; [Z+], [Z-]; [A+], [A-] in numbers area to move the tool for a fixed distance along the selected axis. This distance is controlled by four rates (1.000, 0.100, 0.010, 0.001) (unit: mm). To select pulse increment, press Up (+) and Down (-) key in the [Position] interface.

#### 4.4 Handwheel feeding

In handwheel mode, rotate the handwheel to make the machine perform single step or continuous motion. Determine the feed by testing the handwheel signal of the handheld box. In handwheel mode, the feeding axis and feeding unit are determined by the axis selection signal of the handheld box.

The handwheel feeding step follows:

- (1) Press the mode switch key [Handwheel/Single step] to select handwheel operation;
- (2) Rotate the dip switch on the handwheel to select handwheel axis (X, Y, Z, A);
- (3) Rotate the increment dip switch on the handwheel to select the moving amount (0.1, 0.01, 0.001);
- (4) Rotate the handwheel to move the machine tool. The tool moves certain distance every time you rotate the handwheel for a scale. (For example, if you select X axis in step (2) and select 0.01 in step (3), the tool moves 0.01mm every scale). Rotate the handle continuously to move the machine tool on this axis continuously.

 **Note**

The handwheel feeding mode controls only one coordinate axis every time; the faster the handwheel rotates, the faster the machine tool moves.

#### 4.5 Manual auxiliary function operation

##### Coolant on/off



In handwheel/single step/manual mode, press this key to switch on/off the coolant.

Key indicator: No matter in what mode, the key indicator is on if only the coolant is on, or else the indicator is off.

##### Lubricant on/off



In handwheel/single step/manual mode, press this key to switch on/off the lubricant.

Key indicator: No matter in what mode, the key indicator is on if only the lubricant is on, or else the indicator is off.

##### Principal axis positive rotation/stop



In handwheel/single step/manual mode, press this key to rotate the principal axis positively and press it again to stop the axis.

Key indicator: No matter in what mode, the key indicator is on if only the principal axis is positive rotating, or else the indicator is off.

##### Principal axis reverse rotation/stop



In handwheel/single step/manual mode, press this key to rotate the principal axis reversely and press it again to stop the axis.

Key indicator: No matter in what mode, the key indicator is on if only the principal axis is reverse rotating, or else the indicator is off.

##### General instructions for manual operation keys

Cooling, lubricant, principal axis positive/reverse rotation are available in handwheel, single step and manual mode;

When the principal axis is rotating, press the reverse rotation key, the principal axis will stop first, and rotate in reverse direction after pressing it again.

When auxiliary output is on, if the system is switched to other modes, the output is unchanged; you need to press “Reset” key to switch it off, execute the corresponding M code in automatic mode or execute the corresponding M code in MDI interface to turn off the output;

When the principal axis is positive/reverse rotating and execute M04/M03 directly, the system first stops positive/reverse rotating and then execute M04/M03 instruction;

Positive/reverse rotating of principal is stopped while emergency stop, and other outputs can be set according to system parameters.

## 4.6 Tool setting

Tool setting is the main operation and important skill during CNC processing. Under certain conditions, tool setting precision can determine the processing precision of parts, and the tool setting efficiency also affects the CNC processing efficiency directly. CNC46XX has M series tool setting mode and L series tool setting mode, while M series has two tool setting methods, i.e. centered and tool regulator, and L series uses test cutting.

### 4.6.1 Centered (M series)

The centered function is that the system calculates the center position of the workpiece automatically while tool setting to realize segment centered, rectangle centered and circle center location.

#### Note

In the tool setting operation below, if the auxiliary parameters of the coordinate system doesn't need setting, the first three steps can be omitted. Please refer to chapter 9.5 for auxiliary parameters of the coordinate system.

#### (1) Single axis centered

- Select the edit mode;
- Press [Coordinates], [Coordinates Parameter] to enter the auxiliary parameters setting interface of the coordinate system;
- Move the cursor to desired position, enter new parameters and press [EOB];
- Select handwheel or manual mode;
- Press [Coordinates] to enter coordinate system setting interface;
- Press the left/right arrow to move the cursor to select coordinate system;
- Press [Centered Measurement] to enter centered interface;
- Move the tool to make its side blade touch side A surface of the workpiece, and press [EOB] to record boundary point 1;
- Move the tool to make its side blade touch side B surface of the workpiece, and press [EOB] to record boundary point 2;
- Press [EOB] to calculate the coordinates of center point;
- If there is no question, press [EOB] again to return the result to specified coordinate system.

#### (2) Square centered

- Select the edit mode;
- Press [Coordinates], [Coordinates Parameter] to enter the auxiliary parameters setting interface of the coordinate system;
- Move the cursor to desired position, enter new parameters and press [EOB];
- Select handwheel or manual mode;
- Press [Coordinates] to enter coordinate system setting interface;
- Press the left/right arrow to move the cursor to select coordinate system;
- Press [Centered Measurement] to enter centered interface;
- Move the tool to make its side blade touch side A surface of the workpiece, and press [EOB] to record boundary point 1;
- Move the tool to make its side blade touch side B surface of the workpiece, and press [EOB] to record boundary point 2;
- Record boundary point 3.4 in the same method;

- Press [EOB] after recording all boundary points to calculate the coordinates of center point;
- If there is no question, press [EOB] again to return the result to specified coordinate system.

### (3) Plane circle (XY plane) centered

Circle centered has two modes, which are three points and two points with specified radius; If the user only types two coordinates in the option of workpiece boundary point and specifies one value for R, the system will determine the circle center with two points and radius automatically; if the user types coordinates of three points in the option of workpiece boundary point, the system will determine the circle center with three points and shield R.

The centered step of three points arc follows:

- Select the edit mode;
- Press [Coordinates], [Coordinates Parameter] to enter the auxiliary parameters setting interface of the coordinate system;
- Move the cursor to desired position, enter new parameters and press [EOB];
- Select handwheel or manual mode;
- Press [Coordinates] to enter coordinate system setting interface;
- Press the left/right arrow to move the cursor to select coordinate system;
- Press [Centered Measurement] to enter centered interface;
- Move the tool to make its side blade touch the surface of round workpiece, and press [EOB] to record boundary point 1;
- Move the tool to make its side blade touch another point in the surface of the workpiece, and press [EOB] to record boundary point 2;
- Move the tool to make its side blade touch another point in the surface of the workpiece, and press [EOB] to record boundary point 3;
- Press [EOB] after recording all boundary points to calculate the coordinates of circle center and display in the result section;
- If there is no question, press [EOB] again to return the result to specified coordinate system.

### Arc centered validation

In the main menu, press [Monitor], [MDI] to enter the MDI interface, select edit mode, enter program block G55G0X0Y0 (if coordinate system G55 is selected while tool setting), press [Start], [EOB], and the tool moves to workpiece center automatically, indicating that three points arc centered properly.

The validation steps for other tool setting methods are same.

### 4.6.2 Tool regulator (M series)

#### Tool regulator principle:

The tool regulator uses external sensor switch to set the reference point for axis Z, which is similar to home. After changing tool during processing or changing tool manually, transfer this function to automatically check the Z value of current workpiece's home.

### Tool regulator usage

Before using the tool regulator, you need to set the parameters. In [Coordinate] menu, press [Coordinate Parameter] to show tool setting parameters. After that, press [Tool Regulator] in the setting interface to execute the tool regulator program according to specified parameters.

#### The action sequence of tool regulator follows

- Return Z axis to mechanical home first, and then locate principal axis to X, Y coordinates of the tool regulator;
- Tool regulator blows to start;
- Z axis moves down, and retracts when touches tool regulator sensor switch, moves down at lower speed when the sensor switch leaves, records the machine tool coordinates of current Z axis when touches the switch and assigns to the Z coordinates of current selected coordinate system;
- Tool regulator blows to turn off;
- Z axis returns to home position.

#### 4.6.3 Tool setting by test cutting (L series)

The machine tool uses test cutting for tool setting, which moves the tool to cut the processing file, measures the value after cutting and enters into the system to complete the tool setting for center point.

For tool setting by test cutting, enter the test cutting interface first.

- Press [Coordinate], [Tool Setting] to enter tool setting interface;
- Move cursor to desired tool number, and select diameter or length for the type of current test cutting;
- Select handwheel, single step or manual mode;
- Press the principal axis on, and then press [X+] [X-] [Z+] [Z-] to move the axis and test cutting the workpiece;
- After test cutting, turn off the principal axis but do not move the axis;
- Select edit mode, measure corresponding data and display data, press the number keys to enter directly, press [EOB] to calculate and save automatically, or press [Cancel] to exit;



#### Caution

1. For tool setting by test cutting, automatically calculate the entered measurement value plus current machine tool coordinates and then enter. Therefore, the current position of machine tool must be true.
2. When measuring the diameter of workpiece, test cutting a layer of the workpiece surface. After cutting, the axis can only retract in opposite direction. Do not move X axis, or else the measured diameter will be invalid.
3. Measure the length of the workpiece, touch the workpiece end with the tool, make it can be cut; enter length value 0, indicating that current point is the workpiece home of Z axis.

### 4.7 Data settings

#### 4.7.1 Tool compensation data setting

The tool compensation parameters can be set as follow:

- Select the edit mode;

- In the main menu, press [Coordinate], and then press submenu [Compensation] to enter tool compensation parameter setting interface;
- Move cursor to select the parameter, enter the value and then press [EOB] to modify the parameter where the cursor locates.

#### 4.7.2 System parameter setting

The system parameters can be modified as follow:

- Select the edit mode;
- In the main menu, press [Parameter] to enter parameter setting interface;
- Then, press the submenu key to select the parameter type (comprehensive, management ...);
- Move cursor to select the parameter, enter the value and then press [EOB] to modify the parameter where the cursor locates.

#### 4.8. System shortcuts

Value input dialog box has a direct assignment and incremental assignment two input methods , direct assignment refers directly to the number assigned to the specified input parameters , the incremental value of the assignment refers to the current number and the specified input parameters the added the results then give parameters ; incremental input and direct input box on the left there is a prompt symbol , '=' represents a direct input , '+ ' represents the incremental input , the default mode is always direct assignment , the assignment to change increments way , you need to press the " down arrow" keys .

n the [ operation ] screen, [ position ] under the menu , you can press 'O' key to bring up the G code O program number box, you can quickly switch O block. Press the "EOB" OK, "Cancel " to return . In the [ operation ] screen, [ position ] under the menu , in the " manual mode " , press '←', '→' fast trimming spindle speed, if you press and hold , it will quickly accumulate speed value . Note that this feature must be turned on in order to operate in the spindle , and the current spindle speed is not zero, if the current speed is 0 , please first set in MDI mode for a number of revolutions is not zero, then make the shortcut for .

## 5. Automatic operation

The machine tool moving according to prepared program is called as automatic operation. The automatic operation modes of CNC46XX system follow:

Memory operation, MDI operation, USB disk DNC operation.

### 5.1 Memory operation

The machine tool can operate according to the program in CNC46XX memory, which is called as memory operation.

The program is prestored in the memory. Select and load a program with the operation panel and press the “Start” key to start the automatic operation. Then, press “Pause” key to pause, press “Start” key again to resume the operation, and press “Reset” during operation to stop the program immediately.

The step of memory operation follows:

- (1) Save the program in the memory (see 8.1 for details);
- (2) Select [Edit], [File] in the menu or press [File] on the panel to enter file operation interface;
- (3) Press the direction keys to move the cursor, press [EOB] to select a program and load the file into the work area;
- (4) Press mode selection key [Auto] to switch to automatic mode;
- (5) Press the [Start] key to run the program, and the indicator is on.

### 5.2 MDI operation

In [Monitor] interface, switch to [MDI], enter the program with keypad and make the machine tool operate according to the program. The program block isn't saved in system memory, and can't be preserved upon power failure. This is called as MDI operation and the step follows:

- (1) Press mode selection key [Edit];
- (2) Select [Monitor], [MDI] in the menu to enter MDI interface;
- (3) Enter program block instruction manually;
- (4) Press [Start], [EOB] to start executing the program block.

### 5.3 USB disk DNC

The program read from external USB disk can operate the machine tool without saving in CNC memory. This operation is called as USB disk DNC operation.

The step of USB disk DNC operation follows:

- (1) Insert the USB disk;
- (2) Select [Monitor], [File] in the menu to enter file operation interface;
- (3) Select USB disk and press [EOB] to enter;
- (4) Move cursor to select a file in the disk;
- (5) Press [EOB] to load the file into work area (system buffer);
- (6) Press mode selection key [Auto];
- (7) Press the [Start] key to run the program, and the indicator is on.



**Caution**

The system won't record the USD disk path. If power failure occurs during DNC processing, the program info will be lost when the power supply is connected again.

#### 5.4 Speed rate adjustment

##### **Feeding rate**

In automatic mode, press Up/Down key in [Position] interface to adjust the feeding rate; Press the key once to increase or decrease by 10% (10%-150%).

##### **Manual rate**

In manual mode, press Up/Down key in [Position] interface to adjust the manual rate; Press the key to increase or decrease by 10% (10%-150%). If you press the FF key and Up/Down key, you can adjust the fast forward rate by 10% (10%-150%).

##### **Principal axis rotation**

In automatic or manual mode, press the Left/Right key to adjust the principal axis rotation by 100r/min. The maximum rotation is set by the principal axis parameters in the system and the minimum rotation is 16r/min. If you press and hold the key for three seconds, the value will be increased or decreased quickly.

#### 5.5 Run idle

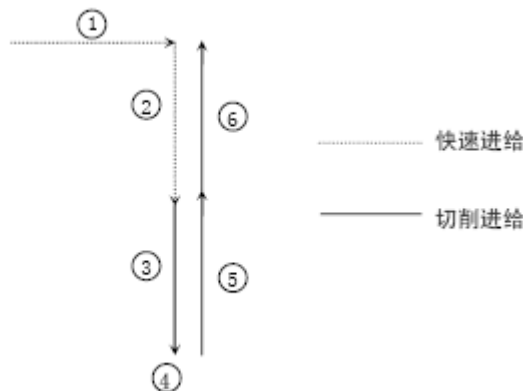
(Reserved)

### 5.6 SBK function

In automatic mode, press [SBK] to start the SBK function. Current program block stops after executing; press [Start] again and next block stops after executing. The SBK mode allows checking the program block by block.

 **Caution:**

- ① In G28-G30, single block also can be stopped at the center point;
- ② The stop points of single block in fixed circle are ①, ②, ⑥ in the figure below; when the single blocks of ①, ② stops, the feeding pauses and the pause indicator is on.



快速进给 Quick feeding  
切削进给 Cutting feeding

### 5.7 BDT function

In automatic mode, press [BDT] to start the BDT function, which will make the block instructions in the line after '/' in the program invalid.

### 5.8 Stopping automatic operating

Two methods are available to stop automatic operating, i.e. enter stop command where the program will stop (M00, M01) and press the key on the operation panel to stop the machine tool.

#### Program stops

After executing the block with M00 or M01, the automatic operating stops, which is same to single block stop, and all mode information is saved. Start with CNC and the automatic operation can be started again.

After processing a part, the automatic operation stops.

#### Program ends

After executing the block with M30, the automatic operating stops, changes into reset state, and returns to program start.

#### Feeding pause

During automatic operation, press the [Pause] key on the operation panel, the automatic operation pauses and the indicator is on; press [Start] again to continue operating the machine tool and the pause indicator is on.

#### Reset

During automatic operation, press the [Reset] key on the operation panel and the system stops immediately. Here, [Reset] has the same function as emergency stop button.

 **6. Safe operation**

6.1 Emergency stop

Press the emergency stop button on the machine tool, which will stop immediately, and all outputs such as principal axis rotation and coolant are turned off. Rotate the button clockwise to cancel emergency stop, but all outputs must be restarted.

 **Caution:**

The power supply isn't always cut off upon emergency stop. Please refer to the electrical configuration description of the machine tool manufacturer for details;

Before releasing emergency stop, please eliminate the problems of the machine tool.

6.2 Hard limit over travel

The system alarms if the tool touches travel switch during operation. The axis in corresponding direction can't move, and only moves in reverse direction. Before the alarm is released, the system can't enter automatic operation normally. After investigating the alarm reason, press [Reset] to clear the alarm in formation.

6.3 Soft limit over travel


If the tool enters the restriction area regulated by the parameter (travel limit), the system alarms over travel, and the tool decelerates and stops. At this moment, you can move the tool to safe direction in manual mode, and then press [Reset] to release the alarm.

 **Caution:**

During automatic operation, when the tool touches an axial travel switch, the tool decelerates and stops all axial motions, and only displays one over travel alarm.

During manual operation, when the tool touches an axial travel switch, the tool only decelerates and stops motion on current axis, and still moves along other axes.

When the tool is in safe position, press [Reset] to clear the alarm. Please refer to the manual of the machine tool for details.

 **7. Alarm and self- diagnosis function**

The system has several levels, and the alarm numbers also have different type, as follow:

0~1023: G code program running alarm info

1024~2048: System environment alarm info

7.1 NC program execution alarm

0000	:	Please reset
0001	:	Program ends
0004	:	Changing tool fails

0005	:	Tool is invalid
0006	:	G block repeat error
0007	:	G block program No. error
0008	:	G7x8x complex instruction code can't run normally
0009	:	Abnormal program termination error
0010	:	Specify M01 code program pause
0011	:	M98 format error
0012	:	Motion transfer fails
0013	:	This block doesn't need compensation
0014	:	G block invalid format
0015	:	M99 instruction transfer abnormal; M99 transfer is prohibited in current position
0016	:	Abnormal motion alarm
0017	:	Illegal character
0018	:	Note symbol format error or no symmetric note symbol
0019	:	Illegal G code
0020	:	G code radius compensation number or value error
0021	:	Undefined G code radius compensation error
0022	:	Arc programming error
0023	:	Specify illegal plane, exceed G17, G18, G19
0024	:	M98 transfer error, may exceed the maximum value
0025	:	Principal axis specifying hardware axis No. error
0026	:	M code execution error
0027	:	Specifying principal axis fails
0028	:	Motion repeats request
0029	:	Specified arc doesn't exist
0030	:	X instruction missing error
0031	:	Y instruction missing error
0032	:	Z instruction missing error
0033	:	A instruction missing error
0034	:	B instruction missing error
0035	:	C instruction missing error
0036	:	D instruction missing error
0037	:	R instruction missing error

0038	:	F instruction missing error
0039	:	T instruction missing error
0040	:	S instruction missing error
0041	:	P instruction missing error
0042	:	M instruction missing error
0043	:	G instruction missing error
0044	:	I instruction missing error
0045	:	J instruction missing error
0046	:	K instruction missing error
0047	:	Q instruction missing error
0048	:	Screw distance repeat designation error
0049	:	System alarm occurs and exits abnormally
0050	:	Exit through human intervention
0051	:	G code parameter source isn't specified
0052	:	G code program No. table storage address isn't specified

7.2 System environment alarm

1024	:	The controller isn't reset
1. The system doesn't perform home action after started		
1025	:	A axis negative soft limit
1026	:	A axis positive soft limit
1027	:	Z axis negative soft limit
1028	:	Z axis positive soft limit
1029	:	Y axis negative soft limit
1030	:	Y axis positive soft limit
1031	:	X axis negative soft limit
1032	:	X axis positive soft limit
1033	:	A axis negative hard limit
1034	:	A axis positive hard limit
1035	:	Z axis negative hard limit
1036	:	Z axis positive hard limit
1037	:	Y axis negative hard limit

1038	:	Y axis positive hard limit
1039	:	X axis negative hard limit
1040	:	X axis positive hard limit

The system has corresponding limit alarm. Please check corresponding limit sensor point or parameters. If hard limit occurs, and the appearance of the sensor point doesn't has any problem, enter the diagnosis mode in manual mode and check the state of the input port in diagnosis mode. If the state is valid, please eliminate in sequence. Pull out the input IO cable and check whether the sense disappears. If yes, please check the circuit. If the problem still exists, the internal optocoupler is broken. Please contact the supplier.

1041	:	Emergency stop
------	---	----------------

Emergency stop button of the handheld box interface is valid.  
External emergency stop 2 input is valid; check whether IO assignment has conflict or interference.  
Search for corresponding function ports in IO configuration, and then check in input diagnosis.

1042	:	Servo X drive alarm
1043	:	Servo Y drive alarm
1044	:	Servo Z drive alarm
1045	:	Servo A drive alarm

Servo alarm; if the servo doesn't alarm, parameter P2.001~004 setting and actual servo alarm level may be reverse. Please modify the parameters.  
The corresponding function ports are IN34~37, which can be checked in input diagnosis.

1046	:	Axis No. definition internal repeat error
------	---	---

Interface axis No. set by parameter P2.45~P2.49 is specified repeatedly

1047	:	Principal axis isn't reset
------	---	----------------------------

1048	:	Mold isn't clamped
------	---	--------------------

1049	:	System safety signal not in position error
------	---	--

1051	:	System air pressure insufficient
------	---	----------------------------------

1052	:	System material clamping signal invalid alarm
------	---	---

### 7.3 Alarm processing

If alarm occurs, please refer to the alarm code to confirm the failure reason.

If the error is caused by the program or data setting, modify the program or set data, and then press [Reset] to clear the alarm info.

#### 7.4 Self-diagnosis function

The CNC system may stop even when there is no alarm info, this may be because the system is executing certain processes. Please check with the self-diagnosis function.

The step of self-diagnosis follows:

- (1) In the main menu, press [Diagnosis] to enter the diagnosis interface;
- (2) Select [Input] to enter the input diagnosis interface, or select [Output] to enter the output diagnosis interface;
- (3) Output diagnosis: Press the direction keys to select the output port, and press [EOB] to switch the output level of corresponding output port;
- (4) Input diagnosis: When certain input signal is valid, the corresponding area on the screen flashes.

## 8.. Program saving & editing

### 8.1 Saving the program in the memory

#### 8.1.1 Keypad input (new program)

Create new program in the memory with the keypad, and the step follows:

In the main menu, press [Edit] to enter program edit interface;

Press [File] to enter file operation interface;

Select [New] to create a new file;

Enter the file name and press [EOB] to confirm and create a new program in current directory in the memory, and load into the system by default;

Select [Close] to exit [Edit] interface;

In edit mode, enter the program content;

After editing all programs, press [Reset] to save the edited programs into the system memory.

#### 8.1.2 PC serial port input

The step of transmitting files to controller through PC follows:

Set system baud rate and ID No.;

Connect to PC and run Adtech serial communication software;

Set the baud rate same as controller, and scan ID device;

Select the [Upload file to NC] button in the communication software;

Select CNC file in the popup dialog box and press [Open] button.

#### 8.1.3 Copying processing files from USB disk

The step of copying CNC processing file to system memory through USB disk follows:

In the main menu, press [Edit] to enter program edit interface;

Select [File] to enter file operation interface;

Select USB disk and press [EOB] to enter;

Move the cursor to select a CNC file and then select [Copy];

Return to the root directory, locate the PROG directory in disk D, enter the directory, and select [Paste] to complete copying.

## 8.2 Reading programs into work area

### 8.2.1 Reading programs from controller into work area

The step of loading files from system memory into work area follows:

Press [File] to enter file operation interface;

Select desired program, which is in PROG directory in disk D by default, press [EOB] to enter subdirectory, or press [Cancel] to exit;

Move cursor to select desired program, press [EOB] to confirm and load the program.

### 8.2.2 Reading programs from USB disk into work area

The step of loading files from USB disk into work area follows:

Insert the USB disk;

Press [File] to enter file operation interface;

Select USB disk, move cursor to select a file in the disk, and press [EOB] to load the file.

## 8.3 Editing & modifying programs

The program in CNC memory can be edited with NC keypad. In the main menu, press [Edit] to enter program edit interface and edit the program in current work area (for loading program into work area, refer to 8.2). The edit mode similar to notepad in Windows. Move the cursor directly to locate, press keys to enter, press [EOB] to change line, and press [Delete] to delete the character where the cursor locates.

### **Caution**

After all operations, press Reset to save the files, and the functions base on edit mode;

CNC46XX uses new file mapping technology, and allows loading processing files that exceed its memory. Therefore, to ensure the system efficiency, you can only search and process, but can't edit the processing files that exceed 2MB.

## 8.4 Deleting programs

### 8.4.1 Deleting programs in memory

Follow the step below to delete the programs in system memory:

Press [File] to enter file operation interface;

Follow the prompt on the screen, select the file and press [Delete] to confirm and delete the file.

### **Caution**

If the program has been loaded into work area, you need to restart the system to delete the program, or else the system will report error.

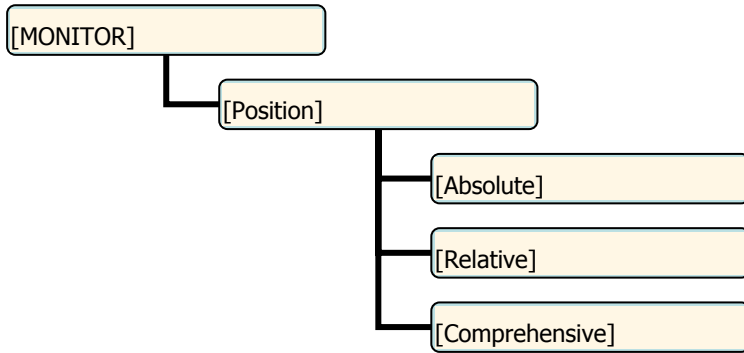
The programs loaded into the work area can't be deleted, or else the system will report error.

### **Main interfaces of the system**

## 9.1 Position interface

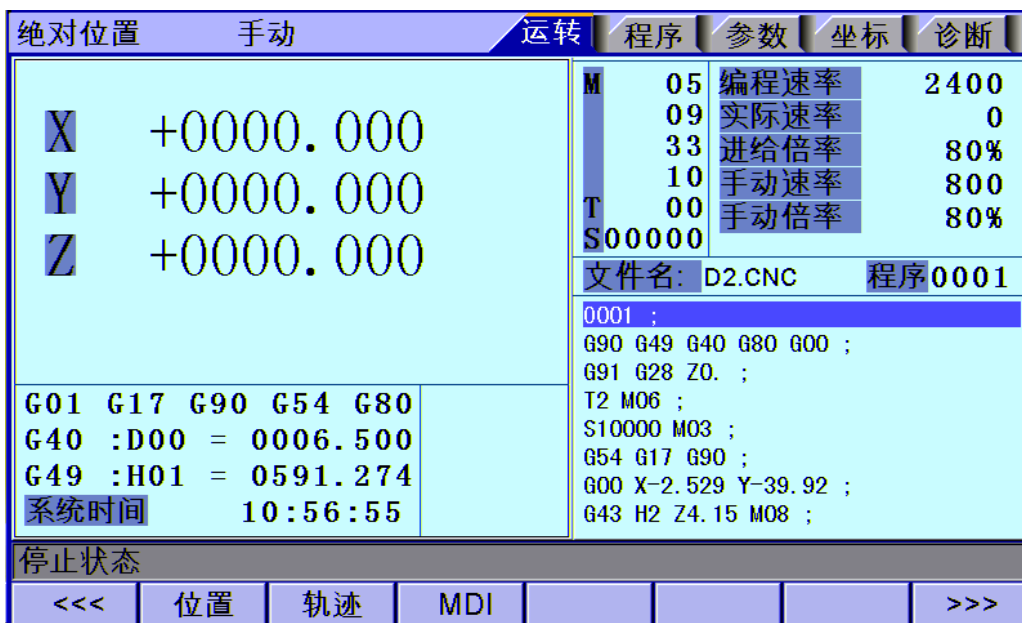
The position interface shows current machine tool coordinates, including absolute position, relative position and comprehensive position. In the main interface, press [Monitor] to enter the position interface.

To enter position interface:



**Absolute position**

The position of current machine tool coordinates relative to the origin of workpiece coordinate system  
The absolute position interface follows:



绝对位置 Absolute position 手动 Manual 运转 Monitor 程序 Program 参 Number Parameter 坐标 Coordinates 坐诊  
Diagnosis  
编程速率 Programming rate  
实际速率 Actual rate  
进给倍率 Feeding ratio  
手动速率 Manual rate  
手动倍率 Manual ratio  
文件名 File name 程序 Program:  
系统时间 System time Stop 状态 Stopped  
位置 Position 轨迹 Track

Absolute Position Interface

**Relative position**

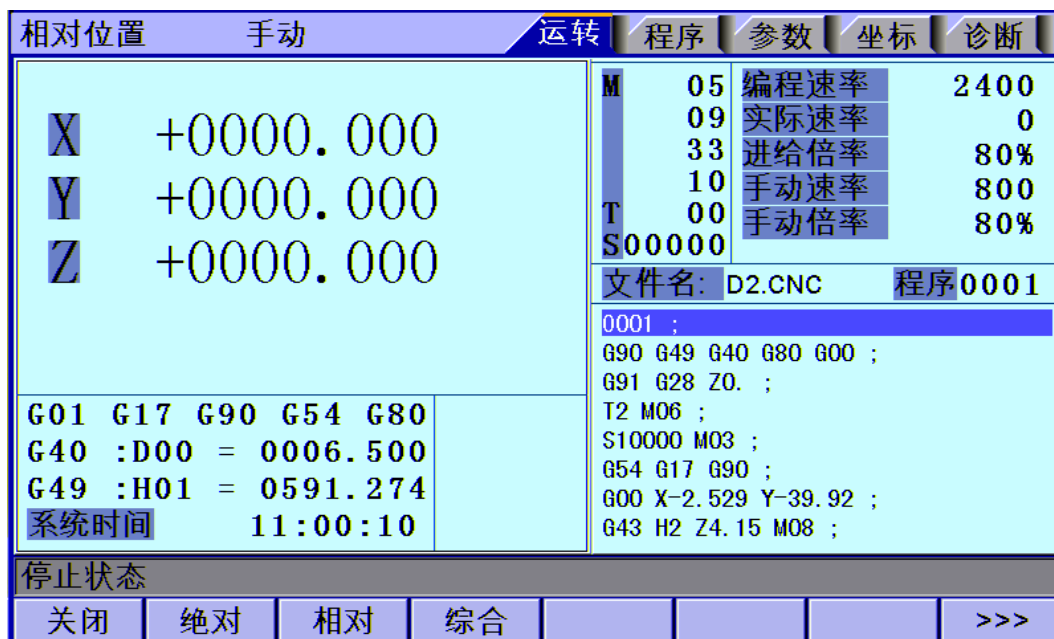
In manual mode, reset current coordinates to check the relative motion distance of any displacement, and thus it is called as relative position.

This interface is usually used for early tool setting. Considering that some operators have been used to manual calculation, this function is preserved. With the more and more powerful of automatic centered function, it is used less.

