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Part I System Introduction

1.1 Overview

Thank you very much for using our embroidery machine control system.

This control system adopts industrial-grade 32-bit DSP processor, which is powerful in function and strong in anti-interference, which effectively improves the stability of the control system.

The excellent control design method effectively improves the production efficiency of the machine, reduces the noise of the whole machine and prolongs the service life of the machine.

The operation uses menus and man-machine dialogues, which is easy to learn.

Complete testing functions and convenient machine parameter settings are very convenient when the machine is installed and debugged.

Can be used with various types of embroidery machines. To meet your various requirements for embroidery, you can have satisfactory embroidery effects on thin, thick and three-dimensional embroidery.

Before using, please read the instruction manual carefully to ensure the correct use of embroidery electromechanical controls.

Due to different configurations, some machines do not have some of the functions listed in this book. For details, please refer to the operating functions of this machine.

1.2 Precautions

Note:

Do not repair and debug the electrical system by non-professionals. This will reduce the safety performance of the equipment, expand the failure, and even cause injury to people and property damage.

After the system is powered on, do not open the chassis cover. Avoid accidental injury.

Please replace the fuse in strict accordance with the product identification requirements to ensure the safety of personnel and property.

This product's switching power supply has over-current and short-circuit protection. If protection starts, check the equipment circuit.

Ventilation should be provided around the control box and driver to facilitate heat dissipation.

The company is not responsible for the consequences of unauthorized changes to this product.

Caveat:

When it is really necessary to open the cover of the chassis, it is necessary to allow access to the components inside the electric control box after 5 minutes of power off.

Forbid:

Electrical equipment is forbidden to work in humid, dusty, corrosive gas, flammable and explosive gas areas, otherwise it may cause electric shock or fire.

1.3 Working environment

Good ventilation, sanitary environment and less dust;

Working space temperature: 5-40 °

Relative humidity in the working space: 30% -90% non-condensing.

1.4 System power and ground

Power requirements:

This electronic control system can use the following power sources:

Single-phase 100V-AC240V / 50-60HZ wide voltage input.

Power about 150W

Grounding requirements:

In order to prevent electric shock or fire due to leakage, overvoltage, insulation, etc. of electrical equipment, please ground the electrical control reliably.

Part II installation requirements

2.1 Installation requirements

When installing the electric control box and driver, leave some space for future maintenance.

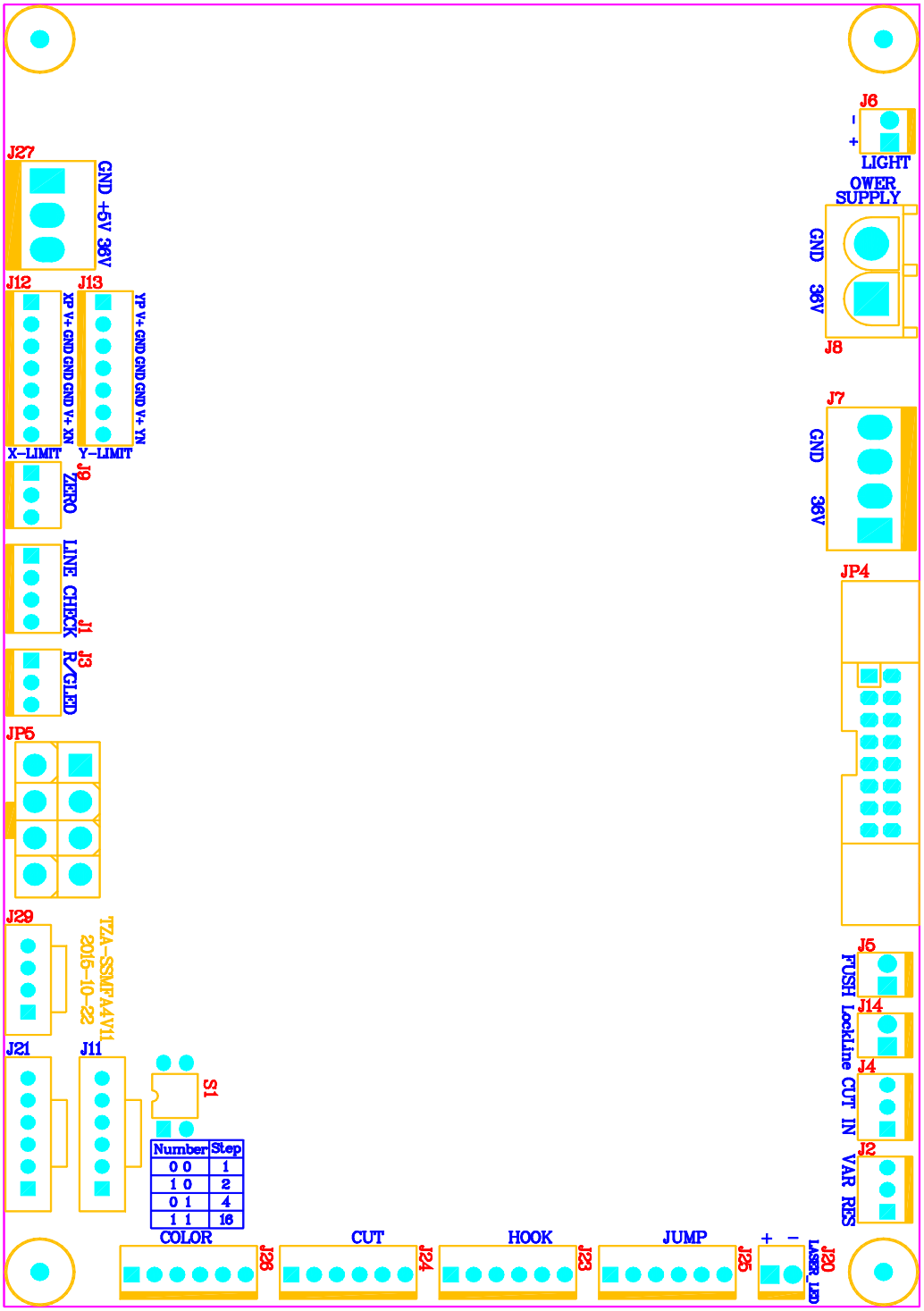
Pay attention not to leave too long in cable connection, leave about 20 cm on both sides of the cable.

