KIOXIA LIGHT RING EQUIPMENT GROUP CO.,LTD.

TEL/WhatsApp: +86 17622605414

Mail: admin@transformercoilwindingmachine.com

Web:www.transformercoilwindingmachine.com

KXY-470 Semi Automatic Flat Wire Round Hole Winding Machine



Machine Function Introduction

1. operational principle ：

1. Utilizing computer-controlled servo drive, this system can manufacture various vertical-wound coils with thicknesses ranging from 0.2mm to 6.0mm and widths from 1.0mm to 10mm (with wire cross-sections up to 30mm²).

2. For mechanical debugging of products with different specifications, only the mold needs to be replaced.

3. Multi-station operation, enabling automatic forming of vertical winding coils on the machine

4. The system can store and retrieve machine parameters for products of various specifications, meeting customers' needs for automated production, efficiency improvement, and quality assurance.

1. Key technical specifications:

winding diameter	Standard: Wire diameter ≤30 mm², width-to-thickness ratio ≤15 times The wire has a maximum width of 15 mm and a maximum thickness of 2.5 mm.
maximum height of coil	150 millimeters
going	7kW transformer with three-phase 380V input and

	220V output
working air pressure	0.4 ~ 0.8mpa/cm
feed line method	Artificial extraction
maximum winding number	100T (left and right rotation)
shape of product	A〔Tap〕, E2〔Tap〕, D〔Tap〕, K〔Tap〕, single-layer, multi-layer continuous inner circular coil
production efficiency	0~55pcs/min
Dimensions (length*width*height)	Approximately 1250*850*1650 mm in dimensions, weighing around 800 kg.

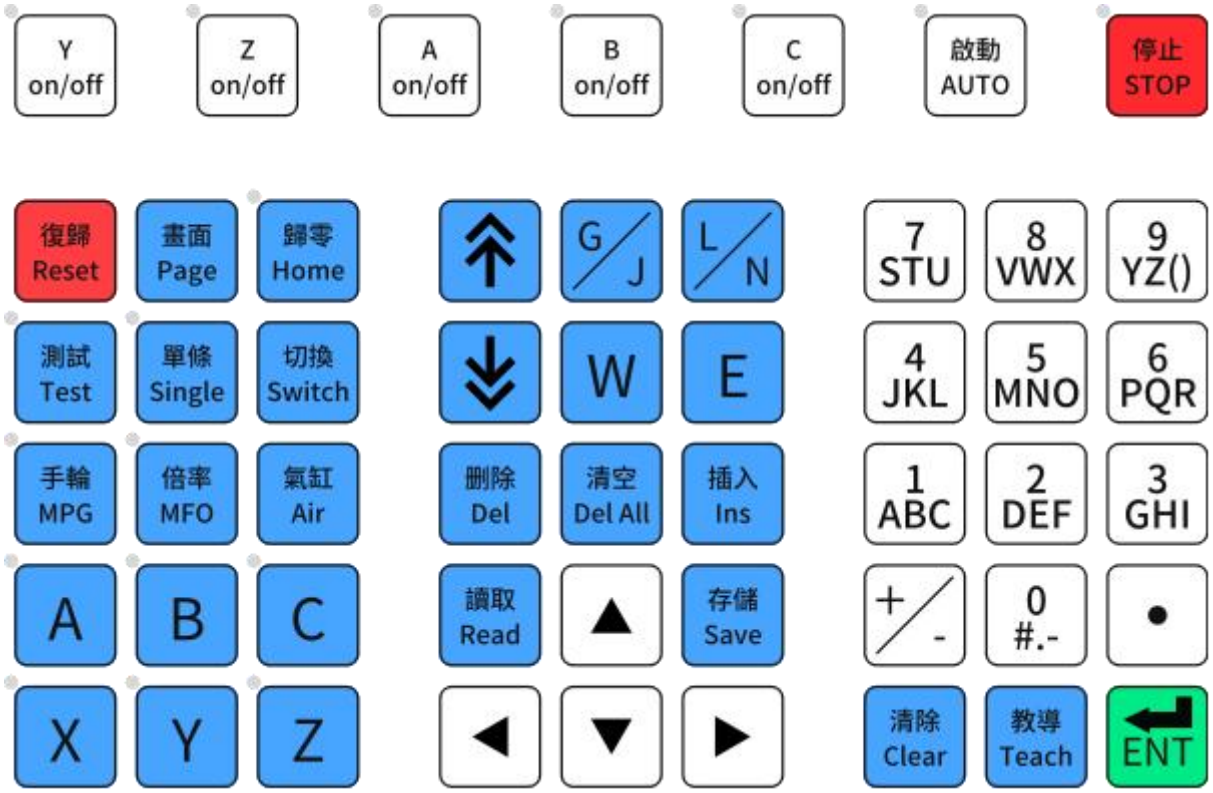
3. Producing styles: Flat line round hole winding form

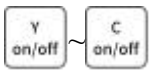




1. Operation Panel Instructions

1.1Keyboard and Key Description





Axis switch key

When the axis is turned off, the corresponding handwheel axis cannot be selected. The LED on this key lights up to indicate the axis is in the off state.



Program started, test button

The program starts the key, and you can switch directly between them.

Start: The machine is in continuous processing mode.