The operation follows:

- Enter [Position] interface;
- Switch to [Relative] interface;
- Then, enter manual mode;
- Press a coordinate axis No., e.g., 'X', and the X coordinate flashes;
- Press "Cancel" to reset X coordinate to 0;

The relative position interface follows:



相对位置 Relative position 手动 Manual 运转 Monitor 程序 Program 参 Number Parameter 坐标 Coordinates 诊断

Diagnosis

编程速率 Programming rate

实际速率 Actual rate

进给倍率 Feeding ratio

手动速率 Manual rate

手动倍率 Manual ratio

文件名 File name 程序 Program:

系统时间 System time

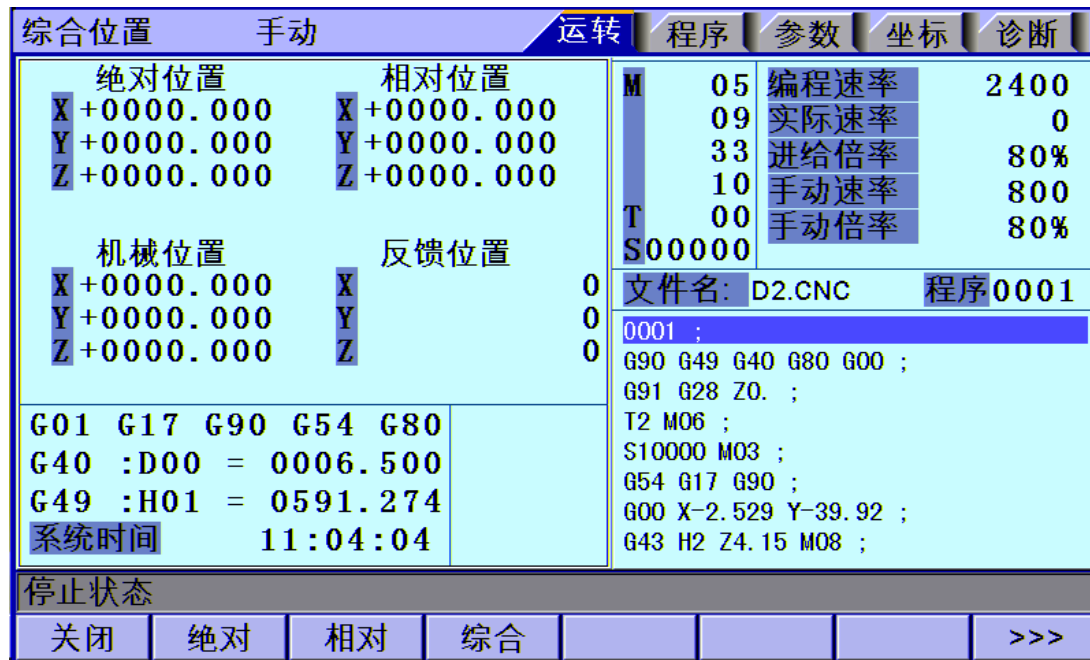
Stop 状态 Stopped

关闭 Close 绝对 Absolute 相对 Relative 综合 Comprehensive

Relative Position Interface

Comprehensive coordinates

The interface displayed by absolute coordinates and machine tool coordinate Comprehensive position interface is shown below:



综合位置 Comprehensive position      手动 Manual      运转 Monitor

程序 Program                              参 Number Parameter      坐标 Coordinates      诊断 Diagnosis

绝对位置 Absolute position              相对位置 Relative position

编程速率 Programming rate

实际速率 Actual rate

进给倍率 Feeding ratio

手动速率 Manual rate

手动倍率 Manual ratio

Machinery 位置 Mechanical position      反馈位置 Feedback position

文件名 File name                          程序 Program:

系统时间 System time

Stop 状态 Stopped

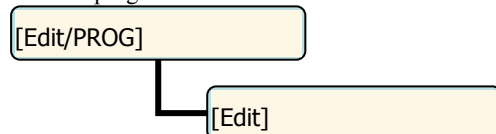
关闭 Close 绝对 Absolute 相对 Relative 综合 Comprehensive

Comprehensive Position Interface

### 9.2 Edit interface

The edit interface shows the program info in current workpiece, including program, file, etc. In the main interface, press [Edit] to enter the program interface.

To enter program edit interface:



### Program edit

The program edit interface shows the NC program currently processed; in edit mode, you can edit the NC program (see 8.3 for details).  
 Program edit interface is shown below:

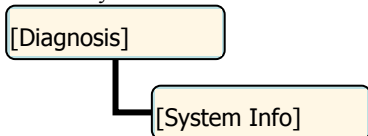


程序编辑 Program edit 手动 Manual 运转 Monitor 程序 Program 参 Number Parameter 坐标 Coordinates 诊断  
 Diagnosis  
 Stop 状态 Stopped  
 编辑 Edit 文件 File

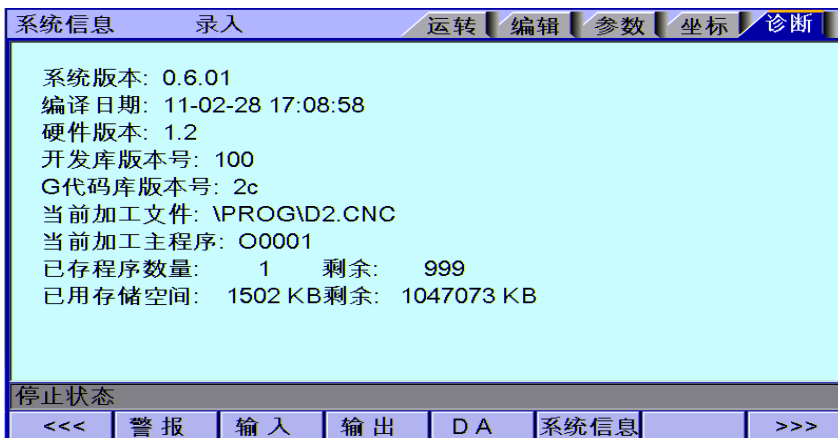
Program Edit Interface

**System info interface**

The system info is a summary of the program blocks in current processing area, and calculates the resource usage in current work area. The upper right of the program directory interface shows the version info of current controller software. If our engineering personnel asks to confirm the software version of the controller on site, please provide this version info.  
 To enter system info interface:



System info interface is shown below:



系统信息 System info 录入 Edit 运转 Monitor 编辑 Edit 参 NumberParameter 坐标 Coordinates 诊断 Diagnosis

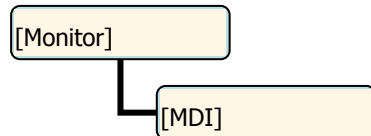
系统版本 System version  
 编译日期 Compilation date: 11-02-28 17:08:58 硬件版本 Hardware version: 1.2  
 开发库版本号 Development library version: 100G 代码库版本号 G code library version: 2c  
 当前加工文件 Current processing file: \PROG/D2.CNC 当前加工 Principal 程序 Current processing main program:  
 O0001  
 已存程序 Number 量 Saved programs 剩余 left  
 已用存储 Empty 间 Used space 剩余 left  
 Stop 状态 Stopped  
 警报 Alarm input Input outputOutput 系统信息 System info

System Info Interface

9.3 MDI interface

MDI mode is mainly used for the execution of single G code in certain occasions.

To enter MDI interface:



In MDI interface, enter complete NC code and then press [Insert] to enter NC instruction to corresponding position, and press [Start] to run.

MDI interaction interface is shown below:



MDI 运行 MDI running 录入 Edit 运转 Monitor 编辑 Edit 参 NumberParameter 坐标 Coordinates 诊断 Diagnosis

绝对位置 Absolute position

机床位置 Machine tool position

Stop 状态 Stopped

位置 Position

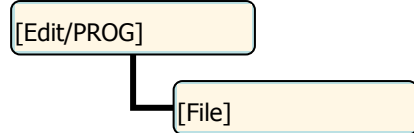
轨迹 Track

MDI Interface

### 9.4 File management

In the file management interface, you can manage the system files.

To enter file management interface:



File management mainly has the following functions:

Connect the UBS disk, and copy the files between USB disk and electronic disk;

Upgrade system software: Copy the upgrade file to system memory in either method above to upgrade the software;

Restart the controller. In [File Management] interface, press the Reset key to restart the controller. This method is different from restarting due to power failure. In certain occasions, you can restart the controller quickly in this method to make certain function take effect.

Connect to PC with the USB cable, and exchange the data between USB disk and PC.

File operation interface is shown below:



文件管理 File management 手动 Manual 运转 Monitor 程序 Program 参 NumberParameter 坐标 Coordinates 诊断  
Diagnosis

我的设备 My devices

本 Ground 磁盘(C:)al disk (C:) 本 Ground 磁盘(D:) Local disk (D:) 可移动磁盘 Mobile disk (U:)

\PROG\本 Ground 磁盘(C:) \PROG\Local disk (C:)

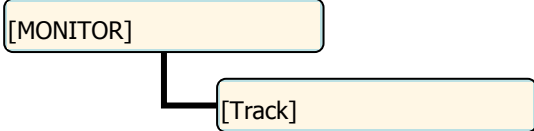
Stop 状态 Stopped

关闭 Close 设备 Equipment 新建 New 复制 Copy 粘帖 Paste 剪切 Cut 连接 PC Connect to PC

File Operation Interface

9.5 Graphic simulation

[Track] function is to simulate NC processing program.  
To enter graphic simulation interface:



Enter track interface to enable real-time track display automatically. During automatic running of the system, the motion track is displayed in real-time. In standby mode, you can also press Preview to prescan the processing file.

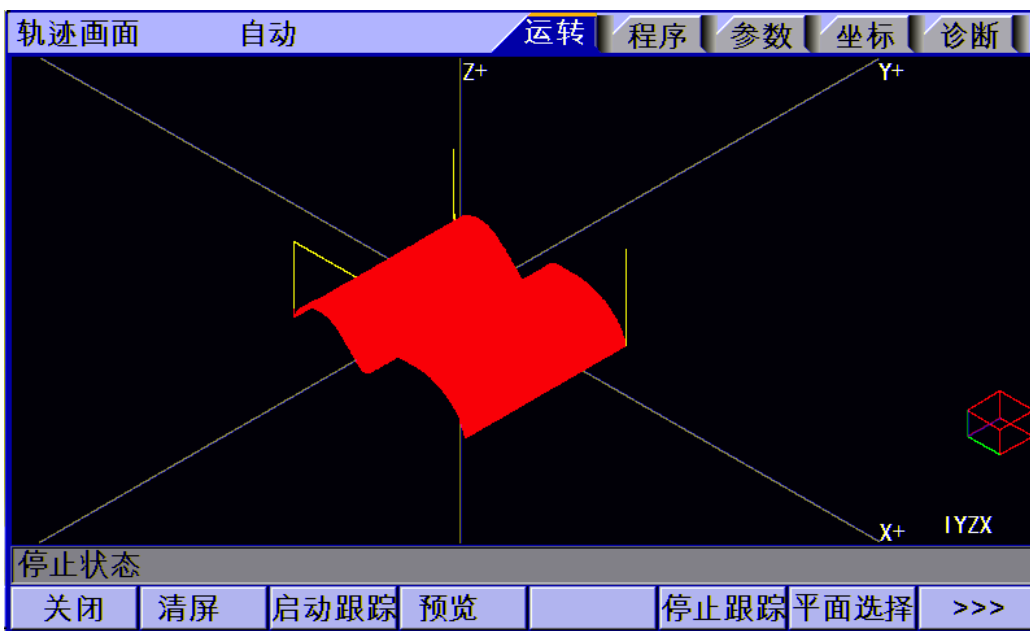
The shortcuts of adjusting position:

PageUp: Zoom in

PageDown: Zoom out

→←↑↓: Shift position; the shift unit is the set pixel unit

Graphic simulation interface is shown below:



轨迹画面 Track screen 自动 Auto 运转 Monitor 程序 Program 参 NumberParameter 坐标 Coordinates 诊断

Diagnosis

Stop 状态 Stopped

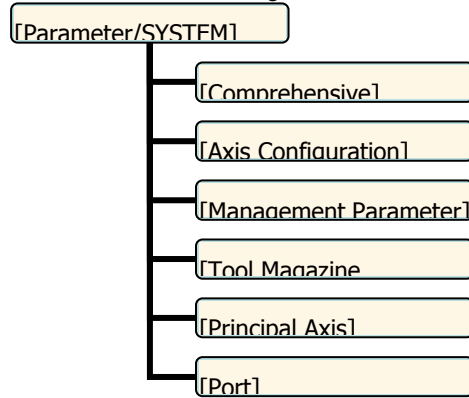
关闭 Close 清屏 Clear Start 跟踪 Start tracking 预览 Preview Stop 跟踪 Stop tracking 平面行动 Select plane

Graphic Simulation Interface

9.6 Parameter interface

The parameter interface shows system parameter info, including comprehensive, axis parameter, management, tool magazine, principal axis, port, etc. In the main interface, press [parameter] to enter the interface.

Parameter has the following menus:



**Comprehensive parameters**

Comprehensive parameters are a set of functions that aren't classified in details, e.g. home mode, manual speed, etc. Comprehensive parameter interface is shown below:

综合参数		录入		运转	程序	参数	坐标	诊断
001,X轴指令倍乘比	1	013,X轴起始速率(mm/min)	100					
002,X轴指令分频系数	1	014,Y轴起始速率(mm/min)	100					
003,Y轴指令倍率比	1	015,Z轴起始速率(mm/min)	100					
004,Y轴指令分频系数	1	016,4轴起始速率(mm/min)	100					
005,Z轴指令倍乘比	1	017,X轴加速度(Kpps)	1000					
006,Z轴指令分频系数	1	018,Y轴加速度(Kpps)	1000					
007,4轴指令倍率比	1	019,Z轴加速度(Kpps)	1000					
008,4轴指令分频系数	1	020,4轴加速度(Kpps)	1000					
009,X轴快移速率(mm/min)	3000	021,X轴正向软限位 (mm)	+ 9999.999					
010,Y轴快移速率(mm/min)	3000	022,X轴负向软限位 (mm)	- 9999.999					
011,Z轴快移速率(mm/min)	3000	023,Y轴正向软限位 (mm)	+ 9999.999					
012,4轴快移速率(mm/min)	3000	024,Y轴负向软限位 (mm)	- 9999.999					
0.								
停止状态								
<<<		综合	轴配置	管理	刀库	主轴	端口	>>>

General parameter Comprehensive Parameter/录入 Edit/运转 Monitor/程序 Program/参 NumberParameter/坐标 Coordinates/诊断 Diagnosis

X axis 指令倍乘比 X axis instruction multiplication ratio Xaxis 起始速率(mm/min) X axis start speed (mm/min)

Xaxis 指令分频 ratio X axis instruction frequency division coefficient Yaxis 起始速率(mm/min) Y axis start speed (mm/min)

Yaxis 指令倍率比 Y axis instruction multiplication ratio Zaxis 起始速率 Z axis start speed (mm/min)

Yaxis 指令分频 ratio Y axis instruction frequency division coefficient Yaxis 起始速率(mm/min)4 axes start speed (mm/min)

Zaxis 指令倍乘比 Z axis instruction multiplication ratio Xaxis speed up 度(kpps) X axis acceleration (kpps)

Zaxis 指令分频 ratio Z axis instruction frequency division coefficient Yaxis speed up 度 Y axis acceleration (kpps)

4axis 指令倍率比 4 axes instruction multiplication ratio      Zaxis speed up 度(Kpps) Z axis acceleration (kpps)

4axis 指令分频 ratio 4 axes instruction frequency division coefficient      4axis speed up 度(Kpps) 4 axes acceleration (kpps)

Xaxis 快移速率(mm/min) X axis rapid traverse rate (mm/min)      Xaxis 正向软限位(mm) X axis positive soft limit (mm)

Yaxis 快移速率(mm/min) Y axis rapid traverse rate (mm/min)      Xaxis 负向软限位(mm) X axis negative soft limit (mm)

Zaxis 快移速率(mm/min) Z axis rapid traverse rate (mm/min)      Yaxis 正向软限位(mm) Y axis positive soft limit (mm)

4axis 快移速率(mm/min) 4 axes rapid traverse rate (mm/min)      Yaxis 负向软限位(mm) Y axis negative soft limit (mm)

Stop 状态 Stopped

综合 Comprehensive/axis configuration Axis configuration/管理 Management/ cutter magazine Tool magazine/Principal axis Principal axis/Port Port

Comprehensive Parameter Interface

4 axes instruction frequency multiplication ratio
4 axes instruction frequency division coefficient
X axis rapid traverse rate (mm/min)

**Axis parameters**

Axis parameters are parameter set of interface characteristics of control position axis. Please refer to the parameter description for details.

Axis parameter interface is shown below:

轴参数		录入		运转	程序	参数	坐标	诊断
001, 伺服X轴报警有效电平		1		013, 伺服Z轴Z相零点使能		0		
002, 伺服Y轴报警有效电平		1		014, 伺服Z轴Z相有效电平		0		
003, 伺服Z轴报警有效电平		1		015, 伺服4轴Z相零点使能		0		
004, 伺服4轴报警有效电平		1		016, 伺服4轴Z相有效电平		0		
005, 伺服X轴复位有效电平		1		017, X硬件正限位使能		0		
006, 伺服Y轴复位有效电平		1		018, X硬件负限位使能		0		
007, 伺服Z轴复位有效电平		1		019, X硬件有效电平		0		
008, 伺服4轴复位有效电平		1		020, Y硬件正限位使能		0		
009, 伺服X轴Z相零点使能		0		021, Y硬件负限位使能		0		
010, 伺服X轴Z相有效电平		0		022, Y硬件有效电平		0		
011, 伺服Y轴Z相零点使能		0		023, Z硬件正限位使能		0		
012, 伺服Y轴Z相有效电平		0		024, Z硬件负限位使能		0		
0.								
停止状态								
<<<		综合	轴配置	管理	刀库	主轴	端口	>>>

axis 参 Number Axis Parameter /录入 Edit /运转 Monitor/程序 Program /参 Number Parameter /坐标 Coordinates/诊断 Diagnosis

Servo X axis alarm 有效电平 Effective voltage level for servo X axis alarm      Servo Z axis Z phase zero enable

ServoYaxisalarm 有效电平 Effective voltage level for servo Y axis alarm	ServoZaxisZPhase active levelEffective voltage level for servo Z axis Z phase
Servo4axisalarm 有效电平 Effective voltage level for servo Z axis alarm	Servo4axisZPhase Zero EnableServo 4 axes Z phase zero enable
Servo4axisalarm 有效电平 Effective voltage level for servo 4 axes alarm	Servo4axisZPhase active levelEffective voltage level for servo 4 axes Z phase
ServoXaxisReset active levelEffective voltage level for servo X axis reset	X 硬件 positive limit 使能 X hardware positive limit enable
ServoYaxisReset active levelEffective voltage level for servo Y axis reset	X 硬件 negative limit 使能 X hardware negative limit enable
ServoZaxisReset active levelEffective voltage level for servo Z axis reset	X 硬 Limit active levelEffective voltage level for X hard limit
Servo4axisReset active levelEffective voltage level for servo 4 axes reset	Y 硬件 positive limit 使能 Y hardware positive limit enable
ServoXaxisZPhase Zero EnableServo X axis Z phase zero enable	Y 硬件 negative limit 使能 Y hardware negative limit enable
ServoXaxisZPhase active levelEffective voltage level for servo X axis Z phase	Y 硬 Limit active levelEffective voltage level for Y hard limit
ServoXaxisZPhase Zero EnableServo Y axis Z phase zero enable	Z 硬件 positive limit 使能 Z hardware positive limit enable
ServoXaxisZPhase active levelEffective voltage level for servo Y axis Z phase	Z 硬件 negative limit 使能 Z hardware negative limit enable
Stop 状态 Stopped	
综合 Comprehensive /axisconfigurationAxis configuration /管理 Management / cutter magazine Tool magazine	
/Principal axis Principal axis /Port Port	

## Axis Parameter Interface

**Management parameters**

This is a function set that confirms identity and initialize the system.  
Management parameter interface is shown below:



Management parameter Management Parameter/录入 Edit /运转 Monitor/程序 Program /参 NumberParameter /坐标 Coordinates/诊断 Diagnosis

input 密码 Select 管理 modelEnter password and select management mode 导入 CSV 系统 configuration 表 Import CSV configuration

修改 Super User 密码 Modify super user password 开机默认显示模块 Default start display module

修改操作用户密码 Modify operation user password System Language 包 System language packs

初始化 General parameter 为出厂值 Reset comprehensive parameters 宏关键字有效使能 Macro keyword effective enable

初使化 IOconfiguration 为出厂值 Reset IO configuration 开机画面显示 modelBoot screen display mode

全部参 Number 重置 Reset all parameters 系统显示 axisSet up(bit)System display axis setting (bit)

Parameter backupBack up parameters Parameter RecoveryRestore parameters from sysconf.bak

生成密码文件 Generating password file Click the menu modeMenu clicking mode

清除累计加工件 NumberClear accumulated processing pieces 清除当前加工件 NumberClear current processing pieces

Stop 状态 Stopped

综合 Comprehensive/axisconfigurationAxis configuration /管理 Management / cutter magazineTool magazine /Principal axis Principal axis/Port Port

Management Parameter Interface

Tool magazine parameters

Tool magazine parameters collect the parameters that the tool magazine requires. The specific meaning of the parameters should be determined by the tool magazine of the machine tool, and therefore should refer to the instructions provided by the machine tool manufacturer.

**Principal axis parameters**

Principal axis parameters are the set of electrical characteristics of servo and common principal axes. The specific application also depends on the principal axis selection of the machine tool manufacturer. The servo parameters and axis parameters have the same meaning, and therefore please refer to the description of axis parameters.

Principal axis parameter interface is shown below:



Principal axis 参 NumberPrincipal Axis Parameter/录入 Edit /运转 Monitor/程序 Program /参 NumberParameter /坐标 Coordinates/诊断 Diagnosis

- Principal axis alarm 有效电平 Effective voltage level for principal axis alarm      Principal axis encoder lines(P)Principal axis encoder wires (p)
- Principal axis Reset active levelEffective voltage level for principal axis reset      Principal axis 归零 offset Pulse Number(P)Principal axis home offset pulses (p)
- Principal axis encoderZPhase Zero EnablePrincipal axis encoder Z phase zero enable      Principal axis PulseLogic LevelPrincipal axis pulse logic voltage level
- Principal axis encoderZPhase active levelEffective voltage level for principal axis encoder Z phase      Principal axis Rotating displayPrincipal axis rotation display mode
- Principal axis positive limit(Port Enable)Principal axis positive limit (port enable)      Principal axis 最大 speed up 度 (Kpps)Principal axis maximum acceleration (kpps)
- Principal axis 复限位(Port Enable)Principal axis negative limit (port enable)      Principal axis External home 回零 directionPrincipal axis external zero home direction
- Principal axis Limit active levelEffective voltage level for principal axis limit      Principal axis Servo Zero 回零 directionPrincipal axis servo zero home direction
- Principal axis Pulse formatPrincipal axis pulse format      Principal axis Maximum speed(rpm)Principal axis maximum rotation (rpm)
- Principal axis 肪冲逻辑 directionPrincipal axis pulse logic direction      Principal axis Back to zero speed(rpm) Principal axis home rotation (rpm)

Principal axis Effective voltage level for X external homeEffective voltage level for principal axis external zero

Principal axis Gear ratio numeratorPrincipal axis gear ratio numerator

Principal axis External home 检测使能 Principal axis external zero test enable Principal axis Gear ratio

itemsPrincipal axis gear ratio denominator

Principal axis ROUNDSet up Principal axis ROUND setting Principal axis encoder 逻辑 directionPrincipal axis encoder logic direction

Stop 状态 Stopped

综合 Comprehensive /axisconfigurationAxis configuration /管理 Management / cutter magazineTool magazine

/Principal axis Principal axis /Port Port

Principal Axis Parameters Interface

**IO configuration parameters**

IO configuration parameters are the assignment of hardware interfaces. This parameter set is the IO pin sequence specified by the system's IO function numbers, which will improve the system flexibility. Please refer to System Parameters for the specific meaning of the parameters.

IO configuration parameter interface is shown below:

IO 参数	录入	运转	程序	参数	坐标	诊断
001,手轮0.1	24	013,伺服Z报警				36
002,手轮0.01	26	014,伺服A报警				37
003,手轮0.001	28	015,IN0-----线号:(1-24)				0
004,手轮轴选X	25	016,IN1-----线号:(1-24)				1
005,手轮轴选Y	27	017,IN2-----线号:(1-24)				2
006,手轮轴选Z	29	018,IN3-----线号:(1-24)				3
007,手轮轴选A	31	019,IN4-----线号:(1-24)				4
008,手轮急停	33	020,IN5-----线号:(1-24)				5
009,手轮暂停	32	021,IN6-----线号:(1-24)				6
010,手轮启动	30	022,IN7-----线号:(1-24)				7
011,伺服X报警	34	023,IN8-----线号:(1-24)				8
012,伺服Y报警	35	024,IN9-----线号:(1-24)				9

0.

停止状态

<<< 综合 轴配置 管理 刀库 主轴 端口 >>>

IO 参 NumberIO Parameter/录入 Edit /运转 Monitor/程序 Program /参 NumberParameter /坐标 Coordinates/诊断

Diagnosis

手轮 Handwheel

ServoZalarmServo Z alarm

手轮 Handwheel

ServoAalarmServo A alarm

手轮 Handwheel

LineWire No.

手轮 axis 选 X Handwheel axis select X

手轮 axis 选 Y Handwheel axis select Y

手轮 axis 选 Z Handwheel axis select Z

手轮 axis 选 A Handwheel axis select A

手轮 Emergency Handwheel emergency stop

手轮 Time outHandwheel pause

手轮 Start Handwheel start

ServoXalarmServo X alarm

ServoYalarmServo Y alarm

Stop 状态 Stopped

综合 Comprehensive /axisconfigurationAxis configuration /管理 Management / cutter magazine Tool magazine

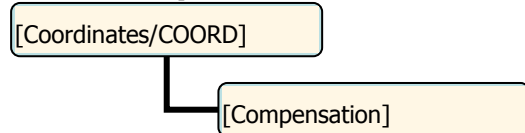
/Principal axis Principal axis /Port Port

IO Configuration Parameters Interface

9.7 Compensation interface

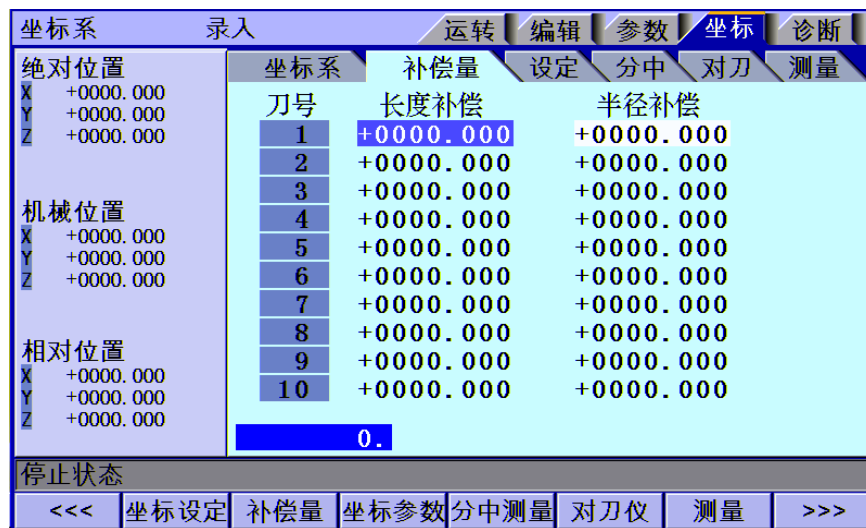
Tool compensation interface shows tool compensation info of the system, including tool length compensation, tool radius compensation and other input variables. The compensation method is different from M series and L series, which will be described below.

To enter tool compensation interface:



M series tool compensation interface has two compensation variables, i.e. tool length compensation and tool radius compensation; corresponding to G43, G44 and G41, G42; enter compensation value to corresponding compensation number, and transfer the compensation number in NC program to realize the compensation. Tool compensation numbers have 36 variables.

Tool compensation interface is shown below:



坐标系 Coordinate system 录入 Edit 运转 Monitor 编辑 Edit 参 Number Parameter 坐标 Coordinates 诊断 Diagnosis

坐标系 Coordinate system 补偿量 Compensation Set upSetting 分 MiddleCentered 对刀 Tool setting 测量 Measurement

刀号 Tool No. 长度补偿 Length compensation radius 补偿费 Radius compensation

绝对位置 Absolute position Machinery 位置 Mechanical position

相对位置 Relative position Stop 状态 Stopped

坐标 Set upCoordinates setting 补偿量 Compensation 坐标参 Number Coordinate system

分 Middle 测量 Centered measurement 对刀仪 Tool regulator 测 量

Tool Compensation Parameter Setting Interface

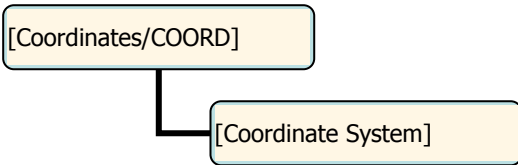
9.8 M series workpiece coordinate system setting interface

The coordinates interface shows coordinate system info, including setting, coordinate system, centered, and tool regulator. In the main interface, press [Coordinate] to enter coordinate system.

**Workpiece coordinate system**

Display workpiece coordinate system, i.e. the offset of workpiece home position and machine tool home position, Totally six basic workpiece coordinate systems (G54~G59) and nine extension coordinate systems (G591~G599) are available.

To enter workpiece coordinate system interface:



The workpiece coordinate system interface is shown below:

停止状态

<<< 坐标设定 补偿量 坐标参数 分中测量 对刀仪 测量 >>>

坐标系 Coordinate system      录入 Edit      运转 Monitor  
 编辑 Edit      参 Number Parameter      坐标 Coordinates      诊断 Diagnosis

坐标系 Coordinate system      补偿量 Compensation      Set upSetting

分 Middle Centered      对刀 Tool setting      测量 Measurement

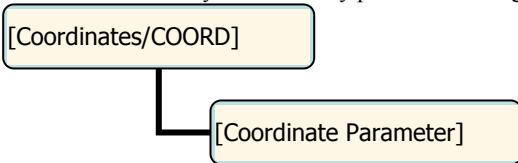
绝对位置 Absolute position      Machinery 位置 Mechanical position  
 相对位置 Relative position      Stop 状态 Stopped  
 坐标 Set upCoordinates setting      补偿量 Compensation      坐标参 Number Coordinate system  
 分 Middle 测量 Centered measurement      对刀仪 Tool regulator      测量 Measurement

Workpiece Coordinate System Setting Interface

**Coordinate system auxiliary parameter setting interface**

The auxiliary parameters for workpiece coordinate system, including origin offset and tool setting parameters of automatic tool regulator.

To enter coordinate system auxiliary parameter setting interface:



The detailed auxiliary parameters are described in the table below:

1	X coordinates offset
2	Y coordinates offset
3	Z coordinates offset
4	A coordinates offset
5	X coordinates of tool regulator
6	Y coordinates of tool regulator
7	Z coordinates of tool regulator

8	Axis selection symbol of tool regulator
9	Effective voltage level of tool regulator
10	Set tool automatically after changing
11	Tool regulator machine tool X limit
12	Tool regulator machine tool Y limit
13	Tool regulator machine tool Z limit
14	Tool regulator X search direction
15	Tool regulator Y search direction
16	Tool regulator Z search direction
17	Tool regulator limit effective signal
18	Add offset to coordinates automatically

## (1) Origin offset

- The origin offset is added to current machine tool coordinates when setting the coordinate system; this parameter setting is available in next tool setting;
- The application of this parameter is for the processing of certain parts that require several working procedures. The first processing procedure may damage the tool setting position of the workpiece, and the next procedure can't locate the proper tool setting position. Therefore, a reference tool setting point is required, and the offset from reference point to actual tool setting position can be set to this parameter. No matter tool setting in which procedure, you only need to set to this reference point and it is same like setting to home position of the workpiece.

