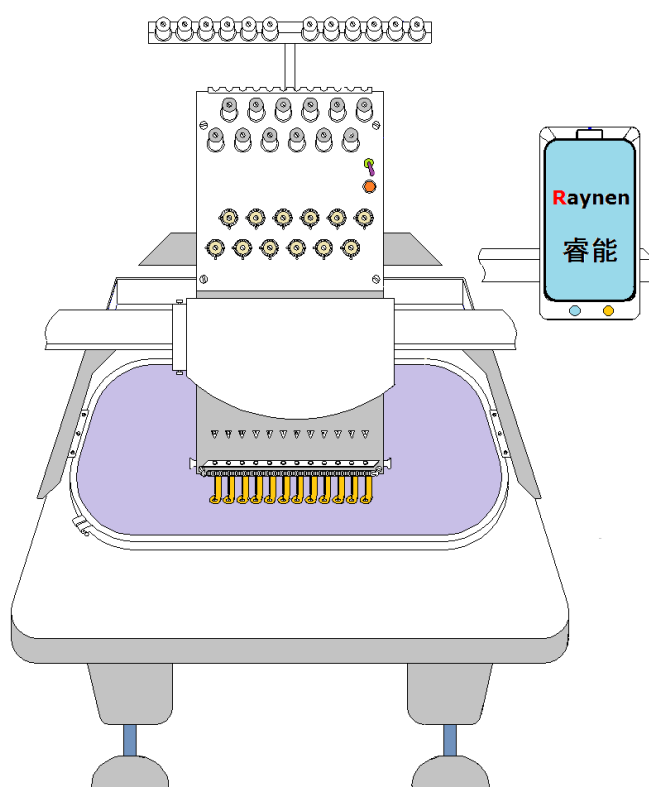


Computerized Controller for Embroidery Machine

SD-series Technical Manual

{ Version V1.0 }

(英文版: SD 系列商用单头刺绣机电控技术手册)



Fujian Raynen Technology Co.,Ltd.

Software Park,Fuzhou, Fujian, China

中国福建睿能科技股份有限公司

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Manufacturer Introduction

Raynen Technology (stock code: 603933) is a high-tech enterprise specializing in the R&D, production and sales of computer control system for knitting and sewing machine and textile servo driver.

Raynen always adheres to the research of automatic control technology, motor control technology, servo drive technology, frequency conversion control technology, digital power supply system pattern, embedded system software development technology, industrial Ethernet technology and knitting pattern CAD software development technology, forming a batch of core technology of domestic leading level, with over 100 national patents and software copyrights. Raynen R&D center is recognized as the "Computerized Fat Knitting Machine Smart Control System R&D Center in China's Textile Machinery Industry", "Textile Equipment Intelligent Control Enterprise Engineering Technology Research Center in Fujian Province" and "Fujian Provincial Enterprise Technology Center". Continuously adhering to independent innovation, Raynen provides the knitting industry with high quality intelligent electronic control products and a series of solutions such as advanced knitting technology software, pattern design software and flat knitting machine networking service, promoting the intelligent advancement of traditional knitting industry, gradually realizing flexible manufacturing from order and design to production, further driving the transformation and upgrading of Chinese knitting industry.

Raynen adheres to the business philosophy of "Cooperation with honesty and sincerity, innovation, growing together with customer success", grasps the favorable opportunity provided by "Made in China 2025" and insists on customer-oriented principle and continuously creates value for customers so as to increase both the corporate value and customer value.

Attention:

Specifications of this product are subject to change without prior notice.

Fujian Raynen Technology Co., Ltd.

Bldg.26, Block C, Software Park, No.89, Software Rd., Gulou District, Fuzhou, Fujian
Tel: 0591-83765135 | Fax: 0591-83767088 | ZIP: 350003

Website: [http:// www.raynen.cn](http://www.raynen.cn)

Precautions for Product Use

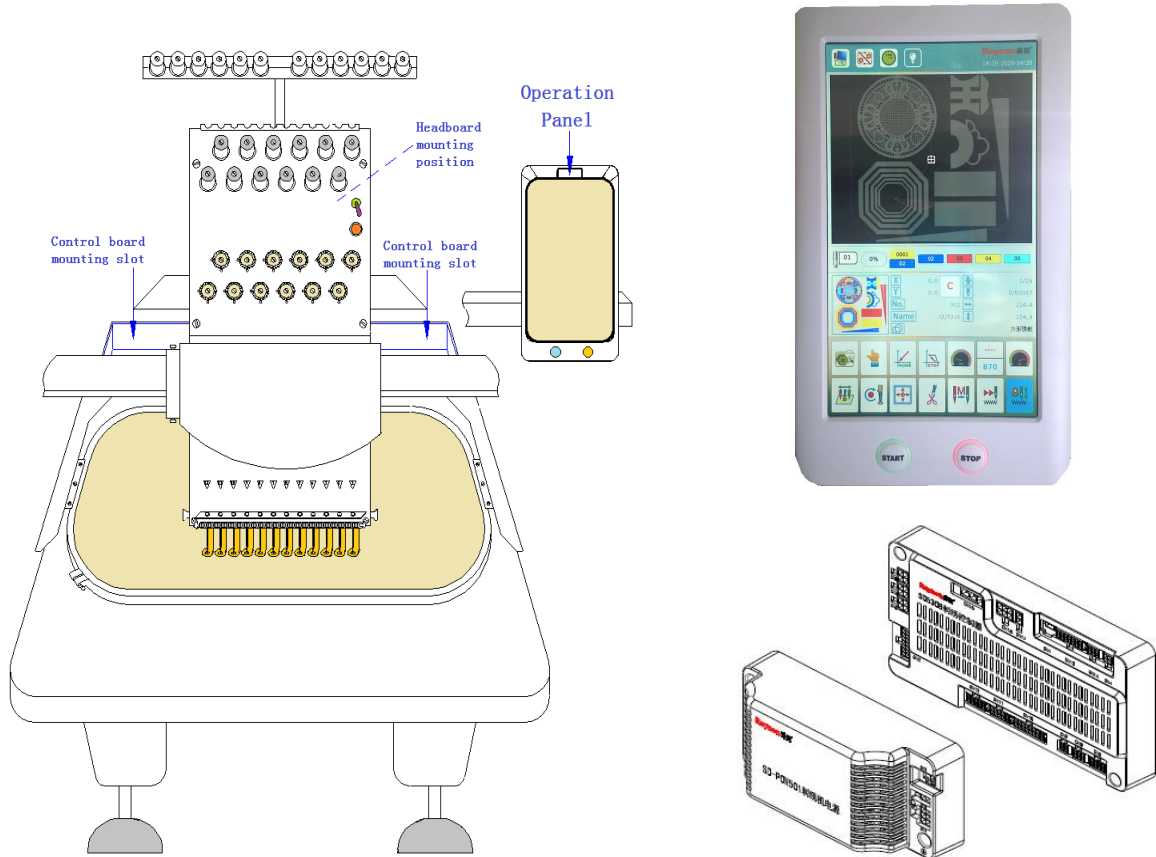
Welcome to use the embroidery control products of Fujian Raynen Technology Co., Ltd
Please read this technical manual / operating instructions carefully to ensure correct operation and use.
Keep this operating manual properly so that you can check it whenever you need it.
Technical specifications are subject to minor changes or minor upgrades without prior notice!



This product is a mechatronic product. In order to reduce the risk of accidental fire, electric shock and personal injury that may occur during use, the following basic safety precautions should be observed.

- ⌋ Please carry out electrical installation and wiring according to the technical requirements, try to make the strong and weak electricity separate wiring, not tied together.
- ⌋ All kinds of installation and connection cables should be well insulated, and the jacket and plastic skin should be free from damage. The connector should not expose the stripped copper wire to avoid short circuit and wire contact during pulling.
- ⌋ For the parts with radiators, keep the radiator and exhaust port ventilated smoothly and do not block.
- ⌋ Before powering on for the first time, be sure to confirm that the external power supply specifications meet the specifications.
- ⌋ If you need to power on immediately after power off, please keep the power off for at least 20 seconds and then power on.
- ⌋ At the start of power-on for 20 seconds, it is the initialization process of the power-on system, and try not to operate.
- ⌋ The LCD screen and touch screen on the operation box are fragile items. Do not use sharp and hard objects for operation and click to ensure the normal function of the LCD screen and touch screen and prolong the service life.
- ⌋ When inputting or outputting the pattern via USB disk, please pay attention to the insertion direction of the USB disk. Do not squeeze hard when the insertion direction is wrong. When reading or writing a USB flash drive, do not dial the USB flash drive to avoid damaging the USB flash drive and data.
- ⌋ Do not open the cover of the electronic control cabinet during the power-on of the product. The chassis may contain fatal high voltage, which may cause accidental personal injury.
- ⌋ If you really need to open the chassis for some tuning or inspection, you should turn on the power supply after the power socket is turned off or the power is turned off for 3 minutes to avoid some internal energy storage capacitors still exist dangerous high voltage, which may cause electric shock and personal injury.
- ⌋ Do not touch the moving parts on the machine while the machine is running, otherwise it may cause personal injury.
- ⌋ The product is forbidden to be placed in places with moisture, dust, corrosive gas, flammable or explosive gas, otherwise it may easily cause accidental fire, electric shock and personal injury.