When arranging cables (route), pay attention that the AC power cables, DC power cables, and signal cables cannot be tied together. It is best to separate the two cables by about 10 cm to avoid interference between the two.

Part III Circuit and Cable Connection Diagram

3.1 Multifunctional board interface diagram

(SSMFA4V3*/5*/6* series)



J1：Disconnection detection sliding photocoupler input， 1.+12V 2. Detection 1 3. Detection 2 4. GND

J2：The needle position detector potentiometer，1.GND 2. Needle signal 3.+12V

J3：To the head light，1.GND 2. Green light 3. Red light

J4：To trimmer proximity switch NPN，1.GND 2.+12V 3. Signal

J5：To push the electromagnet

J6：To lighting LED constant current power supply 2W，1. +V 2. GND

J7：Driver board power，1-2. GND 3-4. +36V

J8：Power Supply Input，1.+36V 2.GND

J9：Zero signal input PNP，1. +5V 2. Zero 3. 5VG

J11、21：Signals and power to sequins and simple reels 1 GND. 2.+5V 3.ADDL 4.CNAH 5.CNAL 6.+36V

J12： X-axis limit signal，1. X+(PNP) 2. +12V 3. GND 4.GND 5. GND 6. +12V 7. X-(PNP) ，When using a single optocoupler or proximity switch, XP is used as the feedback port. At the same time, short XN not connected to GND, otherwise it cannot be used

J13： Y-axis limit signal，1. Y+(PNP) 2. +12V 3. GND 4.GND 5. GND 6. +12V 7. Y-(PNP) When using a single optocoupler or proximity switch, YP is used as the feedback port. At the same time, short YN not connected to GND, otherwise it cannot be used

J14：Upper thread clamping electromagnet

J20：Positioning laser，1. +3.3V 2. GND

J23：To hook stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

J24：To thread trimming stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

J25：To lock head stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

J26：To color change stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

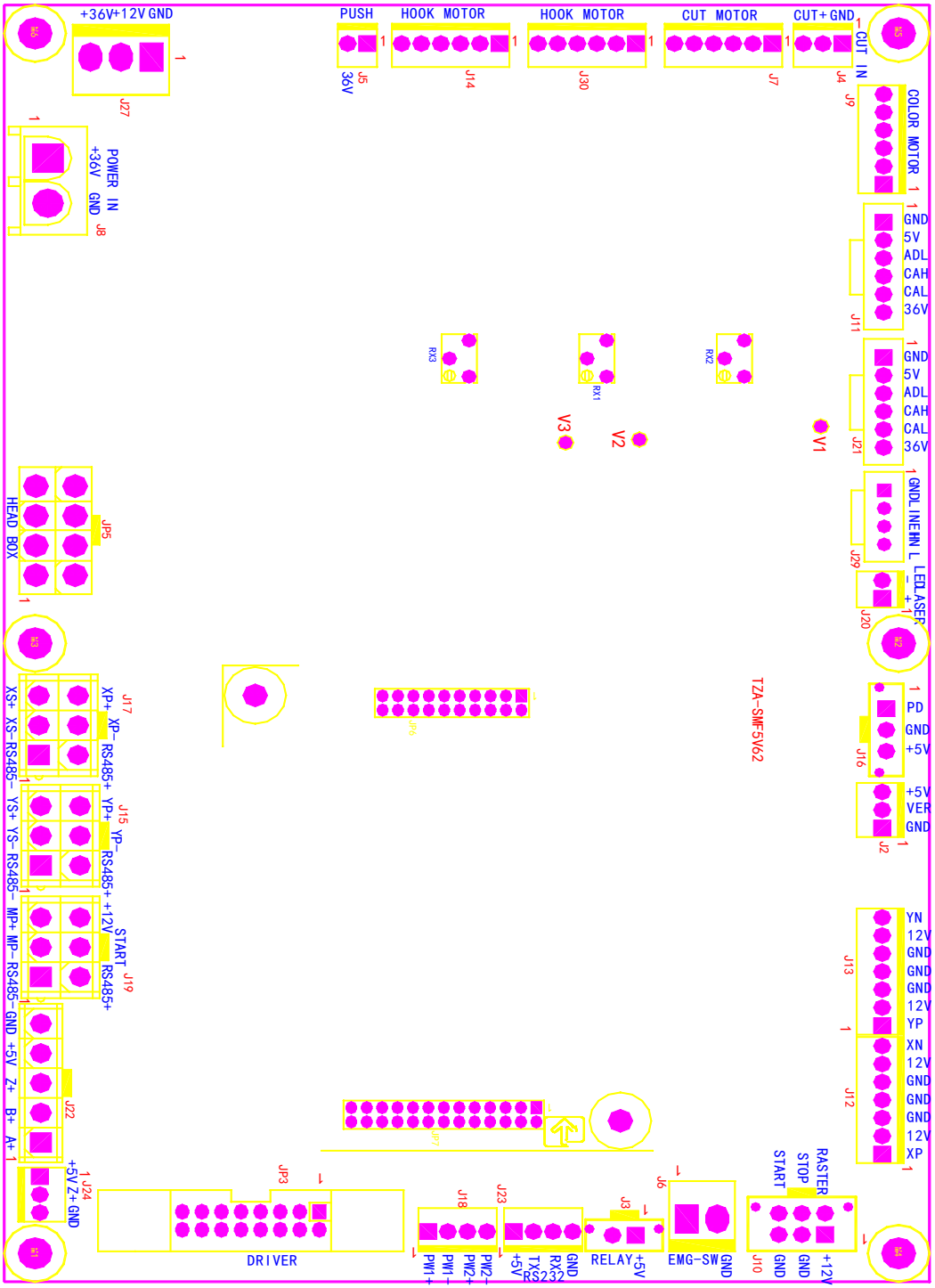
J27：Output 12V, 36V power supply (for connecting the headboard)，1.+36V 2.+12V 3.GND