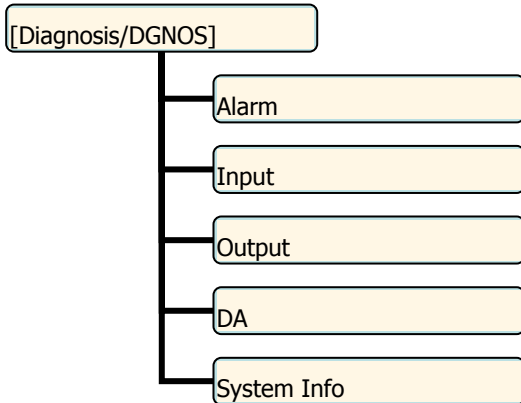
## (2) Tool regulator coordinates, effective signal, automatic tool setting, machine tool Z negative limit of tool regulator:

- The X, Y coordinates are the mechanical coordinates of the tool regulator on machine tool; the tool regulator can position automatically only when the coordinate is set properly.
- Effective voltage level of tool regulator is to set the signal interface level of the tool regulator, which should be set according to the actual interface of the tool regulator.
- Automatic tool setting after changing is that the tool regulator function executes automatically after tool changing instruction is returned successfully to improve the processing efficiency.
- Z negative limit is used to prevent crash caused by not in place of Z axis error checking. Once negative limit alarm occurs, the tool regulator stops working immediately. If the system is in processing state, the system will send abnormal alarm; during separate setting of the tool regulator, the alarm won't occur.

### 9.9 Controller diagnosis interface (diagnosis)

The diagnosis interface is used to display the hardware interfaces and system info, including alarm, input, output, DA diagnosis; press [Diagnosis] to enter the diagnosis interface.

The diagnosis interface follows:



#### Alarm interface

Display the alarm of the system after power on, including 15 alarm records.

#### IO diagnosis interface

IO diagnosis allows entering at any moment. You can check current IO state of the system. In manual mode, press the direction keys to select corresponding IO, and press EOB to control the output manually.

#### DA diagnosis interface

Correct the output voltage of two lines DA voltage module for testing; press the direction keys to output corresponding voltage directly, input the actually measured voltage to corresponding gear position; when transferring control instructions of principal axis, the system will correct according to correction value.

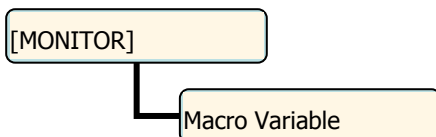
#### System info

The system info shows basic information of current system, and is used to mark current software version, hardware version, upgrade info, etc. In this interface, you can follow the prompt to perform operations.

### 9.10 Macro variable view interface (macro variable)

This is the variable register view menu of macro function. In this menu, you can turn pages to view the macro variables, or enter values to variable register directly in edit mode.

To enter macro variable view interface:



The macro variable menu has eight levels, as below:

#### Local variable

#100~#199

#500~#599

#600~#699

#700~#799

#800~#899

#900~#999

Process variable

- In the variable interfaces of different levels, you can check the corresponding variable number. Local variable has five levels totally, and shows the variables of current working layer by default. To view a specific layer, please enter local variable submenu, and then select according to layers.
- Process variables are to customize the names of 20 variables (#100~#999) according to CSV configuration table, so that the variable names have visual meanings. In programs, the user customized variables are transferred with variable number.

#### 9.11 Current mode instruction info

Display the G code mode info of current system:

In [Monitor] interface, you can check the running code info of current system:

Motion instruction:	G00, G01
Select plane:	G17, G18, G19
Coordinate logic:	G90, G91
Workpiece coordinate system:	G54, G59, G591...G599
Radius compensation:	G40, G41, G42
Length compensation:	G43, G44, G49
Compound instruction retracting plane:	G98, G99
Principal axis rotation:	S
Tool No.:	T

## 10 System maintenance

### 10.1 Restart

- (1) In the main menu, press [Edit] to enter the program interface;
- (2) Press [File] to enter the file interface;
- (3) Press [Reset] and the system asks whether restart or not;
- (4) Press [OK] to restart the system.

### 10.2 System upgrade

The step of copying upgrade program with USB disk follows:

- (1) In the main menu, press [Edit] to enter the program interface;
- (2) Press [File] to enter the file interface;
- (3) Select and access the USB disk;
- (4) Move cursor to the upgrade file, select [Copy], and the system checks the upgrade file according to the file name automatically;
- (5) After upgrading, restart the system to take effect.

### 10.3 Reset

- (1) Select the edit mode;
- (2) In the main menu, press [Parameter] to enter the parameter interface;
- (3) Press [Management] key to enter management parameter interface;
- (4) Move cursor to "006 Reset all parameters";



**Press [EOB], the system confirms, restores the default parameters and restarts automatically.**

### 11.4 Parameter backup and restore

- (1) system selects input mode ;

Under the main menu, press (2) Parameters key , enter the parameter screen ;

- (3) Press [Management] key to enter the management parameter screen ;
- (4) move the cursor to the 007 or 008 , select the corresponding operation menu ;
- (5) press [ EOB ] key, the system prompts secondary confirmation , the system will perform backup and restore operations ;
- (6) backup operation will produce in the root directory SYSCONF.BAK D file , this file can be properly kept for late recovery .

(7) If the recovery operation , the same file to be placed in the D SYSCONF.BAK root directory , the system recovery process will automatically recognize the file for recovery.

#### 11.5. Enter the BIOS

(1) system leads to irreversible error when unable to start , can be programmed into the BIOS upgrade and maintenance ;

(2) method before entering the BIOS after power to the controller, the application starts , press the Cancel button will jump into the success of a blue screen background , check if the BIOS password exists , it will jump out of an input password When prompted, enter the corresponding password to enter the BIOS

(3) enter the BIOS can be maintained are: Format C, D disk, U disk file copy upgrade ;

### 11. System parameters

According to occasions and functions, the parameters contain comprehensive parameters, IO configuration parameters, management parameters and coordinate setting parameters.

- Comprehensive parameters are complete, and contain basic operation and usage settings of the controller, including principal axis, handwheel, home, tool magazine, etc.;
- IO configuration parameters are mainly used for machine installation and test, adapting to the interface characteristics of machine tool and motor drive;
- Coordinate setting parameters are tool setting configuration in [Coordinate] interface;

(1) It is required to confirm user identity to modify the parameter table. The controller has two levels of user authority, which are super user and operator; super user can modify all parameters and user passwords; while operator only can operate the parameters that require modification, and modify the operator password; in P3.1 of management parameters, the system enters the corresponding mode automatically according to the entered password.

(2) According to the application, the parameters will take effect immediately or after restarted; the parameters that require restart are marked with <●>.

(3) Certain parameters are set in binary system (parameter descriptor has bit symbol); the conversion between binary system and decimal system follows:

Bit0: Set to 1 to correspond to decimal 1;

Bit1: Set to 1 to correspond to decimal 2;

Bit2: Set to 1 to correspond to decimal 4;

Bit3: Set to 1 to correspond to decimal 8;

Bit4: Set to 1 to correspond to decimal 16;

Bit5: Set to 1 to correspond to decimal 32;

Bit6: Set to 1 to correspond to decimal 64;

Bit7: Set to 1 to correspond to decimal 128;

For more bits, multiply the decimal system corresponding to binary system of previous position by 2. If only the corresponding bit is 1, accumulate the numbers of corresponding decimal system according to the comparison table to get the setting value.

For example: set Bit0, Bit1 and Bit5 to 1, and the parameter will be  $1+2+32=35$ .

### 11.1 Parameter index list

Parameter type	S/N	Description	Effective mode	Default value	page
General parameter (P1.)	001	Feeding speed (mm/min)	Instant		
General parameter (P1.)	002	Initial feeding speed (mm/min)	Instant		
General parameter (P1.)	003	Feeding acceleration (mm/sec)	Instant		
General parameter (P1.)	004	Home mode	Instant		
General parameter (P1.)	005	IO filter level (1~8)	Instant		
General parameter (P1.)	006	Manual speed (mm/min)	restart		
General parameter (P1.)	007	Maximum feeding speed (mm/min)	Instant		
General parameter (P1.)	008	Maximum handwheel speed (mm/min)	Instant		
General parameter (P1.)	009	Handwheel response coefficient	Instant		
General parameter (P1.)	010	M code waiting time (ms)	Instant		
General parameter (P1.)	011	Line number increment	Instant		
General parameter (P1.)	012	System baud rate	restart		
General parameter (P1.)	013	Controller ID No.	restart		
General parameter	014	Arc interpolation feed (mm)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P1.)					
General parameter (P1.)	015	G73 cycle tool retracting amount (mm)	Instant		
General parameter (P1.)	016	G83 cycle tool retracting amount (mm)	Instant		
General parameter (P1.)	017	Arc interpolation acceleration	Instant		
General parameter (P1.)	018	Interpolation speed mode	Instant		
General parameter (P1.)	019	Code pretreatment processing mode	Instant		
General parameter (P1.)	020	CNC file scanning symbol	Instant		
General parameter (P1.)	021	Variable frequency analog control mode	Instant		
General parameter (P1.)	022	Lubricant pressure schedule open (min)	Instant		
General parameter (P1.)	023	Lubricant pressure holding time (sec)	Instant		
General parameter (P1.)	024	Lubricant control frequency (Hz)	Instant		
General parameter (P1.)	025	automatic zero resetting configuration(bit)	Instant		
General parameter (P1.)	026	arcspeed upclamp dowe radius ratio	Instant		
General parameter (P1.)	027	arcspeed upclamp dowspeedratio	Instant		
General parameter (P1.)	028	Pretreatment buffer tier number	Instant		
General parameter (P1.)	029	insertspeed up model	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
General parameter (P1.)	030	Speed up curves speed up	Instant		
General parameter (P1.)	031	Alarm alarm home lateral alarm home test enable	Instant		
General parameter (P1.)	032	System alarm home test enable	Instant		
General parameter (P1.)	033	X axis diameter can make programming	Instant		
General parameter (P1.)	034	The default processing plane	Instant		
General parameter (P1.)	035	T code format (compensation number digits)	Instant		
General parameter (P1.)	036	The IP address	restart		
General parameter (P1.)	037	Subnet mask	restart		
General parameter (P1.)	038	The default gateway	restart		
General parameter (P1.)	039	The MAC address	restart		
General parameter (P1.)	040	Pretreatment foresight tier number	Instant		
General parameter (P1.)	041	Feed speed parameter setting enabled	Instant		
General parameter (P1.)	042	Turn G00 insert mode can make	Instant		
General parameter (P1.)	043	Abnormal memory location can jump to make	Instant		
General parameter	044	Suspension of Z mentioned safety	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P1.)		level			
General parameter (P1.)	045	To suspend A mentioned safety level	Instant		
General parameter (P1.)	046	Program zero reference point can make back	Instant		
General parameter (P1.)	047	Mechanical zero reference point can make back	Instant		
General parameter (P1.)	048	der the zero model reset coordinate system	Instant		
General parameter (P1.)	049	The Z axis safety height	Instant		
General parameter (P1.)	050	A shaft safety height	Instant		
General parameter (P1.)	051	The Z axis feed speed limit (mm/min)	Instant		
General parameter (P1.)	052	A axis feed speed limit (mm/min)	Instant		
General parameter (P1.)	053	Thread cutting speed up pitch P (mm)	Instant		
General parameter (P1.)	054	Thread cutting speed pitch D (mm)	Instant		
General parameter (P1.)	055	Thread cutting abdication of V (mm)	Instant		
General parameter (P1.)	056	A few exercise can jump to M98 several times	Instant		
General parameter (P1.)	057	Open system zero	Instant		
General parameter (P1.)	058	The spindle brake time delay (ms)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
General parameter (P1.)	089	Rotation axis speed optimization characteristics	Instant		
General parameter (P1.)	060	4 axes maximum rotation speed	Instant		
General parameter (P1.)	061	The handwheel encoder direction	Instant		
General parameter (P1.)	062	The handwheel control mode (0 - old)	Instant		
General parameter (P1.)	063	The handwheel maximum ratio	Instant		
General parameter (P1.)	064	The hand wheel speed up Kps	Instant		
Axis parameter (P2.)	001	X AXIS INSTRUCTION FREQUENCY MULTIPLICATION RATIO	restart		
Axis parameter (P2.)		X axis instruction frequency division coefficient	restart		
Axis parameter (P2.)		Y axis instruction frequency multiplication ratio	restart		
Axis parameter (P2.)		Y axis instruction frequency division coefficient	restart		
Axis parameter (P2.)		Z axis instruction frequency multiplication ratio	restart		
Axis parameter (P2.)		Z axis instruction frequency division coefficient	restart		
Axis parameter (P2.)		4 axes instruction frequency multiplication ratio	restart		
Axis parameter (P2.)		4 axes instruction frequency division coefficient	restart		
Axis parameter		B Axis 指令倍乘比	restart		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)		B Axis 指令分频 ratio	restart		
Axis parameter (P2.)		C Axis 指令倍乘比	restart		
Axis parameter (P2.)		C Axis 指令分频 ratio	restart		
Axis parameter (P2.)	002	X axis rapid traverse rate (mm/min)	Instant		
Axis parameter (P2.)		Y axis rapid traverse rate (mm/min)	Instant		
Axis parameter (P2.)		Z axis rapid traverse rate (mm/min)	Instant		
Axis parameter (P2.)		4 axes rapid traverse rate (mm/min)	Instant		
Axis parameter (P2.)		Baxes rapid traverse rate (mm/min)	Instant		
Axis parameter (P2.)		Caxes rapid traverse rate (mm/min)	Instant		
Axis parameter (P2.)	003	X axis start rate (mm/min)	Instant		
Axis parameter (P2.)		Y axis start rate (mm/min)	Instant		
Axis parameter (P2.)		Z axis start rate (mm/min)	Instant		
Axis parameter (P2.)		4 axes start rate (mm/min)	Instant		
Axis parameter (P2.)		Baxes start rate (mm/min)	Instant		
Axis parameter (P2.)		Caxes start rate (mm/min)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)	004	X axis acceleration (Kpps)	Instant		
Axis parameter (P2.)		Y axis acceleration (Kpps)	Instant		
Axis parameter (P2.)		Z axis acceleration (Kpps)	Instant		
Axis parameter (P2.)		4 axes acceleration (Kpps)	Instant		
Axis parameter (P2.)		B axes acceleration (Kpps)	Instant		
Axis parameter (P2.)		C axes acceleration (Kpps)	Instant		
Axis parameter (P2.)	005	X axis positive soft limit (mm)	Instant		
Axis parameter (P2.)		X axis negative soft limit (mm)	Instant		
Axis parameter (P2.)		Y axis positive soft limit (mm)	Instant		
Axis parameter (P2.)		Y axis negative soft limit (mm)	Instant		
Axis parameter (P2.)		Z axis positive soft limit (mm)	Instant		
Axis parameter (P2.)		Z axis negative soft limit (mm)	Instant		
Axis parameter (P2.)		4 axes positive soft limit (mm)	Instant		
Axis parameter (P2.)		4 axes negative soft limit (mm)	Instant		
Axis parameter (P2.)		Baxes positive soft limit (mm)	Instant		
Axis parameter (P2.)		Baxes negative soft limit (mm)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)		Caxes positive soft limit (mm)	Instant		
Axis parameter (P2.)		Caxes negative soft limit (mm)	Instant		
Axis parameter (P2.)	006	X axis reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)		Y axis reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)		Z axis reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)		X axis reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)		Y axis reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)		Z axis reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)	007	4 axes reverse clearance compensation (pulse)	Instant		
Axis parameter (P2.)		Yaxis zero offset (mm)	Instant		
Axis parameter (P2.)		Zaxis zero offset (mm)	Instant		
Axis parameter (P2.)		4axis zero offset (mm)	Instant		
Axis parameter (P2.)		Baxis zero offset (mm)	Instant		
Axis parameter (P2.)		Caxis zero offset (mm)	Instant		
Axis parameter (P2.)	008	X axis home direction	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)		Y axis home direction	Instant		
Axis parameter (P2.)		Z axis home direction	Instant		
Axis parameter (P2.)		4 axes home direction	Instant		
Axis parameter (P2.)		Baxes home direction	Instant		
Axis parameter (P2.)		Caxes home direction	Instant		
Axis parameter (P2.)	009	X axis home speed (mm/min)	Instant		
Axis parameter (P2.)		Y axis home speed (mm/min)	Instant		
Axis parameter (P2.)		Z axis home speed (mm/min)	Instant		
Axis parameter (P2.)		4 axes home speed (mm/min)	Instant		
Axis parameter (P2.)		Baxes home speed(mm/min)	Instant		
Axis parameter (P2.)		Caxes home speed(mm/min)	Instant		
Axis parameter (P2.)	010	X axis manual speed (mm/min)	Instant		
Axis parameter (P2.)		Y manual speed (mm/min)	Instant		
Axis parameter (P2.)		Z-axis manual speed (mm/min)	Instant		
Axis parameter (P2.)		4 axis manual speed (mm/min)	Instant		
Axis parameter		B axis manual speed (mm/min)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)		C axis manual speed (mm/min)	Instant		
Axis parameter (P2.)	011	X axis constraints speed up degrees (mm/s ^ 2)	Instant		
Axis parameter (P2.)		Y constraints, speed up degrees (mm/s ^ 2)	Instant		
Axis parameter (P2.)		Z axis constraints, speed up degrees (mm/s ^ 2)	Instant		
Axis parameter (P2.)		4 axis constraints speed up degrees (mm/s ^ 2)	Instant		
Axis parameter (P2.)		B axis constraints speed up degrees (mm/s ^ 2)	Instant		
Axis parameter (P2.)		C axis constraints speed up degrees (mm/s ^ 2)	Instant		
Axis parameter (P2.)	012	X axis biggest constraint speed (mm/s)	Instant		
Axis parameter (P2.)		Y the biggest constraint speed (mm/s)	Instant		
Axis parameter (P2.)		Z axis biggest constraint speed (mm/s)	Instant		
Axis parameter (P2.)		4 axis biggest constraint speed (mm/s)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)		B axis biggest constraint speed (mm/s)	Instant		
Axis parameter (P2.)		C axis biggest constraint speed (mm/s)	Instant		
Axis parameter (P2.)	013	Effective voltage level for servo X axis alarm	Instant		
Axis parameter (P2.)		Effective voltage level for servo Y axis alarm	Instant		
Axis parameter (P2.)		Effective voltage level for servo Z axis alarm	Instant		
Axis parameter (P2.)		Effective voltage level for servo 4 axes alarm	Instant		
Axis parameter (P2.)		ServoB Axisalarm 有效电平	Instant		
Axis parameter (P2.)		ServoC Axisalarm 有效电平	Instant		
Axis parameter (P2.)	014	Effective voltage level for servo X axis reset	Instant		
Axis parameter (P2.)		Effective voltage level for servo Y axis reset	Instant		
Axis parameter (P2.)		Effective voltage level for servo Z axis reset	Instant		
Axis parameter (P2.)		Effective voltage level for servo 4 axes reset	Instant		
Axis parameter (P2.)		ServoB AxisReset active level	Instant		
Axis parameter (P2.)		ServoC AxisReset active level	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)	015	Servo X axis Z phase home enable	Instant		
Axis parameter (P2.)		Servo Y axis Z phase home enable	Instant		
Axis parameter (P2.)		Servo Z axis Z phase home enable	Instant		
Axis parameter (P2.)		Servo 4 axes Z phase home enable	Instant		
Axis parameter (P2.)		ServoB AxisZPhase Zero Enable	Instant		
Axis parameter (P2.)		ServoC AxisZPhase Zero Enable	Instant		
Axis parameter (P2.)	016	Effective voltage level for servo X axis Z phase	Instant		
Axis parameter (P2.)		Effective voltage level for servo Y axis Z phase	Instant		
		ServoZ AxisZPhase active level			
		Servo4 AxisZPhase active level			
		ServoB AxisZPhase active level			
		ServoC AxisZPhase active level			
Axis parameter (P2.)	017	X 硬 Limit active level	Instant		
Axis parameter (P2.)		Effective voltage level for Y hard limit	Instant		
Axis parameter (P2.)		Z 硬 Limit active level	Instant		
Axis parameter (P2.)		4 硬 Limit active level	Instant		
Axis parameter (P2.)		B 硬 Limit active level	Instant		
Axis parameter		C 硬 Limit active level	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)	018	X pulse command format	Instant		
Axis parameter (P2.)		Y pulse command format	Instant		
Axis parameter (P2.)		Z pulse command format	Instant		
Axis parameter (P2.)		4Pulse command format	Instant		
Axis parameter (P2.)		BPulse command format	Instant		
Axis parameter (P2.)		CPulse command format	Instant		
Axis parameter (P2.)	019	X pulse logic direction	Instant		
Axis parameter (P2.)		Y pulse logic direction	Instant		
Axis parameter (P2.)		Z pulse logic direction	Instant		
Axis parameter (P2.)		4pulse logic direction	Instant		
Axis parameter (P2.)		Bpulse logic direction	Instant		
Axis parameter (P2.)		Cpulse logic direction	Instant		
Axis parameter (P2.)	020	EFFECTIVE VOLTAGE LEVEL FOR X EXTERNAL HOME	Instant		
Axis parameter (P2.)		YEffective voltage level for X external home	Instant		
Axis parameter (P2.)		ZEffective voltage level for X external home	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)		4Effective voltage level for X external home	Instant		
Axis parameter (P2.)		BEffective voltage level for X external home	Instant		
Axis parameter (P2.)		CEffective voltage level for X external home	Instant		
Axis parameter (P2.)	021	X axis ROUND settings	Instant		
Axis parameter (P2.)		Y axis ROUND settings	Instant		
Axis parameter (P2.)		Z axis ROUND settings	Instant		
Axis parameter (P2.)		4 axis ROUND settings	Instant		
Axis parameter (P2.)		B axis ROUND settings	Instant		
Axis parameter (P2.)		C axis ROUND settings	Instant		
Axis parameter (P2.)	022	Xaxis specified interface axis No	Instant		
Axis parameter (P2.)		Yaxis specified interface axis No	Instant		
Axis parameter (P2.)		Zaxis specified interface axis No	Instant		
Axis parameter (P2.)		4axis specified interface axis No	Instant		
Axis parameter (P2.)		Baxis specified interface axis No	Instant		
Axis parameter (P2.)		Caxis specified interface axis No	Instant		
Axis parameter (P2.)	023	Xaxis encoder wire number (p)(p)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)		Yaxis encoder wire number (p)(p)	Instant		
Axis parameter (P2.)		Zaxis encoder wire number (p)(p)	Instant		
Axis parameter (P2.)		4axis encoder wire number (p)(p)	Instant		
Axis parameter (P2.)		Baxis encoder wire number (p)(p)	Instant		
Axis parameter (P2.)		Caxis encoder wire number (p)(p)	Instant		
Axis parameter (P2.)	024	Xaxis 360 reset	Instant		
Axis parameter (P2.)		Yaxis 360 reset	Instant		
Axis parameter (P2.)		Zaxis 360 reset	Instant		
Axis parameter (P2.)		4axis 360 reset	Instant		
Axis parameter (P2.)		Baxis 360 reset	Instant		
Axis parameter (P2.)		Caxis 360 reset	Instant		
Axis parameter (P2.)	025	Xaxis pulse logic voltage level	Instant		
Axis parameter (P2.)		Yaxis pulse logic voltage level	Instant		
Axis parameter (P2.)		Zaxis pulse logic voltage level	Instant		
Axis parameter (P2.)		4axis pulse logic voltage level	Instant		
Axis parameter		Baxis pulse logic voltage level	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)		Caxis pulse logic voltage level	Instant		
Axis parameter (P2.)	026	Xaxis characteristics (rotation: 0, linear: 1)	Instant		
Axis parameter (P2.)		Yaxis characteristics (rotation: 0, linear: 1)	Instant		
Axis parameter (P2.)		Zaxis characteristics (rotation: 0, linear: 1)	Instant		
Axis parameter (P2.)		4axis characteristics (rotation: 0, linear: 1)	Instant		
Axis parameter (P2.)		Baxis characteristics (rotation: 0, linear: 1)	Instant		
Axis parameter (P2.)		Caxis characteristics (rotation: 0, linear: 1)	Instant		
Axis parameter (P2.)	027	Xaxis rotation display mode	Instant		
Axis parameter (P2.)		Yaxis rotation display mode	Instant		
Axis parameter (P2.)		Zaxis rotation display mode	Instant		
Axis parameter (P2.)		4axis rotation display mode	Instant		
Axis parameter (P2.)		Baxis rotation display mode	Instant		
Axis parameter (P2.)		Caxis rotation display mode	Instant		
Axis parameter (P2.)	028	Xaxis rotation path optimization	Instant		
Axis parameter (P2.)		Yaxis rotation path optimization	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)		Zaxis rotation path optimization	Instant		
Axis parameter (P2.)		4axis rotation path optimization	Instant		
Axis parameter (P2.)		Baxis rotation path optimization	Instant		
Axis parameter (P2.)		Caxis rotation path optimization	Instant		
Axis parameter (P2.)	029	Xaxis maximum acceleration (Kpps)	Instant		
Axis parameter (P2.)		Yaxis maximum acceleration (Kpps)	Instant		
Axis parameter (P2.)		Zaxis maximum acceleration (Kpps)	Instant		
Axis parameter (P2.)		4axis maximum acceleration (Kpps)	Instant		
Axis parameter (P2.)		Baxis maximum acceleration (Kpps)	Instant		
Axis parameter (P2.)		Caxis maximum acceleration (Kpps)	Instant		
Axis parameter (P2.)	030	Xservo home direction)	Instant		
Axis parameter (P2.)		Yservo home direction)	Instant		
Axis parameter (P2.)		Zservo home direction)	Instant		
Axis parameter (P2.)		4servo home direction)	Instant		
Axis parameter (P2.)		Bservo home direction)	Instant		
Axis parameter (P2.)		Cservo home direction)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)	031	Xaxis external home enable	Instant		
Axis parameter (P2.)		Yaxis external home enable	Instant		
Axis parameter (P2.)		Zaxis external home enable	Instant		
Axis parameter (P2.)		4axis external home enable	Instant		
Axis parameter (P2.)		Baxis external home enable	Instant		
Axis parameter (P2.)		Caxis external home enable	Instant		
Axis parameter (P2.)	032	Xaxis encoder pulse logic direction	Instant		
Axis parameter (P2.)		Yaxis encoder pulse logic direction	Instant		
Axis parameter (P2.)		Zaxis encoder pulse logic direction	Instant		
Axis parameter (P2.)		4axis encoder pulse logic direction	Instant		
Axis parameter (P2.)		Baxis encoder pulse logic direction	Instant		
Axis parameter (P2.)		Caxis encoder pulse logic direction	Instant		
Axis parameter (P2.)	033	Xaxis home deceleration speed	Instant		
Axis parameter (P2.)		Yaxis home deceleration speed	Instant		
Axis parameter (P2.)		Zaxis home deceleration speed	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Axis parameter (P2.)		4axis home deceleration speed	Instant		
Axis parameter (P2.)		Baxis home deceleration speed	Instant		
Axis parameter (P2.)		Caxis home deceleration speed	Instant		
Axis parameter (P2.)	034	Xaxis home scanning speed	Instant		
Axis parameter (P2.)		Yaxis home scanning speed	Instant		
Axis parameter (P2.)		Zaxis home scanning speed	Instant		
Axis parameter (P2.)		4axis home scanning speed	Instant		
Axis parameter (P2.)		Baxis home scanning speed	Instant		
Axis parameter (P2.)		Caxis home scanning speed	Instant		
Axis parameter (P2.)	035	The X axis screw filling features enabled	Instant		
Axis parameter (P2.)		Y axis screw filling features enabled	Instant		
Axis parameter (P2.)		The Z axis screw filling features enabled	Instant		
Axis parameter (P2.)		4 axis screw filling features enabled	Instant		
Axis parameter (P2.)		B axis screw filling features enabled	Instant		
Axis parameter		C axis screw filling features enabled	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)	036	Fill the X axis screw spacing (mm)	Instant		
Axis parameter (P2.)		Y fill screw spacing (mm)	Instant		
Axis parameter (P2.)		Fill the Z axis screw spacing (mm)	Instant		
Axis parameter (P2.)		4 fill shaft screw spacing (mm)	Instant		
Axis parameter (P2.)		B fill shaft screw spacing (mm)	Instant		
Axis parameter (P2.)		Fill C axis screw spacing (mm)	Instant		
Axis parameter (P2.)	037	X axis screw fill the starting position (mm)	Instant		
Axis parameter (P2.)		Y axis screw fill the start position (mm)	Instant		
Axis parameter (P2.)		Z axis screw fill the starting position (mm)	Instant		
Axis parameter (P2.)		4 axis screw filling starting position (mm)	Instant		
Axis parameter (P2.)		B axis screw filling starting position (mm)	Instant		
Axis parameter (P2.)		C axis screw filling starting position (mm)	Instant		
Axis parameter	038	X axis screw filling end position (mm)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P2.)					
Axis parameter (P2.)		Y axis screw filling end position (mm)	Instant		
Axis parameter (P2.)		axis screw filling end position (mm)	Instant		
Axis parameter (P2.)		Four axis screw supply end position (mm)	Instant		
Axis parameter (P2.)		B axis screw filling end position (mm)	Instant		
Axis parameter (P2.)		C axis screw filling end position (mm)	Instant		
Management parameter (P3.)	001	Type password to select management mode	Instant		
Management parameter (P3.)	002	Edit super user password	Instant		
Management parameter (P3.)	003	Edit operation user password	Instant		
Management parameter (P3.)	004	Initialize comprehensive parameters to default <●>	restart		
Management parameter (P3.)	005	Initialize IO configuration to default <●>	restart		
Management parameter (P3.)	006	Reset all parameters <●>	restart		
Management parameter (P3.)	007	Back up parameters to sysconf.bak	Instant		
Management parameter (P3.)	008	Restore parameters form sysconf.bak	restart		
Management parameter (P3.)	009	Generate password file	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Management parameter (P3.)	010	Menu clicking mode	Instant		
Management parameter (P3.)	011	Clear accumulated processing pieces	Instant		
Management parameter (P3.)	012	Clear current processing pieces	Instant		
Management parameter (P3.)	013	The cumulative quantity of processing maximum limit	Instant		
Management parameter (P3.)	014	Import CSV system configuration <●>	restart		
Management parameter (P3.)	015	Default boot screen <●>	restart		
Management parameter (P3.)	016	System language packs <●>	restart		
Management parameter (P3.)	017	Macro keyword effective enable	Instant		
Management parameter (P3.)	018	Boot screen mode	Instant		
Management parameter (P3.)	019	System display axis setting (bit)	Instant		
Management parameter (P3.)	020	System debugging information can make	Instant		
Management parameter (P3.)	021	is control composite key can make	Instant		
Management parameter (P3.)	022	Can make additional panel	Instant		
Management parameter (P3.)	023	M code macro program to choose <●>	restart		
Management parameter (P3.)	024	T code macro program to choose <●>	restart		