Test mode: The machine is in test mode. The test knob and handwheel can be used in this state.

Note: The LED light in the upper left corner of the button indicates the program is running in this mode.



Stop program button

When in the "Start" state, press this button to stop the machine after it completes the current spring production.

In other states, pressing this button will stop the machine.



Press this key to return to the [Programming] page in any case.



On the [Programming] page, scroll to display programs; on the [File] page, scroll to display files.



Press this key on the [Programming] page to move the cursor to the top of the screen, where you can set speed, probe, and output.



The Y/Z/A/B/C axes reset to zero at the set speed. If the reset fails to complete within 25 seconds after initiation, the system will display a 'Reset Timeout' fault. This button is available in the 'Stop', 'Test', or 'Handwheel' states.



Clear all previously generated alert display information.



cylinder switch

Press this button to enable/disable the cylinder test function when the handwheel or stop is engaged. When the cylinder test is enabled, pressing the 1-8 numeric keys activates/deactivates the corresponding cylinder. Holding the numeric keys activates/deactivates the cylinder at a 2Hz frequency.

The LED light on the key indicates that the cylinder test is in the open state.



手轮相关按钮，对于扭簧机，“A 轴”无效。

For torsion spring machines, the 'A-axis' button is invalid for the handwheel-related controls.

The 'Handwheel' button activates or deactivates the handwheel function, with the corresponding LED light indicating the handwheel is open.



A/B/C/X/Y/Z buttons: When the handwheel is turned on, select the corresponding axis, with

only one axis active. When the axis is turned off, the selected axis cannot be chosen. The corresponding LED light will illuminate to indicate the axis is selected.
“倍率”按钮：手轮模式处于高速或低速状态，对应的 LED 灯亮表明处于高速状态。



The 

"

Gear 

Ratio" button: When the handwheel is set to high or low speed, the corresponding LED light illuminates to indicate high speed.
Command button, used when writing programs.



Jump 

instruction

, loop instruction, delay instruction, and end instruction are used in programming.

Program Edit Button
Delete: On the [Programming] page, delete the line at the cursor.
“清空”：在【编程】页，常按此键 2 秒以上，则删除全部程序。
Clear: On the [Programming] page, hold this key for more than 2 seconds to delete all programs.



Insert: On the [Programming] page, insert a blank line of code at the cursor position.
在【文件】页，按该键，读出选中的程序。此功能只在原程序未运行的情况下有效，否则系统提示“运行中，禁止操作”。



On the File page, press this key to read the selected program. This function is only available when the original program is not running. Otherwise, the system will display "Running, no operations allowed."
在【编程】或【文件】页，按该键 2 秒以上，可将程序存储在当前程序号中。此功能只在原程序未运行的情况下有效，否则系统提示“运行中，禁止操作”。



On the [Programming] or [File] page, hold down this key for more than 2 seconds to save the program under the current program number. This function is only available when the original program is not running. Otherwise, the system will display "Running, no operations allowed."
此按键有三种功能：
1、This button has three functions:
2、In numeric input mode, pressing this key clears the previous input data.
3、The dialog box is displayed. Press this key to close it.



On the [Programming] page, the number is selected. Press this key to clear the selected data to blank.
在【编程】页，此按键可将当前数据直接输入到程序对应光标中，节省输入程序的时间。

1.1 Panel button description

There are two buttons and a handwheel on the control panel.
Emergency stop button:
The red mushroom-shaped button is the emergency stop button, which can be pressed to stop the machine in case of unexpected situations during processing or reset operations.
Test knob:
In Test Mode, rotating the knob clockwise increases the processing speed, while counterclockwise decreases it until stopping. When stopped, turning the handwheel controls the program speed.
Handwheel:
In the "Manual Wheel Mode", rotating the handwheel causes the corresponding shaft to move, enabling single-axis manual operation. In the "Test Mode", when the speed ratio is set to 0, rotating the handwheel allows multi-axis linkage to achieve manual spring machining.

Operation interface and resource description

1.2Programming Page





Resource description:

1）Number: Indicates the current program line number. If empty, the line is invalid.

2）Instruction: The instruction used by the program in the current line.

3）Start angle:

a、The standard command indicates the starting angle of the X-axis.

b、The line number to jump to.

c、Represents the number of times a command is repeated.

d、The delay instruction indicates the delay time.

4）End angle: X-axis end angle setting.

5）Spooling: Set the number of turns and the degree.

6）Z-axis: Z-axis movement configuration, in mm.

7）A-axis: A-axis movement configuration, in mm

8）B-axis: B-axis movement configuration, in mm

9）Speed ratio: Sets the relative speed for single-step operation. The default value is 100, with a range of 0-600.

10）Cylinder: Current cylinder action configuration.

11）Probe: Current row probe number configuration.

12）Delay: Execute the next line after the current line completes.

13） Enter the probe. Press the right button on the direction in the cylinder programming row to access this page.

14）Probe settings: Maximum number of probe failures (setting to 0 ignores probe failures).

15） Probe failure: Count the number of probe failures. When the failure count reaches the set threshold, display a 'Probe Failure' alert.

16）Production setting: Set the target production of the product (setting to 0 means no production count is considered).

17） Count: The product count is complete. When the target quantity is reached, a "Count Reached" alert is generated.

