KONMEIT

独立伺服送纱控制器用户手册

Independent Servo Yarn Feeding Controller User Manual

康美特（厦门）智控科技有限公司

KONMEIT(XIAMEN) TECHNOLOGY CO., LTD

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简介

Introduction

感谢您选用康美特公司产品，为确保本产品达到您期望的最佳表现，请您务必充分熟悉了解其特点和功能，使用本产品前请仔细阅读本操作手册。该手册包含使用产品前必须注意的重要指导信息。

Thank you for choosing KONMEIT products. In order to ensure that this product achieves the best performance, please be fully familiar with its features and functions, and read this operation manual carefully before using this product. This manual contains important instructions that must be observed before using the product.

本手册是产品不可分割的一部分，产品的所有人发生变化时，本手册必须一并转交新的所有人。

This manual is an integral part of the product. When the owner of the product changes, this manual must be handed over to the new owner.

本手册仅供参考，可能与实际产品略有不同。

This manual is for reference only and may differ slightly from the actual product.

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注意事项

PRECAUTIONS

1. 智能伺服送纱控制器必须在开启的情况下才能摇动机器，否则会断纱；

Only when the intelligent servo feeding controller is started can users operate on the joystick, otherwise, it will cause yarn breakage.

2. 准确输入针筒总针数；

Users have to accurately input the total number of needles;

3. 准确输入输纱器纱轮周长；

Users have to accurately input perimeters of yarn feeder wheels;

4. 准确输入马达齿轮齿数；

Users have to accurately input the gear tooth number of motors;

5. 准确输入输纱器齿轮齿数；

Users have to accurately input the gear tooth number of yarn feeder;

6. 传动比。

Transmission ratio;

以上参数务必准确输入，否则出来纱长会不准确。

Please make sure that all the parameters above are input accurately, otherwise, the yarn length output won't be precisely correct.

一 智能伺服送纱控制器介绍

I.Introduction to Intelligent Servo Yarn Feeding Control System

1.1 智能伺服送纱控制器概览/Intelligent Servo Yarn Feeding Control System

- 型号：KMT-AV1

  Model Number：KMT-AV1

- 旋转按钮/确认键(SET)：设置导航选择，参数设置确认，转动旋转按钮到所需要图像或单元格，按压旋转按钮确认选择和设置。

  Knob/Confirm Button (SET)：Set navigation choice. Confirm parameter settings, rotate the knob to choose image or cell, and press to confirm or set.

- 电源开关 0/I：打开/关闭控制器的电源。

  Power Switch 0/I：Turn ON/OFF for controller power supply.

- INTERFICE 1：输入 1 端口。

  INTERFICE 1：Input 1 port.

- INTERFICE 2：输入 2 端口。

  INTERFICE 2：Input 2 port.

（图1-1）

（1-1）

1.2 旋钮操作说明/**Descriptions of Knob Operation**

1）旋钮操作对应功能/Corresponding functions of knob operation：

旋钮样式/Knob： 

旋钮支持操作/Support operations of：旋转点按/rotate and press;

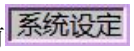
旋转按钮：顺/逆时针旋转旋钮可以切换界面内或操作项的可选内容；

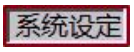
Rotate the knob：Rotate counterclockwise/clockwise to switch interfaces or choose other optional contents;

点按旋钮：点按可以对当前选中的项目或内容进行确认。

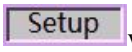
Press the knob：Press to confirm chosen project or content;

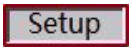
2）按键或模块选中/Knob Confirm and Confirm Module：

按钮选中：如<系统设定>按钮的选中。选中前 

（按钮最外围为淡色方框），选中后 

（按钮最外围变为深色方框），点按旋钮确定执行操作。

Knob Confirm: For example,if <Setup> is chosen, the light colored frame of 

will turn dark 

Press the knob to confirm.

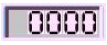
功能模块选中：如<系统>模块选中。选中前 
<系统>模块的图标底色为蓝色，选中后  ，其底色切换为橙色，点按旋钮确定进入页面。

Choose function module: For example, if <System> is chosen, the blue icon  of system will turn orange  . Press the knob to enter the page.

3）复选框勾选/取消/Tick/Untick Checkbox：

复选框勾选：使用旋钮选中复选框后，点按旋  （钮图标内打 √）表示启用对应的功能项，再按一次取消  (图标内 √ 消失)，表示取消该功能的使用。

Tick checkbox：Rotate the knob to choose the checkbox, press the knob to tick the checkbox  , meaning that the corresponding function is chosen, press again to untick the checkbox  , meaning that the corresponding function is not chosen.

数值参数设定：选中参数设定框并确认后 

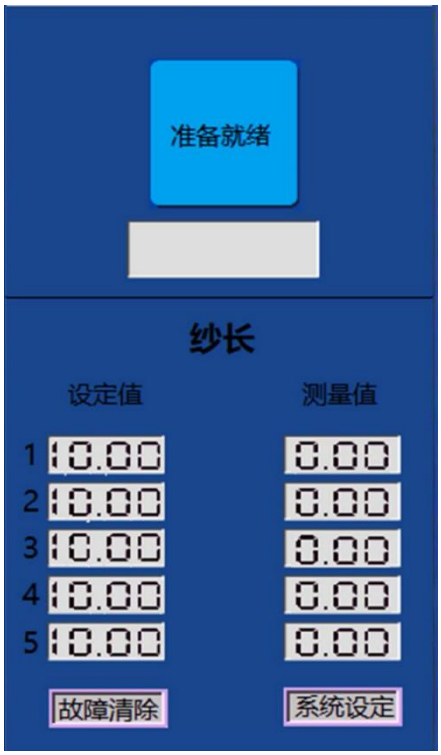
，第一位会在空白与初始值之间来回闪烁，表示当前设置数值的第一位。旋转旋钮选中预设数值后再次点按旋钮，此时第一位数值设定完成，将自动跳转设定第二位。相同操作设定后续全部数值即可。

Parameter Settings: Rotate to choose parameter set box 

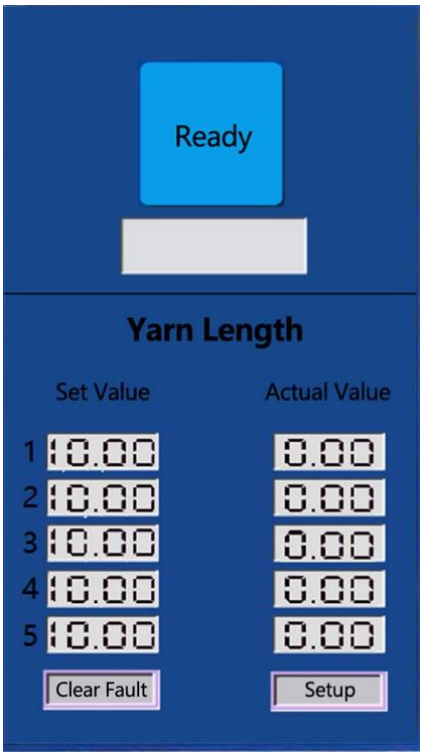
, press to confirm chosen figure for setting. When a digit blinks, it means that you are currently setting it, rotate the knob to preset the value and press the knob again to confirm. Users can set other digits in the same way.

