

ZM430A-A01/ZM530A-A01

FOUR/FIVE AXIS BRUSH DRILLING/TUFTING
MACHINE CONTROL SYSTEM USER MANUAL

Initial information

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Precautions

※transport and storage

- ☞ Product package should not exceed six cartes staked
- ☞ It' s not available to climb ,stand or place heavy objects on the package of product
- ☞ Don' t use the connecting cable drag or carry the product
- ☞ None-collision. scratch panel and display
- ☞ Product package should avoid moisture, isolation and rain

※Unpack Checking

- ☞ Unpack them confirm if thee product is the same as your purchasing
- ☞ Check if damage to the products during transportation
- ☞ Follow the list to check if parts are complete without damage
- ☞ Please contact our company in time once product model not matched. missing attachments ,transport damage, etc

※Wiring

- ☞ The person who makes wiring and inspection must have the appropriate professional capacity
- ☞ Products must be grounded , grounding resistance should be less than 4 ohms. you cannot use the neutral line(zero line) instead of ground
- ☞ Wiring must be properly and securely so as not to cause the product to malfunction or unintended consequences
- ☞ Connection with the product must be connected to a surge absorption diode predetermined direction; otherwise it will damage the product
- ☞ Before the plug or open the product chassis ,the power supply must be cut off.

※Inspection

Must cut off the power before repair or replace components

Short circuit or overload occurs fault, should check troubleshooting rear can restart

Not frequent power outages, for products if should be back online,

When the power is cut off time at least 1 minute apart

※Other

Without permission, please do not open the cabinet without authorization.

When long time not use, please cut off power supply.

Pay special attention to don't let the dust, iron powder into the controller.

Output relay if the use of solid state relay, then must be on the relay coil fly-wheel diode in parallel. Check the power supply is in line with the requirements. Put an end to the controller to burn out.

Life had a lot to do with the environment temperature of the controller, if the process temperature is too high, please install the cooling fan. Controller allows working environment temperature range between 0 °C to 60 °C. Avoid in high temperature, humidity, dust, or to be used in the environment of corrosive gas, where the strong vibration should add rubber cushion for the buffer.

※Maintenance

Under the general conditions of use (environmental conditions: day 30 °C, the average load rate is 80%, operating ratio 12 hours a day), please click the following project for routine inspection and regular inspection.

Daily Check	Daily	confirm that the environment temperature, temperature, dust foreign body Low presence of abnormal vibration and sound
Regular Check	1 year	Whether the solid parts is loose Terminal units is damage

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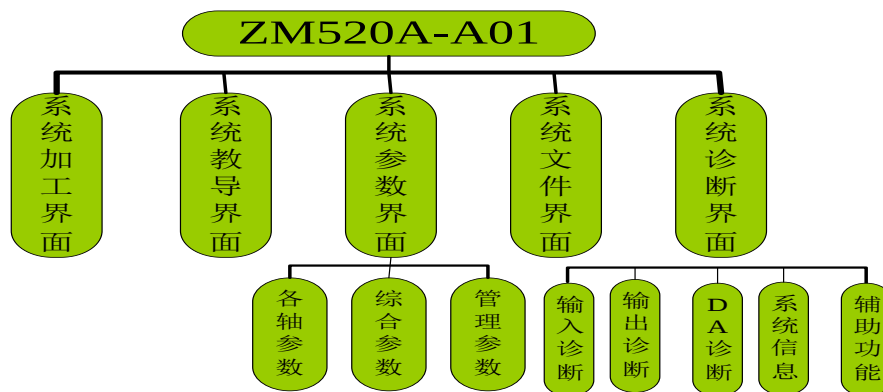
Chapter 1 Product Review articles
Product
Figure



1. 2 Functional Overview

1.2.1 System Interface Architecture

Processing system interface
Teaching system interface
System parameter interface
File system interface
System diagnostics interface
Each axis parameters
Integrated Data
Management Parameters
Input diagnosis
Diagnostic output
DA diagnosis
system message
Accessibility



1.2.2 System Processing Interface



1.2.2.1 Keys and processing interface description

Operating modes: fully automatic, semi-automatic test machine three modes. Full Auto Mode:

After processing a finished product, continue to the next processing products;
semi-automatic mode: a finished product after processing, stopped at the starting
point, then wait for the "Start" button; test mode: mainly used to test the platform, a
spindle motor do not exercise.

Percentage of the drive speed: 0 ~ 10V analog voltage output.

Processing Status: sports, stop, pause, three states.

Yield: Each finished product processing, data plus 1, where the yield on the bar three times in a
row can be cleared by the output value of the replacement product output is
automatically reset to 0.

The total number of holes: Current products include the total number of holes starting point.

Current hole: Indicates where the current hole number.

Current file: displays the name of the current working file.

Spindle speed: for testing spindle machining speed, the unit is well / min.

Start: Start machining program, begin processing products.

Stop: Stop processing the current program.

Zero: zero return, the general starting point for the establishment of new products, the
requirements to perform at a high level, to ensure safety.

From back: back to the starting point, turned on, and the replacement product, you must return to

the starting point, in order to ensure the correct position. Back to the starting point of the process is the first back to zero, and then to the starting point. High requirements to perform, to ensure safety.

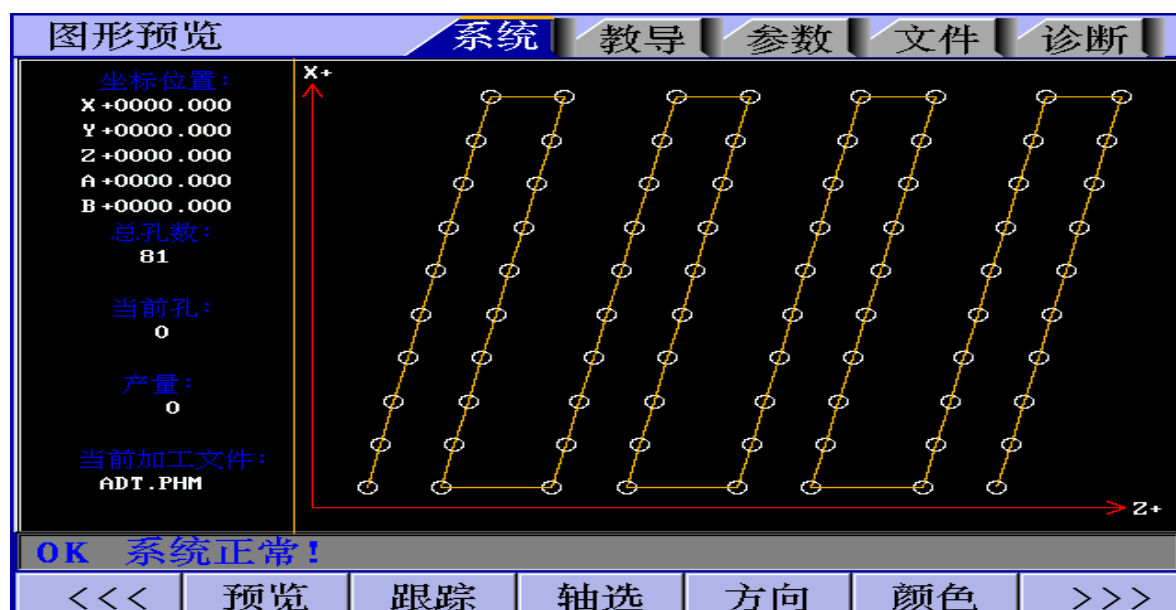
Fill holes: beat the current hole is required to perform at a high level, to ensure safety.

Location: can be positioned directly to the desired holes required to perform at a high level, to ensure safety.

The hole: a hole to the motion, if the starting point is not moved.

Lower hole: move to the next hole, if you move to the starting point at the last hole.

1.2.2.2 Track Function



Preview: The current product distribution holes.

Tracking: Auto Tracking the current machining holes in the process.

Axis selection: You can select any two axes XYZ axis of the graphic display.

Direction: You can select the current direction of two axes.

Color: The system provides two-coat process, each coat can select eight different colors, as follows:



1.2.3 Teaching system interface



1.2.3.1 System teaches Features

In the system interface to implement the teachings taught data entry, edit, delete, and modify.

Under the teachings of the screen you can also manually modify existing data.

Teaches magnification: Click teach magnification data display field to select a magnification ratio of three profiles: 0.01, 0.1.

X+: This key is used to move towards positive direction of x-axis movement, if you move this button, this moved towards positive direction of x-axis for the current teaching magnification value, if you press this button,

the x axis to move in positive direction, until you release the button or inductive limit switches.

X-: This key is used to move the x axis negative direction, if you move this button, this moving in the negative direction of the x axis distance for the current teaching ratio value, if you press this button, the x axis to the negative direction, until you release the button or inductive limit switches.

Y+,Y-,Z+,Z-,A+,A-: The same function as X+, X-

添加 Add: In the current location adds a yellow box hole

修改 Modify: If a hole some deviation on available holes, holes or under tab, move to the hole to be modified and aligned with the axis button holes, you can press a modifier key.

删除 Delete: If taught in the operation, added an extra hole available holes and holes, positioning, or manually navigate the hole, press the delete key, and then click OK.

定位 Positioning: Under normal circumstances, under the hole or holes on keys to move to the required position, but, very often, when the number of holes, press tab, type the number of holes, press OK can be directly reached.

上孔 Former hole: Move to the former hole

下孔 Next hole: Move to the next hole

插入 Insert: Insert one hole before the current hole.

分孔 Hole Classification: In some cases, the holes are evenly distributed, holes function allows you to quickly generate, specific methods are as follows:

O	O	O	O	O	O	O	O	O	O	O
4	5	6	7	8	9	10	11	12	13	14

Assumed 4th hole to 14th hole for uniform distribution of, first mobile to 4th hole, added in (front should has added 3 a hole has), then moved to 14 hole of location, added in, at hole should for 5th hole, then by points hole key, select 9 (because 4 to 14 Middle has 9 a hole), by determine key, current hole into 14 hole, points hole completed.

Note: holes in the current holes between the previous holes and increase the number of holes required.

复制 Copy: If you need to process more than two on a platform of products, could take the data from the first product taught well, and then uses copy function, generate a second product data, do the following:

- 1, according to the normal method was taught first product data.
- 2, moved to the second product of the first hole.
- 3, press the copy button, start number input 1.
- 4, end, enter first number the last number.
- 5 to complete.

Above is a copy of the entire product, flexible use, can also be used in other situations.