18）Ratio: The current speed ratio in test mode, ranging from 0% to 100%.

19）Remaining time: The time required to produce the set target output at the current speed.

20）Probe cylinder indicator: The corresponding indicator light will illuminate when

a probe is input or the cylinder is output.

21）Line number: The current line number of the program

22）Material number: The current program is the file storage page number

1.4 File storage page



Resource description:

1） You can store up to 60 files and navigate between them using the "Previous/Next" buttons.

2） Current program number: The program storage file number being called on the [Programming] page.

3） Number: The file number is displayed.

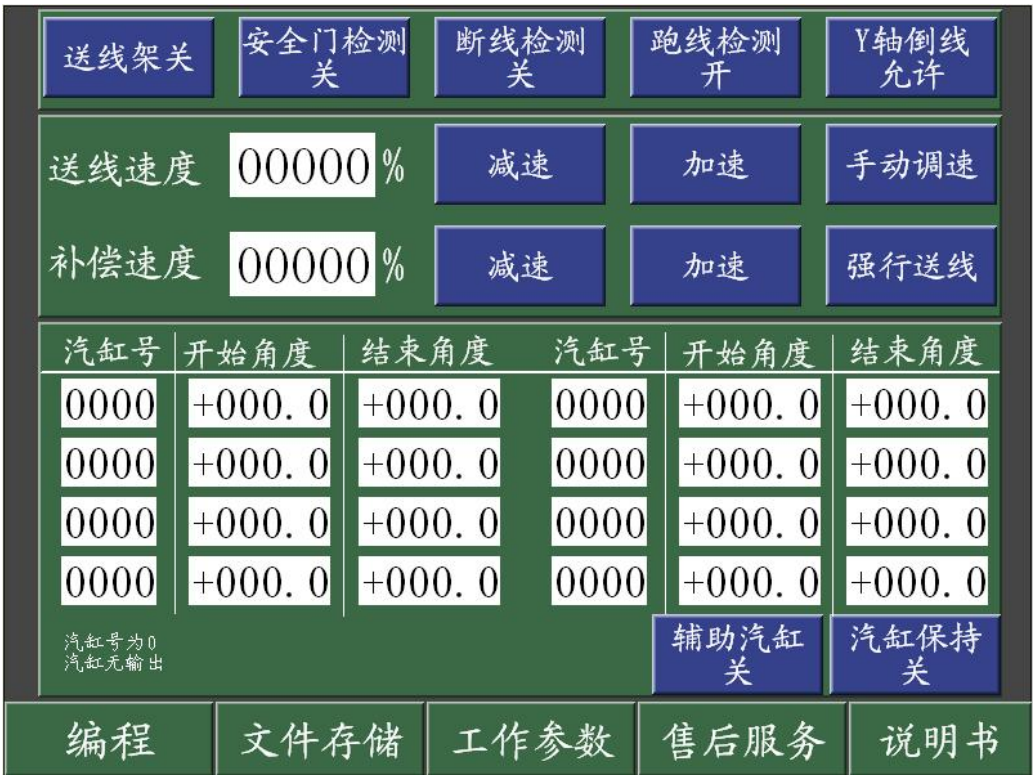
4） File name: The identifier of the user's stored data.

5） Status: The current file status. "OK" means the stored data is valid, and blank means no valid data.

6） To read, select the file and press the Read button.

7） To save, select the file you want to access and hold the "Save" button for more than 2 seconds.

1.5 Work Parameters Page



Resource description:

8） Auxiliary cylinder description: 11 cylinders are available, supporting 8 angle inputs. The same cylinder can be reused, or different cylinders can be used for the same angle.

a、Cylinder number: Set to 1–11. If not used, set to 0.

b、 Start angle: Enter a range from-360.0 degrees to 360.0 degrees.

c、End angle: range-360.0° to 360.0°.

d、 Auxiliary cylinder: Only when the auxiliary cylinder is activated, the 8 parameter sets in the table become effective.

e、Cylinder retention: The cylinder remains open after a single product is completed when no probe is present.

9） Line feeder description: Line feeder activation enabled

a、Wire feed switch button: When in interlock mode, pressing this button activates the automatic wire feed function of the wire feeder.

b、 Force feed: Press this button to enable the feeder to feed wire at compensation speed without conditions.

c、Cable break detection switch: Enables or disables cable break detection.

d、 Tracing detection switch: Detects tracing functionality.

e、Y-axis inversion: Select whether to allow inversion of the Y-axis handwheel.

Feed speed: Set the automatic feed speed. When the machine is in continuous motion, the speed

f、 will be automatically adjusted according to the production speed in "Automatic Speed Control Mode" to achieve the automatic control of the feed frame function.

g、 Compensation speed: Set the compensation feed speed.

h、 Auto/manual speed adjustment: Select auto or manual speed adjustment. When auto mode is selected, the feeding speed automatically adjusts to match the production speed.

Feed line speed; when manually adjusting speed, manually regulate the feed line speed to match production requirements.

i、Auto acceleration (deceleration): Press this key once to increase (decrease) the feed speed by 1; hold the key to continuously increase (decrease) the feed speed.

j、Compensation acceleration (deceleration): Pressing this key once increases (decreases) the feed speed by 1; holding the key continuously increases (decreases) the feed speed.

k、 Safety door detection: Enable the safety door detection function.