1.3 页面模块功能（主页面）

1.3. Main Interface



(图1-2)



(1-2)

1. 状态显示 Status Display	显示当前控制器的状态，与故障代码<2>关联使用。 Display current status of the controller. Corresponding to <2. Fault Code>.
2. 故障代码 Fault Code	正常状态为空白，异常时显示故障代码，与系统状态<1>关联使用。 Normally, the box is blank. It displays fault code when there is an anomaly. Corresponding to <1.Status Display>.
3. 电机编号 Motor ID	为对应伺服送纱电机的电机编号（ID）。 Motor ID of the corresponding servo yarn feeding motor.
4. 设定值 Set Value	显示一号电机所设定的纱长值，2 所对应的设定值表示显示二号电机所设定的纱长值，3.4.5 以此类推。 Display setting yarn length value for the corresponding motors, for example, set value in 2 displays yarn length value for NO.2 motor, and so forth.
5. 测量值 Actual Value	显示一号电机实时纱长，2 所对应的测量值表示二号电机实时纱长，3.4.5 以此类推。 Displays real-time value of yarn length. For example, actual value in 2 displays measured value of yarn length of NO.2 motor, and so forth.
6. 故障清除 Clear Fault	根据系统状态或错误代码提示排查完毕后，触发<故障清除>按钮，此时系统将尝试恢复到正常状态。 After eliminate all faults according to the system status and fault codes, trigger <Clear Fault> to return the system to a normal state.
7. 系统设定 Setup	选中点按进入系统设定界面。 Press to enter system setting interface

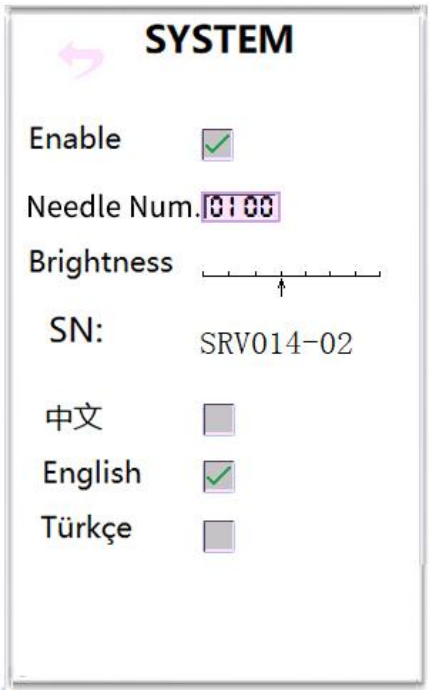
2. 1 系统设置

2.1 System setting:

1. 选中  设定，点按旋钮进入系统设置页面（图 1-4）。

Choose  , press the knob to enter the system setting page (see picture1-4).

（图 1-4）



（1-4）

1）**启用**：选中并勾选<启用>对应的复选框，表示开启控制系统。

Enable: Choose and tick <Enable> checkbox, meaning that the control system is enabled.

2）**针数**：按高位到低位逐一设定数值。表示机器的实际织针数目，需根据实际情况设定。

Needle Num.: Set needle number from the first digit to the fourth digit one by one. It means used needle number in a certain distance. For example, set length to 1cm, and needle number to 100, it means that in 1cm wide fabric there are 100 needles of yarn.

3）**亮度**：选中后根据需求设置屏幕的亮度。

Brightness: Set screen brightness according to your need.

4）SN：为系统软件版本号。

SN：Yarn feeding software version number.

5）**语言选择**：勾选语言后对应的复选框，表示选择当前语言（当前为中文）。

Language: Tick the corresponding checkbox behind the language you need.

6）**参数保存**：当前界面参数一经设定立即生效，但仍未长期存储。返回上一页面，方可触发配置参数存储，直至下一次更改保存。

Save: Parameters in this page immediately take effect after setting, but have been not stored yet. Choose and press to confirm to return to the previous page, and it triggers long-term storage for configuration parameters.

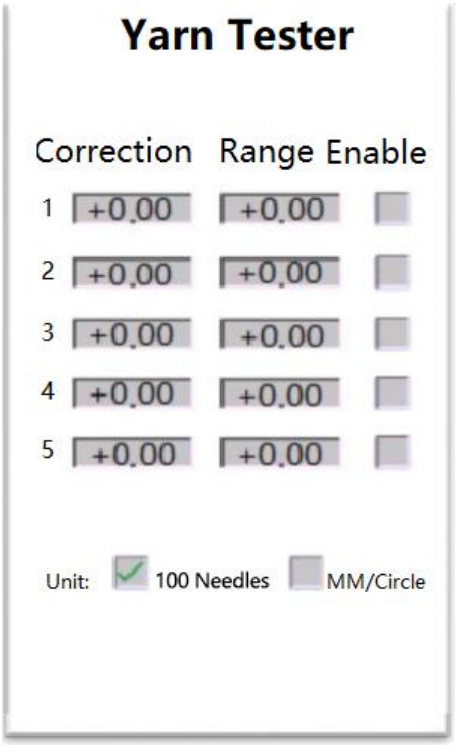
2.2 测纱

2.2 Yarn Tester

选中测纱，并进入测纱页面（图1-5）。

Choose and press to enter the page (see picture1-5).

（图 1-5）



（1-5）

1）**校正**：实测纱长与显示纱长存在误差时，可调整相应通道的校正值来修正误差。若需要校正，校正值=实测纱长-当前显示纱长，校正后，显示纱长就会与实际纱长相符。

Correction: When there is an error between actual yarn length and displayed yarn length, users can adjust *correction value* for the corresponding channel to correct the error. Correction=displayed yarn length-actual yarn length.

例：1号电机实测的纱长为 8.20，而显示的的纱长值是8.00，8.20 - 8.00 = +0.20，则1号电机对应的校正值为+0.20 。

For example: Corresponding yarn length value of NO.1 motor displays 8.20, but the actual yarn length is 8.00, 8.20 - 8.00 = +0.20, then the correction value for NO.1 motor is +0.20

注：此校正值必须在纱长设定值与实际测量纱长值计算确认无误的情况下才可设置。

NOTE: Correction value must be set under the situation that yarn length setting value and actual yarn length value are precisely correct.

2）**偏差**：设定相对应电机通道纱长在允许偏差范围内的最大值与最小值。

Range: Set allowable error range for yarn length in the corresponding motor channel.

例：1号电机的设定纱长值为10，<校正>值为0，<偏差>设为0.02，那么实际纱长在9.98-10.02之间均不会触发报警。该数值单位参数 在<单位>项目（当前为“CM/百针”）。

For example: Set detected yarn length in the NO.1 motor to10, correction value to 0, and range to 0.02, then actual yarn length ranging from 9.98 to 10.02 won’t trigger the alarm. Set <Unit> for parameter (cur. “CM/100 Needles”).

3）**启用**：设定相应通道测纱异常报警停车是否启用，<校正>项设定立即生效，<偏差>项设定后若不启用，其数值将没有意义。

Enable: Tick to set alarm stop for abnormal yarn length in the corresponding channel. If the checkbox is unticked, <Range> value is meaningless, but <Correction> value take immediate effect.