平移 Translation: If the data was copied from another controller, you generally need to modify the data, one approach is to directly modify the starting point, but when the offset is not convenient, the other method is to use the translation feature, specific methods are as follows: First, back to the starting point, and then entered the teaching picture, press the hole key, move to the first hole, position and the actual position at this time is different, press the move key, move the head to the actual first hole location, and then press the SHIFT-key, enter the last hole number, this number is one less than the total number of holes, press OK.

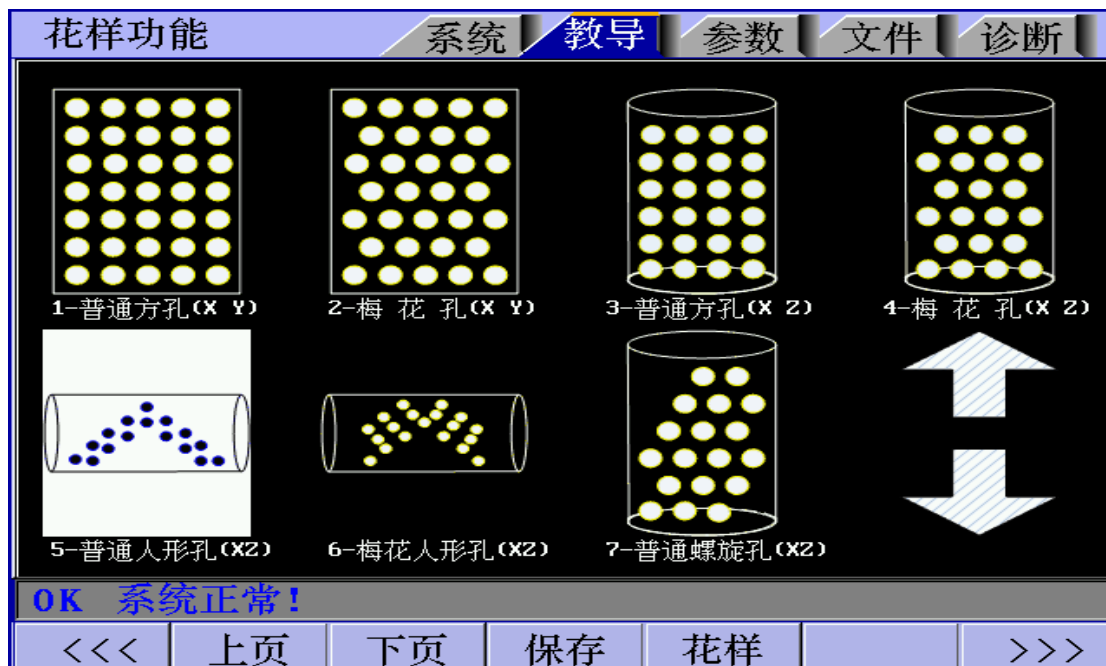
Translation of the above for all data, can also be used for data translation, as long as the first position to the beginning of the translation slot on this, do not enter the final holes, and input the finishing hole.

下页 Down page: To check down page data

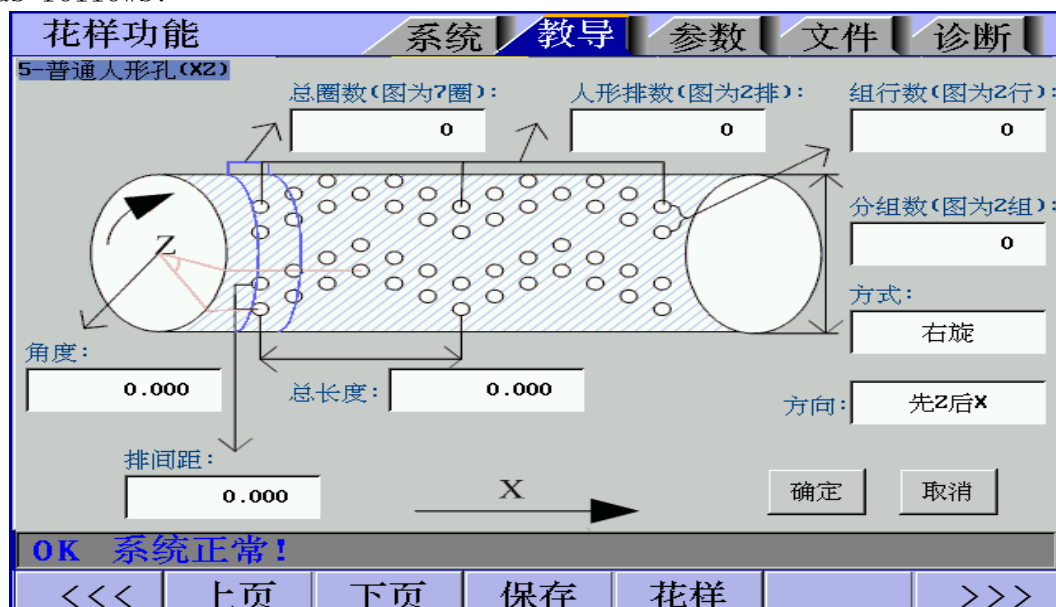
上页 Up page: To check up page data

保存 Save: Used to manually save the currently teaches data. When the parameters in the "010, taught whether data is automatically saved. "Open systems will automatically save modified data in real time, without the need for manual saving.

1.2.3.2 PATTERN FEATURES



Pattern in taught interface of last a child menu, standard program total nine species different pattern, respectively is: General square hole (XY), and plum hole (XY), and General square hole (XZ), and plum hole (XZ), and people shaped hole (XZ), and plum humanoid hole (XZ), and General spiral hole (XZ), and spiral plum hole (XZ), and trapezoidal hole (XZ). Select a fancy graphic, double-click the pattern icon, if you choose the average person-shaped hole (XZ), into the shaped hole patterns taught interface, as follows:



Note: tricks teach you must first teach data from the first hole, and only one hole (apart from the starting point)

1.2. 4SYSTEM PARAMTERS INTERFACE

各轴参数		系统	教导	参数	文件	诊断
001,X轴每转脉冲数(PPr)	10000	010,Y轴每转脉冲数(PPr)	10000			
002,X轴丝杆螺距(mm)	20.000	011,Y轴丝杆螺距(mm)	20.000			
003,X轴起始速率(mm/s)	30	012,Y轴起始速率(mm/s)	30			
004,X轴驱动速率(mm/s)	250	013,Y轴驱动速率(mm/s)	250			
005,X轴加速度(Kpps)	50	014,Y轴加速度(Kpps)	50			
006,X轴跳步距离(mm)	30	015,Y轴跳步距离(mm)	30			
007,X轴归零速度(mm/s)	40	016,Y轴归零速度(mm/s)	40			
008,X轴教导快速(mm/s)	40	017,Y轴教导快速(mm/s)	40			
009,X轴教导慢速(mm/s)	5	018,Y轴教导慢速(mm/s)	5			
<<<<		第 1 页		>>>>		
回起点完成						
<<<	轴参	综合	管理	I/O	>>>	

Axis of the system interface includes the system parameters, system parameters, system management parameters of three-interface, primarily to the type of system parameters. Paging through the <<<< and >>>> parameters can be: axis, integrated, management can then go through a different interface.

参数编辑框			
ADTECH			<-
AB	CD	EF	1/A
GH	IJ	KL	清除
MN	OP	QR	取消
ST	UVW	XYZ	确认

: Back

: Shift between number or character input

 Clear: Clear data

1.2.5SYSTEM FILE INTERFACE



System file interface for the management of system files or documents, the system processing file name suffix. PHM, backup files have the extension of the system parameters. BAK. System tray important folders and files are not deleted. In the system file interface "double-click" to confirm or enter the next directory level.

新建 Create: Create one .PHM file Note: file name can't be longer than 8 letters

复制 Copy: Copy file or folder

粘贴 Paste: Paste file or folder

剪切 Cut: Cut file or folder

删除 Delete: Delete file or folder but not for the system file.

下页 Down: Down page

上页 Up: Up page

<<<: Revert to the former interface

1.2.6SYSTEM DIAGNOSTICS INTERFACE

System Diagnostics interface for input and output of the system for computer-aided diagnosis, includes input Diagnostics, diagnostic, DA Diagnostics, system information, and accessibility.

输入诊断

系统

教导

参数

文件

诊断

☒ X轴原点	☒ Y轴原点	☒ Z轴原点	☒ A轴原点	☒ X轴正限位
☒ X轴负限位	☒ Y轴正限位	☒ Y轴负限位	☒ Z轴正限位	☒ Z轴负限位
☒ A轴正限位	☒ A轴负限位	☒ 上电眼	☒ 下电眼	☒ 重毛报警
☒ 气压报警	☒ 备用报警	☒ B轴原点	☒ 备用	☒ B轴正限位
☒ B轴负限位	☒ 备用	☒ 备用	☒ 备用	☒ 备用
☒ 备用	☒ 备用	☒ 备用	☒ 开始	☒ 停止
☒ 继续	☒ 上孔	☒ 下孔	☒ 补毛	☒ X伺服报警

<<<<

第 1 页

>>>>

OK 系统正常!

<<<

输入

输出

DA

信息

辅助

>>>

输入诊断 Input Diagnostics: Input the Diagnostics for the system status of all input signals are detected and displayed when the corresponding input signal is red.

输出诊断

系统

教导

参数

文件

诊断

☒ 颜色	☒ 输出1	☒ 输出2	☒ 输出3	☒ 输出4
☒ 输出5	☒ 输出6	☒ 刹车	☒ 离合	☒ 启动
☒ 速度	☒ 拍毛	☒ 备用	☒ 备用	☒ 备用
☒ 备用	☒ 备用	☒ 备用	☒ X轴使能	☒ Y轴使能

<<<<

第 1 页

>>>>

OK 系统正常!

<<<

输入

输出

DA

信息

辅助

>>>

输出诊断 Output Diagnostics: Diagnostic used to display the system status for all output signals or output. When the corresponding output is valid appears as red, or when you press the corresponding port will be switched to active or inactive.

DA测试		系统	教导	参数	文件	诊断
DA1校正:						
(1)0.0V	0.00	(1)0.5V	0.50	(1)1.0V	1.00	(1)1.5V 1.50
(1)2.0V	2.00	(1)2.5V	2.50	(1)3.0V	3.00	(1)3.5V 3.50
(1)4.0V	4.00	(1)4.5V	4.50	(1)5.0V	5.00	(1)5.5V 5.50
(1)6.0V	6.00	(1)6.5V	6.50	(1)7.0V	7.00	(1)7.5V 7.50
(1)8.0V	8.00	(1)8.5V	8.50	(1)9.0V	9.00	(1)9.5V 9.50
(1)10.0V	10.00					
DA1输出电压:						
<<<<		0.00		(0~10V)		>>>>
OK 系统正常!						
<<<	输入	输出	DA	信息	辅助	>>>

DA1 校正 Correction: Click on the corresponding voltage input box, and then read the actual voltage values enter into it.