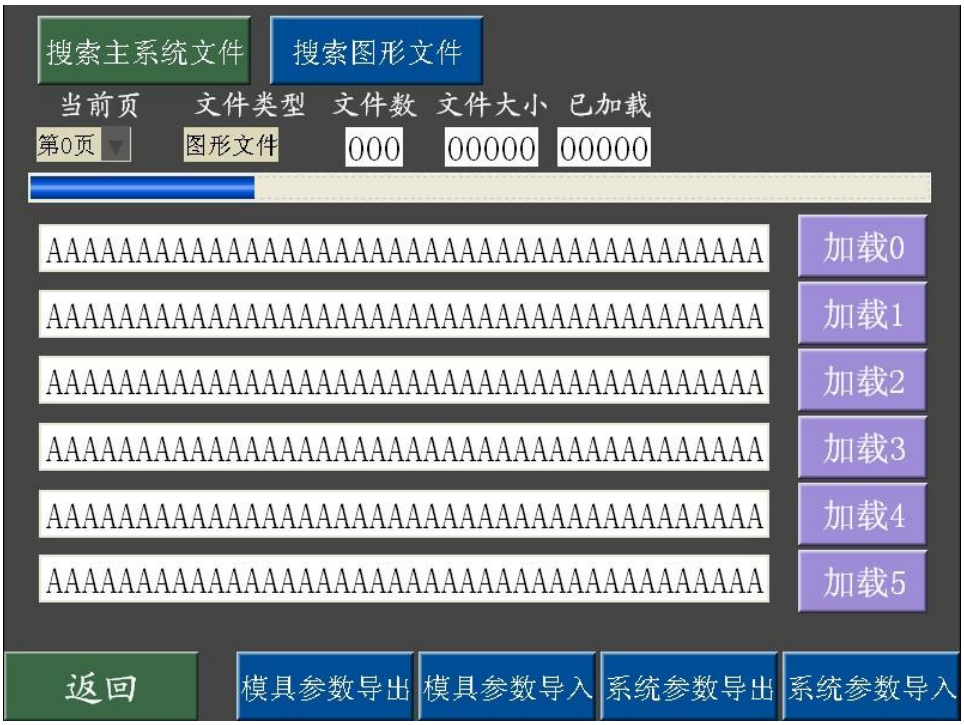
1.6 IO page



Resource description:

1) IO status light: On indicates signal input/output.
2) Defective product detection: The machine will identify defective items within the range from the starting angle to the ending angle.
3) Probe sensitivity: Set the probe sensitivity, with 1 being the highest sensitivity.
4) Probe sensitivity: When the product requires high probe sensitivity, use Probe No.1 or No.2. If the 'probe premature contact' alarm frequently occurs, use Probe No.3 or No.4.

System Upgrade Page



Upgrade steps:

1) Copy the upgrade files to the USB drive (Note: Do not create new folders; just copy them directly to the USB drive).
2) Insert the USB flash drive into the display's USB port.
3) Click "Search Main System Files" or "Search Graphics Files" to find the files to upgrade.
4) Click the "Load" button to the right of the file you want to upgrade.
5) After the loading progress bar completes, the message "Loading completed" appears, indicating the upgrade is finished.
6) Power off and restart to use the latest program.

Data backup steps:

1) Insert the USB drive into the display's USB port.
2) Click 'Export Mold Parameters' to save all saved program directories to a USB drive.
3) The export is complete after the progress bar loads.
4) The steps for using the 'Export System Parameters' function are the same as above.

Data import steps:

1) Insert the USB flash drive into the display's USB port.
2) Click "Import Mold Parameters" to find importable files.
3) After selecting the corresponding file, click 'Load' to import the generated file into the controller.
4) The steps for using the System Parameter Import feature are the same as above.

2 Instruction Description and Example

2.1 Instruction Description

Instructions:

instruct	parameter	explain
S or blank	not have	Execute standard instructions based on program X/Y/Z data

J	line number	Probe jump instruction: If the probe in the previous line fails, the program jumps to the specified line; otherwise, it proceeds directly to the next line.
G	line number	Absolute jump instruction, the program jumps directly to the specified line for execution
L	number of replication	Repeat the start command and use it with the repeat end command N
N	not have	Repeat End Instruction
W	time	Delay instruction (unit: 0.01 seconds). Execute the next line after the specified delay time.
E	not have	end directive
M	not have	The manipulator waits for commands. The program pauses at this line and waits for the manipulator signal. When the signal arrives, it resumes execution.

2.2 Example Procedure 1

order number	instruct	Start Angle	End angle	Unwind	Z-axis (Open)	gear ratio	air cylinder	probe	delayed
0		20	60	1.08	1				
1		60	100	5	10.03	60	1		

2		100	110	-0.01					
3		110	130				2		
4		130	180	10	20	50			
5		180	220				-2		
6		220	300	1	-2				
7		300	330				-1		
8	E								

explain ：

0: The X-axis moves to the 20-degree position at the default speed. Then, the X-axis rotates from 20 degrees to 60 degrees, while the Y-axis advances the cable by 80 degrees in one full rotation, and the Z-axis moves forward by 1 mm.