Part 1 Control System and Function Description



1.1、 Main Specifications

- ✓ Display Screen: 10-inch touch screen. Screen resolution: 1024X600
- ✓ Stepping Precision: Minimum stitch 0.1mm
- ✓ Stitch range: 0.1mm~12.7mm.
- ✓ Pattern input and output: USB, network
- ✓ Servo spindle, stepping frame shift, motor color change, motor trimming, motor hooking
- ✓ Cooperated with the spindle zero detection, the angle detection of the spindle and the spindle motor share the same encoder.
- ✓ Use the external multi-turn potentiometer to directly detect the needle position and display it on the User Interface.
- ✓ Highly reliable connectors are used to ensure the reliability of the system connection.
- ✓ Special embroidery support: yes
- ✓ Lock Encryption: Yes
- ✓ Multi-Language Support: Chinese, English (optional: Other Languages)

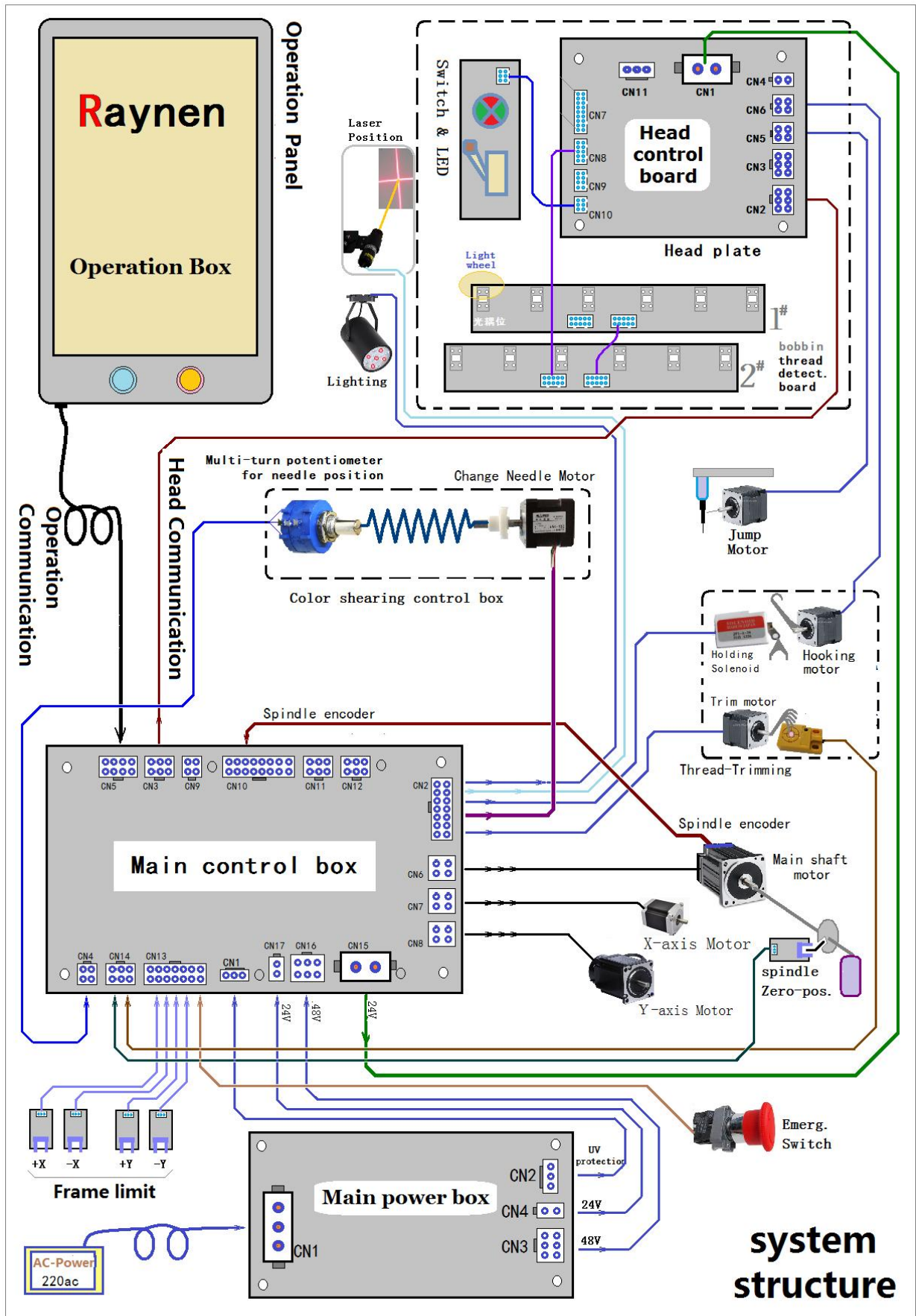
1.2、Function Configuration Table

Category	S.N.	Item	Configuration
User Interface	1	UI for 10-inch touch screen LCD	Standard (External)
Main shaft	2	Brushless DC motor	Standard (internal)
Frame Driver	3	57/86-Stepper Motor	Standard (internal)
Needle Driver	4	42-Stepper Motor	Standard (internal)
hooking driver	5	42-Stepper Motor	Standard (internal)
Trimming Driver	6	42-Stepper Motor	Standard (internal)
Buckle Driver	7	Holding Solenoid	Standard (internal)
Head control	8	Thread hold、Motor jump	Standard (internal)
Head detection	9	Optocouple thread-break detection	Standard (External)
Intrinsic parameter	1	Maximum speed	1200 Rpm
	2	Total memory (Million stitches)	3200
	3	Maximum number of stitches in a single pattern (Million stitches)	1000
	4	Color-changing times	4000
	5	minimum stitch	0.1mm
	6	stitch code range	0.1mm~12.7mm
Basic performance	1	Applique & Combination embroidery	Standard
	2	cyclic embroidery	Standard
	3	Letter embroidery function	Standard
	4	Graffiti embroidery function	Standard
	5	Extension for special embroidery	Standard
Multi-Language	1	Chinese	Standard
	2	English	Standard
	3	Spanish、Turkish、French、Portuguese German、Arabic、Vietnamese、Russian、 Thai、Italian、Dutch、Polish	Assignable
Environment	1	Power requirements	AC100~265V, 50/60Hz
	2	Power supply	average: 100W, peak: 300W
	3	Installation method	Free space of in the machine
	4	Running environment	-10~45℃; 10%~90%RH

1.3、 Main Function Introduction

1. Pattern input, output and system software upgrade	<p>1) This controller can connect to the USB disk. It can read the patterns of Tajima binary, Tajima ternary, Belinda FDR format (including binary, ternary and Z-ary) and ZSK disk into the memory of the embroidery system.</p> <p>2) This controller can be connected to a USB flash drive via a USB interface, and the patterns stored in the system can be output in the Tajima binary format or Rayhong format and stored in the USB flash drive.</p> <p>3) JD series controllers can use USB flash disks, upgrade system software, or perform online software upgrades for machine head plate and special embroidery control boards.</p>
2. Multi-Language support	The system supports to display in Chinese, English, Spanish and Turkish, French and Portuguese.
3. Multiple embroidery process options	This controller can choose to use different embroidery techniques such as “repetition embroidery”, “combination embroidery”, “letter embroidery” and “photo embroidery” etc.
4. Powerful pattern compilation function	This controller can compile the parameters of the “Repetition Embroidery” pattern or “Combine Embroidery” pattern to generate a new pattern, and store it in the memory.
5. Plenty assistant embroidery functions	This controller can “automatically find the origin of embroidery patterns” and add functions such as “applique embroidery”, “border embroidery”, “cross embroidery” and “along the pattern range embroidery”. Enriched the function of pattern embroidery, greatly improved the embroidery process and efficiency.
6. Convenient machine maintenance and debugging functions	This controller includes: machine self-test, encoder self-test, Main shaft motor speed self-test, machine components test functions. The use of these functions makes the debugging, maintenance and fault judgment of the embroidery machine more convenient.
7. Powerful embroidery parameter memory function	This controller can associate the selected embroidery parameters such as the starting point of the pattern, the color changing order, the pattern direction, the rotation angle, and the number of repetitions with the embroidery pattern, and save this set of parameters. When embroidering this pattern again, you can call this group of parameters without resetting, which improves the embroidery efficiency.

1.4、 Electronic Control Overall Structure



1.5、Modules and Peripheral Parts

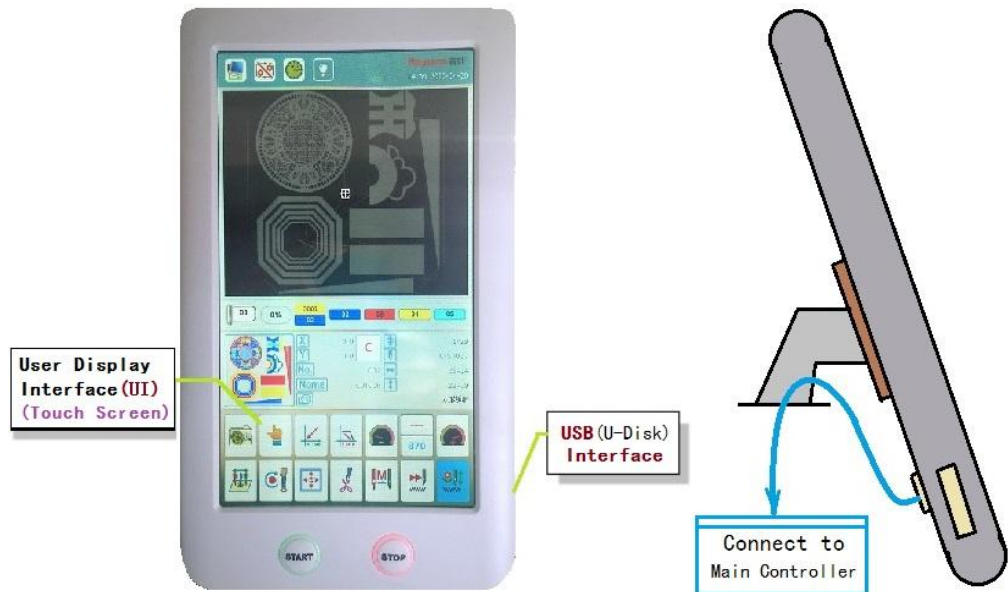
Name	Order Model / Parameter	NoS	Note
User Interface	User Interface box: HMRN5308	1	Standard
Main power	Main power box, Model: SD-POW501	1	Standard
Main controller	Main control box, Model: SD5308	1	Standard
Head control	Head control board [with two motor driver]	1	Standard
bottom inspection	bobbin thread detection board [2x6PIN]	2	Standard
LED Panel	small operation panel	1	Standard
zero board	Spindle zero board	1	Standard
limit board	Frame limit board	4	Standard
Needle potentiometer	multi-turn potentiometer 1K Ω /10turn, MEXICO-1840	1	Optional
Inductive switch	Thread trimming in place 12V, output: NPN-OC	1	Optional
Illumination	Suply: 12V-LED-lamp	1	Optional
Positioning Light	Laser Cross Positioning Light, Suply: 5V	1	Optional
Emergency Stop Button	Emergency Stop Button: Normally open Model: CHLIP: LAS16-AY-11TS	1	Optional
Main shaft motor	SM70-00525-48L; 157W, 48VDC, 4A, 3000Rpm; With photoelectric encoder: 1000P/R	1	With machinery
X-axis Motor	M57, 3P: FHB368; 48V/5.8A/1.2	1	With machinery
Y-axis Motor	M86, 3P: FBH3910; 48V/5.8A/1.2 $^{\circ}$	1	With machinery
Needle-Change	M42: 42H47-1704B05/1.7A/1.8 $^{\circ}$	1	With machinery
Jump-Motor	M42: 42H47-1704B05/1.7A/1.8 $^{\circ}$	1	With machinery
Thread Locking	24V, Bidirectional Locking Solenoid	1	With machinery
Trimming Driver	M42: 42H47-1704B05/1.7A/1.8 $^{\circ}$	1	With machinery
Hooking Driver	M42: 42H47-1704B05/1.7A/1.8 $^{\circ}$	1	With machinery
Holding Solenoid	Supply voltage: 24V	1	With machinery