DA1 输出电压 Output Voltage: Used for the DA on the system (spindle control) for testing.

系统信息		系统	教导	参数	文件	诊断
系统版本: 0.2.0 编译日期: 13-10-24 18:00:52 硬件版本: 1.4 项目编号: B2001B170A 当前加工文件: ADT.PHM(time:2013/01/01)						
OK 系统正常!						
<<<	输入	输出	DA	信息	辅助	>>>

系统信息 System Information: System information to display the current system version, build date, hardware version, project number, current processing file names, information such as the current file was last modified time.



System Auxiliary interface for system maintenance and system accessibility, including the connected PC, reboot, start screen saver.

连接 Connect to PC: Line with PC connected to the system via a USB connection, you can move the system when a disk.

重启系统 Restart System: Restart the system

启动屏保 Start Screen Saver: To start the screen saver when the system has password restrictions, after the screen saver is started to re-enter the need to enter a password, no password limit, enter 0.

2. 4Product Configuration

Model	Name	Quantity
ADT-8860	Motion control card	One pc
TV8000CM	Touch screen controller	One pc
D15G	15Pin signal cable (G) (3.0M)	Four pcs
ZM5A	Handheld box (optional)	one
ZM530 Manual	Manual	One
VGA cable	Display line	One pc (1.5M)
Touch screen serial port cable	Display line	One pc (1.5M)
USB cable	USB data cable	One pc

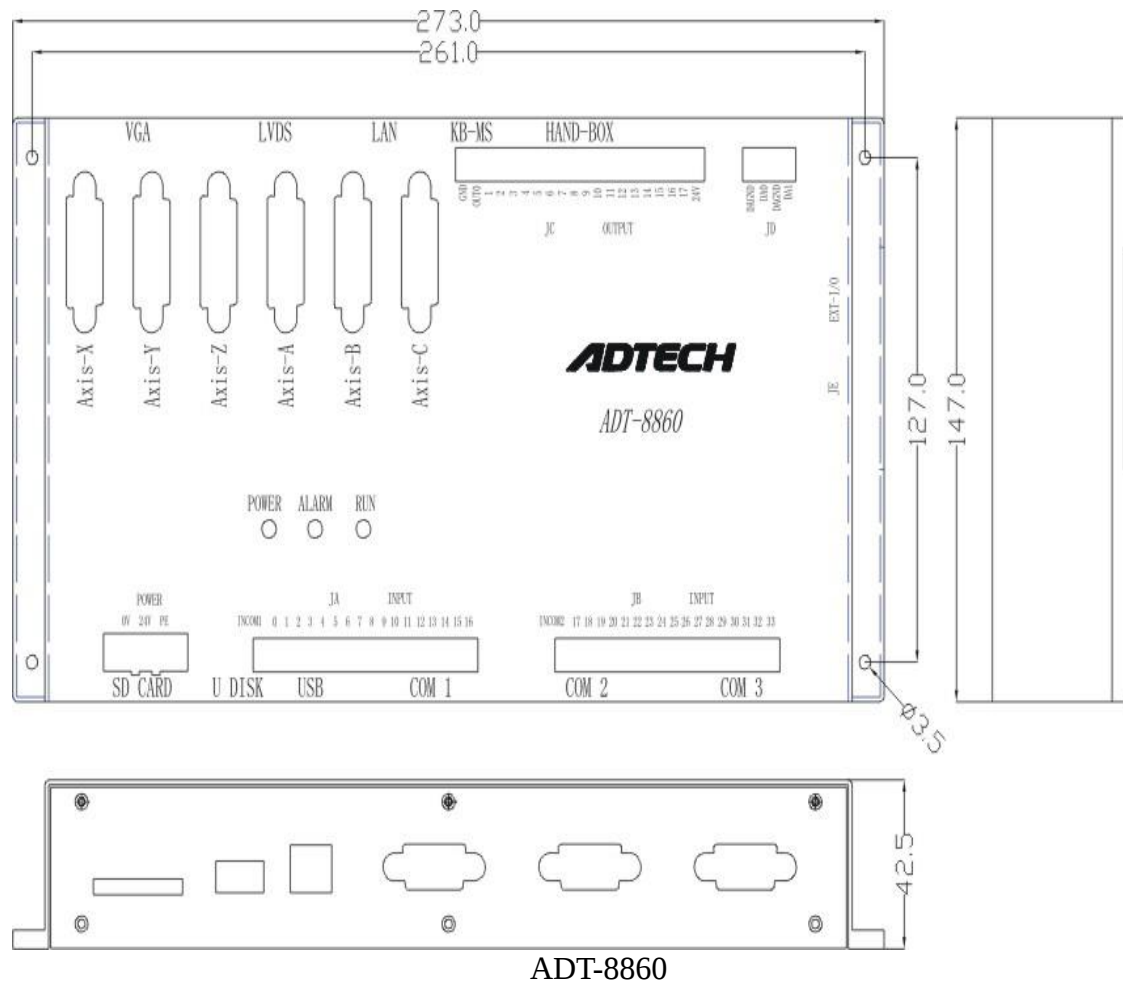
24V Touch screen power cable	Display line	One pc (1.5M)
------------------------------	--------------	---------------

1. 4Basic Specification

Climatic conditions		
Temperature	Working	-5℃～50℃
	Stock or transportation	-30℃～70℃
Relative humidity	Working	20%～90% (℃)
	Stock or transportation	10%～95% (℃)
Atmospheric pressure		86Kpa～106Kpa
Power supply		24V DC (with filter)

Chapter 2 Electric Wiring

2. 1 External Interface



ADT-8860

- (1) the x axis, y axis and z axis, a-, b-axis and c-axis:
15-pin d-socket connection stepper motor drive or Digital AC servo drive
 - (2) JA, JB digital input:
18 interface terminal block socket for each axle spacing and other switching input signals
 - (3) JC digital output:
18 terminal block socket for switch output signal interface
 - D USB and COM1 for computers exchanging files with the ADT-8860 controller, and other features.
 - (5) COM3 and connected to a touch-screen interface (touch serial line connection).
- Services connected to the touch screen VGA interface VGA (VGA cable).

(7) HAND-BOS guidance box interface:

15-pin d-socket connection to teach box

H JD analog voltage output:

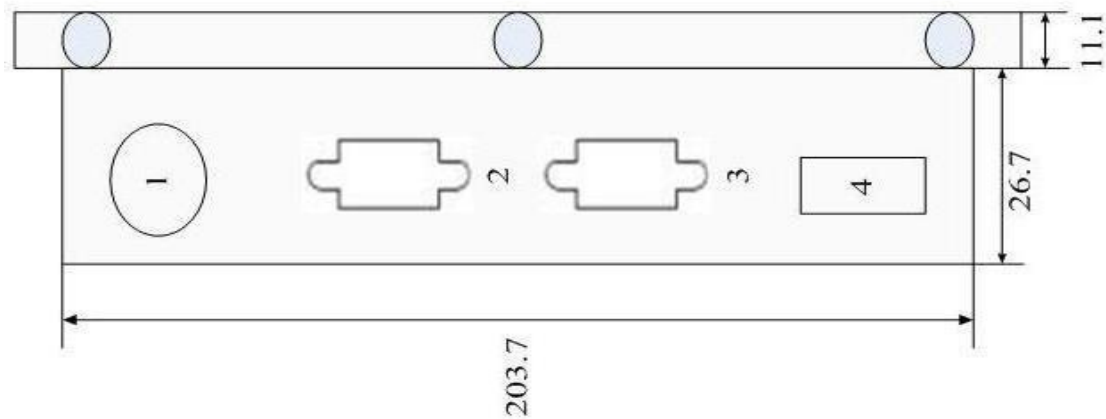
For two-channel analog voltage output

(9)POWER:

ADT8860 controller that uses 24V DC power supply.

(10) other extensions:

16 inputs, 16 outputs, 2 AD input



(1) TV8000CM 24V DC power supply (Figure 1).

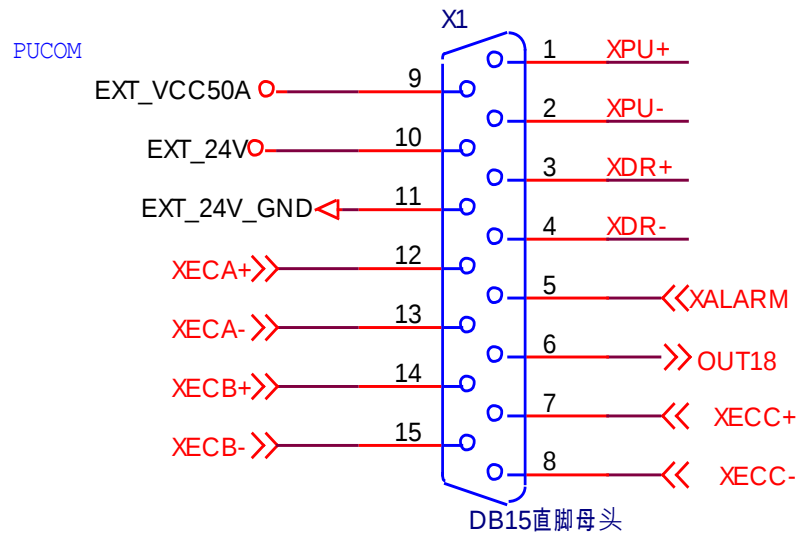
(2) VGA (Figure 2) with ADT-8860 connected to the VGA connector (VGA cable).

(3) Touchpanel (Figure 3) and ADT-8860 connected to COM3 port (by touching a serial line connection).