Parameter type	S/N	Description	Effective mode	Default value	page
Management parameter (P3.)	025	PLC program choose <●>	restart		
Management parameter (P3.)	026	Open the screen saver	Instant		
Management parameter (P3.)	027	Modbus master/slave Settings<●>	restart		
cutter magazine 参 Number (P4.)		《Customized by manufacturer》	Instant		
PrincipalAxis parameter (P5.)	001	Spindle specified by the slogan <●>	restart		
PrincipalAxis parameter (P5.)	002	Effective voltage level for principal axis alarm	Instant		
PrincipalAxis parameter (P5.)	003	Effective voltage level for principal axis reset	Instant		
PrincipalAxis parameter (P5.)	004	Principal axis encoder Z phase home enable	Instant		
PrincipalAxis parameter (P5.)	005	Effective voltage level for principal axis encoder Z phase	Instant		
PrincipalAxis parameter (P5.)	006	Principal axis positive limit (port enable)	Instant		
PrincipalAxis parameter (P5.)	007	Principal axis negative limit (port enable)	Instant		
PrincipalAxis parameter (P5.)	008	Effective voltage level for principal axis limit	Instant		
PrincipalAxis parameter (P5.)	009	Principal axis pulse format	Instant		
PrincipalAxis parameter (P5.)	010	Principal axis pulse logic direction	Instant		
PrincipalAxis	011	Effective voltage level for principal	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
parameter (P5.)		axis external home			
PrincipalAxis parameter (P5.)	012	Principal axis external home test enable	Instant		
PrincipalAxis parameter (P5.)	013	Principal axis ROUND setting	Instant		
PrincipalAxis parameter (P5.)	014	Principal axis encoder wire number (p)	Instant		
PrincipalAxis parameter (P5.)	015	Principal axis home offset pulses (p)	Instant		
PrincipalAxis parameter (P5.)	016	Principal axis pulse logic voltage level	Instant		
PrincipalAxis parameter (P5.)	017	Principal axis rotation display mode	Instant		
PrincipalAxis parameter (P5.)	018	Principal axis maximum acceleration (Kpps)	Instant		
PrincipalAxis parameter (P5.)	019	Principal axis external home direction	Instant		
PrincipalAxis parameter (P5.)	020	Principal axis servo home direction	Instant		
PrincipalAxis parameter (P5.)	021	Principal axis maximum rotation (rpm)	Instant		
PrincipalAxis parameter (P5.)	022	Principal axis home rotation (rpm)	Instant		
PrincipalAxis parameter (P5.)	023	Principal axis gear ratio numerator	Instant		
PrincipalAxis parameter (P5.)	024	Principal axis gear ratio denominator	Instant		
PrincipalAxis parameter (P5.)	025	Principal axis encoder logic direction	Instant		
PrincipalAxis parameter (P5.)	026	Principal axis open delay (ms)	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
PrincipalAxis parameter (P5.)	027	Servo spindle readiness level			
PrincipalAxis parameter (P5.)	028	Servo spindle must stop level			
PrincipalAxis parameter (P5.)	029	Servo spindle zero speed level to reach the designated position			
PrincipalAxis parameter (P5.)	030	Servo spindle speed to reach the level			
PrincipalAxis parameter (P5.)	031	System for spindle speed			
PrincipalAxis parameter (P5.)	032	To perform (whether to shut down the main shaft)			
PrincipalAxis parameter (P5.)	033	Spindle minimum speed (RPM)			
PrincipalAxis parameter (P5.)	034	The first two main maximum rotational speed (RPM)			
PrincipalAxis parameter (P5.)	035	The first two spindle speed			
PrincipalAxis parameter (P5.)	036	The spindle instruction S invalid values can make			
PrincipalAxis parameter (P5.)	037	Mechanical spindle first gear speed (RPM)			
PrincipalAxis parameter (P5.)	038	Mechanical shaft the second leg speed (RPM)			
PrincipalAxis	039	Mechanical spindle third speed (RPM)			

Parameter type	S/N	Description	Effective mode	Default value	page
parameter (P5.)					
PrincipalAxis parameter (P5.)	040	Mechanical fourth gear spindle speed (RPM)			
Port parameter (P6.)	001	Detection of knife instrument input port No	Instant		
Port parameter (P6.)	002	The knife safety testing input port No	Instant		
Port parameter (P6.)	003	The knife knife library output port No. No	Instant		
Port parameter (P6.)	004	The output for the knife dustproof cover port No. No	Instant		
Port parameter (P6.)	005	Raised in place for the knife dustproof cover input port No	Instant		
Port parameter (P6.)	006	Limit of knife instrument input port No	Instant		
Port parameter (P6.)	007	Blowing of knife instrument output port No. No	Instant		
Port parameter (P6.)	008	Spindle detection alarm input port	Instant		
Port parameter (P6.)	009	Variable frequency detection alarm input port	Instant		
Port parameter (P6.)	010	Servo spindle ready input number	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Port parameter (P6.)	011	Servo spindle must stop in place input number	Instant		
Port parameter (P6.)	012	Servo spindle in place number input zero speed	Instant		
Port parameter (P6.)	013	Servo spindle speed to the input number	Instant		
Port parameter (P6.)	014	Variable frequency gear 0 output port No.	Instant		
Port parameter (P6.)	015	Variable frequency gear 1 output port No.	Instant		
Port parameter (P6.)	016	Variable frequency gear 2 output port No.	Instant		
Port parameter (P6.)	017	Variable frequency gear 3 output port No.	Instant		
Port parameter (P6.)	018	Principal axis positive rotation output port No.	Instant		
Port parameter (P6.)	019	Principal axis reverse rotation output port No.	Instant		
Port parameter (P6.)	020	The spindle turn 2 is the output port No.	Instant		
Port parameter (P6.)	021	Spindle 2 reverse the output port No	Instant		
Port parameter (P6.)	022	Reset the alarm output shaft frequency converter	Instant		
Port parameter (P6.)	023	Main shaft blowing the output port No	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
Port parameter (P6.)	024	The spindle brake output port No	Instant		
Port parameter (P6.)	025	Servo spindle can make the output port No.	Instant		
Port parameter (P6.)	026	Servo spindle must stop the output port No.	Instant		
Port parameter (P6.)	027	Servo spindle control output pulse number	Instant		
Port parameter (P6.)	028	Servo spindle rigidity tapping number output	Instant		
Port parameter (P6.)	029	Safety grating input port No	Instant		
Port parameter (P6.)	030	Air pressure alarm input port No	Instant		
Port parameter (P6.)	031	Stuffing alarm input port No	Instant		
Port parameter (P6.)	032	Hydraulic alarm input port No	Instant		
Port parameter (P6.)	033	External start 2 input port No	Instant		
Port parameter (P6.)	034	External suspended 2 input port No	Instant		
Port parameter (P6.)	035	External scram 2 input port No	Instant		
Port parameter (P6.)	036	Cooling machine alarm input port No	Instant		
Port parameter (P6.)	037	Lubricating oil a alarm input port No	Instant		
Port parameter	038	External reset alarm input port No	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
(P6.)					
Port parameter (P6.)	039	Elastic knife input port No	Instant		
Port parameter (P6.)	040	alarm lightoutput port No	Instant		
Port parameter (P6.)	041	Run the lamp output port No	Instant		
Port parameter (P6.)	042	op lamp output port No	Instant		
Port parameter (P6.)	043	Lubricant output port No.	Instant		
Port parameter (P6.)	044	Cooling output port No.	Instant		
Port parameter (P6.)	045	oil pump output port No.	Instant		
Port parameter (P6.)	046	Xaxis negative limitinput port No	Instant		
		Xaxis positive limitinput port No	Instant		
		Yaxis negative limitinput port No	Instant		
		Yaxis positive limitinput port No	Instant		
		Zaxis negative limitinput port No	Instant		
		Zaxis positive limitinput port No	Instant		
		4axis negative limitinput port No	Instant		
		4axis positive limitinput port No	Instant		
		Baxis negative limitinput port No	Instant		
		Baxis positive limitinput port No	Instant		
		Caxis negative limitinput port No	Instant		
		Caxis positive limitinput port No	Instant		
Port parameter (P6.)	047	XExternal homeinput port No	Instant		
		YExternal homeinput port No	Instant		
		ZExternal homeinput port No	Instant		
		4External homeinput port No	Instant		

Parameter type	S/N	Description	Effective mode	Default value	page
		BExternal homeinput port No	Instant		
		CExternal homeinput port No	Instant		
Port parameter (P6.)	048	Xservo enableoutput port No	Instant		
		Yservo enableoutput port No	Instant		
		Zservo enableoutput port No	Instant		
		4servo enableoutput port No	Instant		
		Bservo enableoutput port No	Instant		
		Cservo enableoutput port No	Instant		
Port parameter (P6.)	049	input check active level00 ~ 31	Instant		
Port parameter (P6.)	050	input check active level32 ~ 63	Instant		
Port parameter (P6.)	051	input check active level64 ~ 95	Instant		
Port parameter (P6.)	052	restoration closeIOconfiguration00 ~ 31	Instant		
Port parameter (P6.)	053	restoration closeIOconfiguration32 ~ 63	Instant		
Port parameter (P6.)	054	restoration closeIOconfiguration64 ~ 95	Instant		
Port parameter (P6.)	055	restoration closeLEDconfiguration00 ~ 31	Instant		
Port parameter (P6.)	056	restoration closeLEDconfiguration32 ~ 63	Instant		
Port parameter (P6.)	057	restoration closeLEDconfiguration64 ~ 95	Instant		

## 11. 2 General parameter (P1.)

001	Feed speed (mm/min)
002	Feed the starting speed (mm/min)

003	Feed acceleration (mm/SEC)
007	The largest feed speed (mm/min)

Set the range : 1~9999, 1~9999, 1~8000, 1~9999

unit : mm/min,mm/min,mm/sec,mm/min

The access to : Operation manager and above

The preset value : 3000,200,1000,3000

Effect of time : immediately

instructions : Immediately for G01, G02, G03 instruction feed processing, is in accordance with the instruction F the speed of movement, if not specified in the program instructions, F the order according to the parameters set the speed of movement, if specified F instructions, this parameter is not work.

The function of feeding speed is biggest constraints specified in the manufacturing process of the F means; Namely F means no matter how big setting, the actual speed is not more than the parameter value. Set this parameter to call processing file, to avoid some unexpected speed programming error caused the damage.

004	Way back to zero
-----	------------------

Set the range : 0~1

unit : no

access to : Instructions above administrator

preset value	:	0(zero)
Effect of time	:	immediately
instructions	:	<p>0 - program to zero</p> <p>1 - mechanical zero</p> <p>Program go to zero is zero mean coordinates in place.</p> <p>Mechanical zero need external detection switch to the location of the zero position; Return zero install zero speed quick first movement towards the direction to set to zero, after the detected signals, such as to walking with slow speed, the detected signal disconnect and then slowly forward, until the end of the signal effectively again to zero. When servo Z phase detection in IO configuration parameters can make the switch opens, mechanical zero after the arrival of the signal detection device automatically enabled Z phase positioning do zero position.</p>

005

## IO filtering level (restart)

Set the range	:	0~8
unit	:	no
access to	:	Super administrator
preset value	:	0
Effect of time	:	After the restart to take effect
instructions	:	<p>Set filter constant;</p> <p>Particularly if the environmental disturbance, such as thunder and rain affect the induction switch, can be set into a filter value, the greater the value detection, the longer the higher reliability; 0 is not filtering;</p>

006

## Communication mode selection (restart)

Set range	: No User Network Uart All User
unit	: no
access to	: Operation manager and above
preset value	: Uart
Effect of time	: restart
instructions	:

008	The handwheel maximum speed (mm/min)
Set range	: 500 ~ 10000
unit	: no
access to	: Operation manager and above
preset value	: 5000
Effect of time	: immediately
instructions	: For the handwheel shake mobile axis maximum speed limit (effective) note: when the P1.062 set to 0.

009	Handwheel response factor
Set range	: 100 ~ 3000
unit	: no
access to	: Operation manager and above
preset value	: 1000

Effect of time : immediately

instructions : For the handwheel shake mobile axis maximum speed limit  
(effective) note: when the P1.062 set to 0.

010

M code waiting time (ms)

Set range : 1~9999

unit : ms

access to : Operation manager and above

preset value : 100

Effect of time : immediately

instructions : M code waiting time (ms)

011

行号增量

Set range : 0~64

unit : no

access to : Operation manager and above

preset value : 0

Effect of time : immediately

instructions : At the time of manual editing G code, a newline automatically add a  
Nxxxxx line number;  
When set to 0 said banning the function;

012

系统波特率

Set range : 9600~115200

unit : no

access to : Operation manager and above

preset value : 115200

Effect of time : restart

instructions : DNC or other PC software, and the controller RS232

communication way, adopting the communication rate of setting.

013	ControllerID 号
Set range	: 1~255
unit	: no
access to	: Operation manager and above
preset value	: 1
Effect of time	: restart
instructions	: DNC or other PC software, and the controller adopts the MODBUS protocol communication, this set the ID number of the controller.

014	圆弧插补进给量
Set range	: 0~1
unit	: mm
access to	: Operation manager and above
preset value	: 0.2
Effect of time	: immediately
instructions	: Set the resolution equivalent circular arc If the change set value is too small, the circular arc approximation precision is higher, but will bring a large amount of calculation, will cause the pause in the manufacturing process of the obvious; Influence processing effect

015	G73 fixed cycle return series (M)
016	G83 fixed cycle return series (M)
Set range	: 0.1~100
unit	: mm
access to	: Operation manager and above
preset value	: 2.000
Effect of time	: immediately
instructions	: Set the G73 and G83 instruction after the Q value of feed quantity of the edge of the sword; Set the parameters according to the

actual effect of chip removal, the default value is 2 mm.

017

### The circular arc interpolation processing mode

Set range : Time to break up Position resolution

unit : no

access to : Operation manager and above

preset value : Position resolution

Effect of time : immediately

instructions : Set the circular arc interpolation split way according to the position of separation, or according to the time when the split.

018

### Speed optimization constraint model

Set range : Angle Speed Speed1

unit : no

access to : Operation manager and above

preset value : Speed2

Effect of time : immediately

instructions : Under the mode of pretreatment, setting of Angle using the corner Speed balancing algorithm, set to Speed the axial acceleration constraints balance algorithm, Speed1 balancing algorithm efficient rapid acceleration Speed constraints.

019

### 代码预处理加工模式

Set range : 0~1

unit : no

access to : Operation manager and above

preset value : 0(real-time processing)

Effect of time : immediately

instructions : Real-time processing, suit to the machine.  
Preprocessing mode, the system will enter the processing state

buffer for 2 seconds time to proofread, pretreatment model can only judge the direction of the feed line and the size, so as to automatically adjust the speed, speed optimization run automatically.

020

CNC file scan sign

Set range : 0~1  
 unit : no  
 access to : Operation manager and above  
 preset value : 1  
 Effect of time : immediately  
 instructions : File scan logo effect when processing large files to speed up the file access speed.  
 Transferred to NC file, the system to locate the position of the various procedures section need to conduct a comprehensive scan from beginning to end. So if the file is only a program, and file size is bigger, the unnecessary waiting time, closed this option only to quit after scanning the first program segment address.

021

Frequency conversion control mode

Set range : 0~1  
 unit : no  
 access to : Operation manager and above  
 preset value : 0  
 Effect of time : immediately  
 instructions : Corresponding to the main shaft S code control mode (frequency).  
 Zero: analog output  
 Section 1: of speed control of motor speed (4 coding by P6.014 ~ P4.017 configuration the output port of the spindle parameters), as follows:  
 P6.014 -- -- -- -- S0  
 P4.015 -- -- -- -- S1

P4.016 - - - - - S2  
 P4.017 - - - - - S3  
 Analog output mode, the analog voltage is:  
 $V = S/MaxRPM$   
 S for the user to set the value, and MaxRPM spindle turn biggest value for parameter setting (P4.017);  
 Switch output mode 0-15, according to the four coding output; The value of S code can only be limited to 0-15;

022	Lubricating oil pressure regular open set (min)
023	Lubricating oil pressure keeping time setting
024	Oil control output frequency (Hz)

Set range :  
 unit :  
 access to : Operation manager and above  
 preset value : 0  
 Effect of time : immediately  
 instructions : Set the system automatically timing to start and maintain time parameters of the subsurface pump.  
 Regular open set parameter is the timing starts after the system startup, in minutes, for the unit, timing to begin P6.045 interrupts pump output configuration of output port.  
 The output signal in keeping P1.023 parameters set by the number of seconds after the stop (inverse).  
 Output signal during the work state, in proportion to the number of Hertz P1.024 set pulse output, demand for some oil supply device, keep output low level is set to 0.

025	自动归零模式配置(BIT)
-----	---------------

Set range :

unit :  
 access to : Operation manager and above  
 preset value : Z – XYABC  
 Effect of time : immediately  
 instructions : Set the axis, zero sequence can be set at most three segments.

026	Radius of circular arc acceleration muzzle coefficient
027	Arc acceleration muzzle velocity coefficient

Set range :  
 unit : **coefficient**  
 access to : Operation manager and above  
 preset value : 50, 100  
 Effect of time : immediately  
 instructions : For automatic constraint arc processing speed, the effective parameters in the pretreatment processing mode.  
 About big radius coefficient, the smaller arc speed.  
 The bigger the acceleration coefficient, the greater the arc velocity

028	Preprocessing buffer set section numberBuffer set number of segments
-----	--

Set range : 100~5000  
 unit : **command line**  
 access to : Operation manager and above  
 preset value : 500  
 Effect of time : immediately  
 instructions : Proofread the command line can be set, if your lectures will exist in the process of pretreatment processing pause phenomenon, this value can be increased, to proofread the buffer more instructions.

029	Interpolation speed mode (1: linear deceleration 0: S curve deceleration)
-----	---

030	S speed curve and acceleration

Set range :  
unit :  
access to : Operation manager and above  
preset value :  
Effect of time : immediately  
instructions : Used to set S curve deceleration performance.

031	The alarm to zero after testing can make
032	Check enable system to zero

Set range : 0~1  
unit :  
access to : Operation manager and above  
preset value : 0, 1  
Effect of time : immediately  
instructions : Used to set the corresponding occasions, whether to prompt the user to zero, to ensure that the user has carried on the zero operation;  
Are testing whether zero set to 0, run directly  
。

033	X -AXIS DIAMETER PROGRAMMING ENABLE (Lseries)
-----	---

Set range : 0~1  
unit :  
access to : Operation manager and above  
preset value : 1 (Lseries) /0 (Mseries)  
Effect of time : immediately  
instructions : On the lathe controller (Lseries) is used to set the display of the X axis and programming is radius or the diameter of

the unit;

034	The default processing plane
Set range	: G17,18,19
unit	:
access to	: Operation manager and above
preset value	: G18 (Lseries) /G17 (Mseries)
Effect of time	: immediately
instructions	: The default processing plane to set the default processing, x, y plane or XZ plane, plane, change the default allows programming modal value, no need to specify direct writing and related instructions;

035	T code format (Lseries)
Set range	: 0~2
unit	:
access to	: Operation manager and above
preset value	: 2 (Lseries)
Effect of time	: immediately
instructions	: On the lathe controller (Lseries) used in cutter replacement instruction set T value, after a few digits for compensation, in some traditional programming habits, people used to place with 2 digits number to specify the corresponding knife use compensation; For example, T0801 M06; Change says 8 knife, at the same time use 1 length compensation.

036	IPaddress
037	Subnet mask
038	fault gateway
Set range	:

unit	:	
access to	:	Operation manager and above
preset value	:	192.168.0.123 255.255.255.0 192.168.0.1
Effect of time	:	restart
instructions	:	<p>Parameters used to configure the Ethernet network, the network parameters to the actual network Settings, otherwise no normal access method.</p> <p>Configuration is successful, can be the same network segment in the Intranet (same subnet mask) a ping command test on the PC. Return to timeout the connection is wrong, check the physical connection.</p> <p>By an independent network NC network environment requirement, try not to office network, connected to the Internet network, because the networks of broadcasting and Windows regularly query, make network communication performance of NCS itself is blocked, which affect the communication performance.</p>

040

## Preprocessing prospectie section number

Set range	:	10~200
unit	:	
access to	:	Operation manager and above
preset value	:	20
Effect of time	:	immediately
instructions	:	<p>Pretreatment of foresight is used to set preprocessing of the preview section number.</p> <p>The bigger the value and the computational complexity, resulting in the movement of the longer waiting time before.</p> <p>In a small line interpolation, the value of the general assembly the movement pause in waiting for the chance of operation, to the actual processing effect to set the balance value.</p>

The smaller this value, the small line stoppage time, speed up due to prospective data are not enough, effect of the actual price to set a value balance

This parameter when set the P1.018 as Speed1 no effect

°

041

Feed speed parameter setting enabled

Set range : 0~1

unit :

access to : Operation manager and above

preset value : 0

Effect of time : immediately

instructions : The parameters used for compulsory modify the interpolation speed in the programming, makes programming F failure. For some processing code that ignore the F value applications.

042

G00 Interpolation method can make

Set range : 0~1

unit :

access to : Operation manager and above

preset value : 0

Effect of time : immediately

instructions : Used to set whether G00 instructions with mobile G01 way. If adopt the way of G01 mobile, the interpolation speed to meet the minimum speed shaft well set as benchmark, adjust the interpolation speed;

043

Abnormal memory location can jump to make

Set range : 0~1

unit	:	
access to	:	Operation manager and above
preset value	:	0
Effect of time	:	immediately
instructions	:	Closed OFF this functionality ON open this function, when open this function, processing code at the end of the machining process exception happens to lead to, again from the breakpoint to continue processing.

044	Suspended Z mentioned safety height can make
045	spend A mentioned safety height can make

Set range : OFF Workpiece coordinate machine tool coordinate

unit	:	
access to	:	Operation manager and above
preset value	:	0
Effect of time	:	immediately
instructions	:	Closed OFF this functionality ON open this function, when open this function, the execution of code process, press 【 pause 】 or perform in the zero mode to zero, the Z axis or A shaft automatic increase run to the press P1.049 or P1.050 setting safety height value (workpiece coordinate or machine tool coordinate).

046	Program enables zero reference point
047	Mechanical zero reference point Enable

Set range : 0~1

unit	:	
access to	:	Operation manager and above
preset value	:	0
Effect of time	:	immediately

instructions : Closed OFF this functionality  
 ON open this function, when open this function, the zero mode execute a coordinate program or machinery to zero, run back to coordinate parameters - reference point 1 setting value. setting -

048

Reset to zero mode coordinate system

Set range : MAC Coord G54 Coord  
 unit : no  
 access to : Operation manager  
 preset value : MAC Coord  
 Effect of time : immediately  
 instructions : Administrator is used to set the zero mode operation, under the running - absolutely positioned according to X Y Z A B C axis red flashing, press the "cancel" key reset of the coordinate system, the MAC Coord reset machine tool coordinate values, G54 Coord reset G54 workpiece coordinate values, this feature is usually used for debugging machine with, adjusted the machine to normal process do not use this feature.

049

Z axis safety height

050

A shaft safety height

Set range : -9999.999~9999.999  
 unit : 毫米  
 access to : Operation manager and above  
 preset value : 0  
 Effect of time : immediately  
 instructions : The Z axis safety height

A shaft safety height when P1.044 or P1.045 enabled setting of workpiece coordinate or machine tool coordinate, to set the Z axis or suspension of A shaft in machining process or in the zero model, implement zero automatically improve safety height (workpiece coordinate or machine tool coordinate)

051	The Z axis feed speed limit
052	A axis feed speed limit

Set range : 0~20000

unit : Mm/min

access to : Operation manager and above

preset value : 0

Effect of time : immediately

instructions : Used when the Z axis or up and down A shaft as the cutting feed axis, maximum limit G01 cutting feed speed.

053	Thread cutting speed pitch P (Lseries)
054	Thread cutting speed pitch D (Lseries)
055	Thread cutting back end quantity V (Lseries)

Set range : 0~100

unit : mm

access to : Operation manager and above

preset value : 0

Effect of time : immediately

instructions : Mm is used to set the lathe CNC4620 system thread cutting instructions G32 G92 transferring of the acceleration of processing thread pitch length, slow off the pitch length and back end quantity, details please refer to the CNC4620 about instructions G32 G92

transferring programming manual.

056

A few exercise can jump to M98 several times

Set range : OFF ON

unit : no

access to : Operation manager

preset value : OFF

Effect of time : immediately

instructions : Can make open parameter set to ON, you can jump to M98 instructions the first X the loop N line processing.

057

System boot to zero

Set range : Suggest on zero zero zero automatically

unit : no

access to : Operation manager

preset value : not zero

Effect of time : immediately

instructions : Prompt return to zero, when the system restart, the system prompt is zero, press 【 EOB 】 do return to zero.  
Automatic zero, when the system restart, the system automatically perform zero movement.

058

Principal Axis 刹车延时

Set range : 0 ~ 60000

unit : second

access to : Operation manager

preset value : 1000

Effect of time : immediately

instructions : Used to set the spindle brake switch action between the delay time.

059

The axis of rotation speed optimization feature (change parameters at present no effect)

Set range :  
 unit :  
 access to : Operation manager  
 preset value :  
 Effect of time : immediately  
 instructions : This parameter is no effect

060

4 axis rotation top speed

Set range : 1 ~ 500  
 unit :  
 access to : Operation manager  
 preset value : 50  
 Effect of time : immediately  
 instructions : When set the P1.018 as Angle (Angle X Y Z space optimization) is used to limit the fourth shaft A  
 As the axis of rotation of the highest rotational speed.

061

手轮 EncoderDirection

Set range : 0~1  
 unit : no  
 access to : Operation manager  
 preset value : 0  
 Effect of time : immediately  
 instructions : To obtain when holding a box encoder for the direction and the actual logic axis movement in the opposite direction, can set the parameters, to set in phase.  
 0: positive direction  
 1: FuFang

062

The handwheel control mode

Set range : 0 ~ 1  
 unit :  
 access to : Operation manager  
 preset value : 0  
 Effect of time : immediately  
 instructions : Used to set the handwheel operation control of each axis movement way zero old way 1 new ways.

063

The handwheel maximum ratio

Set range : 500 ~ 10000  
 unit :  
 access to : Operation manager  
 preset value : 4000  
 Effect of time : immediately  
 instructions : The highest rate is used to set the handwheel (effective) when P1.062 set to 1.

064

The hand wheel acceleration

Set range : 1 ~ 20  
 unit :  
 access to : Operation manager  
 preset value : 10  
 Effect of time : immediately  
 instructions : Used to set the handwheel maximum acceleration (effective) when P1.062 set to 1.

11. 3 axis configuration (P2.)

001	X axis instruction times by than
	X axis dividing instruction coefficient
	Y order frequency doubling
	Y axis dividing instruction coefficient
	Z axis instruction times by than
	Z axis dividing instruction coefficient
	4 axis instruction times by than
	4 axis dividing instruction coefficient
	B axis command frequency doubling
	B axis dividing instruction coefficient
	C axis instruction times frequency ratio
	C axis dividing instruction coefficient

Set range : 1~65535

unit : no

access to : Operation manager and above

preset value : 1

Effect of : restart

time

instructions : When different pitch screw with the various steps from the Angle of motor or at a different pulse number of matching of the servo motor, or through all sorts of change gear coupling, through the system of electronic gear ratio parameter setting, can make the program and is consistent with the actual movement distance.

$$CMR/CMD = P/(L \times 1000)$$

CMR: gear score item

CMD: gear score  
 P: once the motor turn the corresponding pulse number  
 L: once the motor turn the corresponding machine tool movement (mm)  
 CMD/CMR value as the pulse equivalent, actually each pulse of the corresponding mobile distance, the unit is 0.001 mm.  
 Case 1: motor each one revolution of the 5000 pulse, motor per round machine tool to move 5 mm,  
 $CMR/CMD = 5000 / (5 * 1000) = 1/1$   
 Can set the CMR = 1, CMD = 1. The pulse equivalent to 0.001 mm  
 Example 2: one revolution of the motor for every 5000 pulse, motor per round machine move 10 mm, then  
 $CMR/CMD = 5000 / (10 * 1000) = 1/2$   
 Can set the CMR = 1, CMD = 2. The pulse equivalent to 0.002 mm

002	X axis move fast speed (mm/min)
	Y fast moving speed (mm/min)
	Z axis move fast speed (mm/min)
	4axis move fast speed (mm/min)
	B axis move fast speed (mm/min)
	C axis move fast speed (mm/min)
003	X axis starting rate (mm/min)
	Y starting rate (mm/min)
	Z axis starting rate (mm/min)
	4 axis starting rate (mm/min)
	B axis starting rate (mm/min)
	C axis starting rate (mm/min)

004	X axis acceleration (Kpps)
	Y axis acceleration (Kpps)
	Z axis acceleration (Kpps)
	4 axis acceleration (Kpps)
	B axis acceleration (Kpps)
	C axis acceleration (Kpps)

Set range : 1~9999, 1~9999, 1~8000

unit : mm/min,mm/min,mm/sec

access to : Operation manager and above

preset value : 3000,200,1500

Effect of time : immediately

instructions : Set this parameter for trapezoidal deceleration parameters, apply to GOO instructions

About starting speed, using a stepper motor, speed of 1-2 a recommended motor, such as before, each machine tool to move 5 mm one revolution of the motor, a speed of second1-2 for 5 to 10 mm/second, namely conversion for mm/min, the starting speed can be set to 300-600 mm/min. For servo motor, with no sense of shock when you start and stop. This rate is too high, may feel vibrations during exercise, and led to a stepper motor out of step.

Affected by acceleration and initial velocity parameters and manual speed, the interpolation motion occasions such as zero speed;

005	XAxis positive soft limit(mm)
	XAxis negative soft limit (mm)
	YAxis positive soft limit(mm)
	YAxis negative soft limit (mm)
	ZAxis positive soft limit(mm)
	ZAxis negative soft limit (mm)
	4Axis positive soft limit(mm)
	4Axis negative soft limit (mm)

	BAxis positive soft limit(mm)
	BAxis negative soft limit (mm)
	CAxis positive soft limit(mm)
	CAxis negative soft limit (mm)

Set range : -9999~9999

unit : mm

access to : Operation manager and above

preset value : Positive and negative maximum

Effect of time : immediately

instructions : Hard limit signal general lathe, the software can not limit, positive limit is set to + 9999.999, the negative limit is set to 9999.999.  
 If it is not hard limit switch, can use software limit, limit software based on machine tool coordinate system, by positive limit and negative limit will be subject to the actual distance, the unit for mm.  
 Limit because software is used to limit point to stop way, it may be a little beyond the setting distance, beyond the distance is related to the acceleration time and speed, so set this parameter to a certain margin.

006	XAxis backlash compensation (pulse)
	YAxis backlash compensation (pulse)
	ZAxis backlash compensation (pulse)
	4Axis backlash compensation (pulse)
	BAxis backlash compensation (pulse)
	CAxis backlash compensation (pulse)

Set range : 1~20000

unit : Pulse

access to : Operation manager and above

preset value : 0

Effect of time : immediately

instructions : Compensation control gap axis.  
 Control unit with a minimum pulse compensated according to the

specific needs of the corresponding number of gear ratio conversion.

007	XAxis zero pulse offset
	YAxis zero pulse offset
	ZAxis zero pulse offset
	4Axis zero pulse offset
	BAxis zero pulse offset
	CAxis zero pulse offset

Set range : -9999~9999  
 unit : Pulse(mm)  
 access to : Operation manager and above  
 preset value : 0  
 Effect of time : immediately  
 instructions : Set the shaft after zero zero offset compensation, unit pulse.  
 Specific process, after the completion of first according to the mechanical zero offset again corresponding pulse, and then set that point to the mechanical zero point.  
 Note: application to zero, this parameter n

008	Xaxes home direction
	Yaxes home direction
	Zaxes home direction
	4axes home direction
	Baxes home direction
	Caxes home direction

Set range : 0~1  
 unit : no  
 access to : Operation manager and above  
 preset value : 1,1,0,0  
 Effect of time : immediately  
 instructions : Setting the mechanical zero direction of each axis machining  
 Zero positive direction  
 Negative direction zero

009	Xaxes home Speed
	Yaxes home Speed
	Zaxes home Speed
	4axes home Speed
	Baxes home Speed
	Caxes home Speed

Set range : 0~9999  
 unit : mm/min  
 access to : Operation manager and above  
 preset value : 1000  
 Effect of time : immediately  
 instructions : Independently set for each Axis zeroing Speed

010	XAxis manualSpeed
	YAxis manualSpeed
	ZAxis manualSpeed
	4Axis manualSpeed
	BAxis manualSpeed
	CAxis manualSpeed

Set range : 0~9999  
 unit : mm/min  
 access to : Operation manager and above  
 preset value : 1000  
 Effect of time : immediately  
 instructions : Set independently for each axis manually move the Speed  
 Starting Speed Speed is determined by 003,004 and processing parameters ;

011	XAxis constraints plusSpeed (mm/sec <sup>2</sup> )
	YAxis constraints plusSpeed (mm/sec <sup>2</sup> )
	ZAxis constraints plusSpeed (mm/sec <sup>2</sup> )
	4Axis constraints plusSpeed (mm/sec <sup>2</sup> )

	BAxis constraints plusSpeed (mm/sec^2)
	CAxis constraints plusSpeed (mm/sec^2)
012	XAxis maximum restraintSpeed (mm/sec)
	YAxis maximum restraintSpeed (mm/sec)
	ZAxis maximum restraintSpeed (mm/sec)
	4Axis maximum restraintSpeed (mm/sec)
	BAxis maximum restraintSpeed (mm/sec)
	CAxis maximum restraintSpeed (mm/sec)

Set range : 1~90000

unit :

access to : Super Admin

preset value : 90000

Effect of time : immediately

instructions : Set the shaft after zero zero offset compensation, unit pulse. Specific process, after the completion of first according to the mechanical zero offset again corresponding pulse, and then set that point to the mechanical zero point.