J29：To the headboard, CAN communication signal, pin correspondence

JP4：16P control cable to driver board

JP5：Connect the power signal cable of the operation head display board

3.2 Multifunctional board interface diagram (SSMF5V6 * series)



J2：The needle position detector potentiometer，1.GND　2. Needle signal　3.+12V

J3：To Rocker Switch Relay，1. +5V　2. Control signal

J4：To trimmer proximity switch NPN，1.GND 2.+12V 3. Signal

J5：To push the electromagnet

J6：External emergency stop switch，1. Control signal 2. GND

J7：To thread trimming stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

J8：Power Supply Input，1.+36V 2.GND

J9：To color change stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

J10：External switch 1.+12V 2-3.GND 4. Raster or minor offset (NPN) 5.Stop(NPN) 6.Start(NPN)

J11、21：Signals and power to sequins and simple reels 1 GND. 2.+5V 3.ADDL 4.CNAH 5.CNAL 6.+36V

J12：X-axis limit signal，1. X+(PNP) 2. +12V 3. GND 4.GND 5. GND 6. +12V 7. X-(PNP) ，When using a single optocoupler or proximity switch, XP is used as the feedback port. At the same time, short XN not connected to GND, otherwise it cannot be used

J13：Y-axis limit signal，1. Y+(PNP) 2. +12V 3. GND 4.GND 5. GND 6. +12V 7. Y-(PNP) When using a single optocoupler or proximity switch, YP is used as the feedback port. At the same time, short YN not connected to GND, otherwise it cannot be used

J14、J30：To hook stepper motor，1.A1 2.NO 3.A2 4.B1 5.NO 6.B2

J15：To Y drive，1.485- 2.YS- 3.YS+ 4.485+ 5.YP- 6.YP+

J16：Hall needle position signal 1. Signal 2.GND 3.+5V

J17：To X drive，1.485- 2.XS- 3.YS+ 4.485+ 5.XP- 6.XP+

J18：Extended output, 1.PW1+ 2.PW1- 3.PW2+ 3.PW2-

J19：To spindle controller，1.485- 2.MP-（PULS-） 3.MP+ 4.485+ 5.START 6.+12V

J20：Positioning laser，1. +3.3V 2. GND

J22：Encoder input，1.A+ 2.B+ 3.Z+ 4.+5V 5.GND

J23：RS232 1.+5V 2.TX 3.RX 4.GND

J24：Zero signal input PNP，1. +5V 2. Zero 3. 5VG

J27：Output 12V, 36V power supply (for connecting the headboard)，1.+36V 2.+12V 3.GND