Part 2 Controller Parts and Wiring

2.1、Main Operation Panel (For Vertical Screen)

Order Model: HMRN5308

(Dimensions: 282X165)



I Touch Screen

This machine adopts high-brightness LCD display and touch screen as the operation interface, which is easy and convenient for learning and using.

I USB Data Transmission Interface

This machine adopts universal USB data interface, which is convenient for inputting and outputting patterns and stored data via USB interface.

⚠ Attention: ⚠

The LCD screen and touch screen on the operation box are fragile items. Do not use sharp and hard objects for operation and click to ensure the normal function of the LCD screen and touch screen and prolong the service life.

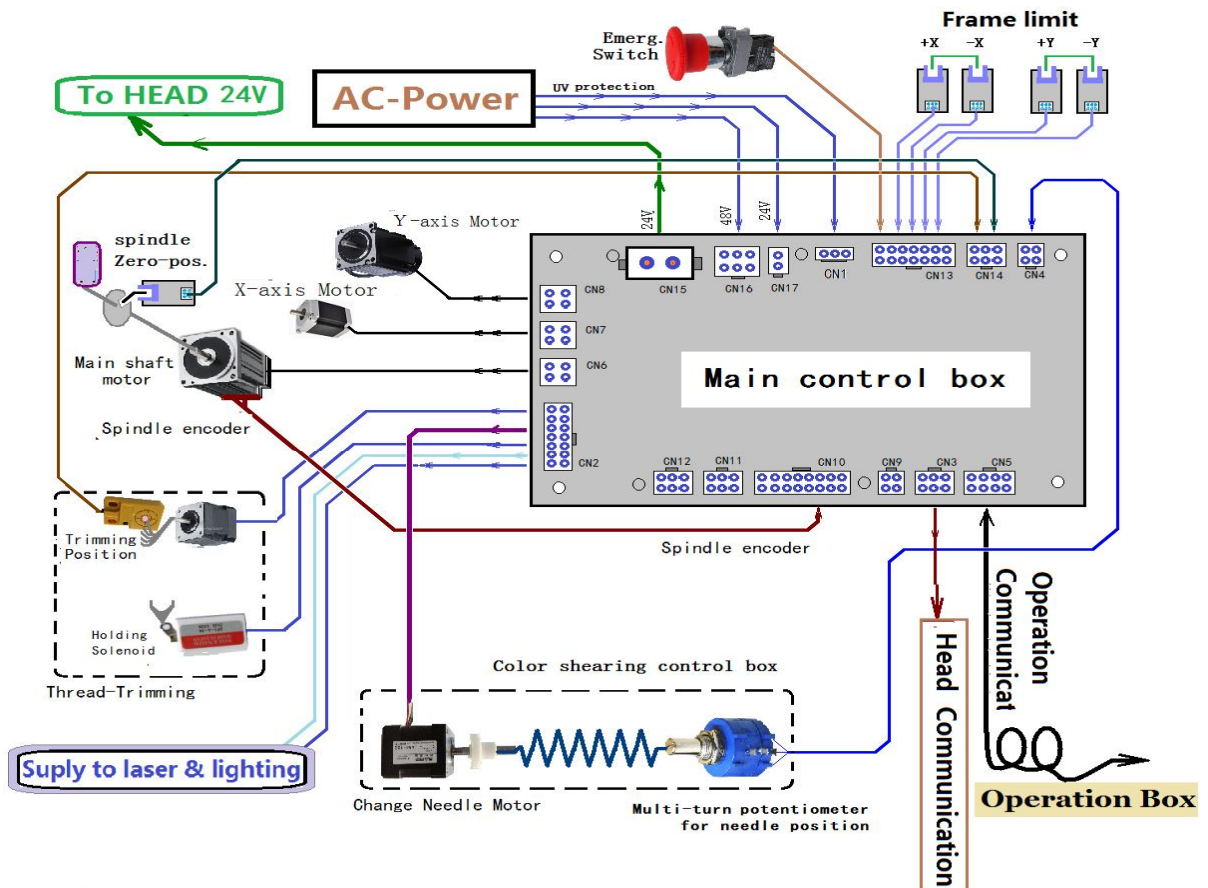
When inputting or outputting the pattern via USB disk, please pay attention to the insertion direction of the USB disk. Do not squeeze hard when the insertion direction is wrong. When reading or writing a USB flash drive, do not dial the USB flash drive to avoid damaging the USB flash drive and data.

2.2、Main Control Box

Order Model: SD5308 (Dimensions: 110X190 Fixing Hole: 92X196)



Wiring Connection Diagram:



CN13 M3045-2*7/M3045-2*7	
Controller to Frame limit	
7.	S5V +5V
6.	SW_X- X- Frame limit
5.	GND GND
14.	S5V +5V
13.	SW_X+ X+ Frame limit
12.	GND GND
4.	S5V +5V
3.	SW_Y- Y- Frame limit
2.	GND GND
11.	S5V +5V
10.	SW_Y+ Y+ Frame limit
9.	GND GND
1.	GND GND
8.	SW_ES Emergency Stop

CN2 M3045-2*7/M3045-2*7	
Controller to STEP-MOTOR	
1.	SMT1_A+ A+
8.	SMT1_A+ Trim A-
2.	SMT1_A+ Motor B+
9.	SMT1_A+ B-
3.	SMT1_A+ A+
10.	SMT1_A+ Change Needle A-
4.	SMT1_A+ Motor B+
11.	SMT1_A+ B-
5.	OUT2 Holding -
12.	OUT1 Solenoid +
6.	GND
13.	L12V Laser-Supply
7.	L5V LED-Supply
14.	GND

CN10 M3045-2*8/M3045-2*8	
Controller to spindle Encoder	
1.	AL1 A+
9.	\AL1 A-
2.	BL1 B+
10.	\BL1 B-
3.	ZL1 Z+
11.	\ZL1 Z-
4.	UL1 U+
12.	\UL1 U-
5.	VL1 V+
13.	\VL1 V-
6.	WL1 W+
14.	\WL1 W-
7.	5V_QEP 5V_QEP
15.	GND GND
8.	\PLUG1 Link judgment
16.	PE Shell-GND

CN11 M3045-2*5/M3045-2*5	
Controller to X-axis Encoder	
1.	AL2 A+
6.	\AL2 A-
2.	BL2 B+
7.	\BL2 B-
3.	ZL2 Z+
8.	\ZL2 Z-
4.	\PLUG2 Link judgment
9.	PE Shell-GND
5.	5V_QEP 5V_QEP
10.	GND GND

CN12 M3045-2*5/M3045-2*5	
Controller to Y-axis Encoder	
1.	AL3 A+
6.	\AL3 A-
2.	BL3 B+
7.	\BL3 B-
3.	ZL3 Z+
8.	\ZL3 Z-
4.	\PLUG3 Link judgment
9.	PE Shell-GND
5.	5V_QEP 5V_QEP
10.	GND GND

CN3 M3045-2*3/M3045-2*3	
Head communication on controller	
1.	CANOH CANO
2.	QFO +Pulse multipl.
3.	PE Shell-GND
4.	CANOL CANO
5.	-QFO -Pulse multipl.
6.	PE Shell-GND

CN5 M3045-2*4/M3045-2*4	
Controller com. to peration Panel	
1.	TXP1 Sendout+
2.	RXP1 Receive+
3.	GND GND
4.	GND GND
5.	TXN1 Sendout-
6.	RXN1 Receive-
7.	PE Shell-GND
8.	C12V 12V

CN8	C4201WV-2*2P/DIP4P/4.2
Controller to Y-axis Motor	
1. PE	Shell-GND
2. U3	U-Phase
3. V3	V-Phase
4. W3	W-Phase

CN7	C4201WV-2*2P/DIP4P/4.2
Controller to X-axis Motor	
1. PE	Shell-GND
2. U2	U-Phase
3. V2	V-Phase
4. W2	W-Phase

CN6	C4201WV-2*2P/DIP4P/4.2
Controller to spindle Motor	
1. PE	Shell-GND
2. U1	U-Phase
3. V1	V-Phase
4. W1	W-Phase

CN9	M3045-2*2/M3045-2*2
CAN2: Back up on the Controller	
1. PE	Shell-GND
2. PE	Shell-GND
3. CAN1L	CAN1L
4. CAN1H	CAN1H