1: During execution, the system first activates Cylinder 1, with the X-axis rotating from 60° to 100° at 60% of its default speed, while the Y-axis advances the spool by 5 turns and the Z-axis moves forward by 10.03mm.

2: The X-axis rotates from 100 degrees to 110 degrees at the default speed, while the Y-axis rotates 10 degrees in the opposite direction.

3: During this operation, the No.2 cylinder is activated first, with the X-axis rotating to 130 degrees at the default speed.

4: The X-axis rotates from 130 to 180 degrees at 50% of the default speed, while the Y-axis advances the spool by 10 turns and the Z-axis moves forward by 20mm.

5: During this operation, the No.2 cylinder is first deactivated, and the X-axis rotates to 220 degrees at its default speed.

6: The X-axis rotates from 220 degrees to 300 degrees at default speed, while the Y-axis advances the cable by one full turn, and the Z-axis moves backward by 2mm.

7: During this operation, the No.1 cylinder is first deactivated, and the X-axis rotates to 330 degrees at its default speed.

8: Rotate the X-axis clockwise to 0 degrees while synchronizing the Y-axis and Z-axis to their zero positions.

2.3 Example Procedure 2

order number	instruct	Start Angle	End angle	Unwind	Z-axis (Open)	gear ratio	air cylinder	probe	delayed
0		20	60	0.3	3		1	1	
1	L	5							
2		60	130				2		
3		130	180	10	20	50			0.5
5	N								
6		300	330				-2		
7		180	220						
8	E								

explain ：

0: The X-axis moves to the 20-degree position at the default speed while activating Cylinder No.1. Subsequently, the X-axis rotates from 20 to 60 degrees, with the Y-axis simultaneously advancing the spool by 300 degrees and the Z-axis moving forward by 3mm, while detecting Probe No.1. Two scenarios may occur: a) If the probe is detected, Cylinder No.1 closes immediately and the current operation ends; b) If no probe is detected, Cylinder No.1 closes after the current operation completes.

1: Set a loop start flag and set the loop count to 5

2.3: a) Open cylinder 2 and rotate the X-axis to 130 degrees at default speed; b) Rotate the X-axis from 130 degrees to 180 degrees at 50% of the default speed while the Y-axis simultaneously winds the cable 10 turns in the forward direction and the Z-axis moves forward 20mm; c) Pause for 0.5 seconds. The program executes the sequence a->b->c->a->b->c, and exits the loop after completing 5 cycles.

4: Set a loop end flag.

5: During this operation, the No.2 cylinder is first deactivated, and the X-axis rotates to 330 degrees at its default speed.

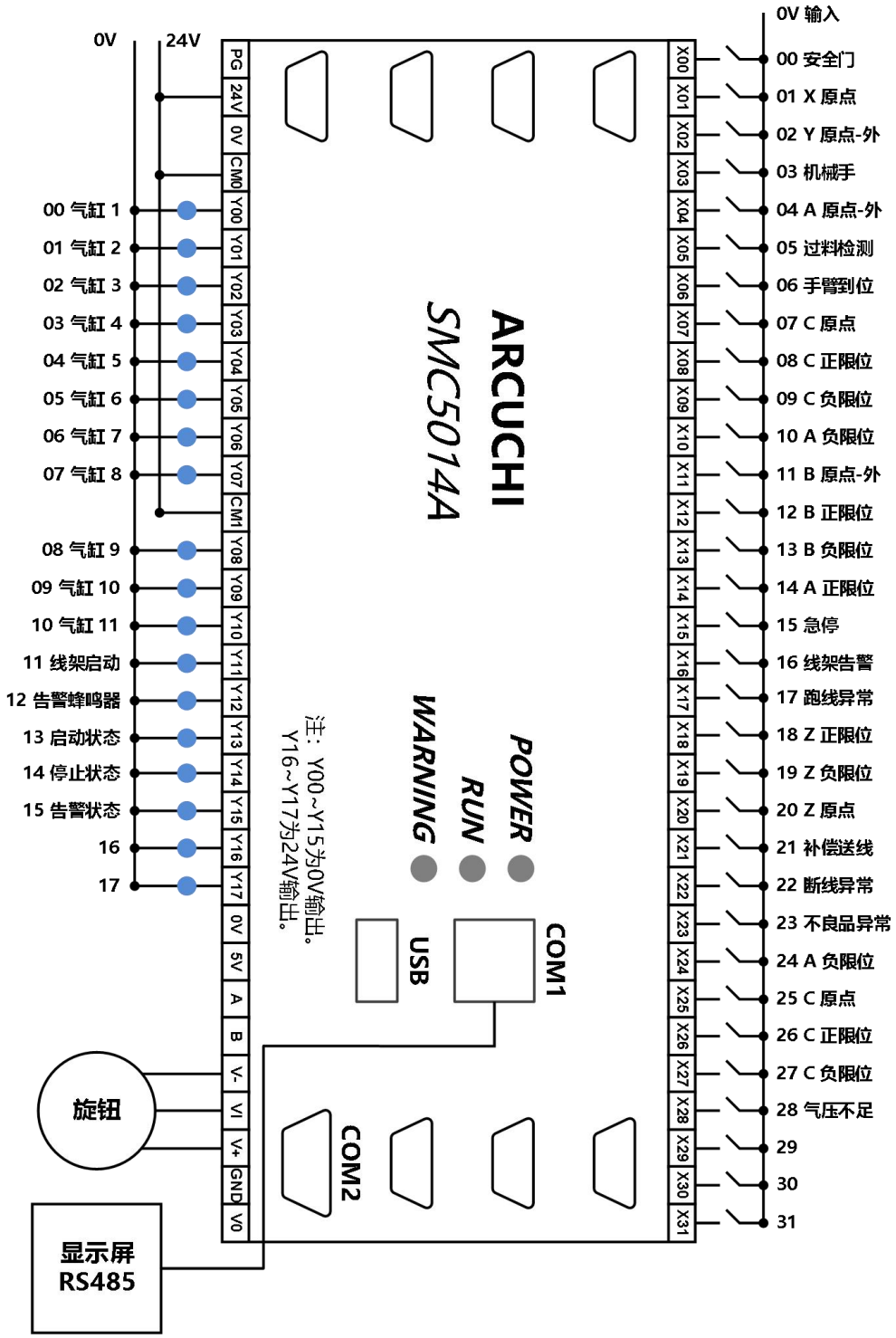
6: The X-axis rotates from 180 degrees to 220 degrees at the default speed, while the Y-axis reverses to zero and the Z-axis returns to the origin.