J29：To the headboard, CAN communication signal, pin correspondence

JP3：16P control cable to driver board

JP5：Connect the power signal cable of the operation head display board

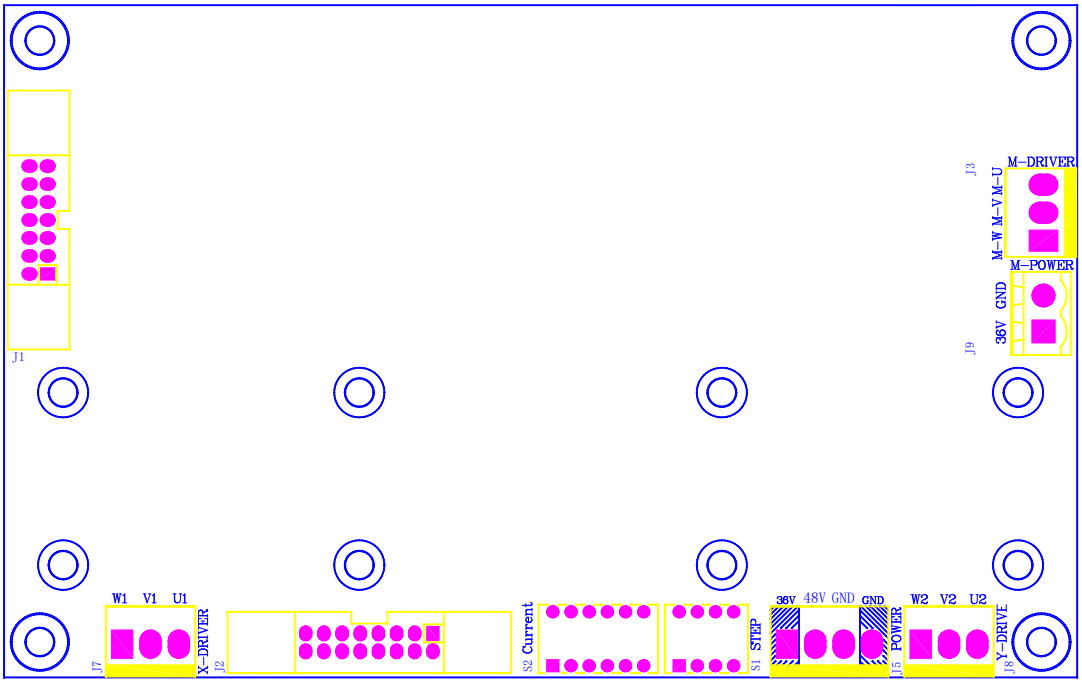
RX1：Trimming motor current adjustment potentiometer, decrease clockwise, increase counterclockwise (not adjusted by non-professionals), V2 is the voltage sampling point 0.5-1.8V (the higher the voltage, the greater the current)

RX2：Trimming motor current adjustment potentiometer, decrease clockwise, increase counterclockwise (not adjusted by non-professionals), V1 is the voltage sampling point 0.5-1.8V (the higher the voltage, the greater the current)

RX3：Trimming motor current adjustment potentiometer, decrease clockwise, increase counterclockwise (non-professionals do not adjust), V3 is the voltage sampling point 0.5-1.8V (higher voltage, higher current)

3.3 Three-in-one driver interface diagram

This driver has 2 power supply connection methods, which are used for single head and 2 heads. See text for details。



J1：Spindle encoder signal interface

J2：To multi-function board control signal interface

J3：Connected to the spindle motor，1.W　2.V　3.U

J5：Input power，Single head machine：1.+36V　2.+36V　3.GND　4.GND

2-head machine：1.NO　2.+48V　3.GND　4.NO

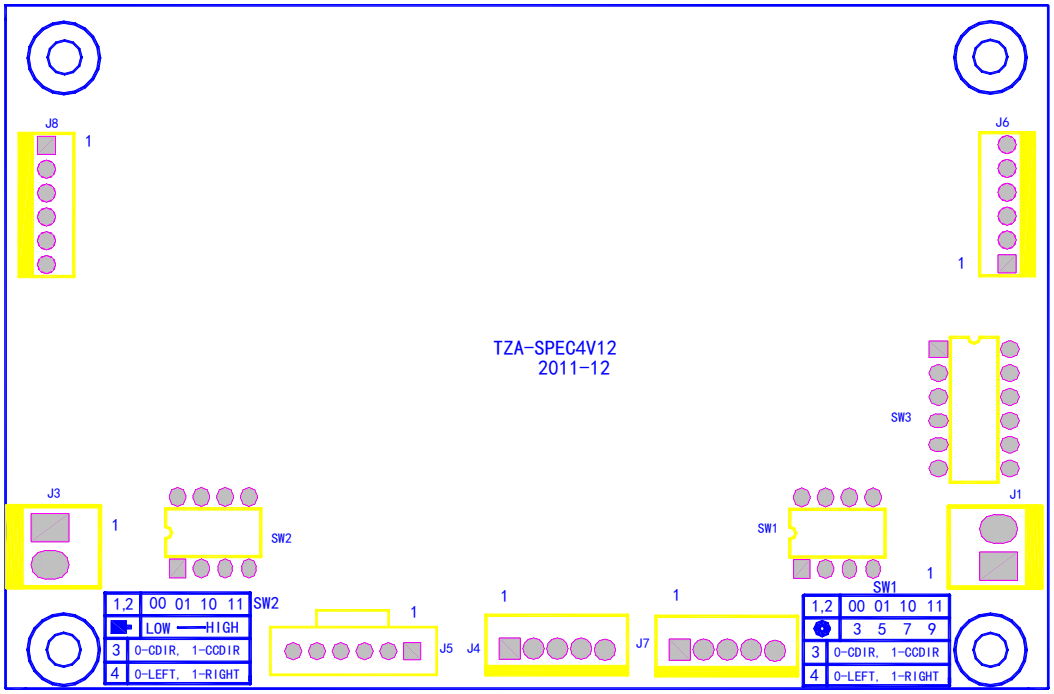
J7：X-axis stepper motor，1.W　2.V　3.U

J8：Y-axis stepper motor，1.W　2.V　3.U

J9：Input power (not used when single-headed)，1. +36V　2. GND

3.3 Motor pneumatic dual-purpose lifting gold plate interface diagram

This sequin plate can be installed as a single sequin with pneumatic lift or electric lift. When installing electric lifting, the fourth position of SW1 and SW2, that is, the left and right heads must be set the same, otherwise it will not work properly. For pneumatic lifting, both sides can be used.