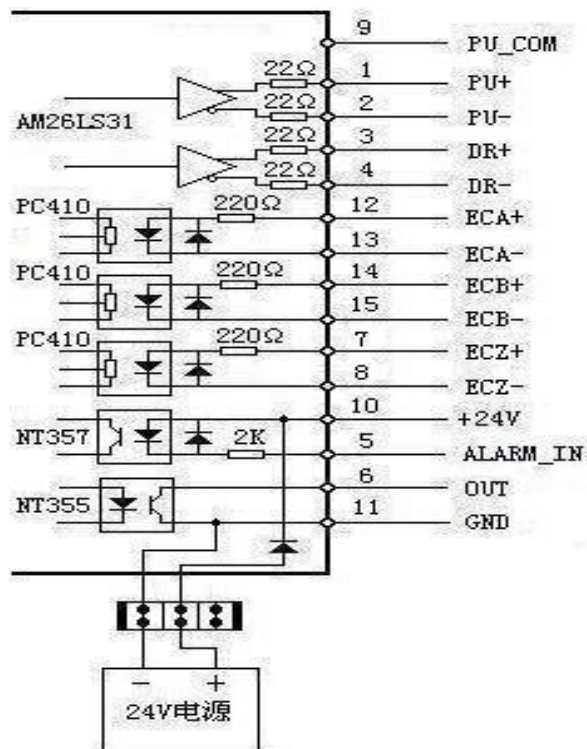
D u disk (Figure 4) can be an external USB flash drive

2. 2 Port Definition and Wiring Diagram

2.2.1 Motor driver control port (Axis-X...Axis-C)



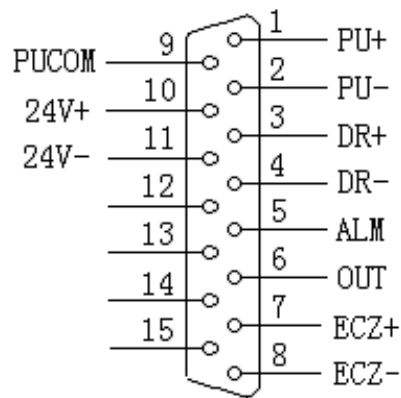
Pulse wiring ports



Pulse output brief internal circuit diagram

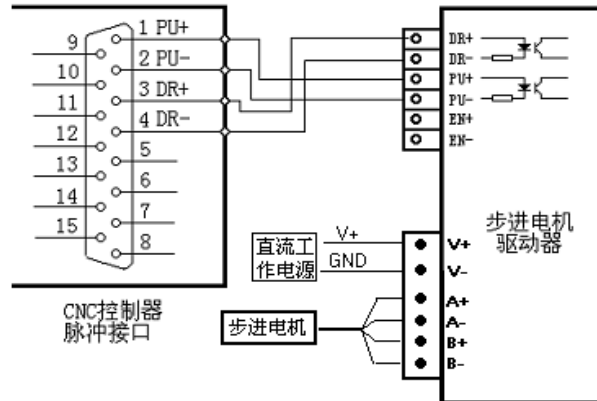
Line No.	Definition	Function
1	PU+	Pulse signal +
2	PU-	Pulse signal -
3	DR+	Direction signal+
4	DR-	Direction signal-
5	ALM	Servo alarm signal input X axis: IN34、Y axis: IN35 、Z axis: IN36、 A axis: IN37、 B axis: IN38、 C axis: IN39
6	OUT	Axis alarm reset output signal X axis: OUT18 Y axis: OUT19 Z axis: OUT20 A axis:OUT21 B axis: OUT22 C axis: OUT23
7	ECZ+	Encoder Z phase input+
8	ECZ-	Encoder Z phase input-
9	PUCOM	Single input for driver
10	24V+	Internal 24V power supply and connected to 24V power of controller
11	24V-	
12	ECA+	Encoder A phase input
13	ECA-	Encoder A phase input -
14	ECB+	Encoder B phase input
15	ECB-	Encoder B phase input

Standard pulse wiring circuit diagram



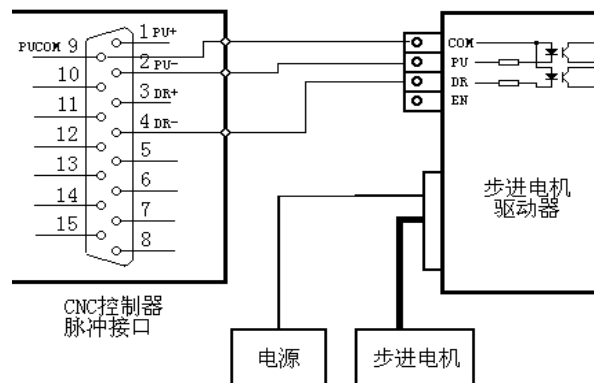
Adapt to ADT-8860 controller

Stepper motor drive connection with the differential input drive for CNC drives for reference, for all NC drive as differential input, strong anti-jamming in this manner, recommended that you use this method. ADT 8860 between drives, stepper motors and stepper motor connection see figure below



Single end input stepping motor drive wiring diagram

Some stepping drive Photocoupler cathode entered together, namely, common cathode connection, not appropriate for a ADT-8860 controller. Connect the anode of the optocoupler inputs together, namely, common anode connection, you should press the Terminal, and PU+, DR+ cannot be together, otherwise it will damage the pulse interface.



Common anode input stepping motor drive wiring diagram

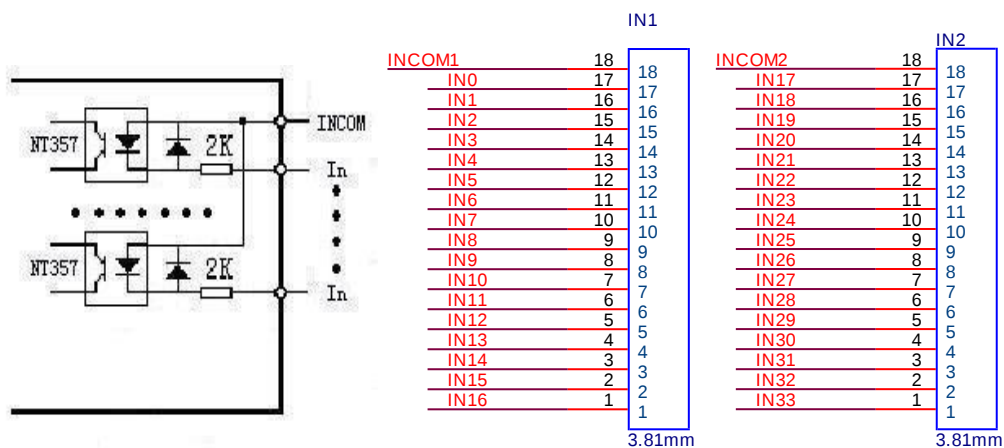
Servo drive wiring diagram

Because most are based on the finite difference method, method of pulse parts refer to the difference, many servo drives need a 12-24V power, can be 10, 11 feet provide a 24V power supply connection varies by different servo drives, if you are unsure, please consult the company.

Note: the PU+ and the PU- and the DR+, DR- any two four foot can't be directly connected together, otherwise it will damage the pulse interface.

2.2.2 Digital Input Ports (JA、JB、Handheld box、Expansion)

Digital input interface contains the axis hardware limit signal, defined as follows



Digital input brief diagram

JA input port configuration

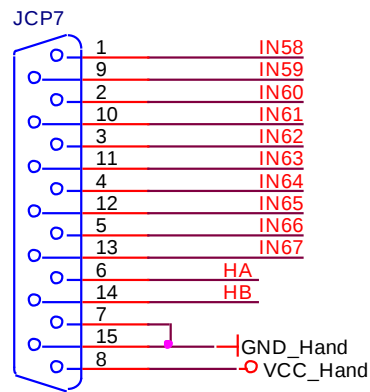
线号 Line number	端口定义 Port definition	功能 function
1	IN16	备用报警 Backup alarm
2	IN15	气压报警 Pressure alarm
3	IN14	重毛报警 hair repeat alarm
4	IN13	下电眼 down light of the sensor
5	IN12	上电眼 up light of the sensor
6	IN11	A 轴负限位 A axis negative limit switch
7	IN10	A 轴正限位 A axis positive limit switch
8	IN9	Z 轴负限位 Z axis negative limit switch
9	IN8	Z 轴正限位 Z axis positive limit switch
10	IN7	Y 轴负限位 Y axis negative limit switch
11	IN6	Y 轴正限位 Y axis positive limit switch
12	IN5	X 轴负限位 X axis negative limit switch
13	IN4	X 轴正限位 X axis positive limit switch
14	IN3	A 轴原点 A axis origin
15	IN2	Z 轴原点 Z axis origin
16	IN1	Y 轴原点 Y axis origin
17	IN0	X 轴原点 X axis origin
18	INCOM1	输入公共端 INCOM1 (24V+、12V+) 接内部或外部提供的电源 input common terminals INCOM1 (24V+、12V+) Connect internal or external power supply

JB Input port configuration

线号	端口定义 Port	功能 function
----	-----------	-------------

Line numbe	definition	
1	IN33	补毛 Fill the hair
2	IN32	下孔 upper hole
3	IN31	上孔 lower hole
4	IN30	继续 continue
5	IN29	停止 stop
6	IN28	开始 start
7	IN27	备用 Standby
8	IN26	备用 Standby
9	IN25	备用 Standby
10	IN24	备用 Standby
11	IN23	备用 Standby
12	IN22	C 轴负限位 C axis negative limit switch
13	IN21	C 轴正限位 C axis positive limit switch
14	IN20	B 轴负限位 B axis negative limit switch
15	IN19	B 轴正限位 B axis positive limit switch
16	IN18	C 轴原点 C axis origin
17	IN17	B 轴原点 B axis origin
18	INCOM2	输入公共端 INCOM2 (24V+、12V+) 接内部或外部提供的电源 input common terminals INCOM1 (24V+、12V+) Connect internal or external power supply

Handheld operator input interface definition



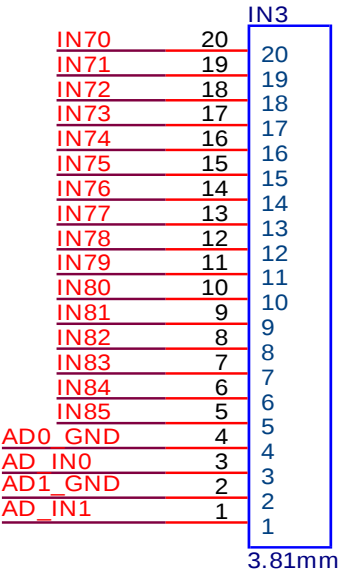
手持盒接口

Handheld operator input interface

线号 Line number	名称 name	功能 function
1	IN58	手轮高速档 Hand wheel high speed gear
2	IN60	手轮中速档 Hand wheel medium speed

		gear
3	IN62	手轮低速档 Hand wheel low speed gear
4	IN64	手轮 C 轴 Hand wheel C axis
5	IN66	教导确认 Teaching confirmation
6	HA	手轮 A 相输入 Hand wheel A phase input
7	GND_Hand	手持盒参考地端 Handheld operator reference ground
8	VCC_Hand	隔离后的+5V 电源 isolation +5V power
9	IN59	手轮 X 轴 Hand wheel X axis
10	IN61	手轮 Y 轴 Hand wheel Y axis
11	IN63	手轮 Z 轴 Hand wheel Z axis
12	IN65	手轮 A 轴 Hand wheel A axis
13	IN67	手轮 B 轴 Hand wheel B axis
14	HB	手轮 B 相输入 Hand wheel B phase input
15	GND_Hand	手持盒参考地端 Handheld operator reference ground