Note: application to return to zero, this parameter n is used to configure in the pretreatment processing, each axis acceleration constraints.

No theory which parameter, the smaller set, will cause the overall processing speed is smaller. By the same token, the bigger the setting, the bigger the overall speed.

Allow the shaft of the individual cases, the value as far as possible. The parameters in the comprehensive parameter P1.018 (Speed optimization constraint mode) set to Speed or Speed1 available at the time. Otherwise, no effect.

013	ServoX Axis alarm active level
	ServoY Axis alarm active level
	ServoZ Axis alarm active level
	Servo4 Axis alarm active level
	ServoB Axis alarm active level

	ServoC Axis alarm active level
014	ServoX AxisReset active level
	ServoY AxisReset active level
	ServoZ AxisReset active level
	Servo4 AxisReset active level
	ServoB AxisReset active level

Set range : 0~1

unit : LOGIC VOLTAGE LEVEL (Logic Level)

access to : Super Admin

preset value : 0, 1

Effect of time : immediately

instructions : Optional adapter interface parameters Servo drives ; specific set of parameters need to see the interface level instructions Servo 's .

0015	ServoX AxisZPhase Zero Enable
	ServoY AxisZPhase Zero Enable
	ServoZ AxisZPhase Zero Enable
	Servo4 AxisZPhase Zero Enable
	ServoB AxisZPhase Zero Enable
	ServoC AxisZPhase Zero Enable

Set range : 0~1

unit : LOGIC VOLTAGE LEVEL (Logic Level)

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Enabled, the parameter setting in mechanical zero mode will be automatically enabled grasp the corresponding shaft encoder Z phase positioning, which is often said that 'servo zero positioning; Repeat this way zero positioning accuracy is decided by the positioning precision of servo, so commonly used servo motor is suggested to open this function. Stepper motor with no encoder, so can't open can make option, otherwise will happen in the machine

to zero can't find the signal and error motion.

0016	ServoX AxisZPhase active level
	ServoY AxisZPhase active level
	ServoZ AxisZPhase active level
	ServoA AxisZPhase active level
	ServoB AxisZPhase active level
	ServoC AxisZPhase active level

Set range : 0~1

unit : LOGIC VOLTAGE LEVEL (Logic Level)

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Optional adapter interface parameters Servo drives ; specific set of parameters need to see the interface level instructions Servo 's .

017	XPositive limit effective hardware level
	YPositive limit effective hardware level
	ZPositive limit effective hardware level
	APositive limit effective hardware level
	BPositive limit effective hardware level
	CPositive limit effective hardware level

Set range : 0~1

unit : no

access to : Super Admin

preset value : 0

Effect of time : restartAfter the entry into force

instructions : Specific parameter is set to see choose buttons or the type of photoelectric switch interface level instructions.  
Scan mode is the system's own, cannot be blocked. Scan mode is used to specify access to the input signal function, scanning mode

adopted software anti-interference testing technology, to determine whether there is a limit alarm or interfere with no action. It need some time, so the real-time uninterrupted type limit. But in most cases (10 mm/min processing speed) and can satisfy the requirement of processing the security check.

Hard limit hardware response function in preference to scan response functions, that is to say, if the hardware can make the response and will speed up the response directly, it is important to note that hardware can only use immediately stop way to end the pulse response function, so the speed is very big

immediately stop may lead to the effect of mechanical vibration. And software scanning method with the method of maximum acceleration deceleration stop, according to the maximum set by the user for each axis acceleration deceleration P2.029 (parameters), so there will be some overshoot phenomenon.

018	XPulse command	format (restart)
	YPulse command	format (restart)
	ZPulse command	format (restart)
	4Pulse command	format (restart)
	BPulse command	format (restart)
	CPulse command	format (restart)

Set range : 0~1

unit : no

access to : Super Admin

preset value : 1

Effect of time : restart

instructions : Pulse command format setting is to configure the output pulse way, need to know beforehand motor drive receives command format.  
 0 + pulses  
 1 pulse + direction

019	XPulse logical direction (restart)
	YPulse logical direction (restart)
	ZPulse logical direction (restart)
	4Pulse logical direction (restart)
	BPulse logical direction (restart)
	CPulse logical direction (restart)

Set range : 0~1

unit : no

access to : Super Admin

preset value : 1

Effect of time : restart

instructions : Setting the direction of the pulse , if the opposite direction controller and the actual drive direction , this parameter can be modified to adjust the direction of rotation of the motor.

020	XExternal zero valid signal.
	YExternal zero valid signal.
	ZExternal zero valid signal.
	4External zero valid signal.
	BExternal zero valid signal.
	CExternal zero valid signal.

Set range : 0~1

unit : LOGIC VOLTAGE LEVEL(Logic Level)

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Setting the zero point zero external sensor switch inductive effective level .  
Low  
High

021	X AxisROUNDSetpoint. (restart)
	Y AxisROUNDSetpoint. (restart)
	Z AxisROUNDSetpoint. (restart)
	4 AxisROUNDSetpoint. (restart)
	B AxisROUNDSetpoint. (restart)
	C AxisROUNDSetpoint. (restart)

Set range : 0~9999999

unit : Pulse

access to : Super Admin

preset value : 0

Effect of time : restart

instructions : Pulse command format setting is to configure the output pulse way, need to know beforehand motor drive receives command format.

0 + pulses

1 pulse ring + direction function is only in the hardware version number 1.0 above have;

The logic of the function is used to prevent shaft count more than maximum count range (2147483648) and the overflow error;

Owing to generally is only possible to set the axis as the axis of rotation overflow, so the system after obtain the parameters of the P2.062 ~ P2.069, if it is found that the user set the axis to the axis of rotation, and USES the 360 - degree display mode, the system based on the current shaft gear ratio calculation of corresponding pulse threshold value, and give the corresponding shaft ROUND parameters, users can see after enable the rotation axis display the change of the parameters. Change after the user can modify the parameters, and displayed in the final number is effective.

This parameter must be restart can be executed correctly; Its execution is corresponding to the condition of shaft must be set to the axis of rotation, and set at 360 degrees to display (P2.062 ~ 069);

022	X Axis Axis number specified interface (restart)
	Y Axis Axis number specified interface (restart)
	Z Axis Axis number specified interface (restart)
	4 Axis Axis number specified interface (restart)
	B Axis Axis number specified interface (restart)
	C Axis Axis number specified interface (restart)

Set range : 0~4

unit : Pulse 口序号

access to : Super Admin

preset value :

Effect of time : restart

instructions : By default, the definition of coordinate axes of the actual number axis are numbered corresponding products shell screen printing, in a certain function abnormality, the shaft of the can pass the assigned function, realize the axis. Set P2.022 X axis to 4, for example, A shaft is set to 1, then the system of any operation, the X axis are mouth into A shaft for product shell pulse operation.

Zero: no the shaft

1 ~ 6: corresponds to a and sixth axis

023	X AxisEncoder lines
	Y AxisEncoder lines
	Z AxisEncoder lines
	4 AxisEncoder lines
	B AxisEncoder lines
	C AxisEncoder lines

Set range : 0~9999

unit : lines

access to : Super Admin

preset value : 2500

Effect of time : immediately

instructions : Set the encoder pulse mouth is connected on the number of lines (AB) pulse, due to internal calls for four times the frequency

division, so input the value of this parameter is calculated by dividing the number of pulse encoder collection week 4.

025	X Axis PulseLogic Level(restart)
	Y Axis PulseLogic Level(restart)
	Z Axis PulseLogic Level(restart)
	4 Axis PulseLogic Level(restart)
	B Axis PulseLogic Level(restart)
	C Axis PulseLogic Level(restart)

Set range : 0~1

unit : LOGIC VOLTAGE LEVEL(Logic Level)

access to : Super Admin

preset value : 0

Effect of time : restart

instructions : Set pulse work normal level, if the setting and motor drives the normal level of different requirements, every time in positive and negative movement (and no pulse quantity clearance), will lead to a direction of accumulated error. So if you found a machine positioning axis direction of accumulated error, should pay attention to whether the parameter is not fit.

026	X Axis characteristics ( rotation 0 , linear 1 )
	Y Axis characteristics ( rotation 0 , linear 1 )
	Z Axis characteristics ( rotation 0 , linear 1 )
	4 Axis characteristics ( rotation 0 , linear 1 )
	B Axis characteristics ( rotation 0 , linear 1 )
	C Axis characteristics ( rotation 0 , linear 1 )

Set range : 0~1

unit : no

access to : Super Admin

preset value : 1

Effect of time : immediately

instructions : Axis of setting properties .

0 : Rotary Axis

1 : Linear Axis

The corresponding parameters and P2.027 P2.021 Axis settings will affect the setting of specific parameters please refer to P2.021 instructions.

027	X Axis Rotating display
	Y Axis Rotating display
	Z Axis Rotating display
	4 Axis Rotating display
	B Axis Rotating display
	C Axis Rotating display

Set range : 0~1

unit : no

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Setting Axis coordinates are displayed. This parameter is set at

P2.062 ~ P2.065 effective way 0

0: 0 to 360 degrees to display

1 : -9999.999 to 9999.999 of the display  
 The corresponding parameters and P2.026 P2.021 Axis settings will affect the setting of specific parameters please refer to P2.021 instructions.

028	X Axis Rotation path optimization
	Y Axis Rotation path optimization
	Z Axis Rotation path optimization
	A Axis Rotation path optimization
	B Axis Rotation path optimization
	C Axis Rotation path optimization

Set range : 0~1  
 unit : no  
 access to : Super Admin  
 preset value : 1  
 Effect of time : immediately  
 instructions : The parameter under the way of P2.026 set to 0, and under the way of P2.027 set to 0; Set whether to choose to find the shortest path automatically move, if the axis is the axis of rotation, and only in positioning, positioning in the process of processing, open this function, can shorten the time.  
 Zero: no optimization path  
 1: the shortest path is enabled  
 Note: if you are in the process of the movement need machining, so the optimization of shortest path may not be what you want the processing trajectory.

029	X Axis biggest plus Speed
	Y Axis biggest plus Speed
	Z Axis biggest plus Speed
	4 Axis biggest plus Speed
	B Axis biggest plus Speed

	C Axis biggest plus Speed
Set range	: 100~8000
unit	: Kpps (Kilo Pulse Per Second)
access to	: Super Admin
preset value	: 2000
Effect of time	: immediately
instructions	: <p>Set different axis can withstand the maximum acceleration, the setting will affect the speed of pretreatment of the axis trajectory optimization. Set high, can accelerate the response time of axis, can according to the machine tool, the characteristics of the motor properly.</p> <p>Affected by the parameters also have zero function and limit stop function.</p> <p>Hard limit function: using software to scan the hard limit effect, because the software to scan the hard limit of each axis is according to the maximum acceleration of slowing down to stop. So setting up too much can lead to machine stop before earthquakes, too small lead to excessive overshoot.</p> <p>Zero function: each axis and USES this value to zero acceleration.</p>

030	XServo Zero zero return direction
	YServo Zero zero return direction
	ZServo Zero zero return direction
	4Servo Zero zero return direction
	BServo Zero zero return direction
	CServo Zero zero return direction

Set range	: 0~1
unit	: no
access to	: Super Admin
preset value	: 0
Effect of time	: immediately
instructions	: <p>This parameter is enabled in P2.015ServoZ phase parameter is enabled , the decision of the Z phase search direction.</p>

0 : positive direction

1 : negative direction

031	X AxisEnable external zero
	Y AxisEnable external zero
	Z AxisEnable external zero
	4 AxisEnable external zero
	B AxisEnable external zero
	C AxisEnable external zero

Set range : 0~1

unit : no

access to : Super Admin

preset value : 1

Effect of time : immediately

instructions : This parameter in determining the mechanical zero mode, whether to need to search the external deceleration switch. If this parameter is set to 0 and P2.015 (phase can make servo Z) is set to 0, then the mechanical action way to zero zero mode is set at the current point directly to zero.

Zero: no

1: have

032	X Axis EncoderPulse logical direction
	Y Axis EncoderPulse logical direction
	Z Axis EncoderPulse logical direction
	4 Axis EncoderPulse logical direction
	B Axis EncoderPulse logical direction
	C Axis EncoderPulse logical direction

Set range : 0~1

unit : no

access to : Super Admin

preset value : 0  
 Effect of time : immediately  
 instructions : When the opposite direction to obtain the logical direction Encoder and actual Axis movement , you can set this parameter be set to the same phase .  
                   0 : positive direction  
                   1 : negative direction

033	Xaxes home Slow downSpeed
	Yaxes home Slow downSpeed
	Zaxes home Slow downSpeed
	4axes home Slow downSpeed
	Baxes home Slow downSpeed
	Caxes home Slow downSpeed
	034
	Yaxes home Zero scan Speed
	Zaxes home Zero scan Speed
	4axes home Zero scan Speed
	Baxes home Zero scan Speed
	Caxes home Zero scan Speed

Set range : 1~20000  
 unit : mm/min  
 access to : Super Admin  
 preset value : 100, 60  
 Effect of time : immediately  
 instructions : When setting the mechanical zero for different Speed parameters , specifically to take effect as follows :  
                   Zero Speed - "( zero when it detects an external switch ) Slow downSpeed--" Scan Speed.

035	X Axis Lo fill function is enabled
	Y Axis Lo fill function is enabled

	Z Axis Lo fill function is enabled
	4 Axis Lo fill function is enabled
	B Axis Lo fill function is enabled
	C Axis Lo fill function is enabled

Set range : OFF ON  
 unit : no  
 access to : Super Admin  
 preset value : OFF  
 Effect of time : immediately  
 instructions : Is set to ON, XYZ 4 BC Axis pitch compensation function effectively

036	X AxisLo fill spacing
	Y AxisLo fill spacing
	Z AxisLo fill spacing
	4 AxisLo fill spacing
	B AxisLo fill spacing
	C AxisLo fill spacing

Set range : 1 ~ 1000  
 unit : mm  
 access to : Super Admin  
 preset value : 10  
 Effect of time : immediately  
 instructions : Set each Axis from N + to N -point compensation interval 1:00 , such as the compensation position is set to 10mm intervals from 0 to 1 is 10mm

037	X Axis Screw up starting position
	Y Axis Screw up starting position
	Z Axis Screw up starting position
	4 Axis Screw up starting position
	B Axis Screw up starting position
	C Axis Screw up starting position

Set range : -9999.999 ~ 9999.999

unit : 毫米

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Set the starting position of the compensation, the corresponding mechanical coordinates, because of the number of pitch compensation from machinery zero position measurement only one location, so this parameter is set in the mechanical zero point position, so this parameter is set to 0 commonly do not set to other values

°

038	X Axis Screw up the end position
	Y Axis Screw up the end position
	Z Axis Screw up the end position
	4 Axis Screw up the end position
	B Axis Screw up the end position
	C Axis Screw up the end position

Set range : -9999.999 ~ 9999.999

unit : mm

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Set position at either end of the compensation, the corresponding mechanical coordinates, specific according to the schedule of the measurement, the value of the positive and negative points, such as measuring pitch compensation from the mechanical zero point position to the mechanical - 110 - mm position, then the set values for the mechanical position - 110 - mm as measured from the machinery zero to 110 position, the value is set to 110 mm. Set after the initial position and ending position of pitch compensation, system trajectory of the mechanical coordinates to pitch error compensation, only in this area is not this the compensation range

of the mechanical coordinates is not to compensate.

11.4 Management parameter (P3.)

001	Select Administrator Mode
002	Modify the super user password
003	User password modification operations

Set range : no

unit : no

access to : no

preset value : no

Effect of time : immediately

instructions : Under this menu, enter the password in accordance with the "insert". If the system user password in the password verification, corresponding to the user mode;  
 Successfully entered, the menu will change into "exit XXX administrator mode", and representative has successfully entered;  
 Under the changed menu as long as you press the insert key, retreat to the management pattern, at this time to modify parameter list and need to re-enter the management mode;  
 Super user mode can modify all the password and the user operation can only modify their own password.  
 Password to 0 represents the model do not check passwords; No need to enter the administrator mode modify parameters can be modified.

004	Initialization General parameter values to the factory<●>
005	Initialization IO configuration to factory value<●>
006	All parameters reset<●>

Set range : no

unit : no

access to : Super User  
 preset value : no  
 Effect of time : immediately  
 instructions : In the Super User mode to initialize the parameter table

007	Parameter backup
008	Parameter Recovery

Set range : no  
 unit : no  
 access to : Super User  
 preset value : no  
 Effect of time : immediately  
 instructions : In super user mode parameters for backup and recovery.  
 Parameters of the backup is specified in the controller under the electronic packing list sysconf. Bak files, if a file name already exists, the position is the last backup will overwrite the file.  
 Recovery is also specified in the electronic packing directory sysconf. Bak files to call back. Recovery will be according to the parameters of the system backup version number to determine whether to belong to the same parameter version, if it is not the same version, is not the restore of the parameter list.  
 After the completion of the system will restart automatically.

009	Generate the password file
-----	----------------------------

Set range : no  
 unit : no  
 access to : no  
 preset value : no  
 Effect of time : immediately  
 instructions : 1, if the user in the case of a forgotten password, you can use this function to generate PassMeg. DAT file, provide the file to controller manufacturers, can back into the password by manufacturers.

010	Click the menu mode
-----	---------------------

Set range : 0~1  
 unit : no  
 access to : no  
 preset value : 0 (Click)  
 Effect of time : immediately  
 instructions : 该 Function 有待开发

011

Clear cumulative processing number of pieces

012

Clear the current number of pieces processed

Set range : no  
 unit : no  
 access to : no  
 preset value : no  
 Effect of time : immediately  
 instructions : Clear the current accumulated value processing numbers.

013

Cumulative processing limit the maximum number of pieces

Set range : 0 ~ 999999  
 unit : no  
 access to : no  
 preset value : 0  
 Effect of time : immediately  
 instructions : Set this value, the automatic mode processing implementing cumulative number greater than this value, the system prompts alarm, P3.011 parameter reset may continue to perform the processing procedure.

014

导入 CSV 系统配置表

Set range : no  
 unit : no  
 access to : no  
 preset value : no

Effect of time : restart  
 instructions : The factory configuration CSV system configuration table into the system .

015

## The default startup screen display module

Set range : Select  
 unit : no  
 access to : Operation manager  
 preset value : ABS  
 Effect of time : immediately  
 instructions : The default startup screen Select, absolute position , relative position, comprehensive location can Select, the user can Select.

016

## System Language 包

Set range : 0~1  
 unit : no  
 access to : Operation manager  
 preset value : 0 (Chinese)  
 Effect of time : immediately  
 instructions : System LanguageSelect。  
 Chinese  
 English

017

## Enable effective macro keyword

Set range : 0~1  
 unit : no  
 access to : Operation manager  
 preset value : 0 (Chinese)  
 Effect of time : immediately  
 instructions : Macro keyword parameter is used to set the effective mask symbol above macro expression is valid , set to a valid , 0 no effect.

018

Boot screen display mode

Set range : 0~6  
 unit : no  
 access to : Operation manager  
 preset value : 1S  
 Effect of time : immediately  
 instructions : Configured for logo display is set to 0 need to press any key to enter the system , the non- zero value , the corresponding time automatically into the system after a delay .

019

系统显示 AxisSet up(bit)

Set range :  
 unit : no  
 access to : Super User  
 preset value : XYZ  
 Effect of time : immediately  
 instructions : Set this value, the automatic mode processing implementing cumulative number greater than this value, the system prompts alarm, P3.011 parameter reset may continue to perform the processing procedure. The current system is used to configure the display of the shaft, can choose different combination of display. This configuration only decided to display the contents of the interface, if itself hardware axis function exists, will still be able to output axis control in programming, just shaft, according to the state will not be including axial spacing, alarm state, will be ignored.

020

Enable debugging in formation system

Set range : 0~1  
 unit : no  
 access to : Super User  
 preset value : OFF/0  
 Effect of time : immediately

instructions : Set this value, the automatic mode processing implementing cumulative number greater than this value, the system prompts alarm, P3.011 parameter reset may continue to perform the processing procedure. The current system is used to configure the display of the shaft, can choose different combination of display. This configuration only decided to display the contents of the interface, if itself hardware axis function exists, will still be able to output axis control in programming, just shaft, according to the state will not be including axial spacing, alarm state, will be ignored.

021

## Axis control composite key enabling

Set range : 0~1

unit : no

access to : Super User

preset value : ON/1

Effect of time : immediately

instructions : Used to configure the controller panel on axial movement of the button is enabled.  
This parameter is used to use additional panel, blocking NC panel composite function of the axis motion control buttons, reduce the operational error, but no additional panel, you must open, otherwise the axis movement no method through the button control.

022

## Enable additional panel

Set range : OFF FCNC4M FDK4A FCNC6D

unit : no

access to : Super User

preset value : OFF/0

Effect of time : immediately

instructions : NC used to configure whether to use additional extension panels, additional panels must complete the relevant series of additional ADT

panel , or compatible interface panel the same protocol .  
 Use additional panels, the system must be shut down debugging in  
 formation enabled (P3.20).

023

M 代码宏程序 Select

Set range : MFUNC User-Def  
 unit : no  
 access to : Super User  
 preset value : MFUNC  
 Effect of time : restart  
 instructions : code used to configure the system macro program , MFUNC  
 M code using the system default macro program , User-Def  
 using user-defined M\_FUNC.NC.

024

T code macro Select

Set range : TFUNC User-Def  
 unit : no  
 access to : Super User  
 preset value : TFUNC  
 Effect of time : immediately  
 instructions : ATC function is used to configure the system , TFUNC M  
 code using the system default macro program , User-Def  
 using user-defined T\_FUNC.NC

025

PLC program Select ( This parameter is no effect )

Set range :  
 unit :  
 access to :  
 preset value :  
 Effect of time :

instructions : This parameter is no effect

026

## Screen saver open

Set range : 0 ~ 1

unit : no

access to : Super User

preset value : 0

Effect of time : immediately

instructions : Set whether to start the screen saver function 0 turn off the screen saver features a screen saver function .

027

## Modbus Master / Slave settings

Set range : SLAVE POLL

unit : no

access to : Super User

preset value : SLAVE

Effect of time : immediately

instructions : Set the system as a slave or master Modbus communication , SLAVE as a slave , POLL as host.

## 11.5 Magazine parameters (P4.)

001

## 《Custom manufacturer》

Set range :

unit :

access to : Operation manager and above

preset value :

Effect of time : immediately

instructions : The parameters are based on each machine tool manufacturers magazine designed to be, please refer to the machine manufacturer's machine instructions book ;

11.6 PrincipalAxis parameter (P5.)

002	Principal Axis alarm active level
003	Principal AxisReset active level
004	Principal Axis EncoderZPhase detection is enabled
005	Principal Axis EncoderZPhase active level
006	Principal Axis positive limit (Port Enable)
007	Principal Axisnegative limit (Port Enable)
008	Principal AxisLimit active level
009	Principal Axis Pulse format
010	Principal AxisPulse logical direction
011	Principal AxisExternal zero effective level
012	Principal AxisExternal zero detection is enabled
013	Principal AxisROUNDSet up (restart)
015	Principalaxes home offset Pulse Number
016	Principal Axis PulseLogic Level
017	Principal Axis Rotating display
018	Principal Axis biggest plus Speed
019	Principal Axis 外部 Zero zero return direction
020	Principal AxisServo Zero zero return direction
022	Principal AxisBack to zero speed
025	Principal Axis EncoderLogical direction

Set range :

unit	:	
access to	:	Operation manager and above
preset value	:	
Effect of time	:	
instructions	:	ServoPrincipalAxis parameter and the same general location Axis parameter . As long as Principal Axis is the use of Servo port control, in accordance with the Axis parameter function Set up to pigeon- Set up.

001

## Principal Axis Axis number specified interface (restart)

Set range	:	0~7
unit	:	Pulse
access to	:	Super Admin
preset value	:	
Effect of time	:	restart
instructions	:	The default mode has a 0, on behalf of the spindle is frequency conversion control mode, namely analog control mode or gear, if you want to use servo spindle, must occupy a code, (servo spindle must be position control mode); Then can modify the parameters for assigned function. 0: analog variable frequency spindle 1 ~ 4: for CNC4640 (20) corresponding to 1 to 4 axis. 7: for CNC4960 spindle interfaces (40) corresponding to the independent. Note: if you have appointed a pulse as the function of the main shaft mouth mouth, the mouth to the pulse from the function of the corresponding shaft out, otherwise when restart the system will priority assigned to the main shaft and the shaft failure.

014

## Principal AxisEncoder lines

Set range	:	0~5000
unit	:	no
access to	:	Operation manager and above

preset value : 2500  
 Effect of time : immediately  
 instructions : Principal Axis rotation Encoder receive lines of the week ;  
 And the general Axis Encoder , can only receive AB phase Pulse, so  
 Encoder receive one week 's lines must be divided by four octave  
 Pulse Number get .  
 Number of Set up the parameters will affect the G74, G84 tapping  
 instructions. So be sure to properly Set up.

021

Principal AxisMaximum speed

Set range : 1~30000  
 unit : no  
 access to : Operation manager and above  
 preset value : 24000  
 Effect of time : immediately  
 instructions : The Set up is used to calculate the controller analog output ;  
 frequency control and assuming a linear analog control mode ;  
 Set up method is based , according to the corresponding inverter  
 10V analog speed, the speed Set up access to the reference  
 Number, then you can directly call the speed value , the controller  
 automatically based on linear proportional output corresponding  
 analog voltage.

023

Principal AxisGear ratio numerator(CMR)

024

Principal AxisGear ratio items(CMD)

Set range : 1~65535  
 unit : no  
 access to : Operation manager and above  
 preset value : 1  
 Effect of time : immediately  
 instructions : f the Principal Axis stalls exist , they should be hardware

gear ratio gear set in this parameter Number, the reference Number is currently not used to the standard version , but some may be used for special occasions .

026	Principal AxisOn delay
Set range	: 0~10000
unit	: Ms
access to	: Operation manager and above
preset value	: 0
Effect of time	: immediately
instructions	: Set up the implementation of Principal Axis movement turned to the next step after the operation or operations are forward or reverse delay time after .

027	ServoPrincipal AxisReady level
028	ServoPrincipal Axis exact stop level
029	ServoPrincipal Axis zero speed level in place
030	ServoPrincipal AxisSpeed each level
Set range	: 0~1
unit	: no
access to	: Operation manager and above
preset value	: 0
Effect of time	: immediately
instructions	: Set up the system detects ServoPrincipal Axis valid input signal level related specifically refer to the specific ServoPrincipal Axisinstructions book .

031	stem Principal Axis Speed
Set range	: 1~24000
unit	: Rev / min
access to	: Operation manager and above

preset value : 6000  
 Effect of time : immediately  
 instructions : up the implementation of Principal Axis current speed.

032

M30 is closed Principal Axis execution

Set range : 0 ~ 1  
 unit :  
 access to : Operation manager and above  
 preset value : 0  
 Effect of time : immediately  
 instructions : Set up0: execute command does not close the Principal Axis M30 run , Set up1: M30 instruction executed automatically close Principal Axis operation.

033

Principal Axis Minimum speed

Set range : 100 ~ 100000  
 unit : Rev / min  
 access to : Operation manager and above  
 preset value : 100  
 Effect of time : immediately  
 instructions : Set upPrincipal Axis Minimum speed.

034

The second Principal AxisMaximum speed

Set range : 1 ~ 100000  
 unit : Rev / min  
 access to : Operation manager and above  
 preset value : 24000  
 Effect of time : immediately  
 instructions : Set upThe second Principal AxisMaximum speed.

035

The second Principal Axis speed

Set range : 1 ~ 24000  
 unit : Rev / min

access to : Operation manager and above  
 preset value : 6000  
 Effect of time : immediately  
 instructions : Set upThe second Principal Axis speed.

036	Principal Axis command S values no effect enabled
-----	---

Set range : OFF ON  
 unit :  
 access to : Operation manager and above  
 preset value : OFF  
 Effect of time : immediately  
 instructions : When set upON, M03Sxxxx instruction S values specified no effect ,  
 Principal Axis of speed takes the value P5.031Set up of .

037	MachineryPrincipal Axis First gear Speed(Lseries)
038	MachineryPrincipal AxisThe second tranche Speed(Lseries)
039	MachineryPrincipal AxisThe third tranche Speed(Lseries)
040	MachineryPrincipal AxisFourth gear Speed(Lseries)

Set range : 1~1000000  
 unit : Rev / min  
 access to : Operation manager and above  
 preset value : 24000  
 Effect of time : immediately  
 instructions : This parameter Number L version of the system for lathes Edition ,  
 Set up lathe Principal Axis Machinery when every bit of the highest  
 speed for M41 M42 M43 M44.

11.7 Port 配置 (P6.)

001	Detected on the knife enter the port number
...	...
048	X Y Z A B C to enable the output port number

Set range : 0~23

unit : Interrupt number

access to : Super Admin

preset value : instructions port table book

Effect of time : immediately

instructions : Set up the configuration system functions assigned corresponding input or output port number ;  
 If you want to shield this function , you can enter 8888 by the insertion , the operation is implicit operation , the operation is successful , it will display  
 “=====”。

049	Enter a valid level is detected00 ~ 31
050	Enter a valid level is detected32 ~ 63
051	Enter a valid level is detected64 ~ 95

Set range : 0x00000000~0xFFFFFFFF

unit :

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : IO is used to configure the input to detect active level 0 : Low level  
 1: High level .  
 Binary conducted pin configuration.  
 For example : P6.050: 10, the binary representation of  
 0,000,000,000,000,000 0,000,000,000,001,010 ;  
 Said IN32 ~ IN63 IN33 IN35 input ports to detect active high input port , and the remaining input ports to detect active low.

052	Reset Close IO Configuration00~31
053	Reset Close IO Configuration32~63
054	Reset Close IO Configuration64~95

Set range : 0x00000000~0xFFFFFFFF

unit :

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Used to configure the reset , alarm, turn off the output of the system needs to be reset IO, 0: do not close the output IO 1: turn off output IO.

Binary conducted pin configuration.

For example : P6.53: 10, the binary representation of 0,000,000,000,000,000 0,000,000,000,001,010 ;

Said OUT32 ~ OUT63 output IO When the system is reset , alarm reset output OUT33 OUT35 off the rest of the OUT output port is not reset output.