4）**单位**：根据用户习惯，选择合适的纱长显示单位。

Unit: According to users’ habit, choose proper display unit for yarn length.

5）**参数保存**：当前界面参数一经设定立即生效，但仍未长期存储。返回上一页面，方可触发配置参数存储，直至下一次更改保存。

Save: Parameters in this page immediately take effect after setting, but have been not stored yet. Choose  and press to confirm to return to the previous page, and it triggers long-term storage for configuration parameters.

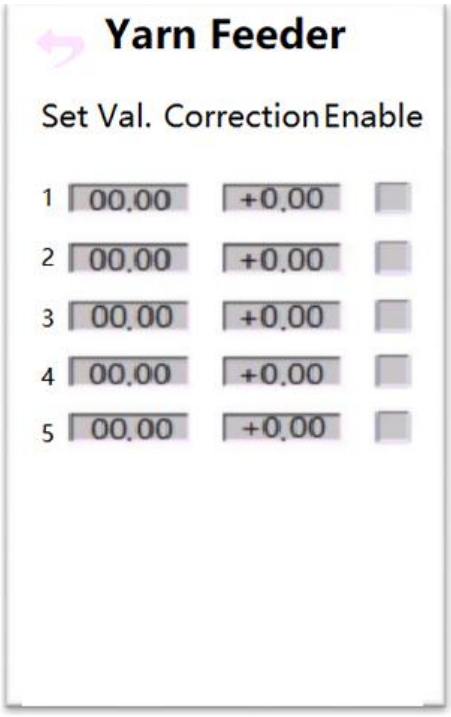
2. 3 送纱

2.3 Yarn Feeder

选中  送纱，并进入送纱页面（图 1-6）。

Choose  for yarn feeding and enter the page (see picture 1-6).

（图 1-6）



（1-6）

1）**送纱值**：设定相对应电机通道的伺服送纱纱长值，单位必须与<测纱>页面中<单位>的设定值保持一致。

Set Val.: Set yarn length for servo yarn feeding in the corresponding motor channel. The unit must be consistent with <Unit> value in <Yarn Tester>.

2）**校正值**：实测纱长与设定纱长存在误差时，可调整相对应电机通道的校正值来修正误差。校正值 = 实测纱长值 - 设定纱长值。

Correction: When there is an error between actual yarn length and setting yarn length, users can adjust the correction value in the corresponding motor channel to correct error. Correction=actual yarn length-setting yarn length.

例：设定的纱长值为 12，实测纱长值为 12.03，那么校正值为：12.03 - 12 = 0.03。将该数值填入对应伺服电机的<校正值>内即可。

For example: Set yarn length to 12, and the actual yarn length detected is 12.03, then the correction is 12.03-12=0.03. Then enter the correction value for the corresponding servo motor.

3）**启用**：控制相对应电机通道的伺服送纱功能的开启与关闭。

Enable: Tick/Untick to turn ON/OFF servo feeding function in the corresponding motor channel.

4）**参数保存**：当前界面参数一经设定立即生效，但仍未长期存储。返回上一页面，方可触发配置参数存储，直至下一次更改保存。

Save: Parameters in this page immediately take effect after setting, but have been not stored yet. Choose and press to confirm to return to the previous page, and it triggers long-term storage for configuration parameters.

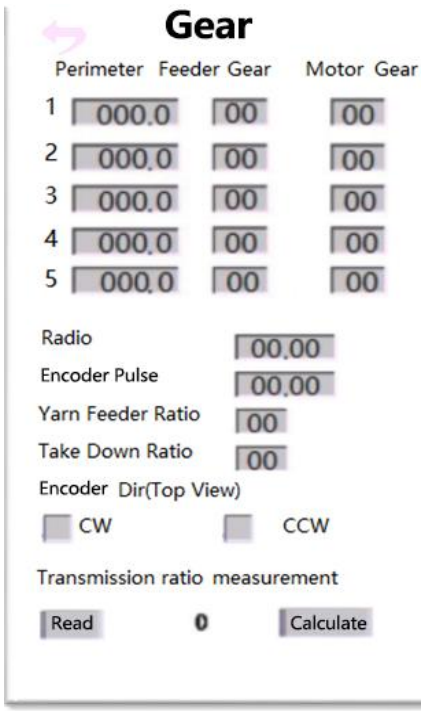
2.3 齿轮

2.3 Gear

选中配置，进入齿轮页面(图1-9)。

Choose for gear settings (see picture 1-9).

（图 1-9）



（1-9）

1）**周长**：设定对应电机通道的测纱器所对应的输纱器纱轮的周长值，单位为MM。

Perimeter: Set yarn feeder wheel perimeter of yarn testers in the corresponding motor channel. Unit:MM.

2）**输纱齿**：设定相对应电机通道的输输纱器纱 轮齿数（适用 1-5 通道）。

Yarn Feeder Tooth: Set gear tooth of the yarn feeder wheel in the corresponding channel (NO.1-5 channel).

3）**电机齿**：设定相对应电机通道的马达齿轮齿数（适用 1-5 通道）。

Motor Gear: Set gear tooth number for motors in the corresponding channels (NO.1-5 channel).

4）**传动比**：大盘旋转一圈与编码器旋转圈数的比例关系（编码器旋转圈数n:大盘旋转1圈，比值n即为传动比数值）；

Ratio: Indicate proportional relationship between encoder pulse and beam revolution. For example, when the beam turn a circle, and simultaneously encoder pulse frequency is 9, then the ratio is 9.

5）**编码线数**：编码器旋转一圈产生的脉冲数；

Encoder Pulse: Pulse frequency per encoder revolution.

6）**送纱分频**：表示编码器多少个脉冲对应送纱电机的一个有效脉冲；

Yarn Feeder Ratio：Indicate how many encoder pulse frequency equals to an effective yarn feeder motor pulse.

7）**卷布分频**：表示编码器多少个脉冲对应卷布电机的一个有效脉冲；（该功能仅在配备卷布机的设备上启用！）

Takedown Ratio: Indicate how many encoder pulse frequency equals to an effective takedown motor pulse (This function can only be used in machines equipped with KONMEIT's takedown).

8）**编码器方向（顶视图1-10）**：配置编码器的安装方向；

Encoder Dir(Top View picture 1-10): Choose direction for installed encoders.

9）**传动比测定**:

Transmission ratio measurement :

① **开机检查**：进行传动比检测前需确保机器具备开机条件，直接开机运行可能导致出现断纱的情况。

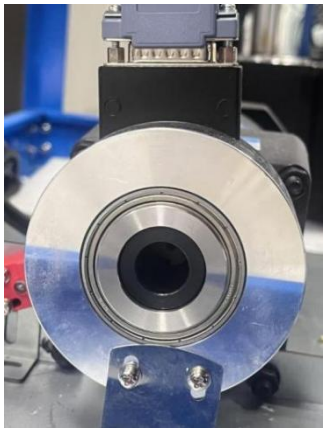
Startup Check: Before measuring transmission ratio, please make sure that the machine is in condition for startup, otherwise, it will cause yarn breakage.

② 设置机台运转两圈，到转停止后，确认<读取>。

Set machine revolution to 2, when the machine reaches setting revolution and stops, confirm<Read>.