J1：To the lift valve，　1.+12V　2. GND

J3：To the lift valve 1.+12V　2. GND

J4：To control switch

J5：To multi-board signal，1. GND.　2.+5V　3.ADDL　4.CNAH　5.CNAL　6.+36V

J6：To conveyor motor，1.A1　2.NO　3.A2　4.B1　5.NO　6.B2

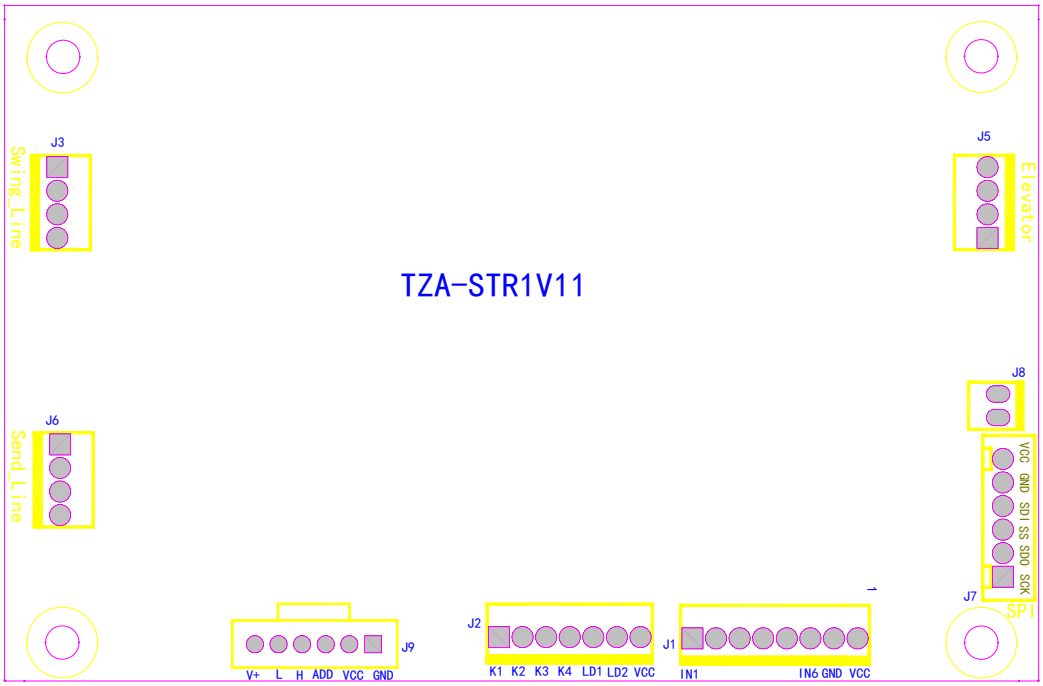
J7： Up and down detection, the first foot is empty when electric. Note: When using pneumatic, short the down position (blue) signal and GND (black). Otherwise, no film can be produced. When the upside down detection is reversed, the blue (4) and gray (5) lines are reversed.

J8：To lift motor，1.A1　2.NO　3.A2　4.B1　5.NO　6.B2

SW1-2：1. (SW2: ON lift motor holds the upper shaft, OFF does not hold the shaft) 2. Empty 3. Motor forward and reverse adjustment 4. Left and right sequin settings (ON left, OFF right, electric lift and double sequins should be set the same).

3.4 Motor pneumatic dual-purpose lifting rope embroidery board schematic diagram

Control board interface diagram:



J1：To the keypad，　1-6. Signal in place　7. GND　8.+V

J2：To the keypad，　1-4. Key signal　5-6. LED　7. +V

J3：To rotating electric machine，1.A1　2.A2　3.B1　4.B2

J5：To lift motor，1.A1　2.A2　3.B1　4.B2

J6：The wire feed motor，1.A1　2.A2　3.B1　4.B2

J7：Extension ports

J8：To the lift valve，1. +V 2. GND

J9： To multi-board signal， 1 .GND. 2.+5V 3.ADDL 4.CNAH 5.CNAL 6.+36V

Part IV Setting of Mechanical Parameters

The unique mechanical parameter setting greatly improves the compatibility of the control system and facilitates the customer's mechanical configuration.

In order to ensure the normal operation of the machine and the effect of embroidery, please configure the mechanical parameters correctly.

4.1 Mechanical parameter setting operation

In the main interface, press the  key to enter the parameter setting interface, and press the  key to enter the machine parameter interface.

The system displays the input password box, press the numeric key to enter the password 20110801, and press the 

key to enter.

Press the up and down keys or the number keys to modify, you can repeat the operation when you need to modify multiple parameters, and press the 

key to save after modification.