055	Reset off LED configuration00~31
056	Reset off LED configuration32~63
057	Reset off LED configuration64~95

Set range : 0x00000000~0xFFFFFFFF

unit :

access to : Super Admin

preset value : 0

Effect of time : immediately

instructions : Used to configure the reset, alarm , the system needs to shut down the operation panel reset LED lights , 0: off 1 : off .

Binary conducted pin configuration.

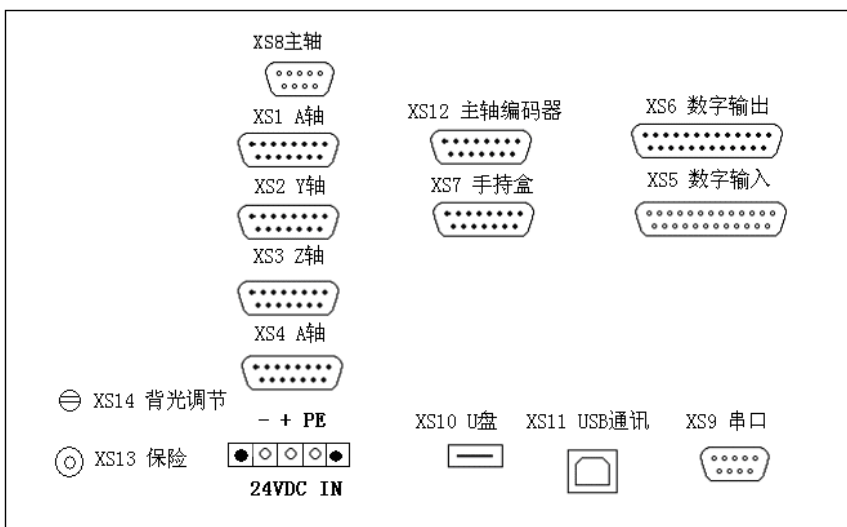
For example : P6.56: 10, the binary representation of 0,000,000,000,000,000 0,000,000,000,001,010 ;

Said LED32 ~ LED63 LED light in when the system is reset, reset the alarm off when LED33 LED35 LED lamp LED light does not reset the remaining closed .

## 12. Hardware interface definition and connection instructions

### 12.1 installation layout

#### 12.1.1 46series external interface diagram



(1) XS1 (X), XS2 (Y) and XS3 (the Z axis), XS4 (A shaft) :

Type D 15 core hole socket connection or digital ac servo drive stepper motor drives

2 XS5 digital input:

Type D 25 core needle socket for the axial spacing and other switch input signal

(3) XS6 digital output:

Type D 25 core hole for switch socket output signal

(4) the USB and serial port with CNC46series controller for computer files, and other functions.

5] CNC46series use 24 v dc power supply controller, the internal power dissipation about 5 w.

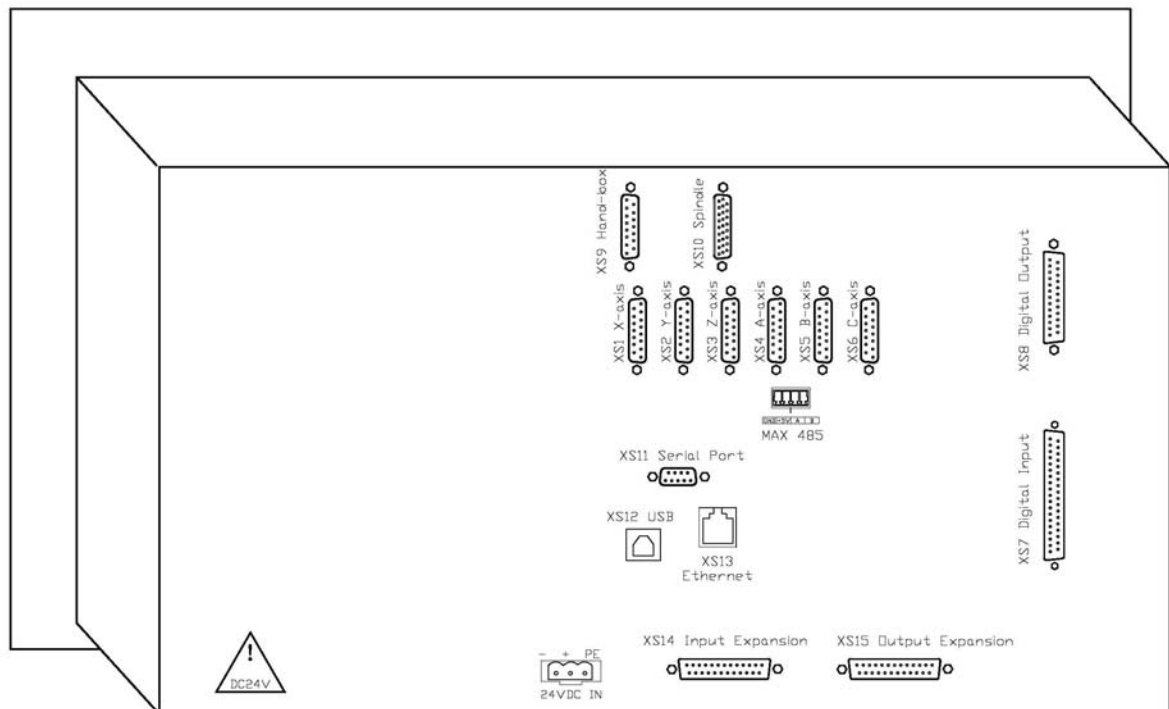
[6] XS7 additional panel:

The handwheel 15 core type D hole socket connection

Once XS8 spindle:

9 core spindle inverter type D needle socket connection

#### 12.1.2. 49 series external interface diagram



(1) XS1 (X), XS2 (Y) and XS3 (the Z axis), XS4 (A shaft), XS5 shaft (B), XS6 axis (C) :

Type D 15 core hole socket connection or digital ac servo drive stepper motor drives

2 XS7 machine input interface:

37 core type D needle socket for the axial spacing and other switch input signal

(3) XS8 machine output interface:

Type D 25 core hole for switch socket output signal

(4) the USB and serial port with CNC49series controller for computer files, and other functions.

5] CNC49series use 24 v dc power supply controller, the internal power dissipation about 5 W.

[6] XS9 handwheel interface:

The handwheel 15 core type D hole socket connection

Once XS10 spindle:

26 core spindle inverter type D needle socket connection

(8) XS14 machine extension input interface:

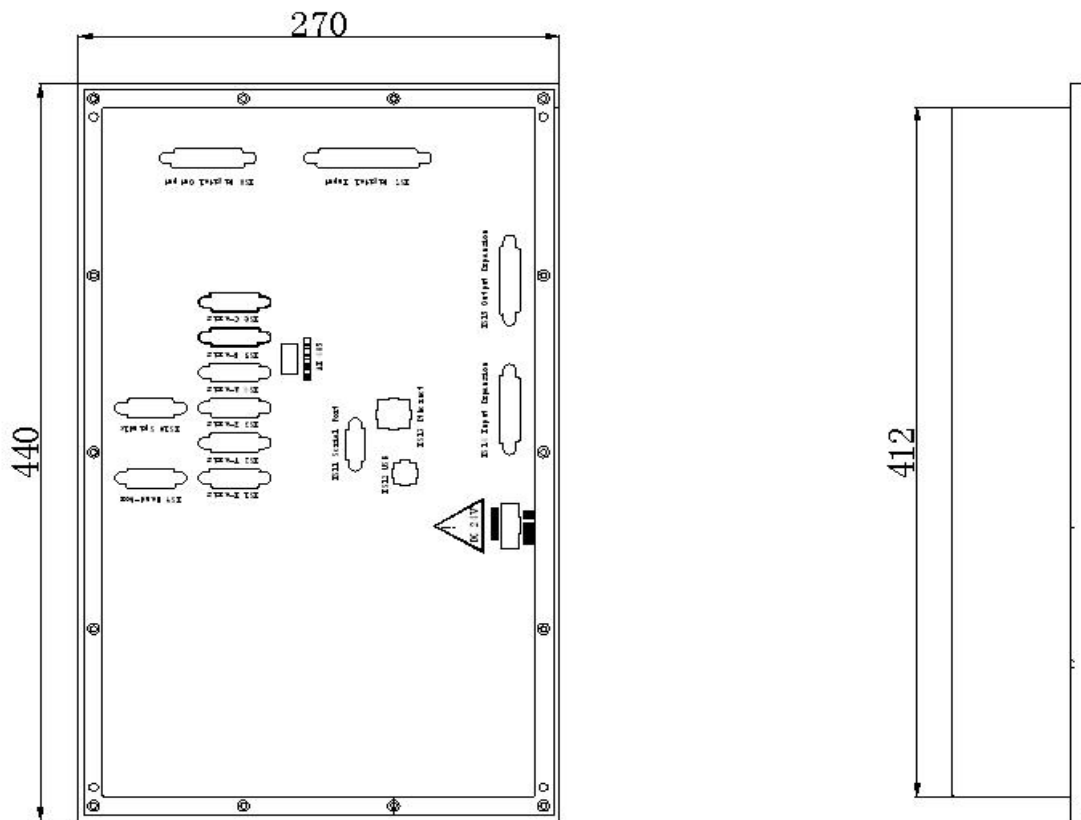
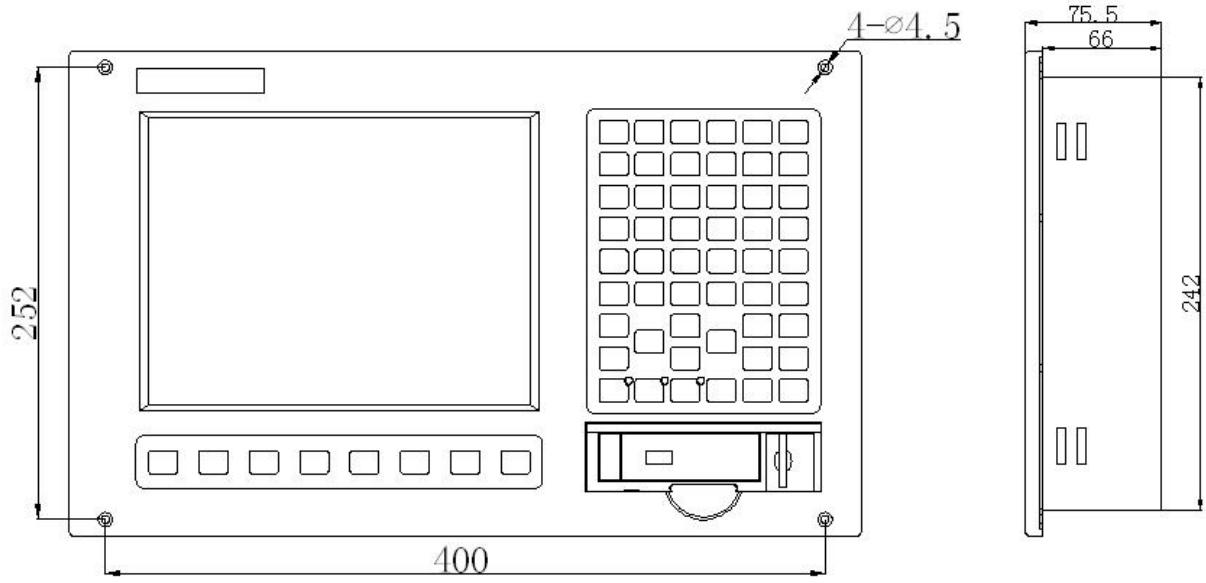
25 core type D hole for switch socket extension amount of input signal

(9) XS15 machine tool to expand output interface:

Type D 25 core hole for switch socket extension output signal

12.1.3. 46 series installation size chart





#### 12.1.5. Installation considerations

The installation of the electrical cabinet

- (1) electric cabinet must be able to effectively prevent the dust, cooling fluid and organic solution to enter;
- 2 design electric cabinet, the system the distance of the back cover and the chassis is not less than 20 cm, should be considered when temperature rises in electric cabinet, must ensure that the ark inside and outside the tank temperature difference is not more than 10 °C;
- (3) in electric cabinet must be installed fan in place to ensure that the internal air circulation;
- (4) display panel must be installed in the cooling fluid can not spray to place;
- 5] design electric cabinet, must consider to try to reduce external electrical interference, to prevent interference to transmit system;

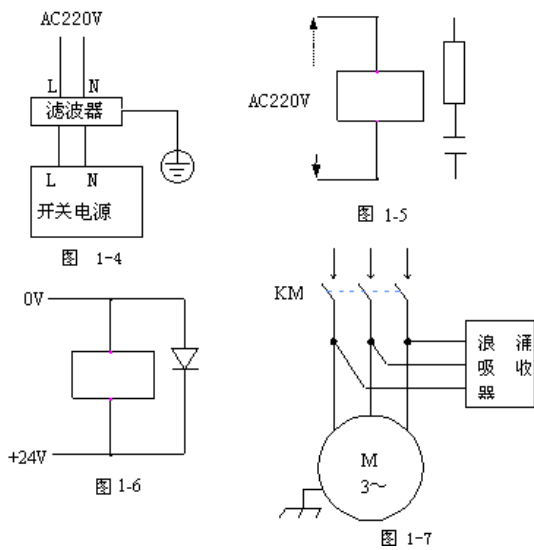
Prevent interference method

System has taken in the design of the electromagnetic radiation shielding space, to absorb impact current, filter anti-jamming measures, such as power supply noise can to a certain extent, prevent the influence of the external interference sources on the system itself. In order to ensure the system stable work, the system installation it necessary to take the following measures:

- (1) CNC to stay away from the disturbance of the equipment (e.g., frequency converter, ac contactor, electrostatic generator, high voltage generator and power circuit block device, etc.), at the same time, switching power supply to separate access filter to improve the anti-interference ability of CNC (as shown in figure 1-4);;
- 2 through isolation transformer to the system power supply, installation of machine tools must be grounded, CNC and drive must be independent from ground connection of ground wire.

Yang system interference method

On both ends of ac coil parallel RC circuit (0.01 u F, 100 ~ 200 Ω, as shown in figure 1-5), the RC circuit installation time as far as possible close to the perceptual load; In the ends of the dc coil reverse parallel fly-wheel diode (as shown in figure 1-6); In ac motor winding end and surge absorber (as shown in figure 1-7).



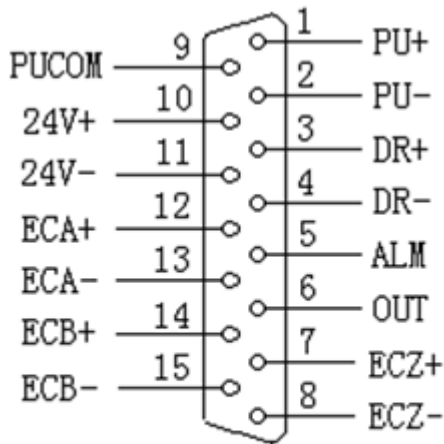
In order to reduce mutual interference between the CNC and the signal cables and power cables between wiring should follow the following principles :

Group	Cable types	Cabling Requirements
A	AC power cord	将 A group of cable with group B, group C bundled separately , retaining the distance between them is at least 10cm, or group A cable electromagnetic shielding
	AC coil	
	AC contactor	
B	AC coil (24VDC)	将 The Group A Group B cable and cable separately or bundled group B cable shielding ; group B and group C cable cable farther away , the better
	DC relay (24VDC)	
	Cable between the system and the electric cabinet	
C	Cable between the system and the machine	The Group C and Group A separate cable bundle , or group C cable shielding ; distance group and B group C cable between the cable at least 10cm, twisted pair cable
	Cable system and Servo drives between	
	Position feedback cable	
	Position Encoder cable	
	Handwheel cables	
	Other shielded cable	

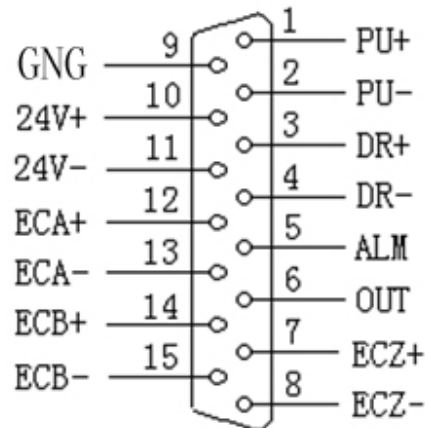
## 12.2 Interface Definition

### Motor Drive Control Interface

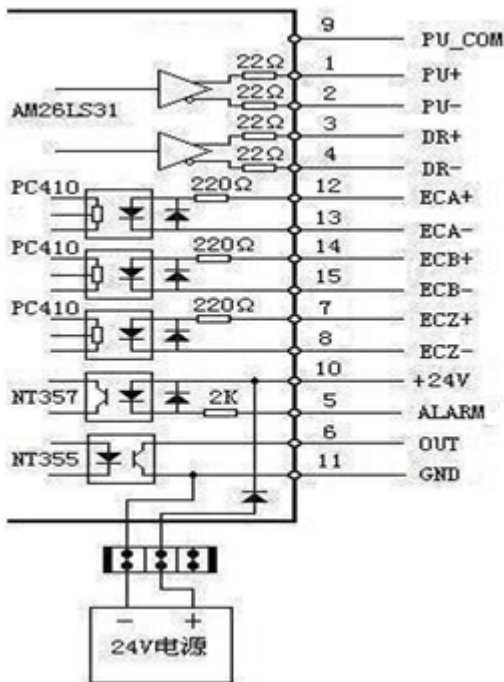
There are four drive interface (46seriesXS1..XS4 or 49seriesXS1..XS4 XS5 XS6), interface definition below:



46系列脉冲接口



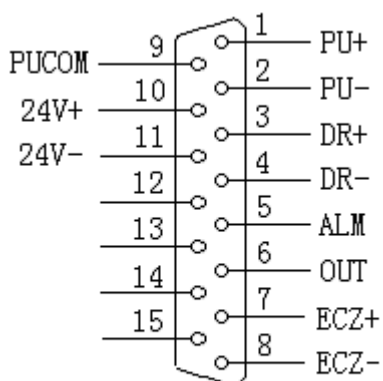
49 系列脉冲接口



Pulse output brief internal circuit diagram

Line	Definition	Function
1	PU+	PulseSignal+
2	PU-	PulseSignal-
3	DR+	DirectionSignal+
4	DR-	DirectionSignal-
5	ALM	ServoAlarmSignal input X Axis: IN34、Y Axis: IN35 、Z Axis: IN36、A Axis: IN37
6	OUT	AxisAlarm Reset outputSignal X Axis: OUT24Y Axis: OUT25Z Axis: OUT26A Axis: OUT27
7	ECZ+	EncoderZPhase input+
8	ECZ-	EncoderZPhase input-
9	GND	49seriesReference ground 46seriesSingle- termination method common
10	24V+	24V internal power supply provided with the controller 's 24V power supply has a direct connection
11	24V-	
12	ECA+	EncoderAPhase input+
13	ECA-	EncoderAPhase input-
14	ECB+	EncoderBPhase input+
15	ECB-	EncoderBPhase input-

## Standard Pulse wiring wiring diagram



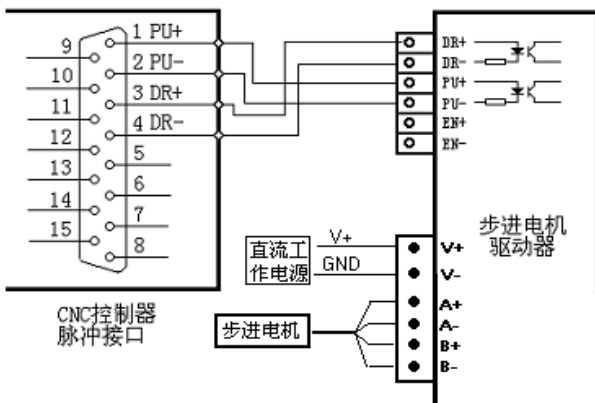
XS1..XS4脉冲接口标配线

This standard wiring is applicable to 46 series and 49 series controller;

This standard wiring is applicable to 46 series and 49 series controller; With differential input wiring of stepper motor drives

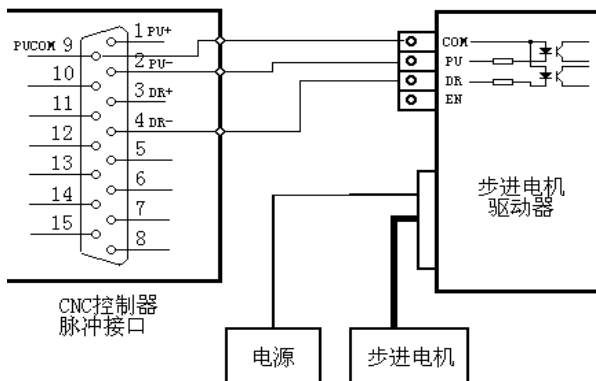
Single-ended input wiring diagram of stepper motor drives

Some companies stepping drive will light coupling input cathode together, namely common cathode connection, not suitable for CNC controller. Input light coupling into the anode together, namely, anode connection at this time should be wiring, referring to the following figure and PU + and DR + can not be together, otherwise it will damage the pulse interface



Single-ended input wiring diagram of stepper motor drives

Some companies stepping drive will light coupling input cathode together, namely common cathode connection, not suitable for CNC controller. Input light coupling into the anode together, namely, anode connection at this time should be wiring, referring to the following figure and PU + and DR + can not be together, otherwise it will damage the pulse interface.



Stepper motor drive common anode input wiring diagram

Differential connection diagram as follows: with servo motor drives the wiring diagram (note: only for 46 series controller)

Because the vast majority are using finite difference method, so some reference difference pulse mode connection, many servo driver needs a 12-24 v power supply, 10, 11 feet can be used to provide the 24 v power supply, the concrete connection according to the different servo driver, if not sure, can ask the company.

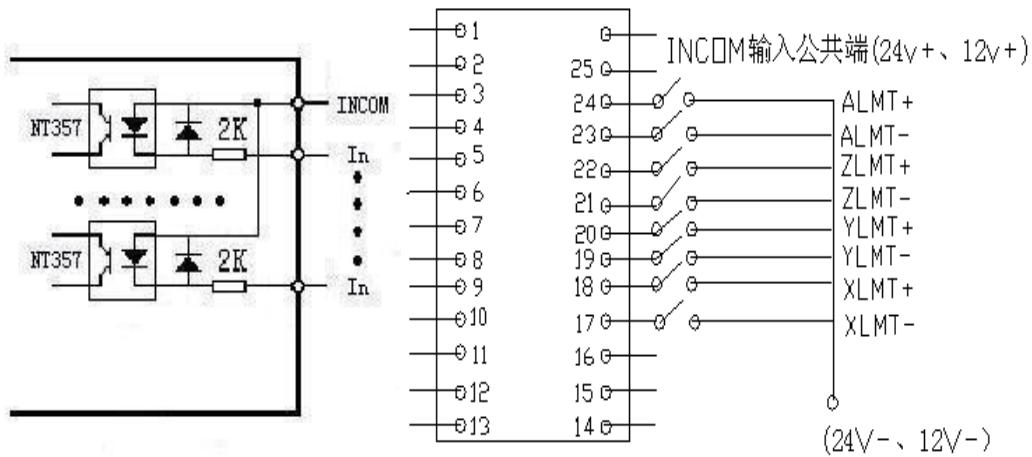
noteM

PU +, PU, DR + and DR - both of these four feet cannot directly together, otherwise it will damage the pulse interface.

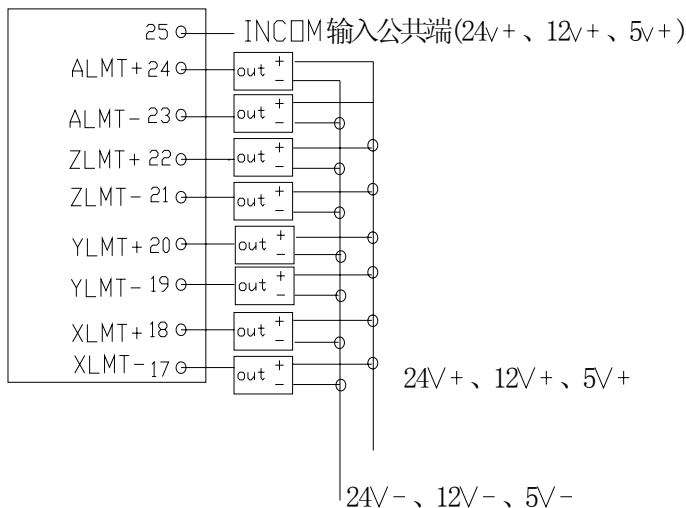
12.2.2. Number word input interface

Number word input interface contains the Axis hardware limit Signal, Definition in the following figure

机械开关接线图



Number word input brief internal output map photoelectric switch wiring diagram



External module + client for proximity switches positive supply - side of the ground proximity switches , OUT terminal is output Signal, ordinary working power proximity switches should be selected for 10-30V , and for NPN output . Photoelectric switches is similar.

## 46MseriesXS5 ( milling version ) input port default configuration

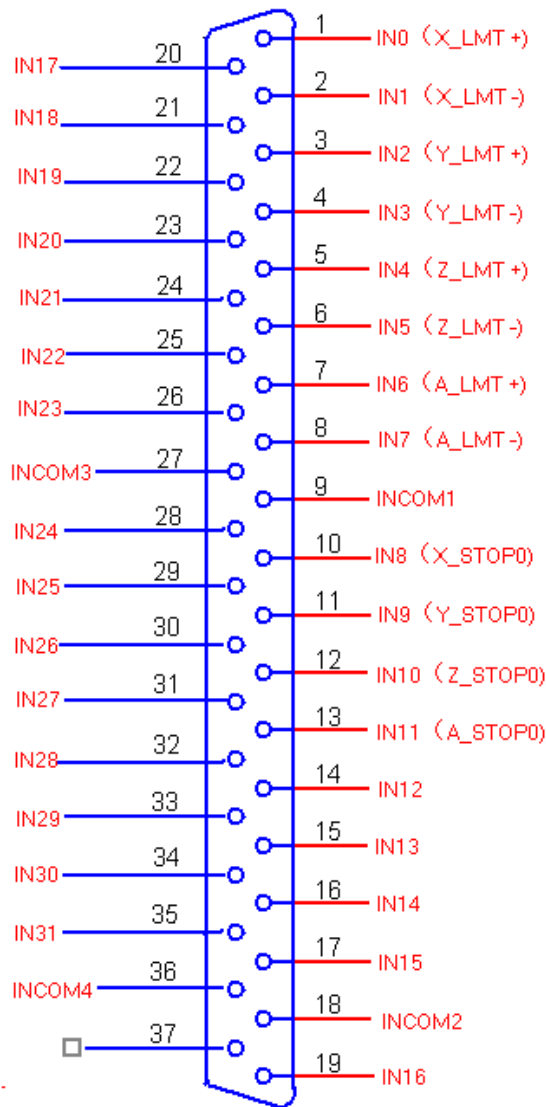
Line	Port Definition	Function
1	IN0	X Axis Zero
2	IN1	Y Axis Zero
3	IN2	Z Axis Zero
4	IN3	A Axis Zero
5	IN4	Standby input
6	IN5	Standby input
7	IN6	Standby input
8	IN7	Standby input
9	IN8	Standby input
10	IN9	Standby input
11	IN10	Standby input
12	IN11	Standby input
13	IN12	Standby input
14	IN13	Standby input
15	IN14	Standby input
16	IN15	Standby input
17	IN16(XLMT-)	X Axis negative limit(StandbyIN32)
18	IN17(XLMT+)	X Axis positive limit(StandbyIN33)
19	IN18(YLMT-)	Y Axis negative limit(StandbyIN34)
20	IN19(YLMT+)	Y Axis positive limit(StandbyIN35)
21	IN20(ZLMT-)	Z Axis negative limit(StandbyIN36)
22	IN21(ZLMT+)	Z Axis positive limit(StandbyIN37)
23	IN22(ALMT-)	A Axis negative limit(StandbyIN38)
24	IN23(ALMT+)	A Axis positive limit(StandbyIN39)
25	INCOM	input common INCOM (24V +, 12V +) connected internally or externally supplied power

46LseriesXS5 (Lathe version) inputPort default configuration

Line	Port Definition	Function
1	IN0	X Axis Zero
2	IN1	Standby input
3	IN2	Z Axis Zero
4	IN3	Standby input
5	IN4	1 knife in place to detect
6	IN5	2 knife in place to detect
7	IN6	3 knife in place to detect
8	IN7	4 knife in place to detect
9	IN8	5 knife in place to detect
10	IN9	6 knife in place to detect
11	IN10	7 knife in place to detect
12	IN11	8 knife in place to detect
13	IN12	Standby input
14	IN13	Standby input
15	IN14	Standby input
16	IN15	Standby input
17	IN16(XLMT-)	X Axisnegative limit(StandbyIN32)
18	IN17(XLMT+)	X Axis positive limit(StandbyIN33)
19	IN18	
20	IN19	
21	IN20(ZLMT-)	Z Axisnegative limit(StandbyIN36)
22	IN21(ZLMT+)	Z Axis positive limit(StandbyIN37)
23	IN22	
24	IN23	
25	INCOM	input common INCOM (24V +, 12V +) connected internally or externally supplied power

49MseriesXS7 ( milling version ) inputPort default configuration

Zero Number word input interface contains XYZABC each Axis of , XYZA Axis hardware limit Signal , etc. , Definition in the following figure

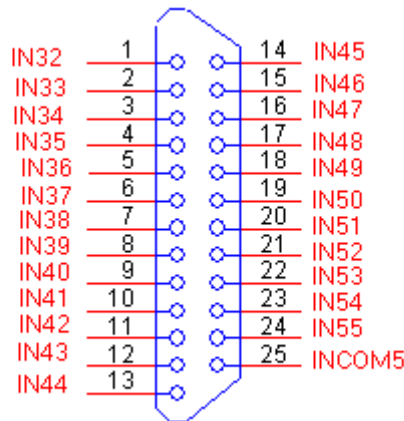


Machine input interface

37 针 插头 Line	4960 (40) Definition	Function	9163 Definition
1	IN0 (X_LMT+)	X Axis positive limit	IN00
2	IN1 (X_LMT-)	X Axis negative limit	IN01
3	IN2 (Y_LMT+)	Y Axis positive limit	IN02
4	IN3 (Y_LMT-)	Y Axis negative limit	IN03
5	IN4 (Z_LMT+)	Z Axis positive limit	IN04
6	IN5 (Z_LMT-)	Z Axis negative limit	IN05
7	IN6 (A_LMT+)	A Axis positive limit	IN06
8	IN7 (A_LMT-)	A Axis negative limit	IN07
9	INCOM1	inputCommon (24v+、 12v+)	+24V
10	IN8 (X_STOP0)	X Axis Zero	IN08
11	IN9 (Y_STOP0)	Y Axis Zero	IN09
12	IN10 (Z_STOP0)	Z Axis Zero	IN10
13	IN11 (A_STOP0)	A Axis Zero	IN11
14	IN12 (B_STOP0)	B Axis Zero	IN12
15	IN13 (C_STOP0)	C Axis Zero	IN13
16	IN14	Standby input	IN14
17	IN15	Standby input	IN15
18	INCOM2	inputCommon (24v+、 12v+)	+24V
19	IN16	B Axis positive limit	IN16

20	IN17	B Axisnegative limit	IN17
21	IN18	C Axis positive limit	IN18
22	IN19	C Axisnegative limit	IN19
23	IN20	Standby input	IN20
24	IN21	Standby input	IN21
25	IN22	Standby input	IN22
26	IN23	Standby input	IN23
27	INCOM3	inputCommon (24v+, 12v+)	+24V
28	IN24	Standby input	IN24
29	IN25	Standby input	IN25
30	IN26	Standby input	IN26
31	IN27	Standby input	IN27
32	IN28	Standby input	IN28
33	IN29	Standby input	IN29
34			IN30
35			IN31
36			+24V
37			