③ 再设置机台运转10圈，到转停止后，再次确认读取<读取>，最后选中<计算>，此时传动比的参数自动写入到<传动比>。

Set machine revolution to 10, when the machine reaches the setting revolution and stops, and confirm <Read> again, and then choose and confirm <Calculate>, then the transmission ratio value will be automatically written to <Transmission Ratio>.



（编码器顶视图 1-10）

(Encoder Top View 1-10)

10）**参数保存**：当前界面参数一经设定立即生效，但仍未长期存储。返回上一页面，方可触发配置参数存储，直至下一次更改保存。

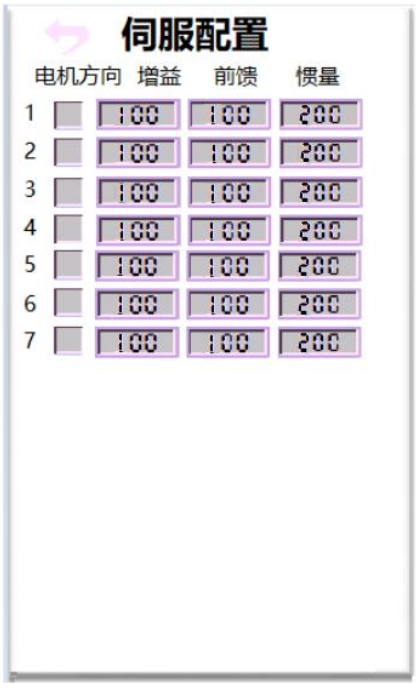
Save: Parameters in this page immediately take effect after setting, but have been not stored yet. Choose and press to confirm to return to the previous page, and it triggers long-term storage for configuration parameters.

2.4 伺服配置

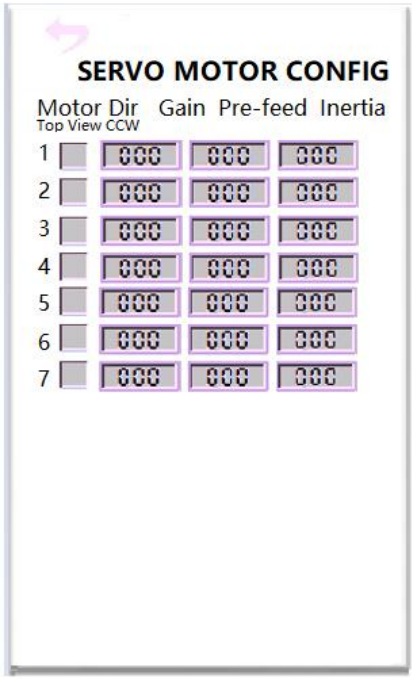
2.4 Servo Configuration

选中  配置，并进入配置页面(图1-11)

Choose  to enter servo configuration settings (picture 1-11)



（图 1-11）



（1-11）

1）**电机方向**:对应通道电机方向（正转、反转）。

Motor Dir: Indicate direction of the corresponding motor (Forw/Rev).

2）**增益**：数值过大系统容易震荡不稳定，过小响应迟缓。推荐值：100。

Gain: Too high value will lead to instability of motor, while too low value will lead to slow responding. Recommended value: 100.

3）**前馈**：速度前馈有助于减轻系统的反馈环路负担，降低因控制增益设置不当造成的过冲和振荡，从而提高系统的整体性能。推荐值：100。

Pre-feed: Feedforward of velocity is useful in alleviating burdens to the system feedback loop, reducing vibration and overshoot due to inappropriate gain setting and improving system’s performance. Recommended value: 100.

4）**惯量**：电机在旋转时所具有的惯性大小。推荐值：200。

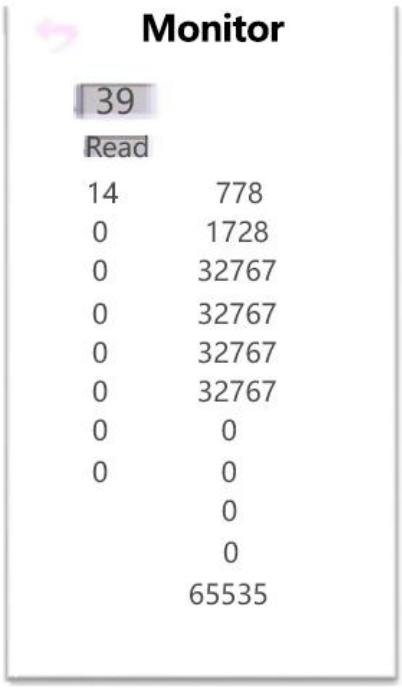
Inertia: The inertia that a motor possesses when it is rotating. Recommended value: 200.

2.5 监视

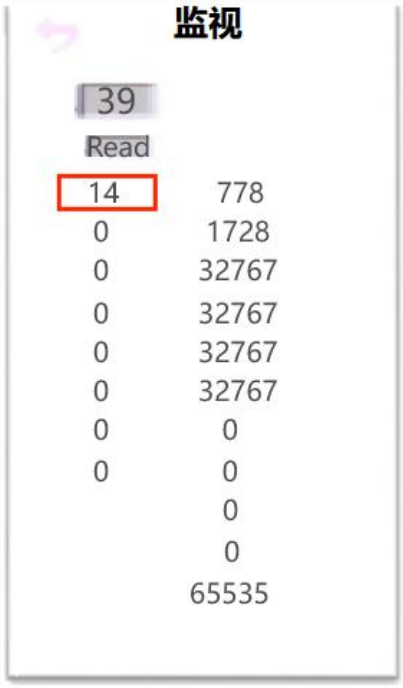
2.5.Monitor

选中  （监视），点按进入监视页面(图 1-12)。

Choose  and press to enter monitor page(1-12)



（图 1-12）



（1-12）

该页面用于显示电子齿轮部分反馈值。

The page is used to display feedback value of electronic gear and other system feedback value.

1) 首列显示值（39 为例）：软件版本号。

Display value in the first column(eg. 39): Software version number.

2) 次列显示值：表示当前通道电子齿轮值。

Display value in the second column:Indicate electronic gear value in the corresponding channel.

3) 操作说明：例如获取软件版本号。

Operation Description: take, acquiring software version number, for example.

进入界面后，先后配置需要访问的 ID：39 的十位和个位数后，选中<读取>项后确认，此时第一行返回数据红色批注中的“14”，便是当前使用的送纱板程序的版本号；

After entering the interface, users need to enter tens digit and ones digit of the ID respectively, and press <Read> to confirm, at the same time, the returned data “14” is displayed at the first row, which shows the version number of the yarn feeding plate program；

注：id 38、40、42、43仅在搭配卷布机系统中使用。

NOTE: ID38,40,42,43 can only be used in machines equipped with KONMEIT's take-down system.