Extended input interface definition



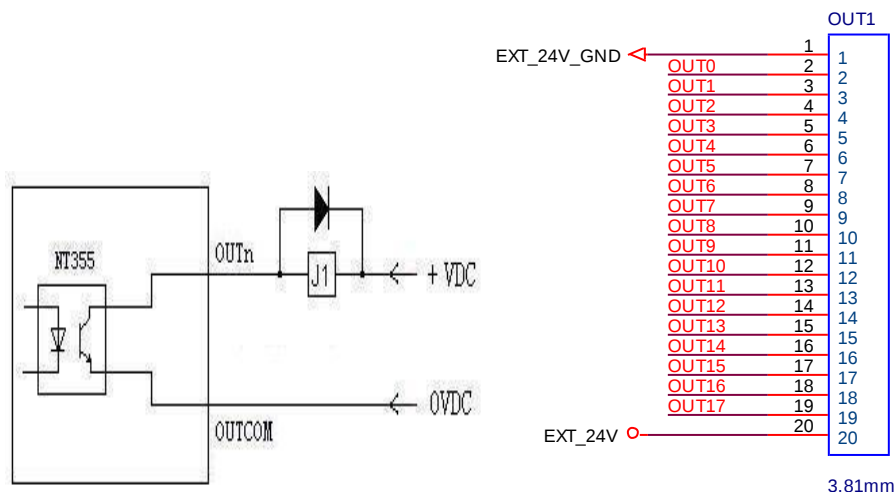
Extended input port configuration

线号 Line number	名称 Name	功能 Function
1	AD_IN1	模拟量输入第 2 路 Analog input No.2
2	AD1_GND	模拟量输入第 2 路参考地 Analog input No.2 reference ground
3	AD_IN0	模拟量输入第 1 路 Analog input No.1
4	AD0_GND	模拟量输入第 1 路参考地 Analog input No.1 reference ground
5	IN85	备用输入 Standby input

6	IN84	备用输入 Standby input
7	IN83	备用输入 Standby input
8	IN82	备用输入 Standby input
9	IN81	备用输入 Standby input
10	IN80	备用输入 Standby input
11	IN79	备用输入 Standby input
12	IN78	备用输入 Standby input
13	IN77	备用输入 Standby input
14	IN76	备用输入 Standby input
15	IN75	备用输入 Standby input
16	IN74	备用输入 Standby input
17	IN73	备用输入 Standby input
18	IN72	备用输入 Standby input
19	IN71	备用输入 Standby input
20	IN70	备用输入 Standby input

2.2.3 Digital output interface(JC、extend)

数字输出接口，输出定义如下 Digital output interface,the output is defined as follows:

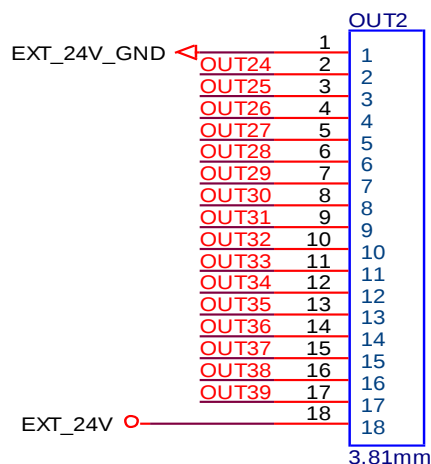


JC 输出端口配置 JC output port configuration

线号 Line number	名称 Name	功能 Function
1	24VGND	输出公共端 output public end
2	OUT0	颜色 colour
3	OUT1	输出 1 output 1
4	OUT2	输出 2 output 2
5	OUT3	输出 3 output 3
6	OUT4	输出 4 output 4
7	OUT5	输出 5 output 5
8	OUT6	输出 6 output 6
9	OUT7	刹车 brake
10	OUT8	离合 clutch
11	OUT9	启动 start-up
12	OUT10	速度 speed
13	OUT11	拍毛 dab
14	OUT12	备用 standby
15	OUT13	备用 standby
16	OUT14	备用 standby
17	OUT15	备用 standby
18	OUT16	备用 standby
19	OUT17	备用 standby
20	+24V	负载+24 电源输入端（需要外部提供+12 至 +24V 电源）load +24 Power input terminal(+12 to+24V external power is

needed)

Digital output interface, the output is defined as follows:

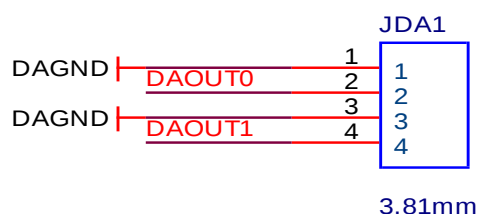


extend output port configuration

线号 Line number	名称 Name	功能 Function
1	EXT_24V_GND	电源参考地 Power reference ground
2	OUT24	开机输出 Boot output
3	OUT25	总电源控制输出 Total power control output
4	OUT26	备用输出 Standby output
5	OUT27	备用输出 Standby output
6	OUT28	备用输出 Standby output
7	OUT29	备用输出 Standby output
8	OUT30	备用输出 Standby output
9	OUT31	备用输出 Standby output
10	OUT32	备用输出 Standby output
11	OUT33	备用输出 Standby output
12	OUT34	备用输出 Standby output
13	OUT35	备用输出 Standby output
14	OUT36	备用输出 Standby output
15	OUT37	备用输出 Standby output
16	OUT38	备用输出 Standby output
17	OUT39	备用输出 Standby output
18	EXT_24V	+24 电源输入端 (需要由外部开关电源提供 给 控制器) +24 power input terminal(Needs to be supplied to the controller by an external switching power)

2.2.4 DA and other interface (JD、LVDS、COM3)

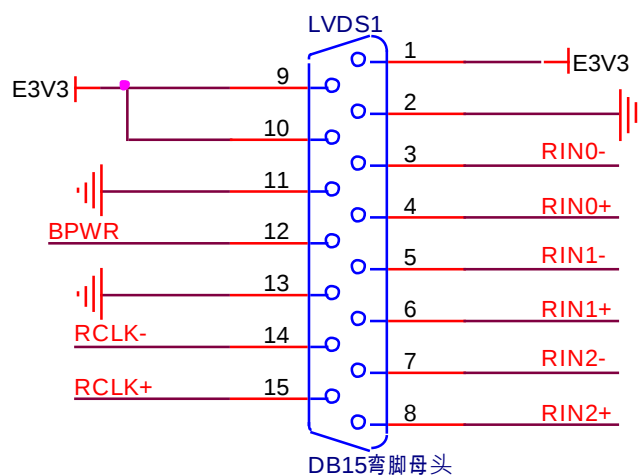
DA 接口, DA 接口定义如下 DA interface, DA interface is defined as follows:



JD 端口说明 JD port description

线号 Line number	名称 Name	功能 Function
1	DAGND	模拟电压参考地 Analog voltage reference ground
2	DAOUT0	模拟电压第 0 路 Analog voltage No.0
3	DAGND	模拟电压参考地 Analog voltage reference ground
4	DAOUT1	模拟电压第 1 路 Analog voltage No.1

LVDS 接口, LVDS 接口定义如下: LVDS interface, LVDS interface is defined as follows

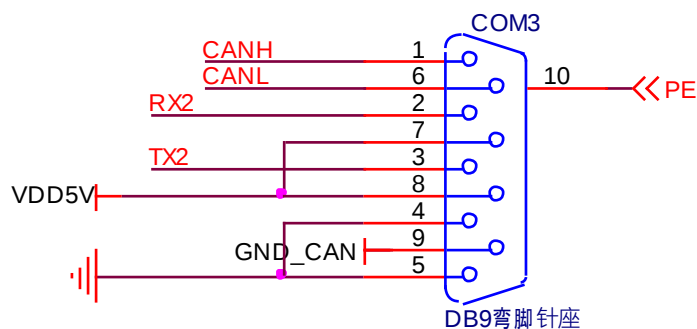


LVDS 端口说明 LVDS port description

线号	名称 Name	功能 Function
----	---------	-------------

Line number		
1	E3V3	3.3V 电源输出 3.3V power output
2	GND	电源参考地 Power reference ground
3	RIN0-	LVDS 差分数据对 0 LVDS differential data pair 0
4	RIN0+	
5	RIN1-	LVDS 差分数据对 1 LVDS differential data pair 1
6	RIN1+	
7	RIN2-	LVDS 差分数据对 2 LVDS differential data pair 2
8	RIN2+	
9	E3V3	3.3V 电源输出 3.3V power output
10	E3V3	3.3V 电源输出 3.3V power output
11	GND	电源参考地 Power reference ground
12	BPWR	背光控制 Backlight control
13	GND	电源参考地 Power reference ground
14	RCLK-	LVDS 差分时钟对 LVDS differential clock pair
15	RCLK+	

COM3 接口, COM3 接口定义如下 COM3 interface, COM3 interface is defined as follows:

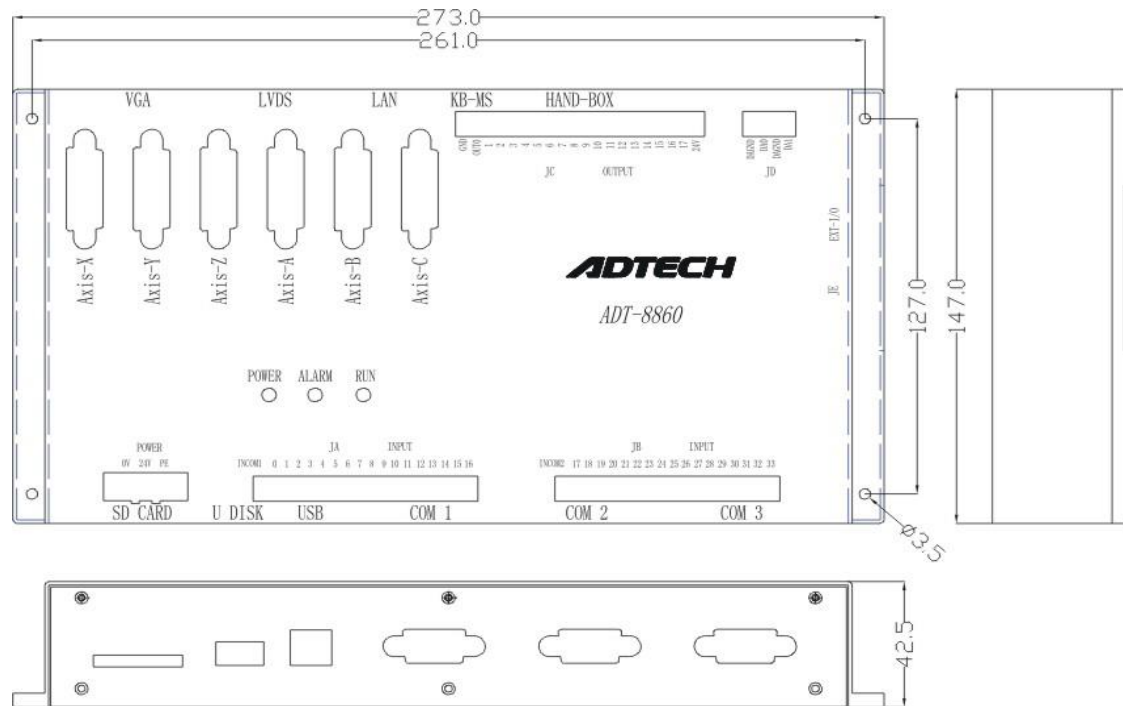


COM3 端口说明 COM3 port description

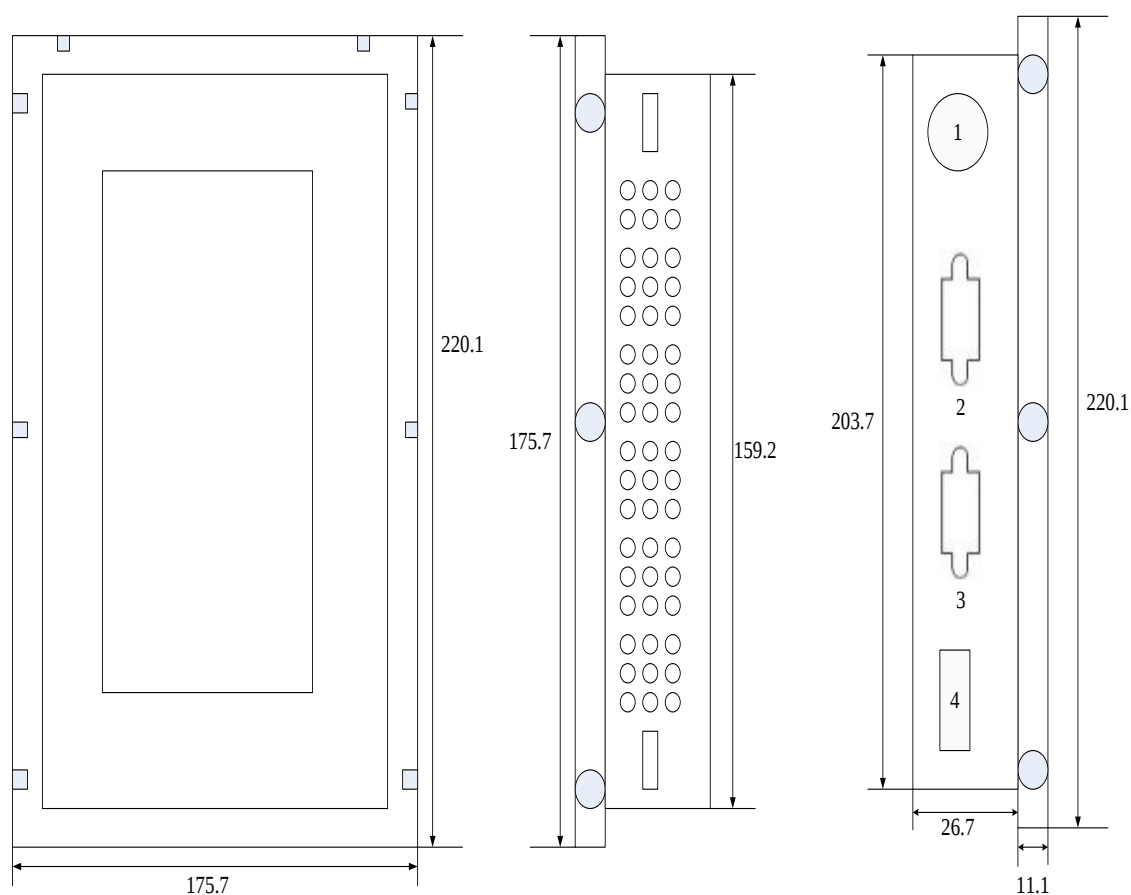
线号 Line number	名称 Name	功能 Function
1	NC	空脚 Empty feet
2	RX2	数据 2 接收 Data 2 receive
3	TX2	数据 2 发送 Data 2 send
4	GND	电源地 Power ground
5	GND	电源地 Power ground
6	NC	空脚 Empty feet
7	VDD5V	向外提供 5V 电源 supply outward 5V power
8	VDD5V	向外提供 5V 电源 5V supply outward 5V power
9	NC	空脚 Empty feet

2. 3 Product installation size

1. 8860 controller

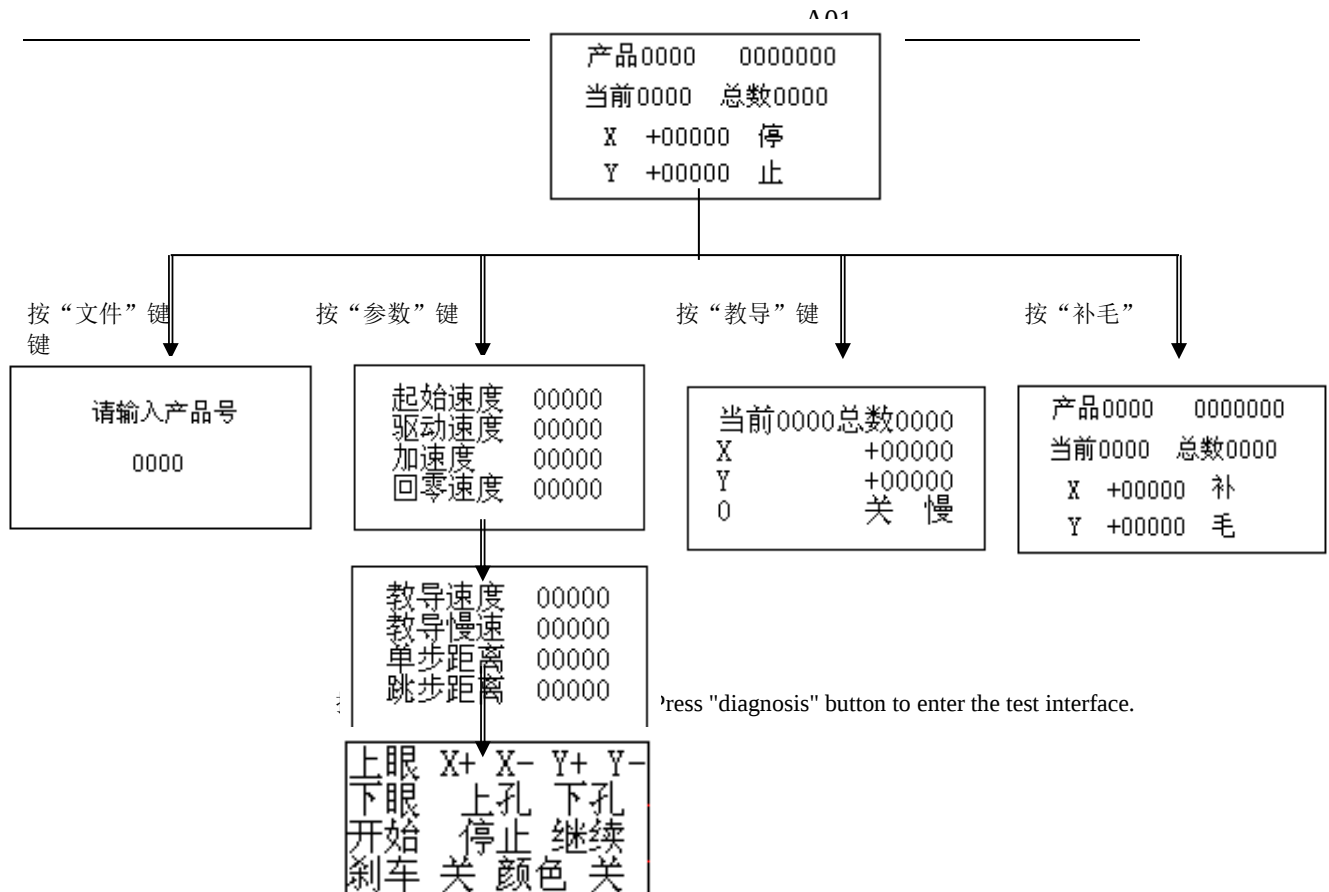


2. TV8000CM touch screen



Chapter Three Functional operation

3. 1 operation chart



3. 2 Description of each function and operation method

3.2.1 Simple machining operation

System will automatically check the input and output after powered. System will alarm and prompt automatically if there is a fault. It will enter the diagnosis screen firstly, and check the input and output signal. Operation can be processed after system parameters is set by relevant technical staff.

Create a new file under file interface (processing files generally stored in the D:PROG), double-click the processing file can be loaded into the current file, back to the system screen, press **Return to zero**, machine return to zero. Please confirm machine is at a high level first, to ensure security, confirm when the status bar shows "return to zero finished".

Move the machine to the starting position with the axis moving key in the teaching screen, press the **Add** button, add the starting point data to the zeroth hole.

Enter the system screen, press **Back** button, the machine will be back to zero position, and then return to the starting position, the display position will all become 0, note: Please confirm machine is at a high level first until the status bar shows "return to zero finished".

Enter the teaching screen, move the machine to the first hole position with axis moving key, press the **Add** key to increase the hole data. Increasing other holes can be used in this similar method.

When the integrated parameters “ 010, teaching data save automatically or not” data will be saved automatically. Conversely, press the **Save** key after data teaching, otherwise the processing data will be lost when the system outage.