49MseriesXS14 ( milling v  
Extended Number word in j



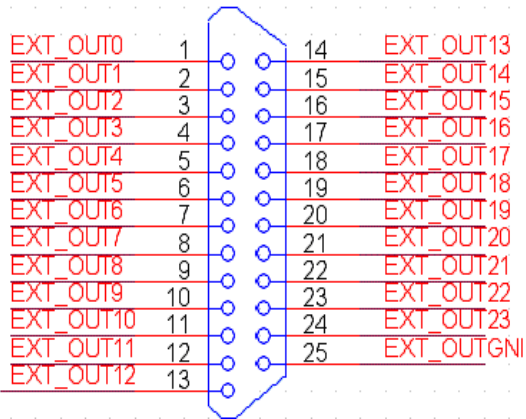
wing figure

Line	Definition	Function
1	IN32	Standby input
2	IN33	Standby input
3	IN34	Standby input

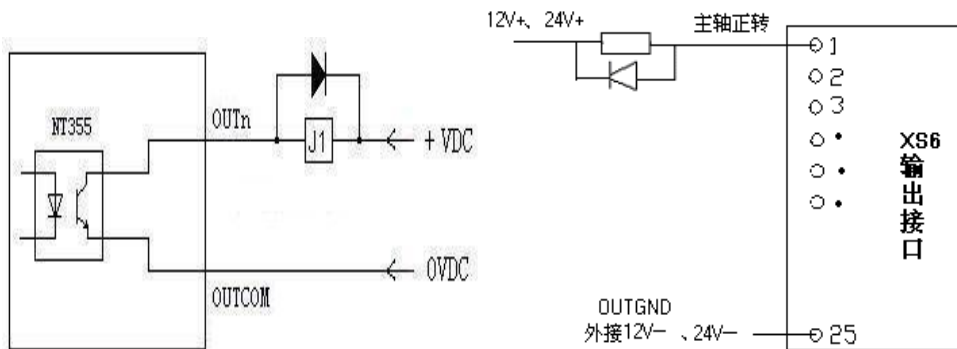
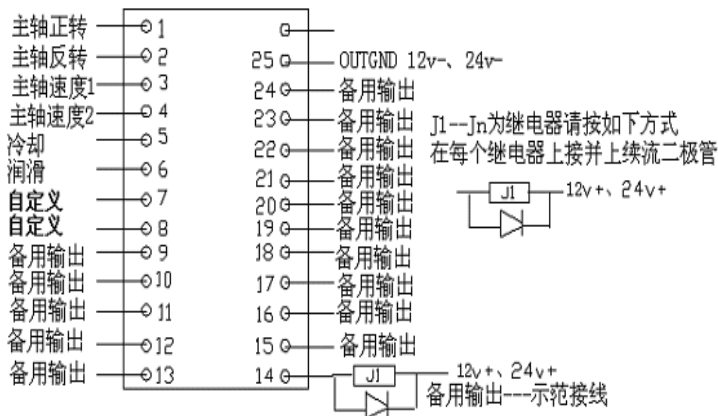
4	IN35	Standby input
5	IN36	Standby input
6	IN37	Standby input
7	IN38	Standby input
8	IN39	Standby input
9	IN40	Standby input
10	IN41	Standby input
11	IN42	Standby input
12	IN43	Standby input
13	IN44	Standby input
14	IN45	Standby input
15	IN46	Standby input
16	IN47	Standby input
17	IN48	Standby input
18	IN49	Standby input
19	IN50	Standby input
20	IN51	Standby input
21	IN52	Standby input
22	IN53	Standby input
23	IN54	Standby input
24	IN55	Standby input
25	INCOM5	inputCommon (24v+, 12v+)

### 12.2.3. Number word output interface

Number word output interface , wiring Definition as follows :



XS6 输出接口接线图



Number word output brief internal circuit ( left ) And wiring machine see right ( to Principal Axis forward as an example )

Mseries milling version CNC4640 (XS6), CNC4960 (XS8) Basic Output Port default configuration

Line	Port	Function
	Definition	
1	OUT0	Principal AxisForward(M03)(Operation PanelM203)
2	OUT1	Principal AxisReverse(M04)(Operation PanelM204)
3	OUT2	(M10、 M11) (FCNC4M Panel chuckM10、 M11)
4	OUT3	(M12、 M13) (Operation Panel LightingM12、 M13)
5	OUT4	Cool down(M08、 M09)(Operation PanelCool downM208、 M209)
6	OUT5	Lubrication(M32、 M33)(Operation PanelLubricationM212、 M213)
7	OUT6	(M14、 M15) (Operation Panel Elastic knifeM14、 M15)
8	OUT7	(M16、 M17) (Operation PanelOr manual cutter magazineM16、 M17)
9	OUT8	(M18、 M19) (Operation Panel cutter magazine+M18、 M19)
10	OUT9	(M20、 M21) (Operation Panel cutter magazine-M20、 M21)
11	OUT10	(M22、 M23) (Operation Panel Bore blowM22、 M23)
12	OUT11	(M24、 M25) (Operation PanelChipM24、 M25)
13	OUT12	(M26、 M27) (FCNC6DChip panel2 M26、 M27)
14	OUT13	(M28、 M29) (FCNC6D panelCool down2 M28、 M29)
15	OUT14	(M30、 M31) (FCNC6D panelElastic materialM30、 M31)
16	OUT15	(M34、 M35) (FCNC6D panelDischarge M34、 M35)
17	OUT16	(M36、 M37) (FCNC6D panelFeeding M36、 M37)
18	OUT17	(M38、 M39) (FCNC6D panelPrincipal Axis 定位 M38、 M39)
19	OUT18	(M40、 M41) (Operation PanelF0 M40、 M41)
20	OUT19	(M42、 M43) (Operation PanelF1 M42、 M43)
21	OUT20	(M44、 M45) (Operation PanelF2 M44、 M45)
22	OUT21	(M46、 M47) (Operation PanelF3 M46、 M47)
23	OUT22	(M48、 M49) (Operation PanelF4 M48、 M49)
24	OUT23	(M50、 M51) (FCNC6D panelF5 M50、 M51)
25		OUTGND12V-、 24V-External public power outlet

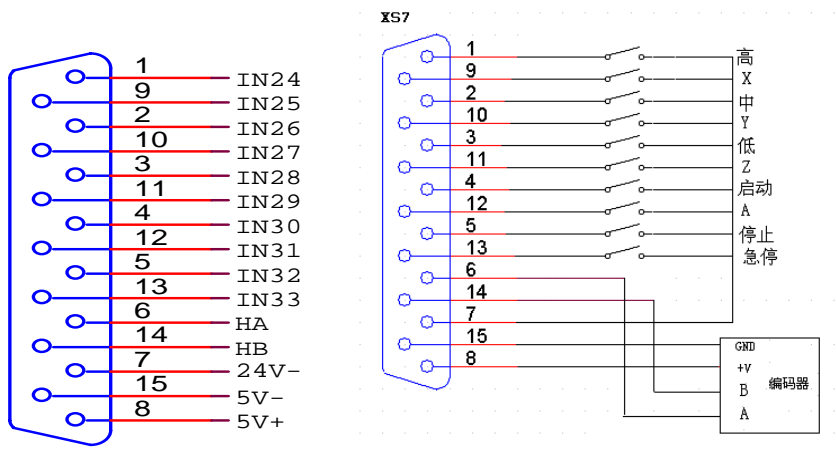
Mseries 铣床版 CNC4960(XS15)扩展 OutputPort default configuration

Line	Port Definition	Function
1	OUT24	(FCNC6D panelF6 M52、M53)
2	OUT25	(FCNC6D panelF7 M54、M55)
3	OUT26	(FCNC6D panelF8 M56、M57)
4	OUT27	(FCNC6D panelF9 M58、M59)
5	OUT28	(FCNC6D panelF10 M60、M61)
6	OUT29	(FCNC6D panelF11 M62、M63)
7	OUT30	(FCNC6D panelF12 M64、M65)
8	OUT31	(FCNC6D panelF13 M66、M67)
9	OUT32	(StandbyOutput M68、M69)
10	OUT33	(StandbyOutput M70、M71)
11	OUT34	(StandbyOutput M72、M73)
12	OUT35	(StandbyOutput M74、M75)
13	OUT36	(StandbyOutput M76、M77)
14	OUT37	(StandbyOutput M78、M79)
15	OUT38	(StandbyOutput M80、M81)
16	OUT39	(StandbyOutput M82、M83)
17	OUT40	(StandbyOutput M84、M85)
18	OUT41	(StandbyOutput M86、M87)
19	OUT42	(StandbyOutput M90、M91)
20	OUT43	(StandbyOutput M92、M93)
21	OUT44	(StandbyOutput M94、M95)
22	OUT45	(StandbyOutput M96、M97)
23	OUT46	(StandbyOutput M98、M99)
24	OUT47	(StandbyOutput M100、M101)
25		OUTGND12V-、24V-External public power outlet

## Lseries (Lathe version) OutputPort default configuration

Line	Port	Function
	Definition	
1	OUT0	Principal AxisForward(M03)
2	OUT1	Principal AxisReverse(M04)
3	OUT2	TurretForwardOutput
4	OUT3	TurretReverseLockingOutput
5	OUT4	Cool down(M08、 M09)
6	OUT5	Lubrication(M32、 M33)
7	OUT6	StandbyOutput(M10、 M11)
8	OUT7	StandbyOutput(M20、 M21)
9	OUT8	Chuck Locking(M12)
10	OUT9	Chuck release(M13)
11	OUT10	StandbyOutput(M16、 M17)
12	OUT11	StandbyOutput(M18、 M19)
13	OUT12	StandbyOutput(M40、 M41)
14	OUT13	StandbyOutput(M42、 M43)
15	OUT14	StandbyOutput(M44、 M45)
16	OUT15	StandbyOutput(M46、 M47)
17	OUT16	StandbyOutput(M48、 M49)
18	OUT17	StandbyOutput(M50、 M51)
19	OUT18	StandbyOutput
20	OUT19	StandbyOutput
21	OUT20	ChVariable speed switch bandsuck 3 (M66、 M67)
22	OUT21	ChVariable speed switch bandsuck 2 (M64、 M65)
23	OUT22	ChVariable speed switch bandsuck 1 (M62、 M63)
24	OUT23	ChVariable speed switch bandsuck 0 (M60、 M61)
25		OUTGND12V-、 24V-External public power outlet

## 12.2.4. Handheld cassette interface

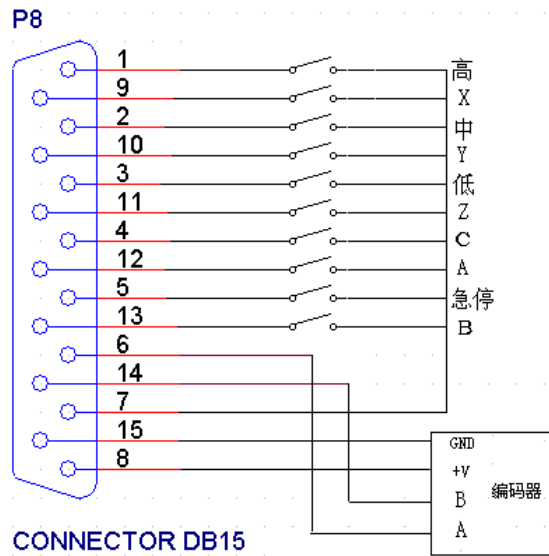


46Xseries (XS7) 的 Definition As follows:

Line	Function 号 Definition	Function
1	(IN24)Position switch	0.1 file---High speed
2	(IN26)Position switch	0.01 file---Medium speed
3	(IN28)Position switch	0.001 file---Low speed
4	(IN30)Button	Cycle start
5	(IN32)Button	Time out
7	24V-	24V internal power supply provides a negative
9	(IN25) AxisSelect	X Axis
10	(IN27) AxisSelect	Y Axis
11	(IN29) AxisSelect	Z Axis
12	(IN31) AxisSelect	A Axis
13	(IN33)Button	Emergency
6	HA	Hand EncoderAPhase inputSignal
14	HB	Hand EncoderBPhase inputSignal
15	5V-	Negative internal 5V power supplied
8	+5V	Provided positive internal 5V supply
7	24V-	24V internal power supply provides a negative

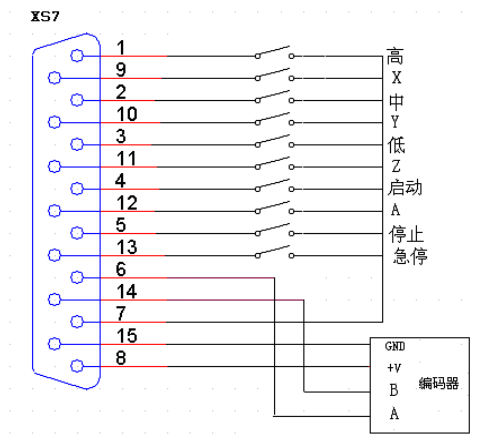
49series (XS9)

CNC4960Definition As follows:



Line	Definition	Function
1	IN63	0.1Position switch—high
2	IN64	0.01Position switch—Middle
3	IN65	0.001Position switch—Low
4	IN60	SelectC Axis
5	IN61	Emergency
6	HA	Hand EncoderAPhase inputSignal
7	24V-	Provided internally-24VPower supply
8	5V+	Provided internally+5VPower supply
9	IN56	SelectX Axis
10	IN57	SelectY Axis
11	IN58	SelectZ Axis
12	IN59	SelectA Axis
13	IN62	SelectB Axis
14	HB	Hand EncoderBPhase inputSignal
15	5V-	Provided internally-5VPower supply

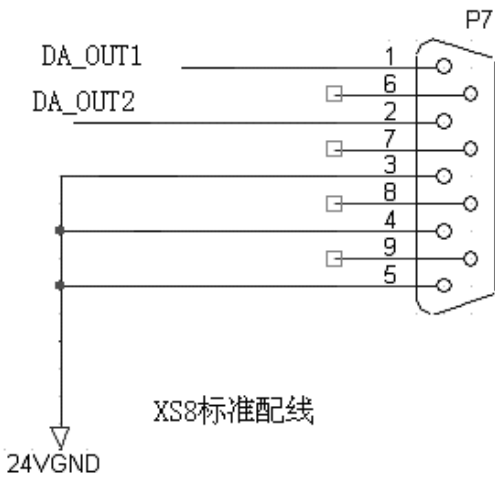
49series (XS9)  
CNC4940Definition As follows:



Line	Definition	Function
1	IN63	0.1Position switch—high
2	IN64	0.01Position switch—Middle
3	IN65	0.001Position switch—Low
4	IN60	Start
5	IN61	Stop
6	HA	Hand EncoderAPhase inputSignal
7	24V-	Provided internally-24VPower supply
8	5V+	Provided internally+5VPower supply
9	IN56	SelectX Axis
10	IN57	SelectY Axis
11	IN58	SelectZ Axis
12	IN59	SelectA Axis
13	IN62	Emergency
14	HB	Hand EncoderBPhase inputSignal
15	5V-	Provided internally-5VPower supply

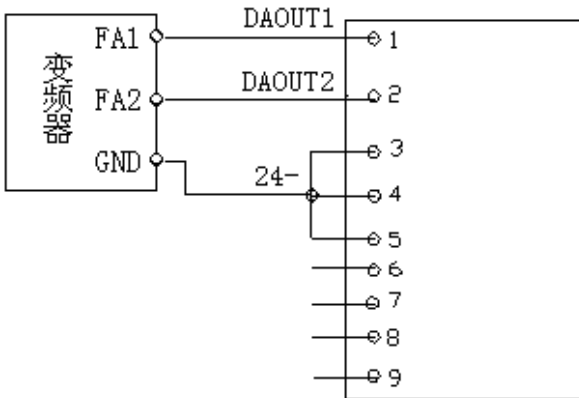
12.2.5. Analog Output Interface (46seriesXS8)

Analog Output interface standard line diagram:



The same applies to the standard line 46series XS8 controller interface

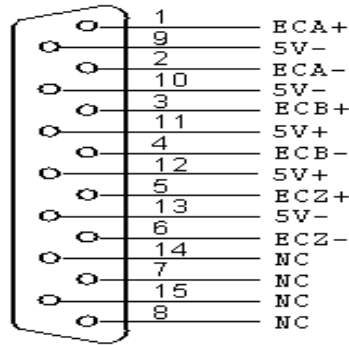
### 模拟主轴XS8与变频器接线图



Line	Definition	Function
1	DAOUT1	Analog voltageOutput (0~10) V
2	DAOUT2	Analog voltageOutput (0~10) V
3	GND	Internal provide24VPower supplyGround
4	GND	Internal provide24VPower supplyGround
5	GND	Internal provide24VPower supplyGround

#### 11.2.6 Principal Axis EncoderInterface (46seriesXS12、49seriesXS10)

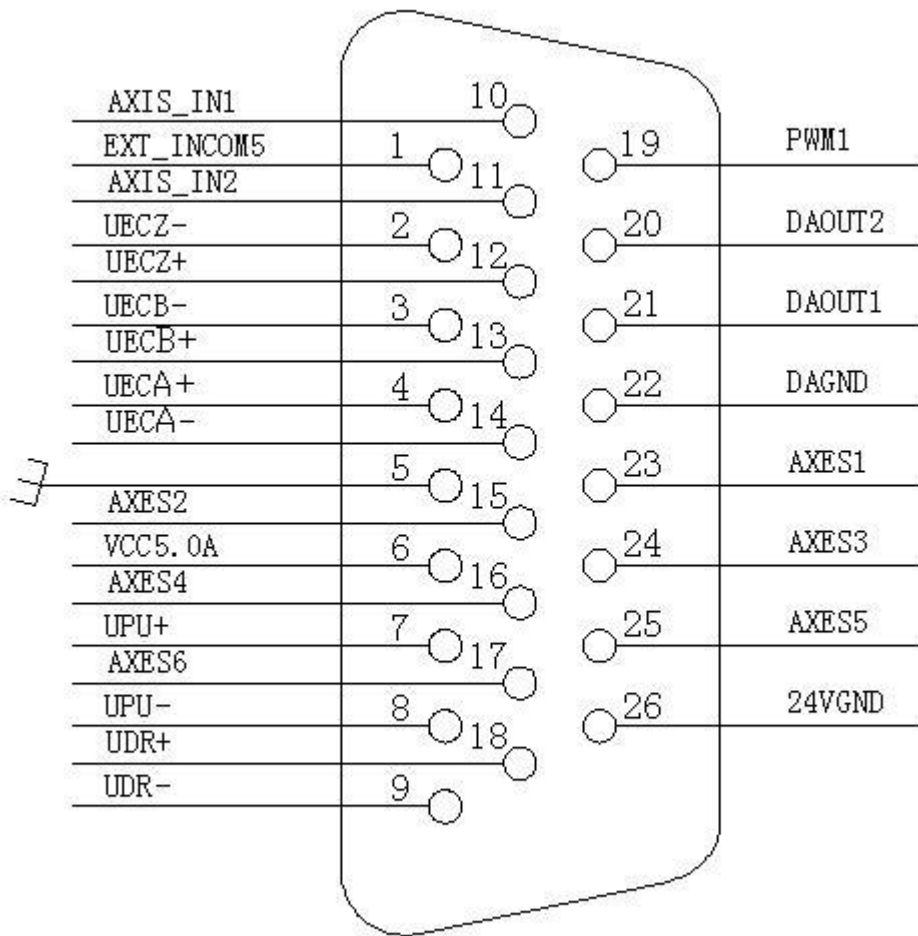
Principal Axis EncoderInterface Schematic(46seriesXS12):



Principal Axis EncoderDefinition As follows(46series Controller):

Line	Definition	Function
1	ECA+	EncoderAPhase input+
2	ECA-	EncoderAPhase input-
3	ECB+	EncoderBPhase input+
4	ECB-	EncoderBPhase input-
5	ECZ+	EncoderZPhase input+ (Standby)
6	ECZ-	EncoderZPhase input- (Standby)
7	NC	Empty
8	NC	Empty
9	5V-	Internal5VPower supply Negative terminal can not connect an external Power supply
10	5V-	Internal5VPower supply Negative terminal can not connect an external Power supply
11	5V+	Internal5VPower supplyCan not connect the positive terminal of the externalPower supply
12	5V+	Internal5VPower supplyCan not connect the positive terminal of the externalPower supply
13	5V-	Internal5VPower supply Negative terminal can not connect an external Power supply
14	NC	Empty
15	NC	Empty

Principal Axis EncoderInterface Schematic(49seriesXS10):



Principal Axis Encoder Definition As follows(49series Controller):

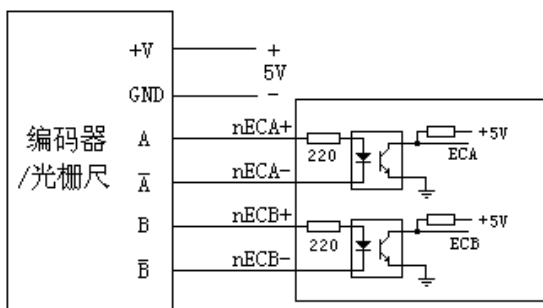
Line	Definition	Function
1	EXT_INCOM5	Control Signal Common Power supply 24V+
2	UECZ-	Principal Axis Encoder Z-
3	UECB-	Principal Axis Encoder B-
4	UECA+	Principal Axis Encoder A+
5	EXT_GNDA	Principal Axis Encoder Power supply Ground GND
6	EXTVCC5.0A	Principal Axis Encoder 5V+
7	CDR-	Principal Axis Position control Direction-
8	CDR+	Principal Axis Position control Direction+
9	CPU-	Principal Axis Position control Pulse-
10	AXIS_IN1	Principal Axis Alarm input Port 1

11	AXIS_IN2	Principal AxisAlarm inputPort 2
12	UECZ+	Principal Axis EncoderZ+
13	UEB+	Principal Axis EncoderB+
14	UECA-	Principal Axis EncoderA-
15	AXES2	Principal AxisOutputPort 2(CCW)
16	AXES4	Principal AxisOutputPort 4
17	AXES6	Principal AxisOutputPort 6
18	CPU+	Principal Axis Position control Pulse+
19	PWM1	PWMOutput
20	DAOUT2	The second Analog Output0~10V
21	DAOUT1	Analog Analog Output0~10V
22	DAGND	Analog GroundGND
23	AXES1	Principal AxisOutputPort 1(CW)
24	AXES3	Principal AxisOutputPort 3
25	AXES5	Principal AxisOutputPort 5
26	24VGND	Control SignalCommon Power supply24VGroundGND

AB decode input into differential anode connection connection, a total of two kinds, determined by the type of the encoder.

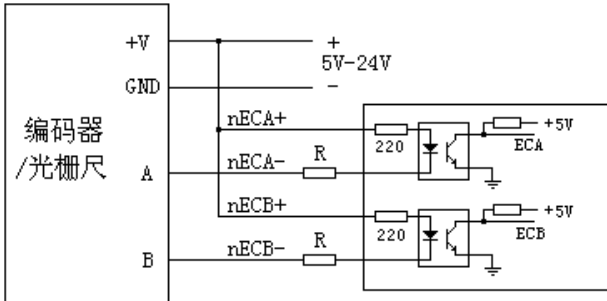
encoder output generally have open collector output, complementary output, the output voltage output and the long drive. The open collector output, complementary output, the output voltage can be used in the anode connection, long drive output using differential method.

phase diagram below AB decode the input signal is the differential input connection mode; If it is A total of anode connection to A phase is end and B phase is connecting end; If it is A common cathode connection, must will The differential connection diagram as follows:



➤ 5V Power Provided by an external.

As follows common anode connection diagram :

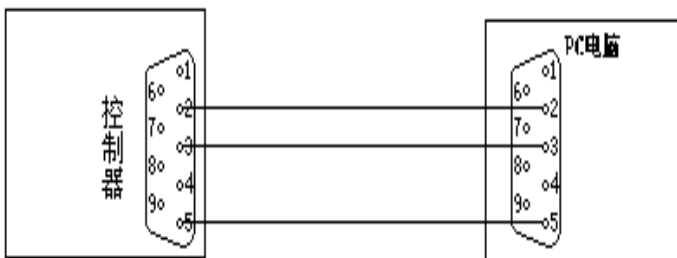
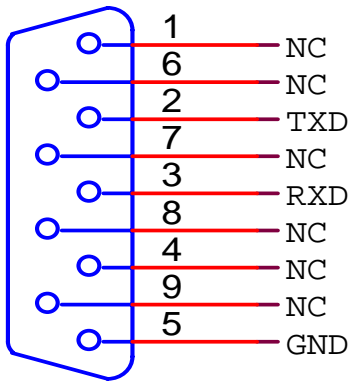


power supply voltage is determined by the encoder, using a 5 v power supply, resistance R can need not, use the 12 v power supply, R 1 k to 2 k resistor are available, and when using 24 v power supply, the resistance of the 2 k to 5 k R available.

Advice:

Try to using differential output of encoder, because adopts differential method, when the line is longer than the anti-jamming is better.

2.2.7. RS232Transmission:Interface(46seriesXS9、49seriesXS11)  
Serial Communications Interface --- 9 pin Signal socket ( male )



RS-232 通讯方式

2.2.8. USBMemory ConnectionInterface(46seriesXS10)

Standard USB memory ( such as U disk )Interface;

11.2.9 PC USB 通信 Interface(46seriesXS11、49seriesX13)

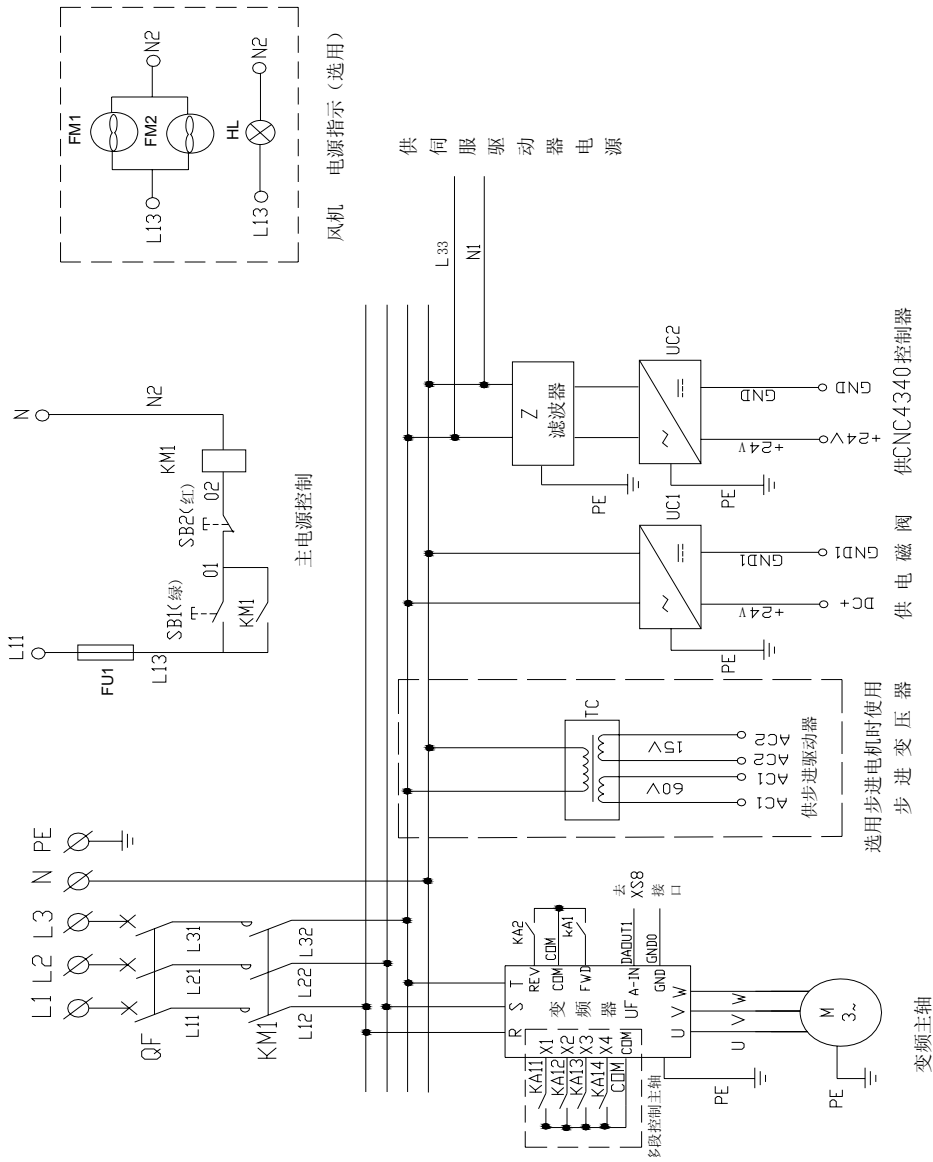
Standard USB communication cableInterface;

## 12.1 Electrical connection diagram

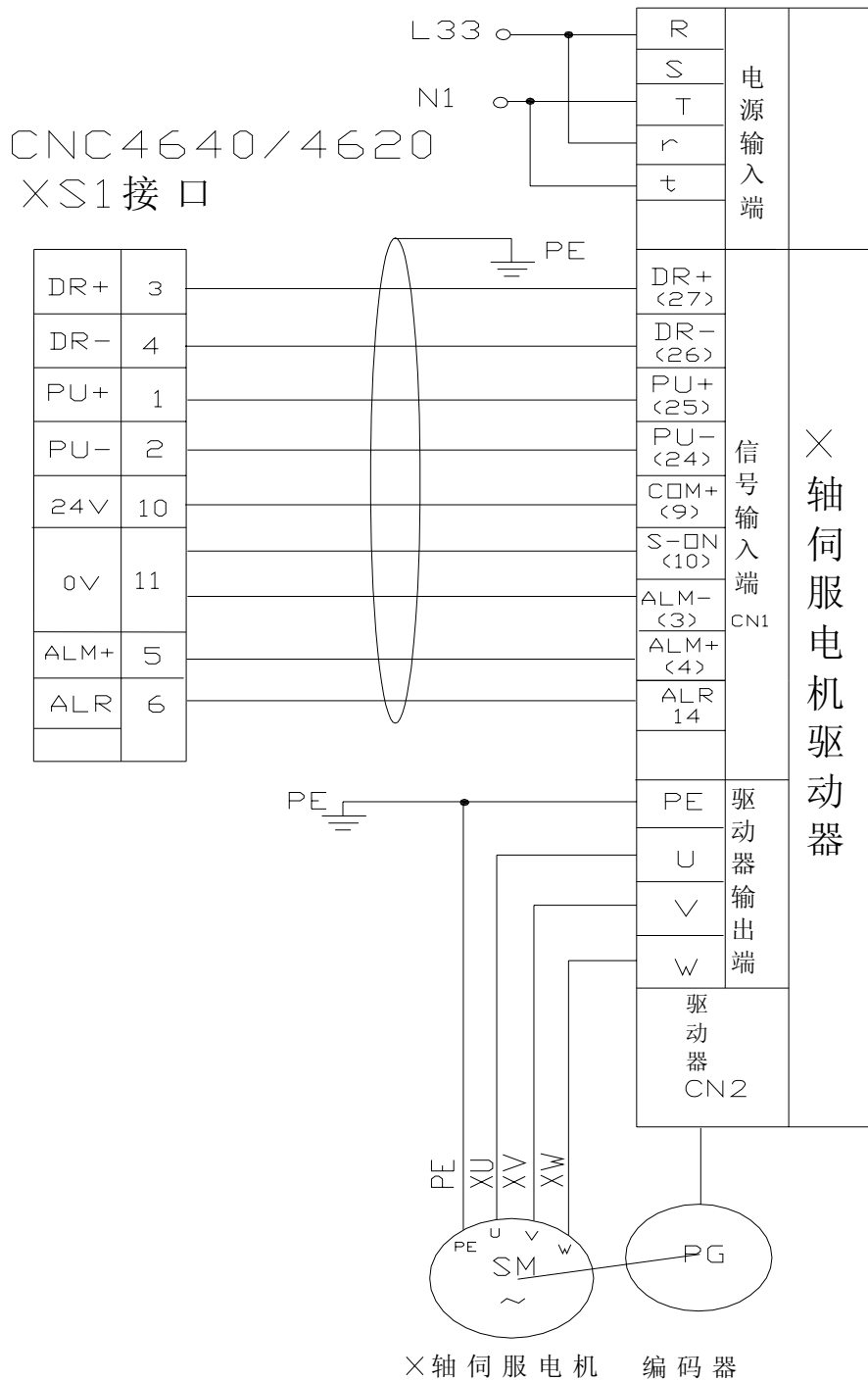
### 12.3.1. Symbol Schematic

符号	名称	图型	符号	名称	图型
QF	断路器		SM	伺服电机	
KM	接触器		M	步进电机	
UF	变频器		SQ	接近开关	
M	电动机		SA	脚踏开关	
TC	变压器		YB	电机制动器	
Z	滤波器		FR	热继电器	
FU	熔断器		UC	开关电源	
SB	按钮		YV	电磁阀	
FM	风机		C	电容	
HL	指示灯		R	电阻	
QS	触点开关		QS	行程开关	
PG	编码器		KA	继电器	