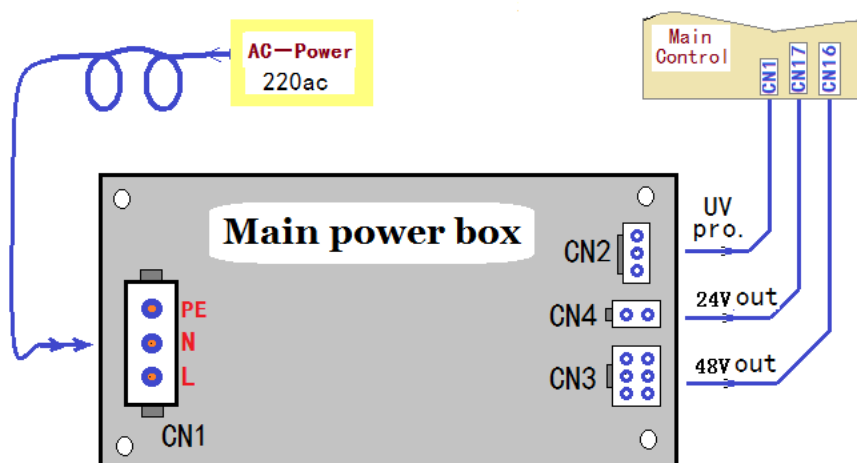
2.3、Main Power Box

Order Model: SD-POW501

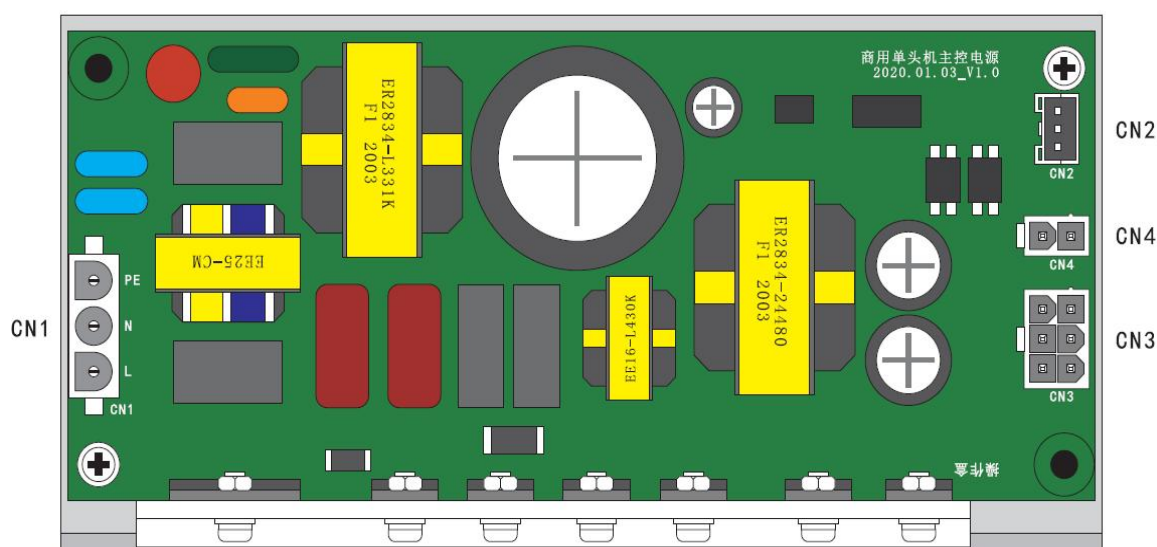
(Dimensions: 80X160 Fixing Hole: 55X143)



Wiring Connection Diagram:



Cable Connection:



CN1	M9848-1*3-W-H(M)SIP3/6.35
AC Power input to Power Board	
1.	PE Shell-GND
2.	N Neutral
3.	L FireWire

CN2	HX25037-3A/XHB-3A
Power Board to main controller	
1.	ZERO_AC AC zero crossing dete.
2.	ACV AC voltage detection
3.	GND GND

CN4	C4201WV-2*1P/DIP2P/4.2
Power Board to main controller	
1.	24V 24V
2.	24V 24V

CN3	C4201WV-2*3P/DIP6P/4.2
Power Board to main controller	
1.	GND GND
2.	48V 48V
3.	GND GND
4.	GND GND
5.	48V 48V
6.	GND GND

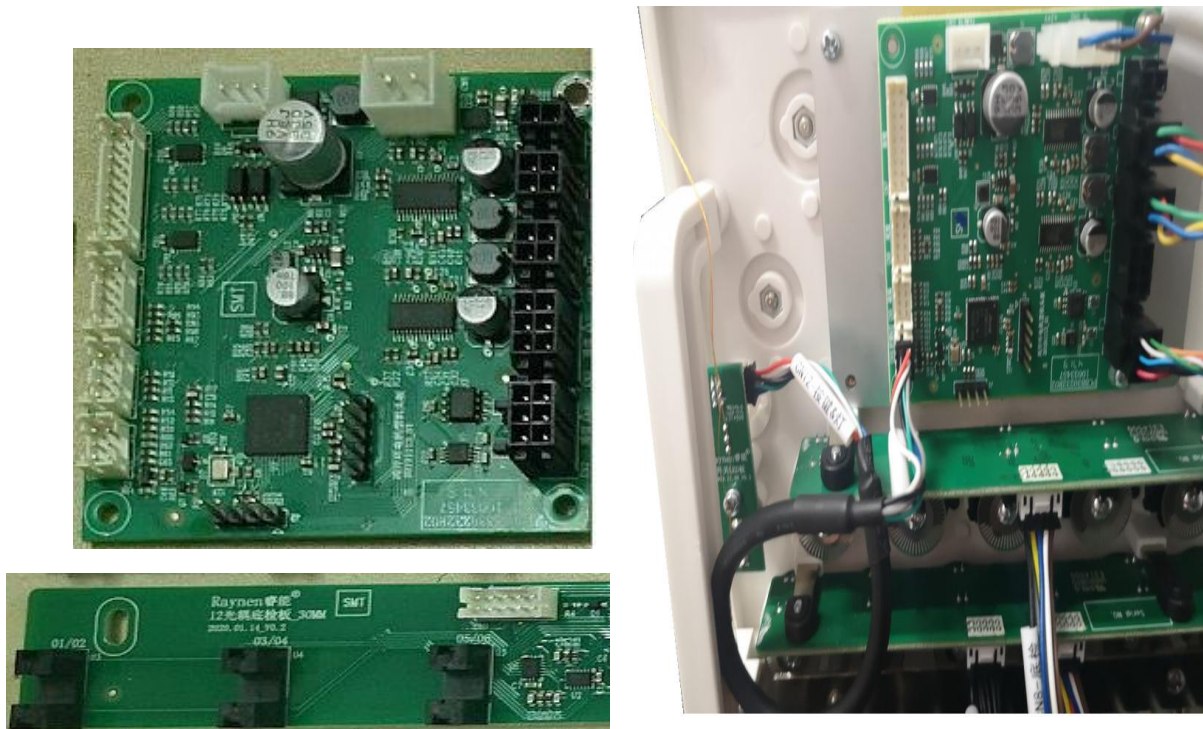
2.4、Head Control Board

The order parts include: head board + bottom inspection board + small operation panel

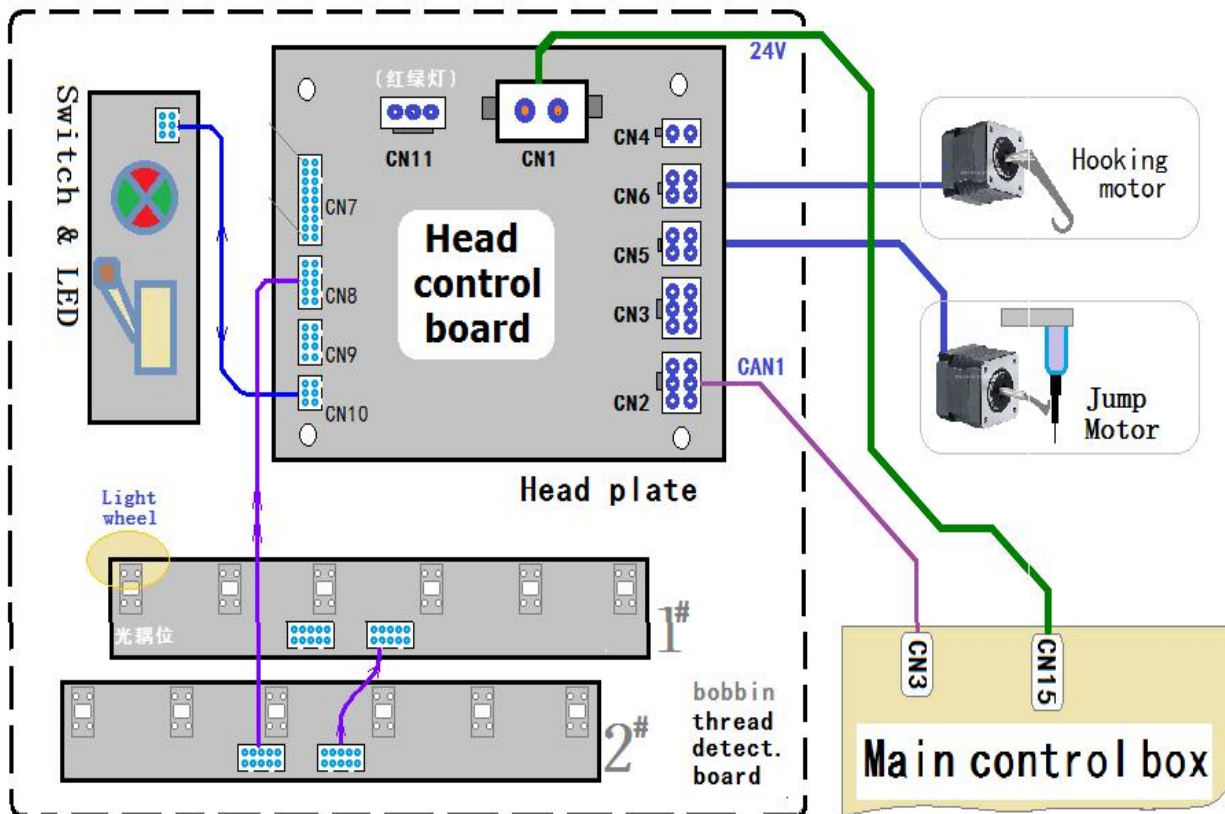
{	Dimensions:	73X74	100X25	25X60	}
{	Fixing Hole:	100X65	120mm	25mm	}

Note: The 12-pin bobbin thread detection board can be formed by staggering the installation of the two board with 6 pins.