4.2 List of mechanical parameters

parameter name	Adjustable range
Max limit speed	700 — 1200RPM
Tread Broken Sensitivity	Head (head board), independent (sliding optocoupler) bottom inspection (double bottom inspection strip)
Main Driver Ratio	150-360（Default 192）
CutLine start Angle	260-320（Adjustable cutting length，Usually 270）
Hook start Angle	70-360（Default 200）This parameter is invalid when the motorized presser foot

Whether to open screenshots	YES、NO（Default NO）
Hook Run Angle	0-255（Default 100）
XY Pulse Frequency	1、2、4、8（Default 2，Matching with driver）
Manufacturers ID	According to customer settings (for identification of the dongle)
X Frame Control Type	F1-F3（Adjust according to model）
X Frame Move Angle	220-270（Adjust according to model）
X MoveFrame RepayTimes	0-9(Default 6)
Y Frame Control Type	F1-F3（Adjust according to model）
X Frame Move Angle	220-250（Adjust according to model）
X MoveFrame RepayTimes	0-9(Default 6)
Machine Type	MT(Horse head machine)、PT(Normal)1、PT2
Lock Mode	Motors and electromagnets (motors for horse head machines, electromagnets for general machines)
Lock Step	0-200（Use of stepper motor）
Raster mode	NPN、PNP、Off, minor offset（Default NPN）
CODE	F1-F3 （F1）
K1	350-510 （510）
Ks2	0-1024 （1024）
K2	250-450 （350）
M	250-450 （500）
N	250-450 （800）
Ks1	0-1024 （0）

Note: The parameters should be adjusted according to the peripheral equipment used by the customer. Can't recover.

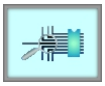
F1-F5 is adjusted according to the cooperation with the machine and the actual embroidery effect.

Part V System Test

This operation is mainly used by maintenance personnel to check whether the machine is working properly。

In the main interface, press the  key to enter the comprehensive setting interface, and press the  key to enter the system test interface. Enter the input test interface by default.

5.1 Input test

In the test interface, press the  key to enter the input test and check whether each item changes with the input status. If it does not change, the current input signal is faulty, please check and repair it. As shown in the figure:

5.2 Output test

In the test interface, press the  key to enter the input test, as shown in the figure:

Press the  key corresponding to each test item to see if the output is valid. If the device corresponding to the output does not operate, the current output is faulty, please check for repair.

Hook test: Each time the key is pressed, the hook knife alternates between extension and reverse return.

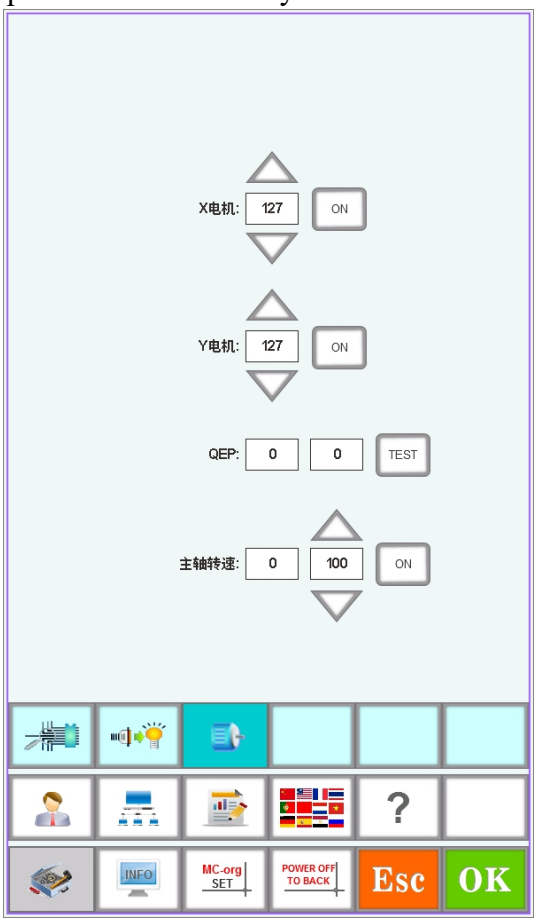
Thread trimming test: Each time the key is pressed, the thread trimming motor rotates for half a revolution to stop and then rotates for half a revolution in the same direction.

Buckle test: Press the button once, and the buckle solenoid will automatically disconnect after 2 seconds.

Sequin test: Press the button once, the sequin landing gear will descend, eject 3 times, and rise.

5.3 Axis test

In the test interface, press the  key to enter the axis test,



Press the  key corresponding to each test item to see if the output is valid. If the device corresponding to the output is not active, the current output is faulty, please check for repair.

XY axis test: press the up and down keys to modify the pulse number (1-127) of the motor movement. The default is 127 pulses. Press the  key to start moving back and forth.

Axis test: Press the  key to start the spindle at a speed of 100 rpm, and press the up and down keys to modify the spindle speed. Check whether the target speed is the same as the actual speed (within 1000 revolutions within 5 revolutions).

5.4 Machine head test (only used with machine head)

In the test interface, press the 

key to enter the head disconnection test, press the number keys to test the corresponding needle bar, and check whether the disconnection detection is valid. If the front output is faulty, please check for repair.

Bottom line detection: Turn the detection wheel, and the indicator light will flash with the speed.