After the data teaching completed, switch to the system processing interface, set movement mode, press the **Start** button on the operation box to start processing products, **Stop** button to pause processing products, **Continue** button to continue processing products.

3.2.2 System auxiliary interface update program operation

Updating procedures is used for system upgrades, system upgrades including .NCP package and.BIN package upgrade. Upgrade can copy the resource package and resource to the local disk (D:), the ADT directory with the U disk or computer,

And then switch to the system auxiliary interface, select **Reboot system** , press the screen rapidly when system restarts , until the system enters the BIOS interface. Then select **Update program** , system will prompt if update is successful. Restart the system after program is updated.

Chapter Four Programming Chapter

Appendix 1: Program recording method

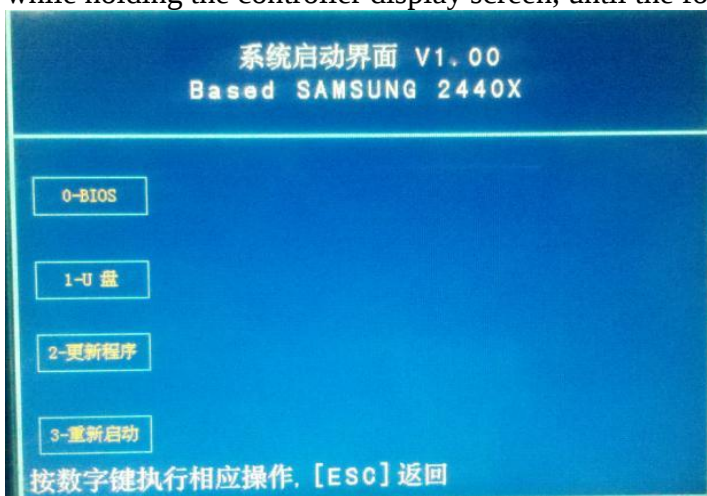
Prepare a computer, a USB line, the corresponding client program (Name: adtrom.bin) and the resource package (Name: nc_res.ncp).

一、Corresponding tool list

Computer, USB data transmission line

二、Burning software method

Connect the USB cable to the computer and the controller, open the controller while holding the controller display screen, until the following interface:



Choose 1-u disk. At this time, the computer will appear a hard disk, entering the hard disk ,ADT folder can be seen, enter the ADT directory, copy adtrom.bin files and NC Nc_res.ncp then press ESC key on the controller , choose 2 update program after updating complete prompt, then restart the controller.

三、attention

Make sure the client program name is correct

Chapter Five :system parameter

5.1 Parameters of each axis

Parameters of each axis are often used or modified in the comprehensive application of the system, mainly contain system movement, system processing, zero mode, speed control and other parameters.

001	X 轴每转脉冲数 (PPr) X axis number of pulses per revolution
002	X 轴丝杆螺距(mm) X axis screw pitch
003	Y 轴每转脉冲数 (PPr) Y axis number of pulses per revolution
004	Y 轴丝杆螺距(mm) Y axis screw pitch
005	Z 轴每转脉冲数 (PPr) Z axis number of pulses per revolution
006	Z 轴丝杆螺距(mm) Z axis screw pitch
007	A 轴每转脉冲数 (PPr) A axis number of pulses per revolution
008	A 轴丝杆螺距(mm) A axis screw pitch
009	B 轴每转脉冲数 (PPr) B axis number of pulses per revolution
010	B 轴丝杆螺距(mm) B axis screw pitch

设定范围 : 每转脉冲为 1~65535 螺距为 0~9999.999

Setting number of pulses per revolution is 1~65535

range screw pitch is 0~9999.999

单位 unit : PPr 和 mm PPr and mm

使用权限 : 管理员 administrators

Permission

n to use

预设值 : 10000 和 20.000 10000 and 20.000

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanism

m

说明 : When the screw and various motor are

Introductions

connected, the electronic gear ratio of the system is set, which can keep the programming and the actual moving distance.

screw pitch: correspond to the pitch of the lead screw.

Number of pulses per revolution: the number of pulses needed to turn a circle on the corresponding shaft screw.

Example: X shaft screw is 20mm, the motor rotates one circle of the corresponding pulse number is 10000, the motor and the lead screw through a 1:2 reducer connection.

Can be set: the number of pulses per revolution is 20000 pitch is 20mm.

011	X 轴起始速率 (mm/s)	X axis initial rate (mm/s)
014	Y 轴起始速率 (mm/s)	Y axis initial rate (mm/s)
017	Z 轴起始速率 (mm/s)	Z axis initial rate (mm/s)
020	A 轴起始速率 (mm/s)	A axis initial rate (mm/s)
023	B 轴起始速率 (mm/s)	B axis initial rate (mm/s)

设定范围 : 1~200000

Setting

range

单位 unit : mm/s

使用权限 : 管理员 administrators

Permissio

n to use

预 设 值 : 30

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说 明

: Used to set the initial velocity of the motion of each shaft processing, and can be set to 1.5 times, namely, the motor start with 1.5 turn/s . For step motor, this is a appropriate speed, for the servo motor, it can be appropriately increased to 2-3 turns.

Introducti

ons

012	X 轴驱动速率 (mm/s) X axis driving speed (mm/s)
015	Y 轴驱动速率 (mm/s) Y axis driving speed (mm/s)
018	Z 轴驱动速率 (mm/s) Z axis driving speed (mm/s)
021	A 轴驱动速率 (mm/s) A axis driving speed (mm/s)
024	B 轴驱动速率 (mm/s) B axis driving speed (mm/s)

设定范围 : 1~200000

Setting

range

单位 unit

: mm/s

使用权限

: 管理员 administrators

Permissio

n to use

预 设 值

: 250

Preset

value

生效机制

: 立即生效 Come into effect immediately

Effective

mechanis

m

说 明

: 一般可设为螺距的 10-15 倍，即电机最高速度 can be set to 10-15 times the pitch generally, that is, the maximum speed of the motor up to 10-15 turns

Introducti

ons

per second, but this speed can only be achieved at a long distance, generally there is no need to set too high.

013	X 轴加速度 (Kpps) X axis accelerated speed
016	Y 轴加速度 (Kpps) Y axis accelerated speed
019	Z 轴加速度 (Kpps) Z axis accelerated speed
022	A 轴加速度 (Kpps) A axis accelerated speed
025	B 轴加速度 (Kpps) B axis accelerated speed

设定范围 : 1~8000

Setting
range

单位 unit : Kpps

使用权限 : 管理员 administrators

Permissio
n to use

预 设 值 : 50

Preset
value

生效机制 : 立即生效 Come into effect immediately

Effective
mechanis
m

说 明 : This value is better to set to 50, it has nothing to do with small fraction of the drive and the pitch, the scope advised between 30 to 90, the greater the value, the faster, but being too fast will lead to motor losing step.

Introducti
ons

026	X 轴跳步距离 (mm) X axis jumping distance
-----	--------------------------------------

027	Y 轴跳步距离 (mm) Y axis jumping distance
028	Z 轴跳步距离 (mm) Z axis jumping distance
029	A 轴跳步距离 (mm) A axis jumping distance
030	B 轴跳步距离 (mm) B axis jumping distance

设定范围 : 1~9999

Setting

range

单位 unit : mm

使用权限 : 管理员 administrators

Permissio

n to use

预 设 值 : 30

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说 明 : When the distance exceeds a certain range, IT can not move in the two holes. It needs to stop at high level, and then move to the next hole, and then continue to plant hair. This value is related to the speed of the spindle motor.

Introducti

ons

031	X 轴归零速度 (mm/s) X axis return to zero speed
032	Y 轴归零速度 (mm/s) Y axis return to zero speed
033	Z 轴归零速度 (mm/s) Z axis return to zero speed
034	A 轴归零速度 (mm/s) A axis return to zero speed
035	B 轴归零速度 (mm/s) B axis return to zero speed

设定范围 : 1, 200000

Setting

range

单位 unit : mm/s

使用权限 : 管理员 administrators

Permissio

n to use

预 设 值 : 40

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说 明 : 指回零点的速度。 The speed to zero

Introducti

ons

036	X 轴教导快速 (mm/s) X axis teaching fast speed
038	Y 轴教导快速 (mm/s) Y axis teaching fast speed
040	Z 轴教导快速 (mm/s) Z axis teaching fast speed
042	A 轴教导快速 (mm/s) A axis teaching fast speed
044	B 轴教导快速 (mm/s) B axis teaching fast speed

设定范围 : 1~200000

Setting

range

单位 unit : mm/s

使用权限 : 管理员 administrators

Permissio

n to use

预 设 值 : 40

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说明 : Switch to fast manual speed when teaching. This

Introducti movement is uniform movement, can not be set too
ons high, in order not to lose step.

037	X 轴教导慢速 (mm/s) X axis teaching slow speed
039	Y 轴教导慢速 (mm/s) Y axis teaching slow speed
041	Z 轴教导慢速 (mm/s) Z axis teaching slow speed
043	A 轴教导慢速 (mm/s) A axis teaching slow speed
045	B 轴教导慢速 (mm/s) B axis teaching slow speed

设定范围 : 1~200000

Setting

range

单位 unit : mm/s

使用权限 : 管理员 administrators

Permissio

n to use

预 设 值 : 5

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说明 : Switch to a slow manual speed when teaching.

Introducti

ons

046	X 轴正向软限位 (mm) X axis positive soft limit
047	X 轴负向软限位 (mm) X axis negative soft limit
048	Y 轴正向软限位 (mm) Y axis positive soft limit
049	Y 轴负向软限位 (mm) Y axis negative soft limit
050	Z 轴正向软限位 (mm) Z axis positive soft limit
051	Z 轴负向软限位 (mm) Z axis negative soft limit
052	A 轴正向软限位 (mm) A axis positive soft limit
053	A 轴负向软限位 (mm) A axis negative soft limit
054	B 轴正向软限位 (mm) B axis positive soft limit
055	B 轴负向软限位 (mm) B axis negative soft limit

设定范围 : -9999.999~+9999.999

Setting
range

单位 unit : Mm

使用权限 : 管理员 administrators

Permission
to use

预 设 值 : +9999.999 and -9999.999

Preset
value

生效机制 : 立即生效 Come into effect immediately

Effective
mechanism

说 明 : This parameter is used to set the positive and
Introducti negative direction soft limit of each axis, the soft limit
ons is used to ensure that each axis runs in a safe place,
but it will automatically stop and alarm, and the soft
limit will be delayed.