ID	功能/Function	单位/Unit
0	读取电机速度/Read motor velocity	Rpm
1	读取速度指令值/Read speed command value	Rpm
2	读取内部转矩指令/Read inner torque command	N·m
34	读取伺服驱动器错误代码/Read servo drive fault code	-
36	读取纱长数据/Read yarn length data	-
37	读取送纱电机脉冲数据/Read yarn feeding motor pulse data	-
38	读取监控卷布脉冲发送报表/Read software version number	-
39	读取软件版本号/Read actual gear value takedown channel	-
40	读取卷布通道实际齿轮值/Read actual gear value takedown channel	-
42	读取卷布实时张力监控值/Read real-time rolling tension value	-
43	读取布匹称重值/Read fabric weight value	0.01kg

二 电气连接图

II. Electronic Circuit

2.1 INTERFICE 1 端口及 INTERFICE 2 端口接线图(表 2-1、表 2-2)

2.1 Wiring Diagram of INTERFACE 1 and INTERFACE 2 (Table 2-1,2-2)

线号/Line	颜色/Color	DB9 公插头(INTERFICE 1) DB9 COM（INTERFICE 1）	端口功能/Interface Function
1	红/RED	24VDC-IN	直流供电+(DC24V) DC / power supply+ (DC24V)
2	蓝/BLUE	RS485-A	485 通讯 A/485 Communication A
3	绿/GREEN	RS485-B	485 通讯 B/485 Communication B
4	棕/BROWN	FAULT	输入故障信号/Input fault signal
5	黑/BLACK	COM	直流供电-/DC power supply-
6	粉/PINK		
7	灰/GRAY		
8	白/WHITE		
9	黄/YELLOW		

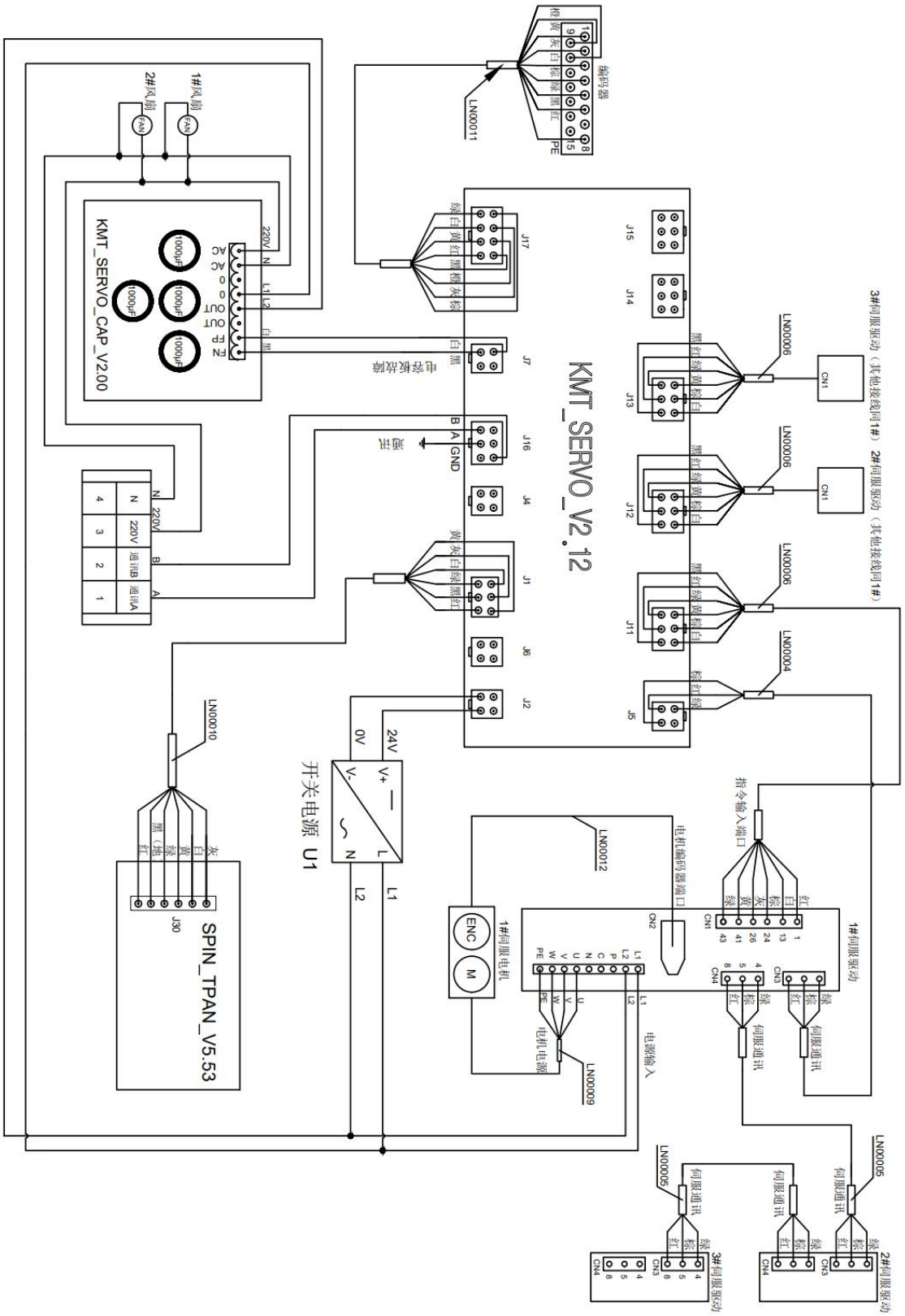
(表 2-1/Table 2-1)