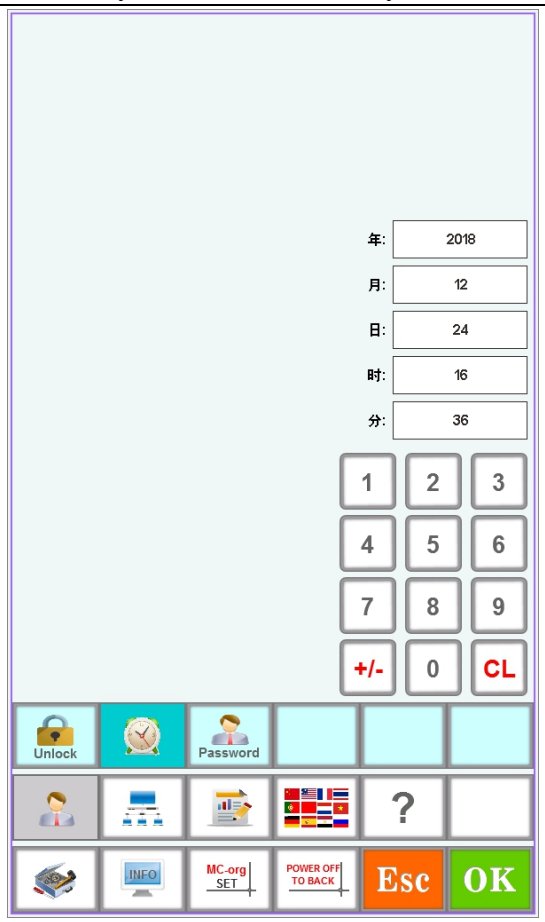
Choose upper or lower line test as needed.

Part VI User Management

On the main menu interface. Press the  key to enter the comprehensive setting interface, and press the  key to enter the user management interface. In this interface, you can set time settings and user restrictions. As shown in the figure:

6.1 Time setting

Press the  key to enter the time setting interface (if the device is turned on to restrict use, you cannot enter the time setting interface), as shown in the figure:



Set the current system time as required and press the 

key to save.

6.2 Generate serial number encryption and unlock with PC

When using a PC to generate a serial number for encryption, press the  key to enter the operation interface, as shown in the figure:

The machine expires because of restricted use. The system automatically locks the machine and prompts for the password to release the restriction. As shown in the figure:

After telling the device serial number to the device supplier, enter it after obtaining the release password from the supplier, and press the 

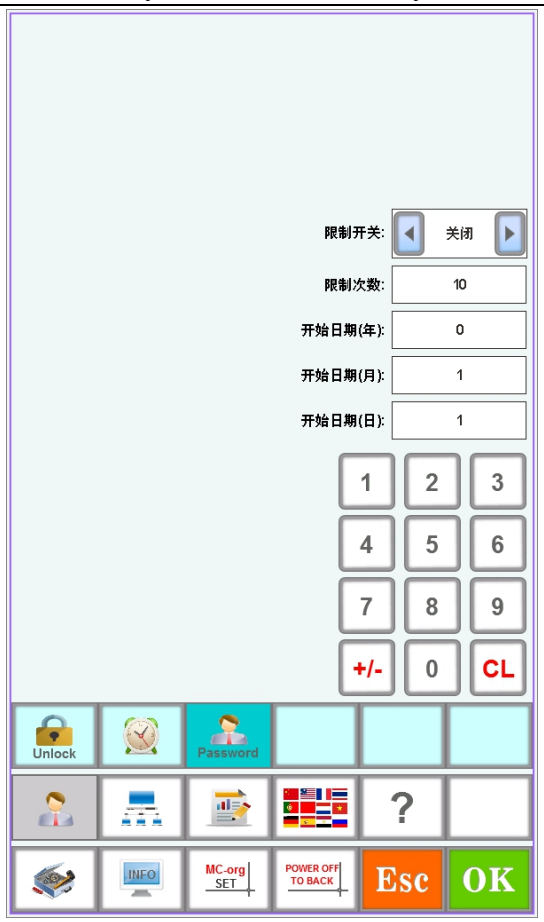
key to complete the unlocking of the current limit. The usage time will be reset after the release, 0 days is unlimited.

Please do not turn off the current device before obtaining the unlock password, otherwise the obtained password will not properly lift the restriction.

6.3 Use system to generate encryption and unlock

When using the serial number generated by the system for encryption, press the 

key to enter the operation interface. The system prompts for the management password. The default password is 11111111 when the restricted use is not enabled. It is automatically generated by the system after the restricted use is enabled One line ADMIN ********). As shown in the figure:



Set whether to enable and limit the time according to your needs. The time limit is set to take effect on the day of the month following the setting.

The start date (day) of the lock can only be used from 1-28 days.

A maximum of 36 periods can be set.

After the setting is completed, insert the USB flash drive and then press the OK key to save the current settings, and export the password generated by the system to the USB flash drive. If you do not insert a USB flash drive, an error will be prompted. At this point, you will exit without encryption.

The name of the text exported by the USB flash drive is the current system number. The first text content is the management password automatically generated by the system. This password can be used to enter the settings again. The rest are the unlock passwords corresponding to the set number of periods.

Decryption by stages and expiration of expiration. Press the  key to enter the operation interface and enter the encrypted serial number to release the restriction of the latest period.

Part VII Sequin Control Board and Switch Use Method

7.1 Motor lifting sequin control board

When using sequin embroidery, you must ensure that the "sequin use needle bar" parameter of the embroidery parameter has been set corresponding to the mechanical installation needle bar (close, left, right, left and right). The sequin type is set to "motor".

The output and lifting motor can use the DIP switch to adjust the rotation direction of the motor. When the motor is reversed, the third position of the DIP switch SW1 / SW2 can be adjusted.

You can choose whether to install the landing gear on the left or right nose. Switch the DIP switch SW1 / SW2 to the fourth position. The ON (0) direction is the left nose and the OFF (1) direction is the right nose.

Sequin size and lifting speed are set in the embroidery parameters.

When the sequin head switch is in the upper position, the indicator light is off to close the landing gear.