7: End line: Rotate the X-axis forward to 0 degrees, and reset the Y-axis and Z-axis

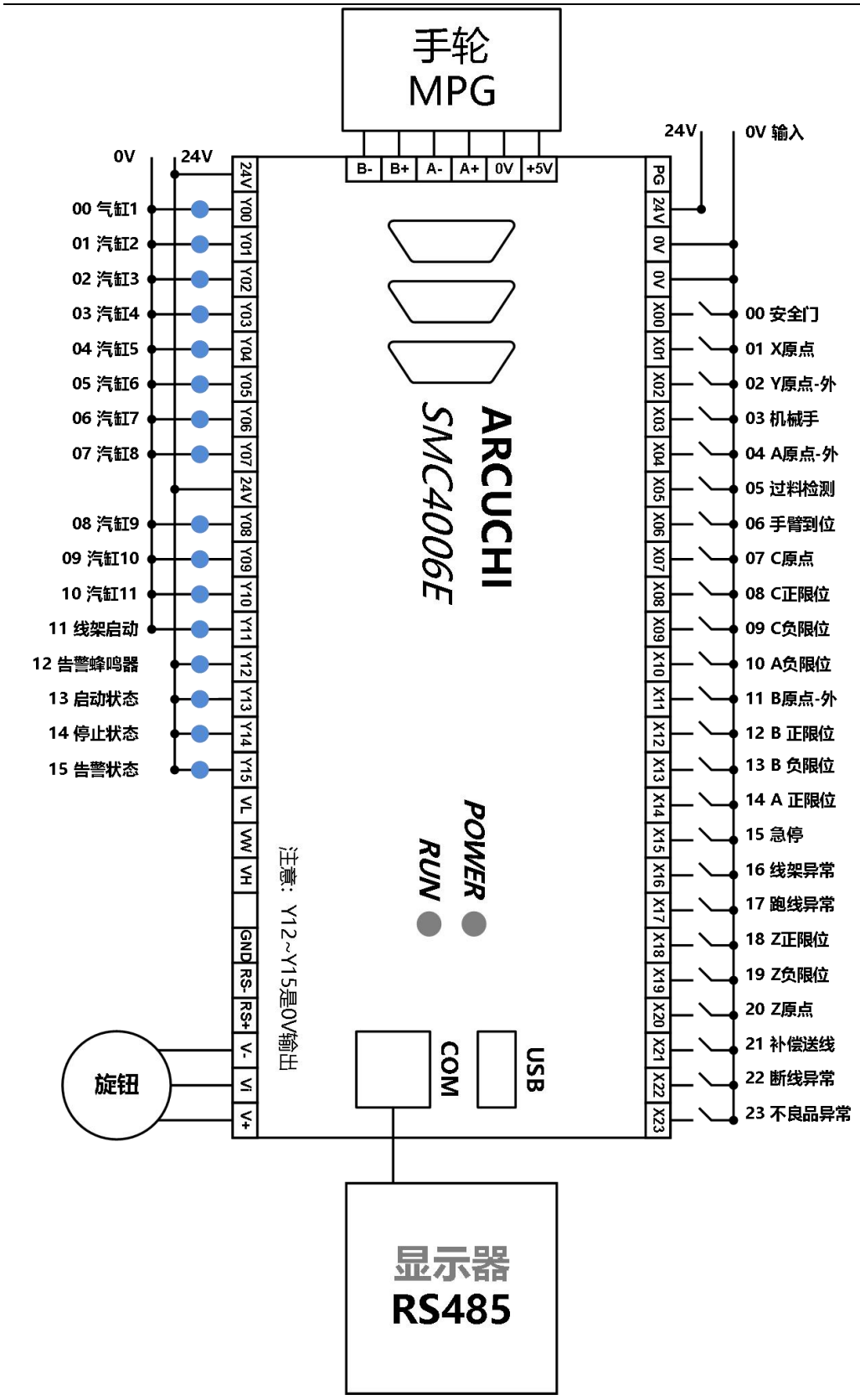
to zero position simultaneously.