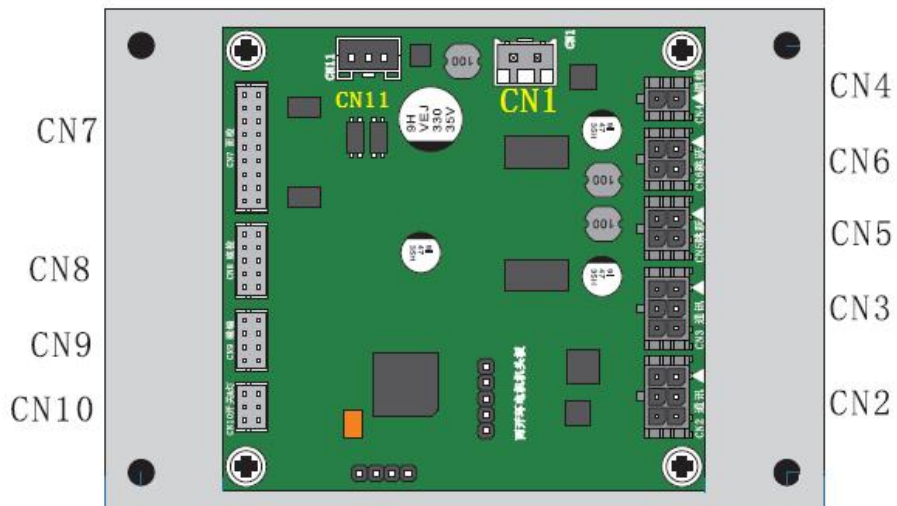
Combined physical map:



Wiring Connection Diagram:



Cable Connection:



CN1	C4201WV-2*1P/DIP2P/4.2
Head to controller	
1.	GND GND
2.	IN24V +24V

CN11	HX25037-3A/XHB-3A
Head to special Embroidery	
1.	\ZPR Red-LED-out
2.	\ZPG Green-LED-out
3.	AGND GND[out]

CN6	M3045-2*2/M3045-2*2
Head to Hook motor	
1.	SMT1_A+ Hook A+
2.	SMT1_A- Hook A-
3.	SMT1_B+ motor B+
4.	SMT1_B- motor B-

CN5	M3045-2*2/M3045-2*2
Head to JUMP motor	
1.	SMT1_A+ JUMP A+
2.	SMT1_A- JUMP A-
3.	SMT1_B+ motor B+
4.	SMT1_B- motor B-

CN2	M3045-2*3/M3045-2*3
Head communication from controller	
1.	CANOH CANOH
2.	QFI +Pulse multipl.
3.	PE Shell-GND
4.	CANOL CANOL
5.	-QFI -Pulse multipl.
6.	PE Shell-GND

CN3	M3045-2*3/M3045-2*3
Head communication from controller	
1.	CANOH CANOH
2.	QFI +Pulse multipl.
3.	PE Shell-GND
4.	CANOL CANOL
5.	-QFI -Pulse multipl.
6.	PE Shell-GND

CN8	PHD-2*5/PHD-B10B
Head to Bobbin Thread Dete. Board	
1.	5V 5V
2.	\CN_IN Insertion dete.
3.	GND GND
4.	GND GND
5.	A0 coding-0
6.	A1 coding-1
7.	A2 coding-2
8.	\OEL Low-Enable
9.	\OEH High-Enable
10.	\BOT_IN Pulse input

CN9	PHD-2*4/PHD-B8B
Head to Bobbin Magnetic Dete. Board	
1.	5V 5V
2.	12CSDA 1 ² C-Data
3.	GND GND
4.	12CSCL 1 ² C-Glock
5.	A0 coding-0
6.	A1 coding-1
7.	A2 coding-2
8.	\OEL Low-Enable

CN10	PHD-2*4/PHD-B8B	
Head to Small-OP. Panel		
1.	LR	Red-LED
2.	LG	Green-LED
3.	\SW_UPI	Up Switch
4.	\SW_DNI	Down Switch
5.	GND	GND
6.	GND	GND

CN7	PHD-2*9/PHD-B18B	
Head to Jump spring		
1.	GND	GND
2.	GND	GND
3.	\TOP_IN1	Nose-L. sign.-1
4.	\TOP_IN2	Nose-L. sign.-2
...
18.	\TOP_IN16	Nose-L. sign.-16

CN4	M3045-2*1/M3045-2*1	
Head to Locking Solenoid		
1.	OUT1	Locking+
2.	OUT2	Solenoid-

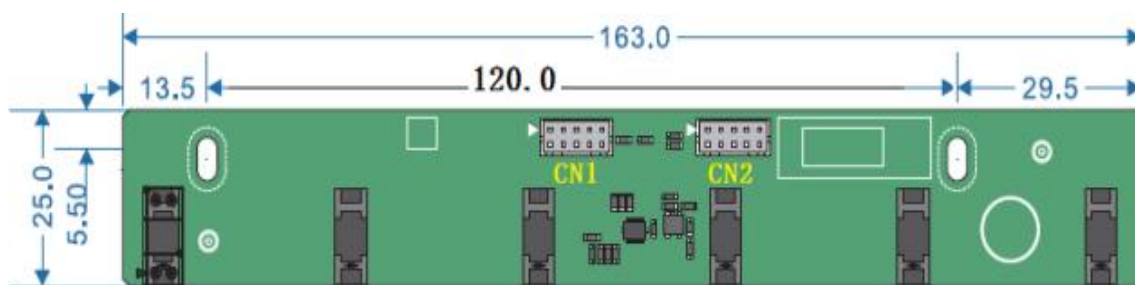
External switch panel interface:

Interface on the bobbin thread detection board

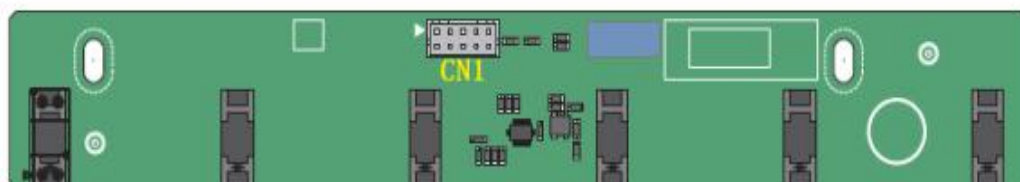
CN1
A2006HB-2x3P/A2006-TP-B
1. LR
2. LG
3. \SW_UPI
4. \SW_DNI
5. GND
6. GND

CN1 & CN2	
A2006HB-2x5P/A2006-TP-B	
1. 5V	6. A1
2. \CN_IN	7. A2
3. GND	8. \OEL
4. GND	9. OEH
5. A0	10. \BOT_IN

Dimension drawing of the bobbin thread detection board:



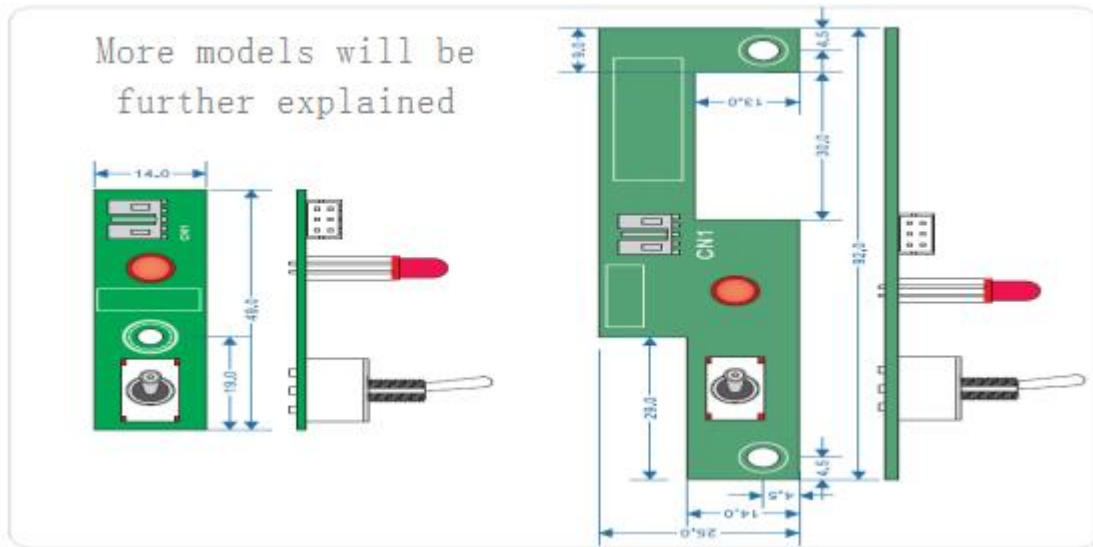
Bobbin thread detection board(A)



Bobbin thread detection board(B)

Note: The 12-pin bobbin thread detection board can be formed by staggering the installation of the two board with 6 pins, and CN1 and CN2 can be cascaded

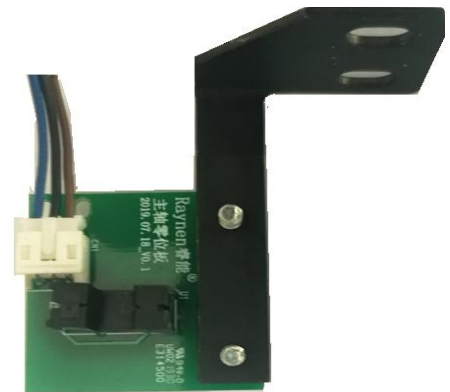
Dimension drawing of the small operation panel with different models:



2.5、Other Accessories Board



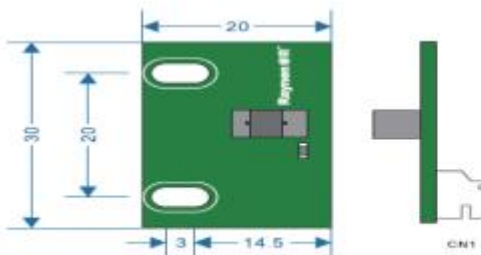
Frame limit board



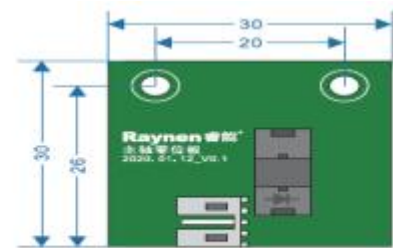
Spindle zero board

<p>CN1 HX20006-3Y/HX20006-PT 1. VCC 2. SENSOR 3. GND</p>

<p>CN1 HX20006-3Y/HX20006-PT 1. VCC 2. SENSOR 3. GND</p>



Frame limit board

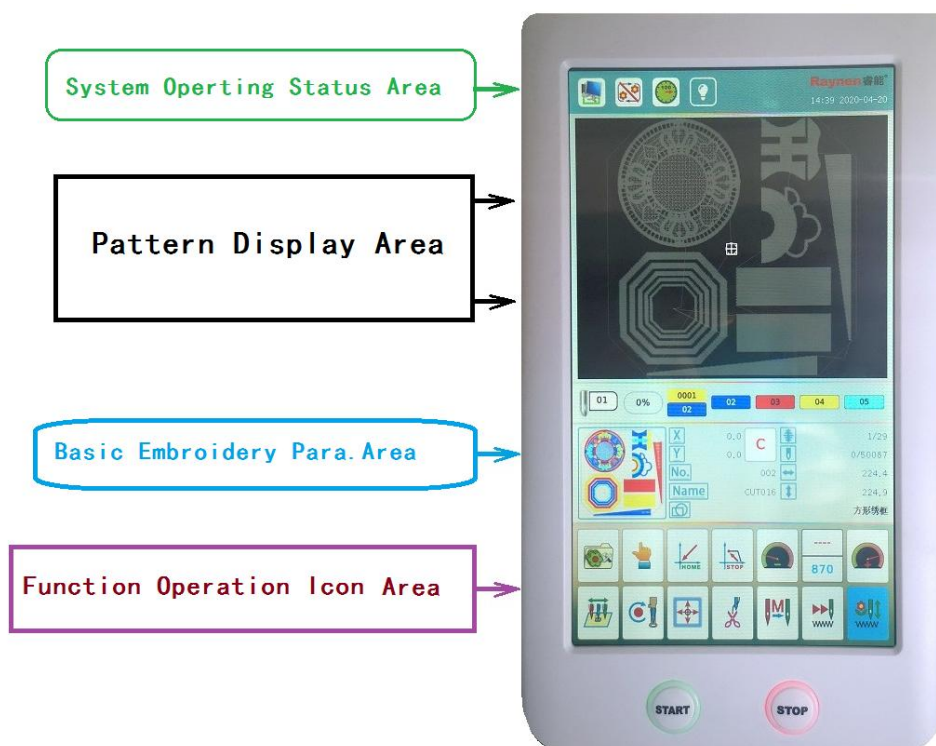


Spindle zero board

Part 3 Use and Maintenance

3.1、User Interface for Vertical Screen

On the main user interface , it can be divided into the following areas for display:



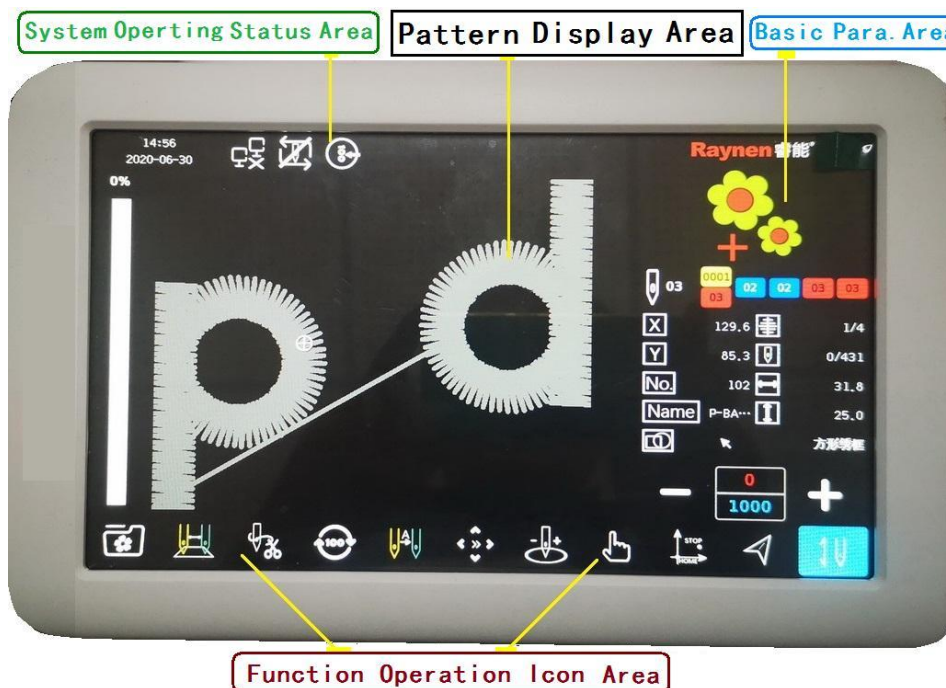
In the function operation icon area, you can enter the following various sub-functions:



Pattern Management	Parameter Setting	Return to Stitch point	Shortcut Menu	Reduce Speed	Speed/Set Speed	Increase Speed
Color Change Operation	Main Shaft Inching Op.	Frame Shift Operation	Trimming Operation	Color Change Mode	Idling & Pos. Idling Op.	Embroidery Confirmation

3.2、User Interface for Horizontal Screen

On the main user interface , it can be divided into the following areas for display:



In the function operation icon area, you can enter the following various sub-functions:

Pattern Management	Color Change Operation	Trimming Operation	Main Shaft Inching Op.	Color Change Mode	Frame Shift Operation	Idling & Position Idling Op.	Parameter Setting	Return to Stitch point	Shortcut Menu	Embroidery Confirmation

3.3、 Setting Method of Needle Position Potentiometer

The needle position potentiometer for color-changing is installed on the back of the machine head. The left and right continuous movement during use may cause wear or deviation. Please follow the steps below to replace and make correct alignment before use:

- I Use the specified model and parameter to the needle position potentiometer for color-changing , and weld it in 3-line order;
- I Keep the potentiometer and the color change screw in the disengaged state, and accurately align the machine head with the "first needle";
- I Turn on the power and rotate the potentiometer freely, the aligned "first pin" is displayed on the screen;
- I Tighten screws of potentiometer and color change screw
- I Manually change the color knob to check whether the "head pin" to "tail pin" can be adjusted smoothly, and there should be no dead spots;
- I Through the "manual color change" on the operation screen, detect each target position until everything is normal.

3.4、 Contact form for Customer Service

Electronic controller order for commercial single-head embroidery			
Contract No:		Delivery dates:	
Delivery Address:			
Number of needles:		Screen type	£Vertical/ £Horizontal
Emergency switch:	£YES / £NO	Head-Jump:	£Solenoid/ £Motor
LED-light:	£YES / £NO	Laser positioning:	£YES / £NO
Encryption:	£YES / £NO		
Other notes:			

Attention:

Specifications of this product are subject to change without prior notice.

Fujian Raynen Technology Co., Ltd.

Bldg.26, Block C, Software Park, No.89, Software Rd., Gulou District, Fuzhou, Fujian

Tel: 0591-83765135 | Fax: 0591-83767088 | ZIP: 350003

Website: [http:// www.raynen.cn](http://www.raynen.cn)

Appendix: System Wiring Set

Part One: Power cable

1 AC power rope



2 Power adapter cable



交流转接线材 交流插座 (L/N)	ICONS301428 1P1A17300328 250V插座插头+护套				红	单芯线 一层两股 1mm ² L=120mm	ICONS301428 1P1A17300328 250V插座插头+护套	交流转接线材 交流插座 (L/N)
----------------------	--	--	--	--	---	--	--	----------------------

3 Power input wire



AC220输入 电源板CN1	制造商 P2812-1+3P 198483-2	1	PE	1	PE	黄绿	护套线 3PIN 1mm ² L=600mm	ICONS301438 1P1A17300332 250V插座插头+护套	交流插座 (PE) 插座开关 (L/N)
		2	N	2	N	蓝			
		3	L	3	L	棕			

4 24V Power Cable



24V电源板线材 电源线	制造商 ELL100340012 WE10030-1101	1	24V	1	24V	红	护套线 2PIN L=330mm 250V (0.3mm ²)		24V电源板线材 电源线
		2	24V	2	24V	红			

5 48V Power Cable



48V电源板线材 电源线	制造商 ELL100340012 WE10030-1101	1	GND	1	GND	黑	单芯线 6PIN 1.68mm (0.75mm ²) L=330mm	制造商 ELL100340012 WE10030-1101	48V电源板线材 电源线
		2	48V	2	48V	红			
		3	GND	3	GND	黑			
		4	GND	4	GND	黑			
		5	48V	5	48V	红			
		6	GND	6	GND	黑			

6 AC Signal Cable



AC信号线 电源板CN2	长江(CJT) A2608H-3P A2508-TP	1	ZERO AC	1		黄绿	单芯线 3PIN AWG26 L=330mm	长江(CJT) A2608H-3P A2508-TP	AC信号线 电源板CN1
		2	ACV	2		蓝			
		3	GND	3		棕			