When the switch is in the neutral position, the upper indicator is green when the sequin embroidery has not been entered, and the landing gear is in the upper position, waiting for automatic control. When entering sequin embroidery, the landing gear is automatically lowered and the lower indicator light turns green. Both the up and down lights are green.

When the switch is turned from the neutral position to the lower position, the upper indicator light is off, the lower indicator light is green, and the landing gear is in the lower position. Press the red button to switch the switch once, and the ejection motor will eject the film once.

The installation method of the left and right double sequins is the same, you only need to match the last digit to the assembly position.

7.2 Cylinder lifting sequin control board

When using sequin embroidery, you must ensure that the "sequin use needle bar" parameter of the embroidery parameter has been set corresponding to the mechanical installation needle bar (close, left, right, left and right). Sequin lifting type is set to "cylinder".

The output motor can use the DIP switch to adjust the rotation direction of the motor. When the motor is reversed, the third position of the DIP switch SW1 / SW2 can be adjusted.

You can choose whether to install the landing gear on the left or right nose. Switch the DIP switch SW1 / SW2 to the fourth position. The ON (0) direction is the left nose and the OFF (1) direction is the right nose.

Part VIII Common faults and troubleshooting methods

Error message	Error message	Error message
Communication timeout or multifunction board 1/2 communication timeout	1. Failure of signal line connection between operation head and multi-function board 2. The multi-function board does not match the operation head 3. Damage of multi-function board	3. Damage of multi-function board 2. Replace the multi-function board 3. Replace the multi-function board
Touch screen no response	1.The touch screen plug has bad contact 2. The touch screen is damaged	1. Replug the touch screen 2. Replace the touch screen
Touch screen drift (touch position misaligned)	1. Aging touch screen 2. The touch screen is damaged	1. Recalibrate the position of the touch screen 2. Replace the touch screen
The main axis is not 100 degrees	Spindle stop is not 100 degrees	Point or manually turn the spindle to 100 degrees
The spindle is not turn	1. Spindle controller has no signal or power input 2. Spindle motor has no power input or input error 3. The controller or spindle motor is damaged	1. Check the signal line or power line of the spindle controller 2. Check the input power of spindle motor 3. Replace the controller or motor
The spindle inversion	1. Parameter setting of servo controller is wrong 2. The encoder A/B is inversely connected	1. Reset the parameters of the servo controller 2. Adjust the A/B phase connection of the encoder
There is no zero	1. Zero signal board is damaged 2. Zero to multi-function board connection cable failure	1. Zero-position plate 2. Check or replace the connection cable
Color change the timeout	1. The color changing motor does not work 2. The color changing mechanism is stuck 3. The cable connecting the color changing motor to the power supply panel fails	1. Check the color changing motor or connection cable 2. Repair or replace stuck mechanical parts 3. Check or replace the connection cable

No needle position	1. Needle position detection potentiometer position error 2. The potentiometer is damaged 3. Fault of potentiometer to multi-function board cable	1. Adjust the position of needle detection potentiometer 2. Replace the potentiometer 3. Replace or overhaul cables
X motor driver error	1.X drive overvoltage or overcurrent protection 2. Drive damaged	1. Check the input power of the driver and repower it 2. Replace the drive
Y motor driver error	1.Y drive overvoltage or overcurrent protection 2. Drive damaged	1. Check the input power of the driver and repower it 2. Replace the drive
The cutting line is not in place	1. Proximity switch detection is not in place 2. Proximity switch is damaged	1. Manually adjust the shear link to position 2. Replace proximity switch
The shear motor does not work	1. Bad contact of motor plug or cable 2. Damage of multi-function board 3. Motor damage	1. Check the cable or plug and reinsert the plug 2. Replace the multi-function board 3. Replace the motor
The hook motor does not work	1. Bad contact of motor plug or cable 2. Damage of multi-function board 3. Motor damage	1. Check the cable or plug and reinsert the plug 2. Replace the multi-function board 3. Replace the motor
Lock head fault (pin bar falling)	1. Bad contact of motor plug or cable 2. Damage of multi-function board 3. Motor damage 4. Mechanical dislocation or stuck	1. Check the cable or plug and reinsert the plug 2. Replace the multi-function board 3. Replace the motor 4. Repair the mechanical part
Gold sheet pin position error	Incorrect setting of gold sheet needle rod	Reset the color change order
Fault detection abnormal	1. The optocoupler installation position is not correct 2. The optical coupling plate is damaged 3. Fault of cable or plug from optocoupler board to multi-function board 4. Damage of multi-function board 5. The setting of embroidery parameter "surface line breakage	1. Readjust the installation 2. Replace the optical coupling plate 3. Test the cable and reinsert the plug 4. Replace the multi-function board 5. Adjust embroidery parameters correctly

	detection" or "bottom line breakage detection" is wrong	
Flower version mismatch	1. Error of flowerplate data 2. The speed is too high 3. Low XY drive current 4. Mechanical failure	1. Test flower plate 2. Lower spindle speed 3. Adjust the drive current or change the pin step value 4. Repair the mechanical part
+X limit error	+X limit	Manually move the embroidery box in the opposite direction
-X limit error	-X limit	Manually move the embroidery box in the opposite direction
+Y limit error	+Y limit	Manually move the embroidery box in the opposite direction
-Y limit error	-Y limit	Manually move the embroidery box in the opposite direction