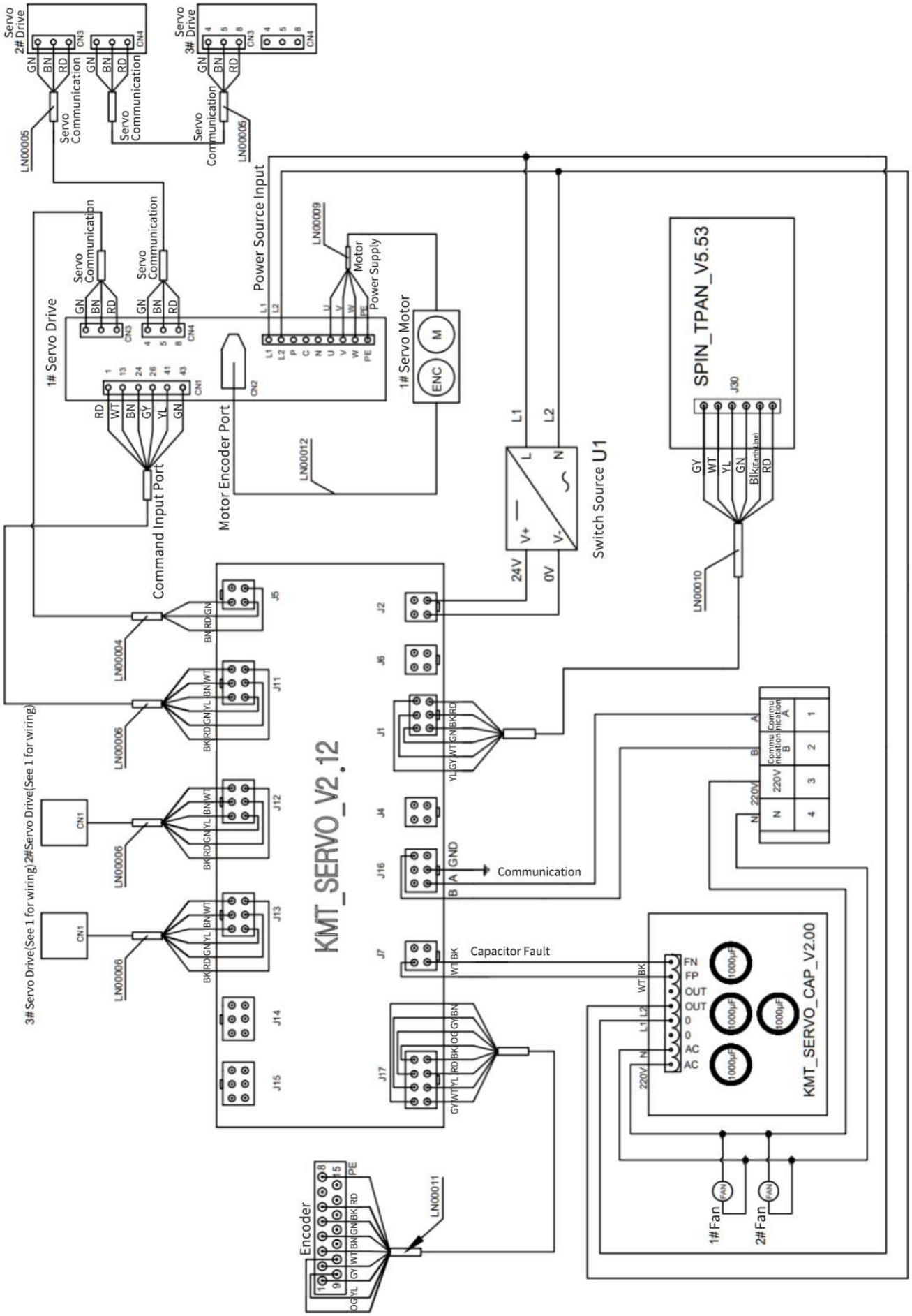
线号/Line	颜色/Color	DB9 母插头(INTERFICE 2) DB9 COM（INTERFICE 2）	端口功能/Interface Function
1	红/RED		
2	蓝/BLUE	NC	故障输出常闭/Fault output, normally closed
3	绿/GREEN	COM	故障输出公共端/Fault output, COM
4	棕/BROWN	NO	故障输出常开/Fault output, normally open
5	黑/BLACK		
6	粉/PINK		
7	灰/GRAY		
8	白/WHITE		
9	黄/YELLOW		

(表 2-2/Table 2-2)

2.2 伺服通讯板接线图（图 2-1）

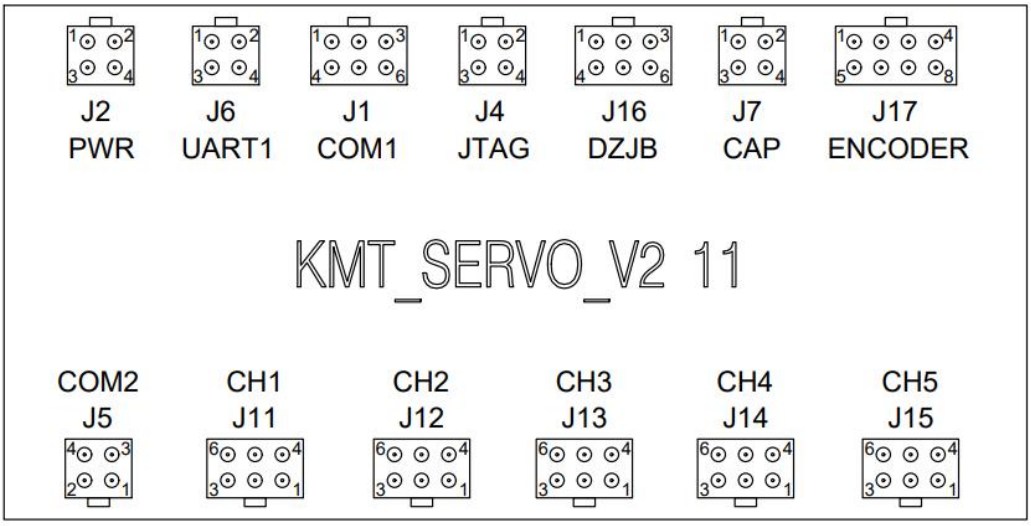
2.2 Servo Communication Board Wiring Diagram（Picture 2-1）




Servo 2# Drive
Servo 3# Drive
Servo Communication
LN00005
1# Servo Drive
Power Source Input
Motor Power Supply
LN00009
1# Servo Motor
SPIN_TPAN_V5.53
Command Input Port
Motor Encoder Port
LN00012
Switch Source U1
24V
0V
LN00010
LN00004
LN00006
2#Servo Drive(See 1 for wiring)
3#Servo Drive(See 1 for wiring)
KMT_SERVO_V2.12
Communication
Capacitor Fault
KMT_SERVO_CAP_V2.00
1000μF
1#Fan
2#Fan
Encoder
LN00011

2. 3 通讯板端子介绍

2.3 Introduction to Interfaces on Communication Board



编号/NO.	部件名称/Component Name	说明/Description
1	J2 (PWR)	①24V ②GND ③NC ④NC
2	J6 (UART1)	①24V ②RXD ③TXD ④GND
3	J11 (COM1)	①V ②GND ③A ④B ⑤F ⑥N
4	J16 (DZJB)	①V ②GND ③A ④B ⑤P+ ⑥P-
5	J7 (CAP)	①N ②F ③N ④GND
6	J17 (ENCODER)	①A+ ②B- ③+Z ④+V ⑤A- ⑥B- ⑦-Z ⑧-G
7	J5 (COM2)	①GND ②B ③A ④V
8	J11 (CH1)	①GND ②F ③P- ④P+ ⑤Z- ⑥Z+
9	J12 (CH2)	①GND ②F ③P- ④P+ ⑤Z- ⑥Z+
10	J13 (CH3)	①GND ②F ③P- ④P+ ⑤Z- ⑥Z+
11	J14 (CH4)	①GND ②F ③P- ④P+ ⑤Z- ⑥Z+
12	J15 (CH5)	①GND ②F ③P- ④P+ ⑤Z- ⑥Z+