Part Two: Controller cable

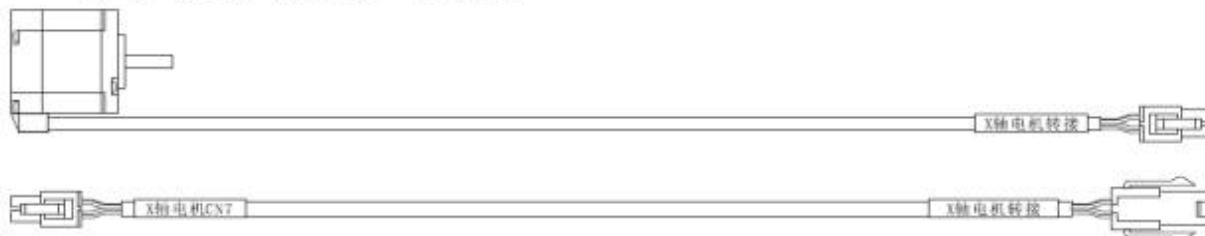
1 Main Shaft Cable



主轴电机动力线 主控制板	浙江红菱 0342300-11-2002 0342300-3137	2	U1	2	U1	电机自屏蔽线	浙江红菱 0342300-11-2002 0342300-3137	主轴电机
		3	V1	3	V1			
		4	W1	4	W1			

主轴电机编码器线 主控制板	北京博盟 T3025-200-0-0 T3000P5-004	1	ALIA+	A+	电机自屏蔽线	浙江红菱 0342300-11-2002 0342300-3137	主轴电机
		9	\ALIA-	A-			
		2	BLIB+	B+			
		10	\BLIB-	B-			
		3	ZLIZ+	Z+			
		11	\ZLIZ-	Z-			
		4	ULIU+	U+			
		12	\ULIU-	U-			
		5	VLIV+	V+			
		13	\VLIV-	V-			
		6	WLIV+	W+			
		14	\WLIV-	W-			
		7	5V_QEP	编码器供电			
		15	GND	地			
		8	\PLUG1	端子连接检测			
		16	PE	机壳地			

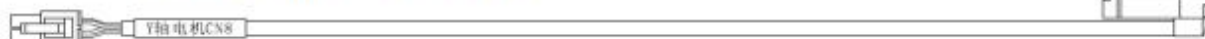
2 X-axis Motor Cable



X轴电机	浙江红菱 0342300-11-2002 0342300-3137	2	U2	2	U2	电机自屏蔽线	浙江红菱 0342300-11-2002 0342300-3137	X轴电机动力线 主控制板
		3	V2	3	V2			
		4	W2	4	W2			

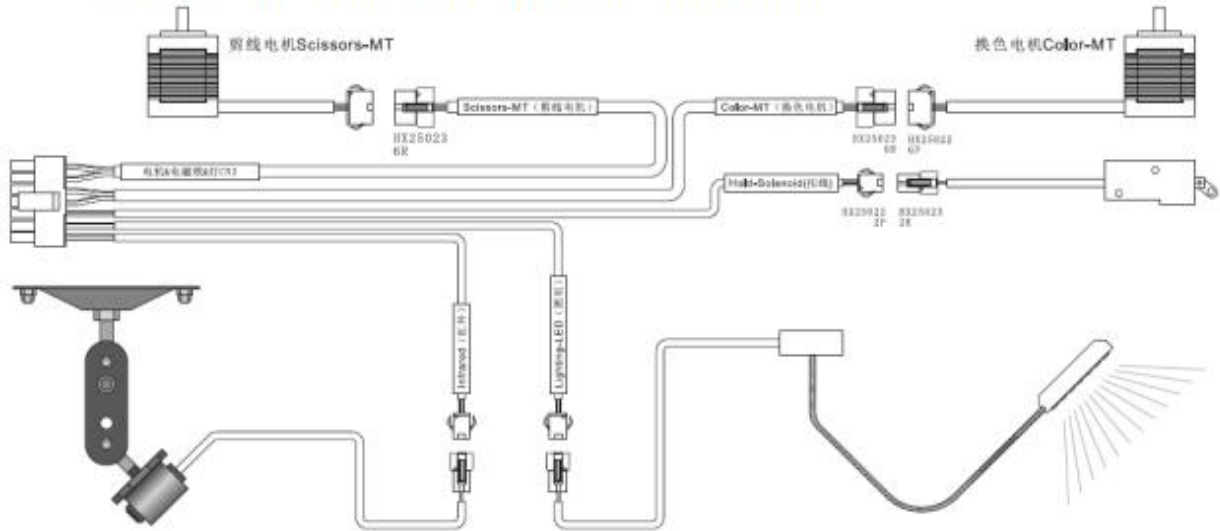
X轴电机动力线 主控制板	浙江红菱 0342300-11-2002 0342300-3137	2	U2	2	U2	白	伊普瑞 6P15 2249G 每个端子三位两线	浙江红菱 0342300-11-2002 0342300-3137	X轴电机动力线 主控制板
		3	V2	3	V2	黑			
		4	W2	4	W2	黄 红 绿			

3 Y-axis Motor Cable



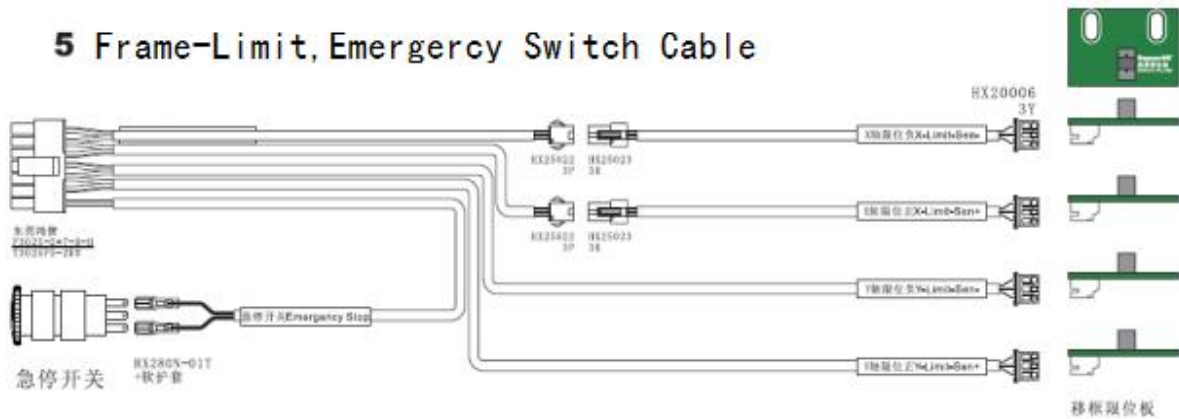
Y轴电机动力线 主控制板	浙江红菱 0342300-11-2002 0342300-3137	2	U3	2	U3	电机自屏蔽线	浙江红菱 0342300-11-2002 0342300-3137	Y轴电机
		3	V3	3	V3			
		4	W3	4	W3			

4 Step-Motor, Solenoid, Light & Laser-Pos.



多轴电机+2 电液阀驱动板	各轴电机 HX25023-6R	1	SMT1_A+	1	A+	红	护套管 4715 22AWG L=300mm	浙江红景 HX25023-6R HX25023-6R	剪线电机 Scissors-MT
		8	SMT1_A-	3	A-	绿			
		2	SMT1_B+	4	B+	黄			
		9	SMT1_B-	6	B-	蓝			
		3	SMT2_A+	1	A+	红			
		10	SMT2_A-	3	A-	绿			
		4	SMT2_B+	4	B+	黄	护套管 4715 22AWG L=1000mm	浙江红景 HX25023-6R HX25023-6R	换色电机 Color-MT
		11	SMT2_B-	6	B-	蓝			
		5	OUT2	2	GND	黑			
		12	OUT1	1	24V	红			
		6	GND	2	GND	黑			
		13	L12V	1	12V	红			
		7	L5V	1	5V	红			
		14	GND	2	GND	黑	护套管 4715 22AWG L=1000mm	浙江红景 HX25023-6R HX25023-6R	照明 Lighting-LED
						红外 Infrared			

5 Frame-Limit, Emergency Switch Cable

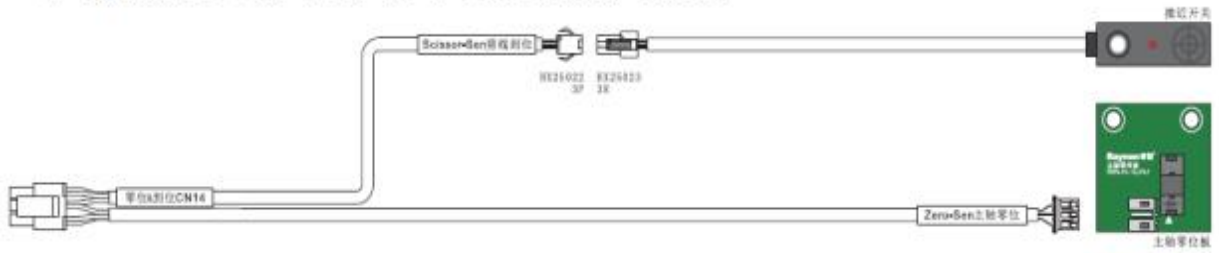


限位&急停	各轴电机 HX25023-6R	7	S5V	1	VCC	棕	护套管 1715 24AWG L=1400mm	浙江红景 HX25023-6R HX25023-6R	X轴限位负 (转接)
		6	SW_X-	2	X-	黑			
		5	GND	3	GND	蓝			
		14	S5V	1	VCC	棕			
		13	SW_X+	2	X+	黑	护套管 1715 24AWG L=1400mm	浙江红景 HX25023-6R HX25023-6R	X轴限位正 (转接)
		12	GND	3	GND	蓝			
		4	S5V	1	VCC	棕			
		3	SW_Y-	2	Y-	黑			
		2	GND	3	GND	蓝	护套管 1715 24AWG L=900mm	浙江红景 HX25023-6R HX25023-6R	Y轴限位负 Y-Limit-Sen-
		11	S5V	1	VCC	棕			
10	SW_Y+	2	Y+	黑					
9	GND	3	GND	蓝					
1	GND	2	GND	黑	护套管 1715 24AWG L=700mm	浙江红景 HX25023-6R	急停开关 Emergency Stop		
8	SW_ES	1	ES	红					