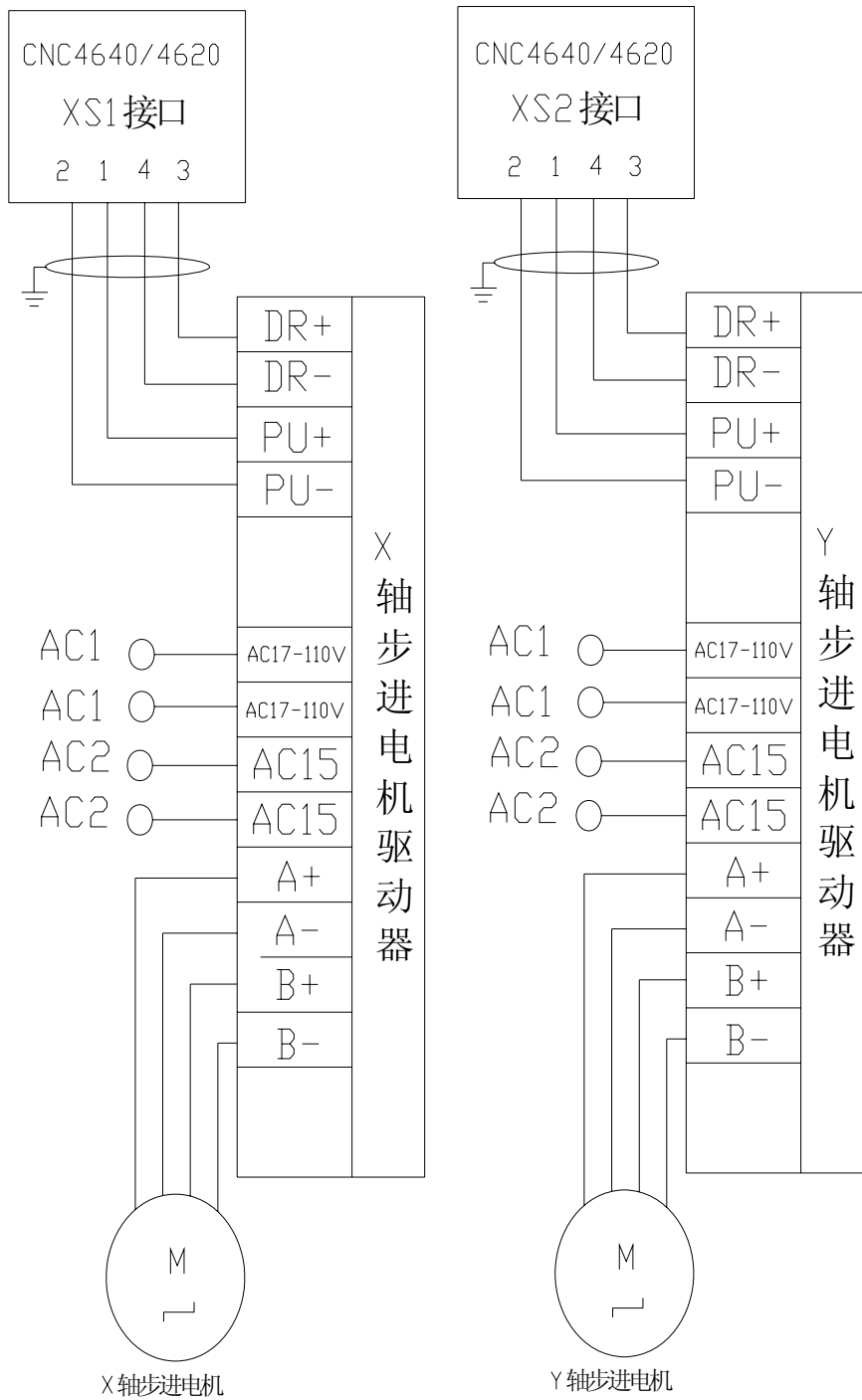
12.3.2. Power supply Connection diagram



12.3.3. ServoDrive connection Schematic

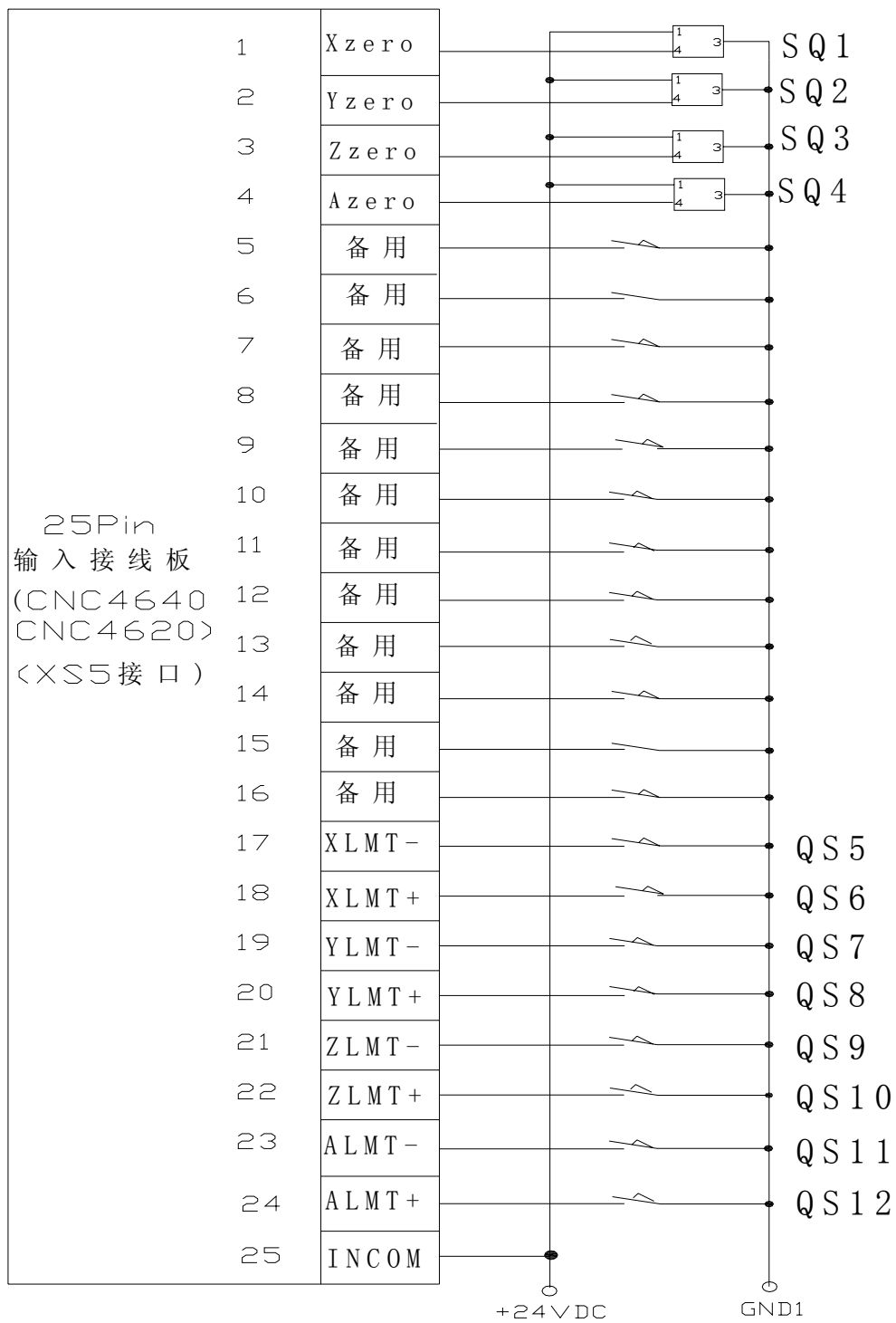


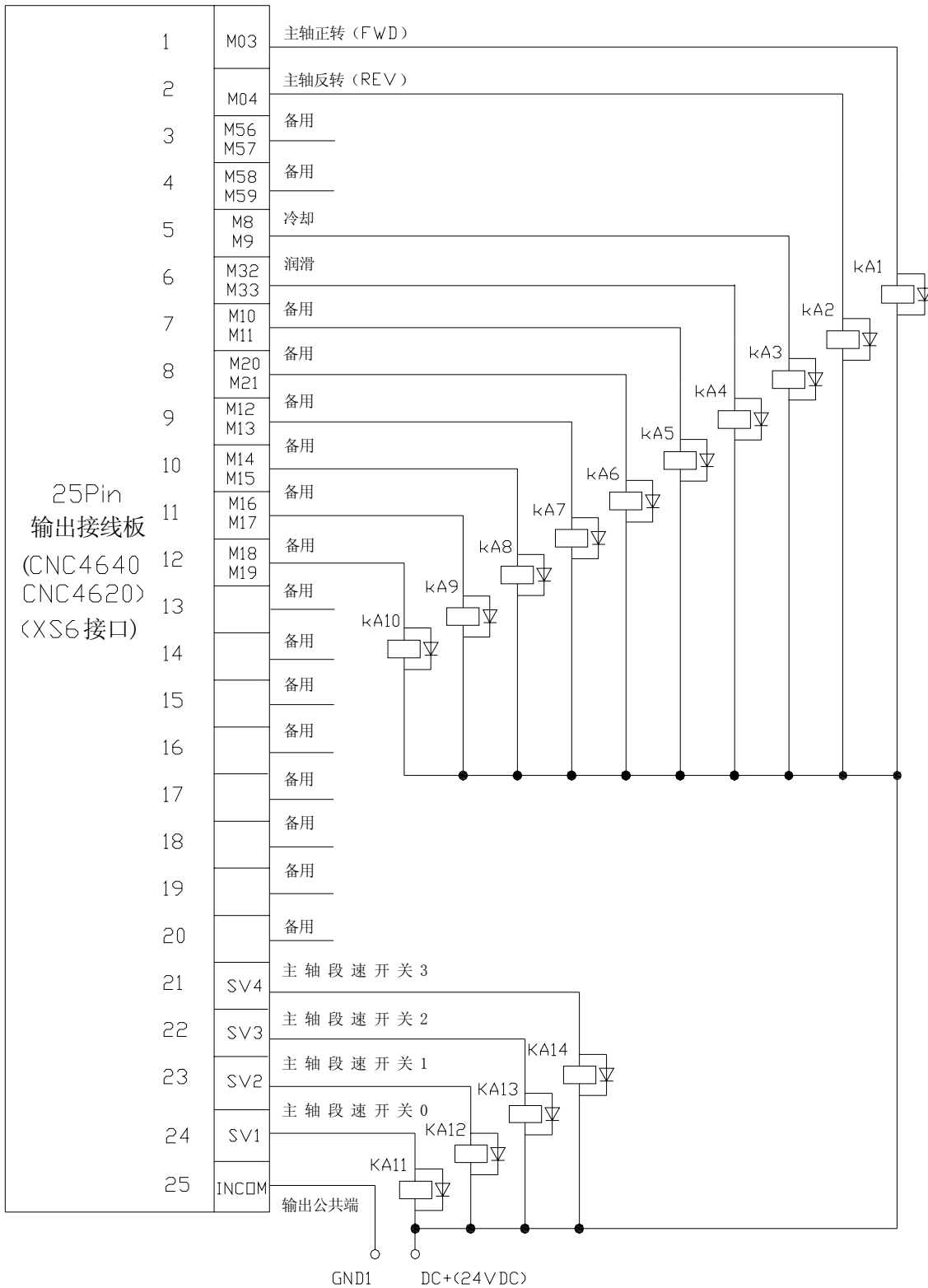
12.3.4. Stepping connection Schematic



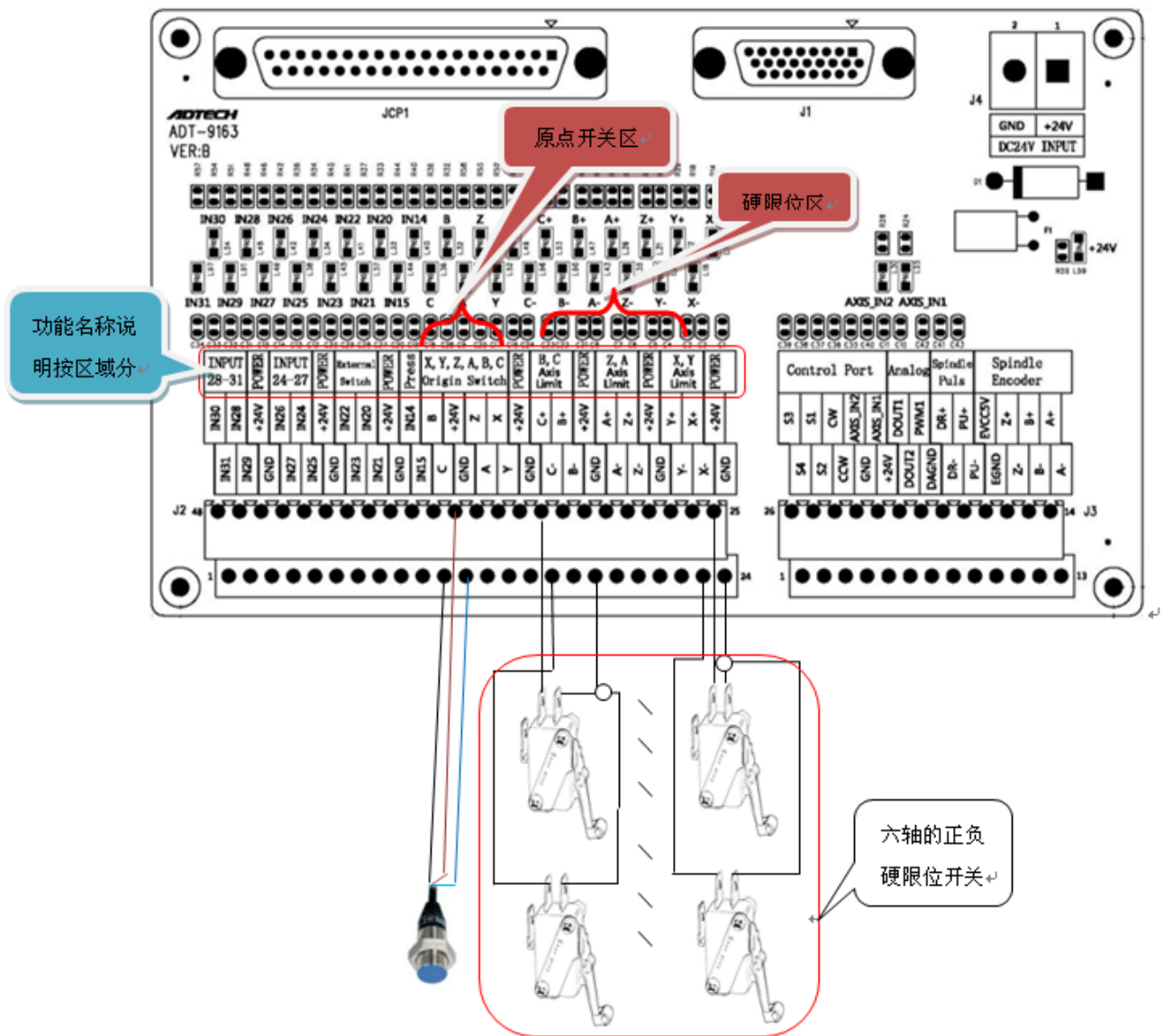
### Q2BYG1106M 步进系统

#### 12.3.5. inputOutputIOElectrical connection Schematic





12.3.6. ADT9163Splitter Wiring Schematic



Instructions: GND terminal on line and the + 24 v for external proximity induction switch power supply. Each four input points Shared a group, each group of power supply terminal maximum working current is 200 ma. All for + 24 v input point public end, when all the inputs to the GND connected, state of input point reverse it.

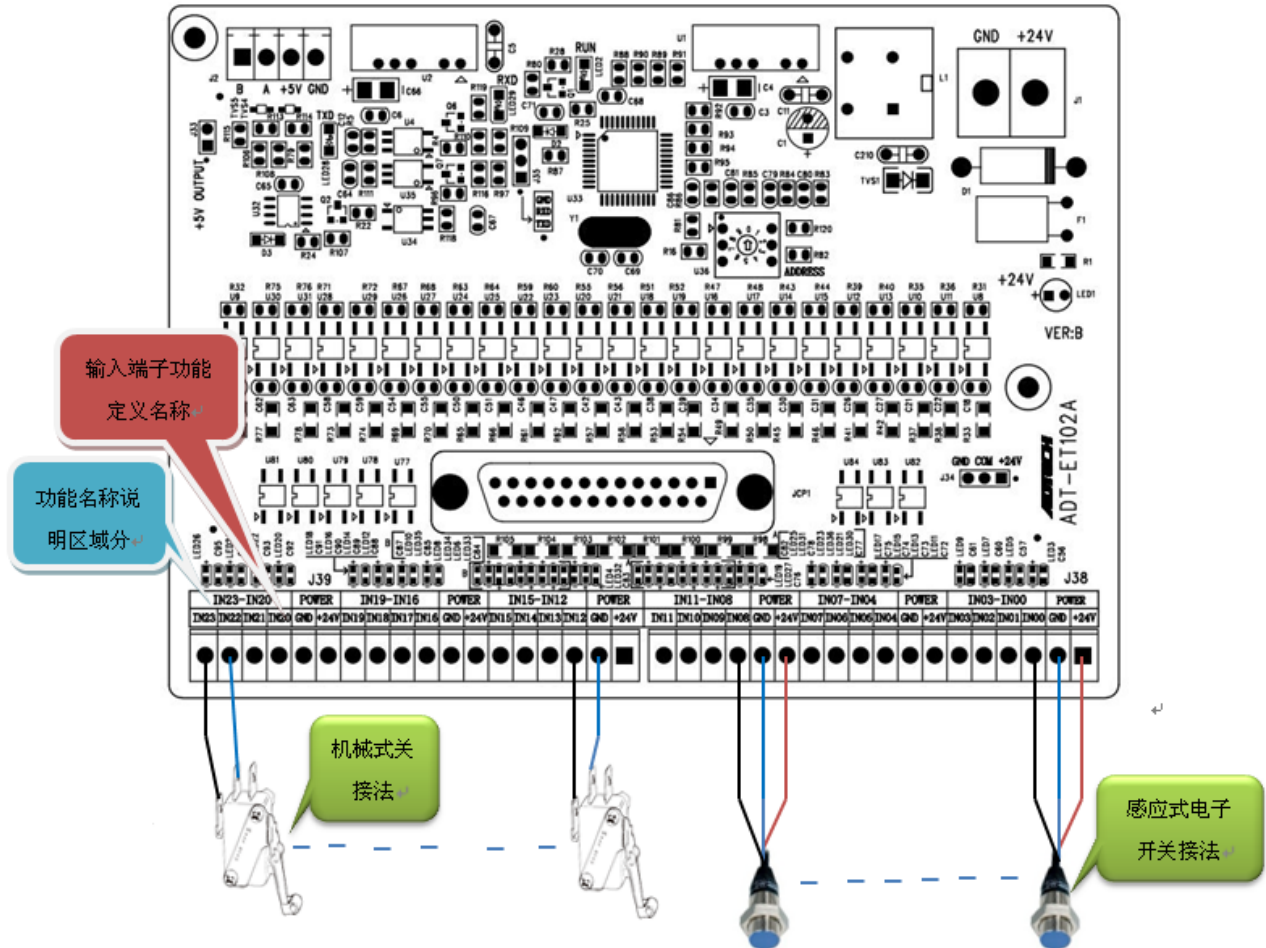
Terminal	Regional.	Port Name	Function
----------	-----------	-----------	----------

No.			
J2	POWER	+24V	24V Power supply Output Terminal
J2		GND	24V Power supply Output GND Terminal
J2	X, Y Axis Limit	X+	X Axis positive limit
J2		X-	X Axis negative limit
J2		Y+	Y Axis positive limit
J2		Y-	Y Axis negative limit
J2	POWER	+24V	24V Power supply Output Terminal
J2		GND	24V Power supply Output GND Terminal
J2	Z, A Axis Limit	Z+	Z Axis positive limit
J2		Z-	Z Axis negative limit
J2		A+	A Axis positive limit
J2		A-	A Axis negative limit
J2	POWER	+24V	24V Power supply Output Terminal
J2		GND	24V Power supply Output GND Terminal
J2	B, C Axis Limit	B+	B Axis positive limit
J2		B-	B Axis negative limit
J2		C+	C Axis positive limit
J2		C-	C Axis negative limit
J2	POWER	+24V	24V Power Output Terminal
J2		GND	24V Power Output GND Terminal
J2	X,Y,Z,Z Origin Switch	X	X Axis Origin
J2		Y	Y Axis Origin
J2		Z	Z Axis Origin
J2		A	A Axis Origin
J2	POWER	+24V	24V Power Output Terminal
J2		GND	24V Power Output GND Terminal
J2	B, C Origin Switch	B	B Axis Origin
J2		C	C Axis Origin
J2	Press	IN14	Pressure Detection
J2		IN15	Vacuum detection

Terminal No.	Regional.	Port Name	Function
J2	POWER	+24V	24V Power Output Terminal
J2		GND	24V Power OutputGND Terminal
J2	External Switch	IN20	External Control Switch
J2		IN21	External Control Switch
J2		IN22	External Control Switch
J2		IN23	External Control Switch
J2	POWER	+24V	24V Power Output Terminal
J2		GND	24V Power OutputGND Terminal
J2	INPUT 24-27	IN24	IN24
J2		IN25	IN25
J2		IN26	IN26
J2		IN27	IN27
J2		POWER	+24V
J2		GND	24V Power OutputGND Terminal
J2	INPUT 28-31	IN28	IN28
J2		IN29	IN29
J2		IN30	IN30
J2		IN31	IN31
J2			

Terminal No.	Regional.	Port Name	Function
J3	Spindle Encoder	A+	Principal Axis Encoder A +
J3		A-	Principal Axis Encoder A -
J3		B+	Principal Axis Encoder B +
J3		B-	Principal Axis Encoder B -
J3		Z+	Principal Axis Encoder Z +
J3		Z-	Principal Axis Encoder Z -
J3		EVCC5V	Principal Axis EncoderPower supply5Vport
J3		EGND	Principal Axis EncoderPower supply 0 Vport
J3	Spindle Puls	PU+	ServoPrincipal Axis Position control PU+
J3		PU-	ServoPrincipal Axis Position control PU-
J3		DR+	ServoPrincipal Axis Position control DR+
J3		DR-	ServoPrincipal Axis Position control DR-
J3		PWM1	PWM1
J3		DAGND	Analog Ground
J3		DOUT1	0-10V Analog Analog Output
J3		DOUT2	0-10VThe second Analog Output
J3	Control Port	IAXIS_IN1	Principal AxisAlarmSignal1 inputPort
J3		+24V	Control SignalCommon +24V
J3		IAXIS_IN2	Principal AxisAlarmSignal2 inputPort
J3		GND	Control SignalCommon GND
J3		CW	Principal AxisForwardSignal
J3		CCW	Principal AxisReverseSignal
J3		S1	Principal Axis Speed 1
J3		S2	Principal Axis Speed 2
J3		S3	Principal Axis Speed 3
J3		S4	Principal Axis Speed 4

12.3.7. ET102ASplitter Wiring Schematic



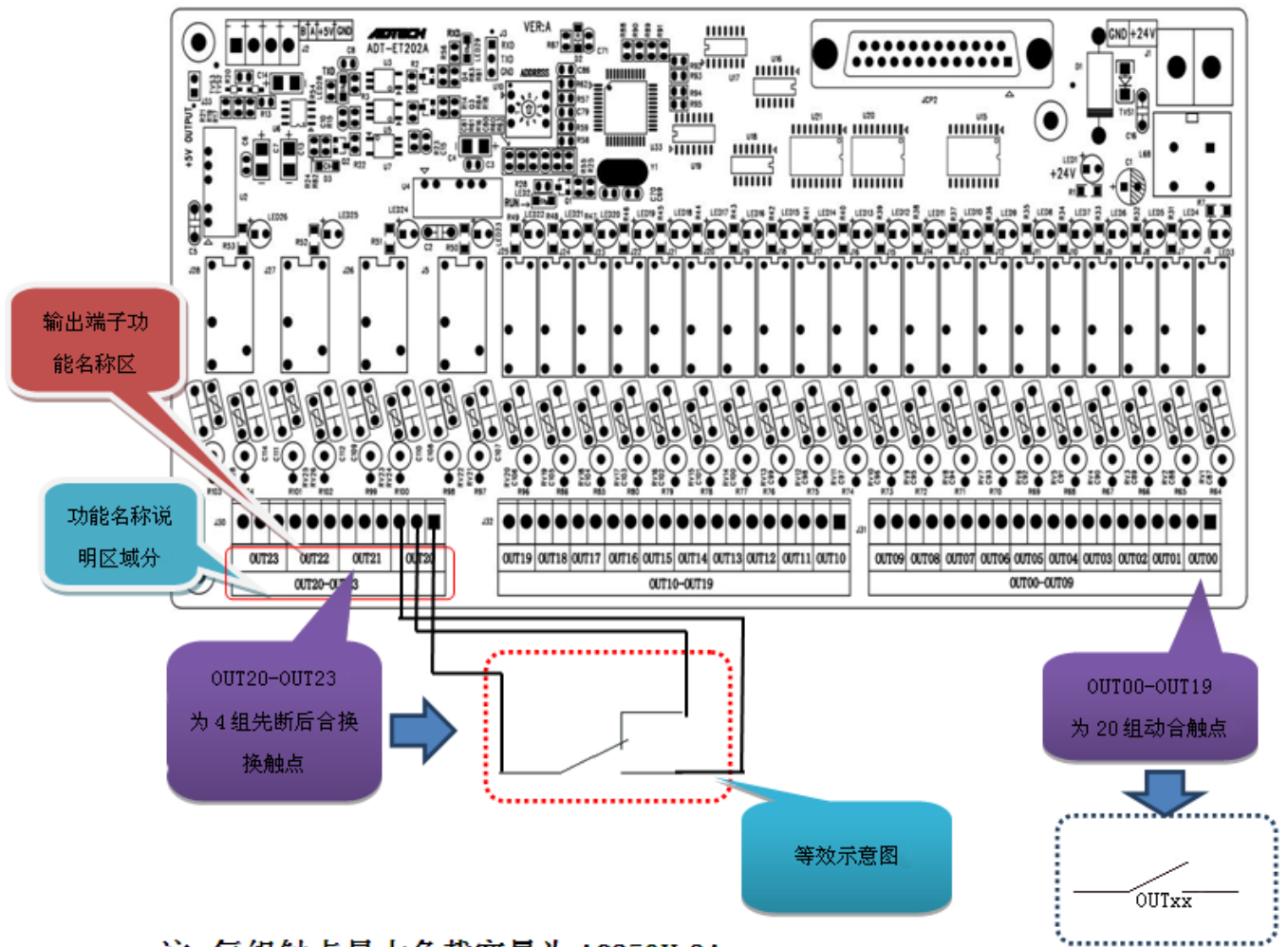
Instructions: GND terminal on line and the + 24 v for external proximity induction switch power supply. Each four input points Shared a group, each group of power supply terminal maximum working current is 200 ma. In addition to IN08 IN15 by J34 jumper by 24 v or choose DN common GND, all other public end input point for + 24 v, the input terminal to the GND connected, state of input point reverse it.

ET102A Splitter FunctionDefinition table

Terminal No.	Regional.	Port Name	Function
J38	POWER	+24V	24VPower supplyOutput Terminal
J38		GND	24VPower supplyOutputGND Terminal
J38	IN03-IN00	IN00	IN00
J38		IN01	IN01
J38		IN02	IN02
J38		IN03	IN03
J38	POWER	+24V	24VPower supplyOutput Terminal
J38		GND	24VPower supplyOutputGND Terminal
J38	IN07-IN04	IN04	IN04
J38		IN05	IN05
J38		IN06	IN06
J38		IN07	IN07
J38	POWER	+24V	24VPower supplyOutput Terminal
J38		GND	24VPower supplyOutputGND Terminal
J38	IN11-IN08	IN08	IN08
J38		IN09	IN09
J38		IN10	IN10
J38		IN11	IN11
J39	POWER	+24V	24VPower supplyOutput Terminal
J39		GND	24VPower supplyOutputGND Terminal
J39	IN15-IN12	IN12	IN12
J39		IN13	IN13
J39		IN14	IN14
J39		IN15	IN15
J39	POWER	+24V	24VPower supplyOutput Terminal
J39		GND	24VPower supplyOutputGND Terminal
J39	IN19-IN16	IN16	IN16
J39		IN17	IN17
J39		IN18	IN18
J39		IN19	IN19

Terminal No.	Regional.	Port Name	Function
J39	POWER	+24V	24V Power supply Output Terminal
J39		GND	24V Power supply Output GND Terminal
J39	IN23-IN20	IN20	IN20
J39		IN21	IN21
J39		IN22	IN22
J39		IN23	IN23

12.3.8. ET202ASplitter Wiring Schematic



注：每组触点最大负载容量为 AC250V 3A<sub>u</sub>

ET202A Splitter FunctionDefinition table

Terminal No.	Regional.	Port Name	Function
J31	OUT00-OUT09	OUT00	OUT00
J31		OUT01	OUT01
J31		OUT02	OUT02
J31		OUT03	OUT03
J31		OUT04	OUT04
J31		OUT05	OUT05
J31		OUT06	OUT06
J31		OUT07	OUT07
J31		OUT08	OUT08
J31		OUT09	OUT09
J32	OUT10-OUT19	OUT10	OUT10
J32		OUT11	OUT11
J32		OUT12	OUT12
J32		OUT13	OUT13
J32		OUT14	OUT14
J32		OUT15	OUT15
J32		OUT16	OUT16
J32		OUT17	OUT17
J32		OUT18	OUT18
J32		OUT19	OUT19
J30	OUT20-OUT23	OUT20	OUT20
J30		OUT21	OUT21
J30		OUT22	OUT22
J30		OUT23	OUT23