三. 故障代码

III. Fault Code

3.1 电子送纱故障代码

3.1 Electronic Yarn Feeding Fault Code

代码/ Code	故障原理/Fault Cause	解决方案/Solution
1000	伺服通道 1：<伺服控制线 1>连接异常 Servo Channel 1：<Servo Control Line 1> connection anomaly	确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>尝试恢复。 Make sure that connecting terminals are well connected to exclude disconnection fault,click <Clear Fault> to retry after eliminating all issues
12XX-18XX （XX 为任意数值） (XX is a random number)	伺服通道 1：<伺服控制线 2>连接异常 Servo Channel 1：<Servo Control Line 2> Connection anomaly	同上/Ditto
1CXX （XX 为任意数值） (XX is a random number)	伺服通道 1：<伺服控制线 2>连接异常 Servo Channel 1：<Servo Control Line 2> Connection anomaly	同上/Ditto
1E99	伺服通道 1：伺服驱动器报警 Servo Channel 1：Servo servo drive alarm	打开机箱，查看对应通道伺服驱动器上显示的报警代码，根据代码查询<伺服驱动器故障排查>手册进行处理。 Open the case to check the alarm code on the corresponding channel of servo drive and see <Servo Drive Troubleshoot> manual for reference according to the code;
2000	伺服通道 2：<伺服控制线 1>连接异常 Servo Channel 2：<Servo Control Line1> Connection anomaly	确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>尝试恢复。 Make sure that connecting terminals are well connected to exclude disconnection fault,click <Clear Fault> to retry after eliminating all issues
22XX-28XX （XX 为任意数值） (XX is a random number)	伺服通道 2：<伺服控制线 2>连接异常 Servo Channel 2：<Servo Control Line 2> Connection anomaly	同上/Ditto
2CXX （XX 为任意数值） (XX is a random number)	伺服通道 2：<伺服控制线 2>连接异常 Servo Channel 2：<Servo Control Line 2> Connection anomaly	同上/Ditto
2E99	伺服通道 2：伺服驱动器报警 Servo Channel 2：Servo servo drive alarm	打开机箱，查看对应通道伺服驱动器上显示的报警代码，根据代码查询<伺服驱动器故障排查>手册进行处理。 Open the case to check the alarm code on the corresponding servo drive and see <Servo Drive Troubleshoot> manual for reference according to the code;
3000	伺服通道 3：<伺服控制线 1>连接异常 Servo Channel 3：<Servo Control Line1> Connection anomaly	确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>尝试恢复。 Make sure that connecting terminals are well connected to exclude disconnection fault,click <Clear Fault> to retry after eliminating all issues

32XX-0x38XX (XX 为任意数值) (XX is a random number)	伺服通道 3：<伺服控制线 2>连接异常 Servo Channel 3：<Servo Control Line 2> Connection anomaly	同上/Ditto
3CXX (XX 为任意数值) (XX is a random number)	伺服通道 3：<伺服控制线 2>连接异常 Servo Channel 3：<Servo Control Line 2> Connection anomaly	同上/Ditto
3E99	伺服通道 3：伺服驱动器报警 Servo Channel 3：Servo servo drive alarm	打开机箱，查看对应通道伺服驱动器上显示的报警代码，根据代码查询<伺服驱动器故障排查>手册进行处理。 Open the case to check the alarm code on the corresponding servo drive and see <Servo Drive Troubleshoot> manual for reference according to the code;
4000	伺服通道 4：<伺服控制线 1>连接异常 Servo Channel 4：<Servo Control Line 1> Connection anomaly	确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>尝试恢复。 Make sure that connecting terminals are well connected to exclude disconnection fault,click <Clear Fault> to retry after eliminating all issues
42XX-48XX (XX 为任意数值) (XX is a random number)	伺服通道 4：<伺服控制线 2>连接异常 Servo Channel 4：<Servo Control Line 2> Connection anomaly	同上/Ditto
4CXX (XX 为任意数值) (XX is a random number)	伺服通道 4：<伺服控制线 2>连接异常 Servo Channel 4：<Servo Control Line 2> Connection anomaly	同上/Ditto
4E99	伺服通道 4：伺服驱动器报警 Servo Channel 4：Servo servo drive alarm	打开机箱，查看对应通道伺服驱动器上显示的报警代码，根据代码查询<伺服驱动器故障排查>手册进行处理 Open the case to check the alarm code on the corresponding servo drive and see <Servo Drive Troubleshoot> manual for reference according to the code;
5000	伺服通道 5：<伺服控制线 1>连接异常 Servo Channel 5：<Servo Control Line1> Connection anomaly	确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>尝试恢复。 Make sure that connecting terminals are well connected to exclude disconnection fault,click <Clear Fault> to retry after eliminating all issues
52XX-58XX (XX 为任意数值) (XX is a random number)	伺服通道 5：<伺服控制线 2>连接异常 Servo Channel 5：<Servo Control Line 2> Connection anomaly	同上/Ditto
5CXX (XX 为任意数值) (XX is a random number)	伺服通道 5：<伺服控制线 2>连接异常 Servo Channel 5：<Servo Control Line 2> Connection anomaly	同上/Ditto
5E99	伺服通道 5：伺服驱动器报警 Servo Channel 5：Servo servo drive alarm	打开机箱，查看对应通道伺服驱动器上显示的报警代码，根据代码查询<伺服驱动器故障排查>手册进行处理。 Open the case to check the alarm code on the corresponding servo drive and see <Servo Drive Troubleshoot> manual for reference according to the code;

B700	1、<储能电容通信线>连接异常 <Energy-Storage Capacitor Communication line> Connection anomaly 2、<储能电容板>工作异常 <Energy-Storage Capacitor Board> abnormal work	1、确认接线端子接触良好，排除断线故障，清除故障重试； Make sure that connecting terminals are well connected, eliminate disconnection fault and retry after troubleshooting; 2、确认储能电容模组动力进线电压正常，接线可靠； Make sure power line for energy-storage capacitor has access to normal voltage supply and is well connected; 确认<储能电容低压供电线>接线可靠，24V 直流电压正常。 Make sure that <energy-storage capacitor low voltage power line > is well connected and has normal access to 24V DC voltage power supply;
B800	1、<编码器连接线>连接异常 <Encoder Connection Line> Connection anomaly 2、驱动板提供给编码器的供电异常 Drive board abnormal power supply to encoder	1、确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>尝试恢复。 Make sure that connecting terminals are well connected to exclude disconnection fault,click <Clear Fault> to retry after eliminating all issues; 2、更换驱动板。 Replace drive board;
B810	1、编码器信号屏蔽层功能失效 Encoder signal shield layer lose efficacy; 2、编码器轴心进入灰尘棉絮等异物 Encoder shaft center is blocked by dust and other foreign matters;	1、确认屏蔽层连接良好； Make sure that the shield layer is well connected; 2、排除异物，清洁，做好简易防棉絮措施。 Clear all foreign matters and clean, apply preventive maintenance in case that the encoder is blocked again;
B820	1、编码器信号屏蔽层功能失效 Encoder signal shield layer loss efficacy; 2、编码器轴心进入灰尘棉絮等异物 Encoder shaft center is blocked by dust and other foreign matters;	同上/Ditto
A700	等待机器停机后再确认代码 Wait until the machine stops and check the code	No treatment needed
B0XX （XX 为任意数值） (XX is a random number)	1、<通信板>未正常上电工作 Take-down system responding anomaly 2、<通信线 1>连接异常 Too low takedown pulse dividend ratio	1、根据电气原理图，排查供电异常； Exclude power supply anomaly according to wiring diagram 2、确认接线端子接触良好，排除断线故障，排查问题后，主页面点击<故障清除>试恢复。 Make sure that terminals on both sides of the slip ring are well connected, retry after eliminating disconnection fault;
B1XX （XX 为任意数值） (XX is a random number)	<通信板>与主机通信异常 Take-down communication anomaly at runtime	同上/Ditto
B301	1、<通信板>供电异常 <Communication Board> power supply anomaly 2、<通信板>软件失效复位 <Communication Board>software loss efficacy	1、根据电气原理图，排查供电异常。 Exclude power supply anomaly according to wiring diagram 2、确认硬件版本/软件版本是否为最新版本。 Make sure that hardware/software is the latest version

（表 3-1/Table 3-1）

3.2 主页面状态

3.2 Main Interface Status

主页面状态 Status on Main Interface				
注释 Description	机器上电初始化中 The machine is initializing during power-on	机器初始化完毕/故障清除完毕 Machine initializing finishes/All faults cleared	无故障运行中 Running in no-fault condition	纱长超出设定值 Yarn length exceeds setting value
主页面状态 Status on Main Interface				
注释 Description	<启用>关闭 <Enable> OFF	故障状态 Fault		

(表 3-2/Table 3-2)

注：若面板<测纱器>报警，首先检查各通道送纱电机是否正常启用。其次是<测纱>页面中的<校正>项和<偏差>项的数值是否设定。若均已设定，需检查设定数值是否有误。其他故障请参照“伺服驱动器故障代码处理办法”（表 3-1、表 3-3、表 3-4），执行问题排查并尝试解决。

NOTE: When <Yarn Sensor> on the panel alarms, please check if all yarn feeding motor in each channel is normally enabled. Secondly, check values in <Correction> and <Error> in <Yarn Tester> are already set. If the values have already set, please check if all the setting values are correct. For other faults please see table 3-1,3-3 and 3-4 for reference.