3 Electrical connection

Distribution Diagram 5014A/4006E


0V
24V
PG
24V
0V
CM0
Y00
Y01
Y02
Y03
Y04
Y05
Y06
Y07
CM1
Y08
Y09
Y10
Y11
Y12
Y13
Y14
Y15
Y16
Y17
0V
5V
A
B
V-
V1
V+
GND
V0
00 气缸 1
01 气缸 2
02 气缸 3
03 气缸 4
04 气缸 5
05 气缸 6
06 气缸 7
07 气缸 8
08 气缸 9
09 气缸 10
10 气缸 11
11 线架启动
12 告警蜂鸣器
13 启动状态
14 停止状态
15 告警状态
16
17
旋钮
显示屏
RS485
ARCUCHI
SMC5014A
POWER
RUN
WARNING
USB
COM1
COM2
注：Y00~Y15为0V输出。
Y16~Y17为24V输出。
0V 输入
X00
X01
X02
X03
X04
X05
X06
X07
X08
X09
X10
X11
X12
X13
X14
X15
X16
X17
X18
X19
X20
X21
X22
X23
X24
X25
X26
X27
X28
X29
X30
X31
00 安全门
01 X 原点
02 Y 原点-外
03 机械手
04 A 原点-外
05 过料检测
06 手臂到位
07 C 原点
08 C 正限位
09 C 负限位
10 A 负限位
11 B 原点-外
12 B 正限位
13 B 负限位
14 A 正限位
15 急停
16 线架告警
17 跑线异常
18 Z 正限位
19 Z 负限位
20 Z 原点
21 补偿送线
22 断线异常
23 不良品异常
24 A 负限位
25 C 原点
26 C 正限位
27 C 负限位
28 气压不足
29
30
31

KIOXIA LIGHT RING EQUIPMENT GROUP CO.,LTD.
TEL/WhatsApp: +86 17622605414
Mail: admin@transformercoilwindingmachine.com
Web:www.transformercoilwindingmachine.com



KIOXIA LIGHT RING EQUIPMENT GROUP CO.,LTD.
Add: Building G, No.209 Zhonghuan East Road, Free Trade Zone (Airport Economic Zone), Tianjin

Appendix A: Analysis of Common Causes

1) After the controller is powered on, the program cannot be initiated, only a peak sound is heard, and there is no display on the screen.

The system startup file may be corrupted. Contact the supplier.

2) If the controller emits a continuous beeping sound after startup, it may indicate a serious system startup failure. In this case, contact the supplier immediately.

3) The system has started, but some or all keys are unresponsive. You can then access the I/O test interface to check each key individually. If the test fails, the keyboard may have a faulty key layout. Please contact the supplier for assistance.

4) The system has started, but the screen repeatedly displays X alarm or Y alarm while the servo driver shows no alarm. In this case, adjust the alarm output logic of the servo parameters. Check the servo driver to verify if its preset alarm output logic can be inverted. If so, modify the parameter; otherwise, proceed to system parameter settings to adjust the alarm logic.

5) When the system starts, manually rotating each axis will only move in one direction, while the other axis vibrates simultaneously. In this case, reset the servo drive parameters to pulse + direction mode.

6) After system startup, manual axis movement functions normally but

processing cannot commence. First, verify the zeroing is correct. Second, inspect for broken wires. For wire feeders lacking wire break signals, short-circuit the wire break input (as it's a normally closed contact). Additionally, check if the processed quantity exceeds the target. If so, initiate processing is prohibited.

7) The system starts normally, but no response occurs when the reset button is pressed. Check if the selected axis is the feed axis, as the feed axis cannot reset.

8) The system starts normally. Pressing the reset button immediately displays a reset failure. Check if the emergency stop button is pressed. If the reset failure persists after a period of time, inspect the origin switch to verify the input signal.

9) The cylinder fails to extend. Ensure the operating current does not exceed 500mA.

10) The probe consistently fails. Ensure the probe's delay setting is sufficiently long, and confirm the machine shares a common ground with the controller system.

11) When the system starts, an alarm (a prolonged controller sound) will be triggered. This may indicate that the spring production quantity has exceeded the preset target. To resolve this, press the 'Reset Count' button to clear the current count, or adjust the cursor to the target quantity setting to reset it.

12> After power-on, the controller fails to generate pulses while the motor operates. Check the wiring, verify the ground connection, and adjust the servo filter parameters.

Precautions and Maintenance of Controller

1. Precautions:

① It is strictly prohibited to strike or collide with the motor top or computer screen in any manner.

②. Before powering on, verify the power supply is correct.

③. Lubricate the rotating and sliding parts with engine oil.

④. It is strictly prohibited for any body parts (clothing, scraps of fabric) or tools to come into contact with the rotating parts of the machine.

II. Machine Adjustment Steps:

①. Confirm the product shape and prepare the required nozzle and wire pass nozzle according to specifications.

② Power on. After the screen is activated, in single, Z-axis, or manual mode, gently turn the handwheel to raise the Z-axis to a higher position, then press the reset button. Wait for the machine to automatically reset before proceeding to the next step.

③, thread the wire, adjust the height of the wire pressing triangle and the center offset between the wire groove seat and the wire diameter and winding direction,

and install the nozzle.