X轴限位负 (转接)	浙江红景 HX25023-6R	1	S5V	1	Vcc	棕	护套管 1715 24AWG L=1700mm	浙江红景 HX25023-6R HX25023-6R	X轴限位负 X-Limit-Sen-
		2	SW_X-	2	X-	黑			
		3	GND	3	GND	蓝			

X轴限位正 (转接)	浙江红景 HX25023-6R	1	S5V	1	Vcc	棕	护套管 1715 24AWG L=1700mm	浙江红景 HX25023-6R HX25023-6R	X轴限位正 X-Limit-Sen+
		2	SW_X+	2	X+	黑			
		3	GND	3	GND	蓝			

6 Spindle-Zero, Trim Detection Cable



单位零位传感器线	东帝线缆 E231124-1450 E182379-212	1	S12V	1	棕	东帝线缆 SP15 L-155mm	浙江红星 H32022-37 H32022-37	剪线到位 Scissor-Sen
		4	SENSOR	2	黑			
		5	GND	3	蓝			
		3	S5V	1	棕	东帝线缆 SP15 L-155mm	浙江红星 H32022-37 H32022-37	主轴零位 Zero-Sen
		6	ZERO_M	2	黑			
		2	GND	3	蓝			

7 Operation Panel Cable



操作盒信号线	东帝线缆 E2323-24-1-1 E182379-212	1	TXP1	9	RX+	东帝线缆 SP15 L-150mm E2323-24-1-1 E182379-212 东帝线缆 AWN20379 USB3.0 专用线材到机头	AWN20379 USB3.0	操作盒 OP-Box
		2	RXP1	6	TX+			
		4	GND	4	GND			
		5	TXN1	8	RX-			
		6	RXN1	5	TX-			
		7	PE	外壳	PE			
		8	C12V	1	VCC			

8 Communication Cable



通信线	东帝线缆 E231124-1450 E182379-212	1	CAN0H	1	红	东帝线缆 SP15 L-155mm E231124-1450 E182379-212	东帝线缆 E231124-1450 E182379-212	机头板 CN2
		4	CAN0L	4	白			
		2	QF0	2	黑			
		5	\QF0	5	绿			
		3	PE	3	屏蔽			

9 Needle position potentiometer Cable



电位器线	东帝线缆 E231124-1450 E182379-212	2	GND	3	蓝	东帝线缆 SP15 L-155mm	浙江红星 H32022-37 H32022-37	Color-Sen 换色到位
		3	S3.3V	1	棕			
		4	VPOS_DET	2	黑			

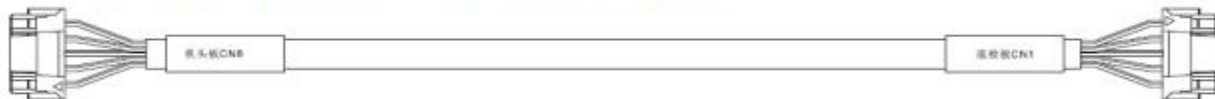
10 24V output Cable



24V输出线	东帝线缆 E231124-1450 E182379-212	1	S24V	2	IN24V	红	东帝线缆 SP15 L-235mm 1815G	浙江红星 H32022-37 H32022-37	机头板CN1
		2	GND	1	GND	黑			

Part Three: Head cable

1 Bobbin Thread Detection Cable



A2006HB-2x5P
A2006-TP-B

A2006HB-2x5P
A2006-TP-B

底检线	东江 A2006HB-2x5P A2006-TP-B	1	5V	1	护套线 10PIN L=1100mm 26AWG	东江 A2006HB-2x5P A2006-TP-B	底检板CN1
		2	\CN_IN	2			
		3	GND	3			
		4	GND	4			
		5	A0	5			
		6	A1	6			
		7	A2	7			
		8	\OEL	8			
		9	OEH	9			
		10	\BOT_IN	10			

2 Bobbin Thread Detection Transfer Cable



A2006HB-2x5P
A2006-TP-B

A2006HB-2x5P
A2006-TP-B

底检互连线	东江 A2006HB-2x5P A2006-TP-B	1	5V	1	护套线 10PIN L=1100mm 26AWG	东江 A2006HB-2x5P A2006-TP-B	底检板CN2
		2	\CN_IN	2			
		3	GND	3			
		4	GND	4			
		5	A0	5			
		6	A1	6			
		7	A2	7			
		8	\OEL	8			
		9	OEH	9			
		10	\BOT_IN	10			

3 Head-small-panel Cable



A2006HB-2x5P
A2006-TP-B

A2006HB-2x5P
A2006-TP-B

按键&灯线 机头板CN10	东江 A2006HB-2x5P A2006-TP-B	1	LR	1	护套线 10PIN L=1100mm 26AWG 保护套80P 该线的颜色需要与原款	东江 A2006HB-2x5P A2006-TP-B	按键&灯板CN1
		2	LG	2			
		3	\SW_UP1	3			
		4	\SW_DN1	4			
		5	GND	5			
		6	GND	6			

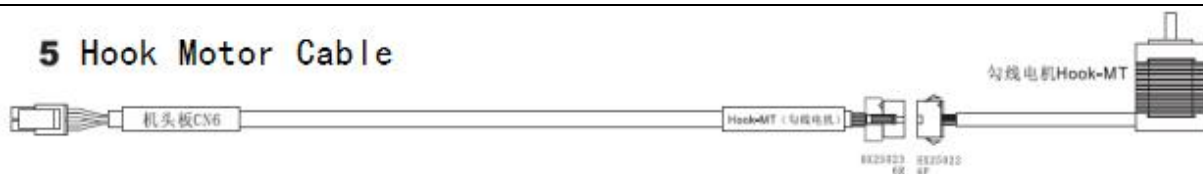
4 Head Jump Motor Cable



SDXC-ZK-001A

跳跃电机线 机头板CN5	东江特准 A2006HB-2x5P TPB21TP-25P	1	SMTI_A+	1	A+	护套线 10PIN L=1100mm 22AWG 保护套80P 该线的颜色需要与原款	东江特准 A2006HB-2x5P TPB21TP-25P	转接
		3	SMTI_A-	3	A-			
		2	SMTI_B+	4	B+			
		4	SMTI_B-	6	B-			
底检互连线	东江 A2006HB-2x5P A2006-TP-B	3	GND	3	护套线 10PIN L=1100mm 26AWG	东江 A2006HB-2x5P A2006-TP-B	底检板CN2	
		4	GND	4				
		5	A0	5				
		6	A1	6				
		7	A2	7				
		8	\OEL	8				
		9	OEH	9				
10	\BOT_IN	10						

5 Hook Motor Cable



勾线电机线 机头板CN6	头壳料号 11802195-219	1	SMT2_A+	1	A+	护套线 10PIN L=400mm 24AWG 护套颜色: 黑色 请线前请先剪去屏蔽层	单芯线号 HX32010-10 HX32010-17	转接
		3	SMT2_A-	3	A-			
		2	SMT2_B+	4	B+			
		4	SMT2_B-	6	B-			

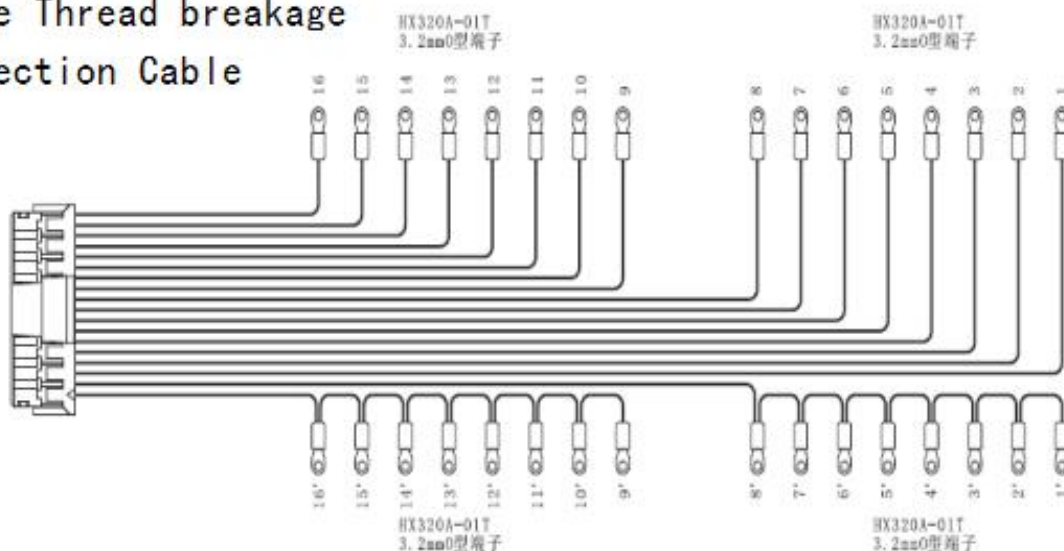
6 Thread Locking Motor Cable



SDXC-ZK-001A

锁线电磁铁 机头板CN4	头壳料号 11802195-219	1	OUT1	1	红	护套线 2PIN L=100mm 24AWG 护套颜色: 黑色 请线前请先剪去屏蔽层	2510-01针座	转接
		2	OUT2	2	黑			

7 Nose Thread breakage detection Cable



面检线	长江 A101608-140E 12100-17-3	1	GND			单芯线 1PIN 24AWG200mm		
		2	GND					
		3	TOP-IN1					
		4	TOP-IN2					
		5	TOP-IN3					
		6	TOP-IN4					
		7	TOP-IN5					
		8	TOP-IN6					
		9	TOP-IN7					
		10	TOP-IN8					
		11	TOP-IN9					
		12	TOP-IN10					
		13	TOP-IN11					
		14	TOP-IN12					
		15	TOP-IN13					
		16	TOP-IN14					
		17	TOP-IN15					
		18	TOP-IN16					