056	起始速度 Initial speed (mm/s) 设定范围 : 1~10000 Setting range 单位 unit : mm/s。 使用权限 : 管理员 administrators Permission to use 预 设 值 : 100 Preset value 生效机制 : 立即生效 Come into effect immediately Effective mechanism 说 明 : This parameter determines the initial speed of each axis motion when the 009 motion mode of the composite parameter is exponential. Introductions
057	驱动速度 Driving speed(mm/s) 设定范围 : 1~10000 Setting range 单位 unit : mm/s 使用权限 : 管理员 administrators Permission to use 预 设 值 : 300 Preset value 生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说 明

: This parameter determines the maximum speed of each axis motion when the 009 movement mode of the comprehensive parameter is modified by the index.

Introducti

ons

058

结束速度 End speed(mm/s)

设定范围

: 1~10000

Setting

range

单位 unit

: mm/s

使用权限

: 管理员 administrators

Permissio

n to use

预 设 值

: 100

Preset

value

生效机制

: 立即生效 Come into effect immediately

Effective

mechanis

m

说 明

: In the comprehensive parameters of the 009 movement model for the index addition and subtraction, this parameter determines the speed of the end of each axis movement.

Introducti

ons

059

加速度 acceleration (mm/s)

设定范围

: 1~10000

Setting

range

单位 unit : mm/s

使用权限 : 管理员 administrators

Permission

n to use

预 设 值 : 500

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说 明 : This parameter determines the acceleration of each axis motion when the 009 motion mode of the composite parameter is exponential.

Introducti ons

060

减速度 deceleration (mm/s)

设定范围 : 1~10000

Setting

range

单位 unit : mm/s

使用权限 : 管理员 administrators

Permission

n to use

预 设 值 : 300

Preset

value

生效机制 : 立即生效 Come into effect immediately

Effective

mechanis

m

说明 : 在综合参数的 009 运动模式为指数加减时, 此参数决定各轴运动的减速度。In the comprehensive parameters of the 009 movement model for the index addition and subtraction, this parameter determines the speed of the reduction of the axis movement.

061

手轮最大速度 Maximum speed of hand wheel (mm/min)

设定范围 : 500~10000

Setting
range

单位 unit : mm/min

使用权限 : 管理员 administrators

Permission
to use

预设值 : 9000

Preset
value

生效机制 : 立即生效 Come into effect immediately

Effective
mechanism

说明 : 手轮最大速度用于设置教导手轮最大的速度, 该速度的快慢会影响教导手轮与工作台响应的实时性。The maximum speed of the hand wheel is used to set the maximum speed of the teaching hand wheel, the speed will affect real time of the teaching hand wheel and working table.

Introducti
ons

062

手轮响应系数 Hand wheel response coefficient

设定范围 : 100~3000

Setting

	range	
	单位 unit	: No
	使用权限	: 管理员 administrators
	Permission to use	
	预 设 值	: 1000
	Preset value	
	生效机制	: 立即生效 Come into effect immediately
	Effective mechanism	
	说 明	: 手轮响应系数可以理解为就是手轮速度的加 速度。The response factor of the hand wheel can be understood as the acceleration of the wheel speed.
063	变频器速度 Frequency inverter speed 0(%)	
	设定范围	: 0~100
	Setting range	
	单位 unit	: No
	使用权限	: 管理员 administrators
	Permission to use	
	预 设 值	: 100
	Preset value	
	生效机制	: 立即生效 Come into effect immediately
	Effective mechanism	
	说 明	: 此值与变频器速度百分比的乘积为速度 0 时的

Introductions: 电压输出。This value is the product of the speed of the frequency inverter as the voltage output of 0.

064	变频器速度 Frequency inverter speed 1(%)
设定范围 Setting range	: 0~100
单位 unit	: No
使用权限 Permission to use	: 管理员 administrators
预设值 Preset value	: 20
生效机制 Effective mechanism	: 立即生效 Come into effect immediately
说明 Introductions	: 此值与变频器速度百分比的乘积为速度 1 时的电压输出。This value is the product of the speed of the frequency converter as the voltage output of 1.

5.2 Comprehensive parameter

Comprehensive parameters are often used in system processing or need to be modified, including the limit switch, motion mode and other parameters

001	Touch sound is open or not
Setting range	: Yes or not
unit	: No
Permission	: administrators

n to use

Preset : Yes

value

Effective : Come into effect immediately

mechanis

m

Introducti : This parameter is used to set the prompt whether
ons to open the sound when screen touching, yes is to
open, no is to close.

002

Whether stop in the high level when color changes

Setting : Yes or Not

range

unit : No

Permissio : administrators

n to use

Preset : Yes

value

Effective : Come into effect immediately

mechanis

m

Introducti : Some color change output is slow, it must stop at
ons high level before color change.

003

Z axis if limit position or not

004

A axis if limit position or not

Setting : Yes or No

range

unit : No

Permissio : administrators

n to use

Preset : No

	value		
	Effective	:	Come into effect immediately
	mechanism		
	Introductions	:	If the axis is the rotation axis, can be arbitrary rotation, can be set to no in this time.
005	B axis location limit or not		
	Setting	:	Yes or No
	range		
	unit	:	No
	Permission to use	:	administrators
	Preset	:	No
	value		
	Effective	:	Come into effect immediately
	mechanism		
	Introductions	:	If the axis for the rotation axis, can be arbitrary rotation, then can be set to no in this time.
006	Movement mode		
	Setting	:	To the upper movement or leave lower motion
	range		
	unit	:	No
	Permission to use	:	administrators
	Preset	:	leave lower motion
	value		
	Effective	:	Come into effect immediately
	mechanism		
	Introductions	:	Leave low electric eye exercise can achieve

ons faster processing, if a deep hole should be chosen to host sports.

007	Pause mode
-----	------------

Setting :
range Pause immediately or Stop at high level
unit : No
Permission to use : administrators
Preset : Pause immediately
value
Effective : Come into effect immediately
mechanism
Introduction : State of the spindle after pressing suspension key.

008	Back to zero after products processed
-----	---------------------------------------

Setting : 0~9999
range
unit : No
Permission to use : administrators
Preset : 0
value
Effective : Come into effect immediately
mechanism
Introduction : This parameter is used to set the number of products processed automatically back to zero, if this value is zero, then no return to zero.

009	The hand wheel is turned on or not
-----	------------------------------------

Setting range	:	Yes or No
unit	:	No
Permission to use	:	administrators
Preset value	:	No
Effective mechanism	:	Come into effect immediately
Introductions	:	This parameter is used to set the teachings of the hand wheel is turned on

010	Movement pattern
Setting range unit	: Introductions or Each axis interpolation or Index addition and subtraction
Permission to use	: administrators
Preset value	: Common mode
Effective mechanism	: Come into effect immediately
Introductions	: Normal mode is the form of each axis in the form of the pulse of the motion, the axis interpolation is all the motion axes in the form of interpolation movement, the index addition and subtraction is the movement of all axes in the form of exponential acceleration and deceleration movement.

011	Teaching whether the data is automatically saved
-----	--

Setting	:	Yes or No
range		
unit	:	No
Permission to use	:	administrators
Preset value	:	No
Effective mechanism	:	Come into effect immediately
Introduction	:	This parameter is used to set the data to be saved automatically when the data is updated.

012

dabbing mode

Setting	:	
range		Close or power on open or Run time open
unit	:	No
Permission to use	:	administrators
Preset value	:	Closed
Effective mechanism	:	Come into effect immediately
Introduction	:	This parameter is used to set the processing mode of the beat.

013

dabbing time

Setting	:	0~9999
range		
unit	:	ms
Permission	:	administrators

n to use

Preset : 500

value

Effective : Come into effect immediately

mechanis

m

Introducti : This parameter is used to set the period of the
ons dabbing.

5.3 parameters management

Parameters management are used in the system management and settings and parameters in the maintenance, such as the management mode switch, parameter backup, system language management, and so on.

001	maintenance mode
	Setting : Admin and Operator
	range
	unit : No
	Permissio : administrators or operator
	n to use
	Preset : Admin
	value
	Effective : Come into effect immediately
	mechanis
	m
	Introducti : This parameter is used to switch the current
	ons system management mode, the system management
	mode includes: the administrator mode (Admin),
	operator mode (Operator).
002	Operator password
	Setting : 15 bit length (number or letter)

range
unit : No
Permission to use : administrators or operator
Preset : 0
value
Effective : Come into effect immediately
mechanism
Introduction : This parameter is used to set the operator password, old password needs to confirm when modify. The initial password is 0, there is no password protection.

003

Administrator password

Setting : 15 bit length (number or letter)
range
unit : No
Permission to use : administrators or operator
Preset : 0
value
Effective : Come into effect immediately
mechanism
Introduction : This parameter is used to set the operator password, old password needs to confirm when modify. The initial password is 0, there is no password protection.

004

Initialize system parameters

Setting : No

range
unit : No
Permission to use administrators
Preset : No
value
Effective : effective after restart the system
mechanism
Introduction : This exercise is the initialization of the system parameters.

Note: this operation is performed, all the parameters of the system will be restored to the initial value.

005

System parameter backup

Setting : No
range
unit : No
Permission to use administrators
Preset : No
value
Effective : Come into effect immediately
mechanism
Introduction : SYSTEM PARAMETERS BACKUP :
D:\SYSCONF.BAK

This exercise as a backup system parameters, to prepare for recovery! System parameter backup will overwrite the original backup of the parameter file, if the original backup file needs to be saved, please copy

it or move it to the other path.

006	System parameter recovery
Setting range	: No
unit	: No
Permission to use	: administrators
Preset value	: No
Effective mechanism	: effective after restart the system
Introduction	: This operation will restore the parameters of the backup to the current system, this operation will modify the current system all parameters. System parameter backup path is: D:SYSCONF.BAK, if there is no this file, parameter recovery will not be successful.

007	System language pack
Setting range	: Chinese and English
unit	: None
Permission to use	: administrators
Preset value	: Chinese
Effective mechanism	: effective after restart the system
Introduction	: This parameter is used to switch the current

ons system language, the system language includes:
Chinese (Chinese), English (English).

008	Boot screen dwell time
Setting	: 0~600000
range	
unit	: ms
	: administrators
Permissio	
n to use	
Preset	: 2000
value	
Effective	: Come into effect immediately
mechanis	
m	
Introducti	: This parameter is used to set the stop time of the
ons	boot screen.

(一) Revision History

Feedback person		Feedback date		The current version / total pages	
Problem description					
Engineer confirm					
Edition after revision		Page Count after revision		Amendment person	