④. Select the appropriate slide table based on the product's forming sequence, configure the forming jig, and edit the program (refer to the program editing section for programming mode).

⑤. For the second leg, select the appropriate forming jig based on its shape.

⑥. For the first foot, select the appropriate forming jig based on its shape.

3-cylinder adjustment:

①. When the nozzle is reset to zero position, the wire feeder completes its feeding operation. As the nozzle begins to rotate, the wire pressing cylinder immediately withdraws (lifting) the coil after winding, then promptly lowers it (the subsequent cylinder timing is determined based on the part's shape).

4. Tin furnace temperature control:

① The temperature of lead-tin furnace is generally controlled at 280℃±10℃.

②. The temperature of lead-free tin furnace is generally controlled at 310℃±10℃.

3. Cylinder Call Programming Mode:

1. The cylinder numbering follows a left-to-right sequence, where 1 indicates the open cylinder and-1 indicates the closed cylinder.

2. The sequence is 1, 2, 3, 4, 5. -1, -2, -3, -4, -5.

3. The first cylinder is the wire feeding cylinder, the second is the wire pressing cylinder, the third is the cylinder for the depth of stripping, the fourth is the cylinder

for the length of stripping, and the fifth is the cylinder for blowing the skin.

4. Reversing the positions of the two air pipes on the exchange cylinder can change the cylinder programming mode: 1 becomes-1, and-1 becomes 1.

5. Before and after program editing in automatic shutdown or reset mode: Press the cylinder key—when the indicator light turns on, then sequentially press 1, 2, 3, 4, 5 to observe the position of each cylinder.

Matters need attention

Security considerations:

1. Do not open the casing without permission.

2. When the controller is not in use for an extended period, disconnect the power supply.

3. Special attention must be paid to prevent dust and iron powder from entering the control chamber.

4. Handle with care during transportation to avoid damaging the controller.

Precautions for correct use;

Improper usage may cause malfunction, and in worst cases, could even damage the controller.

Therefore, please follow the following precautions for the correct use of the control device.

1. Verify that the connected power supply meets the specifications to prevent

controller burnout.

2. The controller's lifespan is significantly affected by ambient temperature. If the processing site temperature is excessively high, installation should be performed.

Cooling fan. The controller supports an operating temperature range of 0°C to 60°C.

3. Avoid use in environments with high temperature, humidity, dust, or corrosive gases.

4. In areas with strong vibrations, rubber shock pads should be installed for cushioning.

Maintenance

Precautions for Maintenance and Inspection

1. The power supply of the main circuit should be disconnected first before performing maintenance and repair on the controller.

2. The operator must personally verify that the power supply is disconnected to prevent accidents.

Check items and cycles

Under standard operating conditions (environmental parameters: daily average temperature 30°C, 80% load rate, 12-hour daily operation), perform routine inspections and periodic checks as specified below.

Maintenance of mechanical parts

1. Daily maintenance:

①. Before daily startup, inspect all machine components for normal operation. Clean the surface with a gas gun, wipe the sliding parts, and apply lubricating oil.

②. When cleaning the equipment, avoid directing the air gun at the solder surface or flux cup to prevent injury from molten solder or flux splashes, as well as scalding the airway.

③. Clean up and recycle tin slag and flux residue in time.

II. Regular Maintenance:

①. Apply grease to the grease nozzle area every three months using a grease gun, ensuring the grease flows out cleanly from the gap.

②. Temperature control gauges and barometers shall be calibrated annually, while mechanical components require semi-annual maintenance. Any abnormalities should be addressed through proactive maintenance.

③. If the machine is not in use for an extended period, the surface must be thoroughly cleaned, lubricated, and wrapped with a waterproof rubber cloth to prevent moisture ingress and surface dust contamination.

4.Packaging

Packaging Material: Carton/Wooden case with foam inside. 1. General package(Paper carton or plastic bag): For small equipped parts for Digital CNC Wire Coil Winding Machine, Package it with form and pack paper to guarantee unbroken during the transport. 2.Wooden case package: For larger scale Digital CNC Wire Coil Winding Machine ,we have special skilled carpenter, who would make the proper wooden case with exact thickness, density,length. The up arrow ↑marked on the outer wooden case. Buffer material would be put in the wooden case to prevent crack and shock.



5.Market Area

We work closely with Southeast Asia, European, America, South America, Australia, New Zealand partners to provide local sales, support and service assistance for coil winding machines.

6.FACTORY:

Founded in 1993, KIOXIA LIGHT RING EQUIPMENT GROUP CO.,LTD. has been a well-known manufacturing excellent performance winding machines together with associated production and technology. KIOXIA LIGHT RING provide highly cost effective manufacturing solutions for the production of the wound components of all types such as transformers,chokes etc.

KIOXIA LIGHT RING EQUIPMENT GROUP CO.,LTD.

TEL/WhatsApp: +86 17622605414

Mail: admin@transformercoilwindingmachine.com

Web:www.transformercoilwindingmachine.com

WeChat WhatsApp





KIOXIA LIGHT RING EQUIPMENT GROUP CO.,LTD.

Add: Building G, No.209 Zhonghuan East Road, Free Trade Zone (Airport Economic Zone), Tianjin