3.3 伺服驱动器故障代码及处理方法

3.3 Servo Drive Fault Code and Treatment

当驱动器发生故障时，将停止运行，出现异常的驱动器的数码管将显示相应的故障代码，请根据“伺服驱动器故障处理办法”排除故障。

When drive fault occurs, the machine will stop running, and the fault code will be displayed on the digital tube on the corresponding servo drive. Please eliminate the fault according to *Fault Code.*

故障清除方式说明/Descriptions for Fault Clearance Method：

电源重置（重启）：关闭驱动器电源，等待 3 分钟后，再上电。

Power Reset**:** Turn off drive power for 3 minutes before re-powering.

注意：在清除故障前，请确认驱动器的使能信号已经无效（伺服驱动器的数码管显示“rdy”字样表示驱动器上电就绪但未使能，“run”字样表示上电就绪并且已经使能），以免电机突然运转发生危险。

NOTE: Please make sure that drive enable signal is invalid before clearing the fault (if digital tube on the servo drive displays “rdy” , it means that the drive is ready to be charged but not yet enabled, while “run” means that the drive is enabled and ready to be charged) in case that the motor runs suddenly, leading to dangerous situation.

伺服驱动器故障的处理方法 1-重启/更换

Troubleshooting Method for Servo Drive 1- Restart/Replace

(表 3-3/Table 3-3)

代码/ **Code**	产生机理/**Cause**	解决措施/**Treatment**
E101.0	H02 及以上功能码参数异常 Abnormal parameter for H02 and above function code	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E101.1	H00/H01 组参数异常 Abnormal parameter for H00/H01group	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E101.2	参数总个数变化读写时地址异常 Address abnormality during read/write due to change in total number of parameters	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E101.9	功能码属性初始化校验异常 Initialization checksum error for function code attributes	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E102.0	FPGA 通信建立的异常 FPGA abnormal communication connection	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E102.1	FPGA 初始化启动异常 FPGA initialization startup anomaly	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E102.8	FPGA 与 MCU 版本号不匹配 FPGA and MCU version number mismatch	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E104.1	MCU 运行超时(MCU 死机) MCU running timeout (MCU crash)	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E104.2	FPGA 运行超时（FPGA 死机） FPGA running timeout (FPGA crash)	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E104.4	MCU 指令更新超时 MCU command refresh timeout	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.0	无法识别的编码器类型 Cannot recognize encoder type	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.1	无对应型号电机 No corresponding type motor	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.2	无对应型号驱动器 No corresponding type drive	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.9	电机与驱动器电流匹配错误 Motor and drive current type mismatch	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.6	FPGA 与电机型号不匹配 FPGA and motor model mismatch	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.7	机型参数校验错误 Model parameter checksum error	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E120.8	结温参数校验错误 Junction temperature parameter checksum error	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E136.0	编码器 ROM 电机参数校验异常 Encoder ROM motor parameter checksum error	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive

E136.1	编码器 ROM 电机参数读取异常 Encoder ROM motor parameter read anomaly	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E150.2	Buffer 5V 电压检测异常 Buffer 5V voltage detection anomaly	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E150.3	STO 输入电路硬件诊断失败 Hardware diagnosis failure of STO input circuit	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E150.4	PWM Buffer 硬件诊断失败 Hardware diagnosis failure of PWM Buffer	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E500.2	FPGA 位置反馈脉冲过速 FPGA position feedback pulse overspeed	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E122.1	DI 功能分配故障 DI function allocation fault	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E122.2	DO 功能分配故障 DO function allocation fault	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E122.3	旋转模式上限过大 Excessive upper limit in the rotation mode	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E122.4	VDI 功能分配故障 VDI function allocation fault	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E122.5	DI 和 VDI 功能分配重复 DI and VDI redundant function allocation	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E150.0	STO 进入安全状态 STO enter safety state	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E150.1	STO 输入状态异常 STO enter safety state	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E208.2	编码器通讯超时 Encoder communication timeout	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E208.4	FPGA 电流环运算超时 FPGA current loop calculation timeout	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E500.1	速度反馈溢出 Speed feedback overflow	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E640.1	续流二极管结温过高 Excessive junction temperature of freewheeling diode	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E650.0	散热片温度过高 Cooling plate overheat	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E661.0	STune 调整失败 STune adjustment failure	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E662.0	ETune 调整失败 ETune adjustment failure	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E663.0	ITune 调整失败 ITune adjustment failure	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E664.0	共振过大 Excessive resonance	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive

E731.0	编码器电池失效 Encoder battery loss efficacy	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E733.0	编码器多圈计数错误 Encoder multi-turn count error	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E735.0	编码器多圈计数溢出 Encoder multi-turn count overflow	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E740.0	编码器通讯超时 Encoder communication timeout	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E740.2	绝对值编码器错误 Absolute encoder error	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E740.3	绝对值编码器单圈解算错误 Absolute encoder error for single-turn calculation	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E740.6	编码器写入故障 Encoder write fault	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E760.0 /E765.0	编码器过热/尼康编码器过热或过速 Encoder overheat/Nikon encoder overheat or overspeed	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
E994.0	站号冲突 Station number conflict	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
EA33.0	编码器读写校验异常 Encoder read and write checksum error	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
EB01.0	位置指令增量过大 Excessive position command increment	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
EB01.1	位置指令增量单次过大 Excessive single position command increment	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
EB01.3	指令溢出 Command overflow	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
ED02.0	Modbus 通讯超时 Modbus communication timeout	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
ED03.0	CANLink 掉线 CANLink disconnection	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
ED04.0	CANopen 通信超时 CANopen communication timeout	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
ED05.0	CANopen 通信恢复初始化 CANopen communication reset to initialization	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
ED08.0	CANopen 总线 PDO 传输长度错误 PDO transmission length error on CANopen COM	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive
ED11.0	Canopen 同步周期误差过大 Excessive synchronization period error for CANopen	重启，若无法解决则需要更换伺服驱动器 Restart; if the issue persists, replace the servo drive

伺服驱动器故障的处理方法 2-异常处理

Troubleshooting Method for Servo Drive 2- Treatment

● E101.0：H02 及以上功能码参数异常

E101.0：Abnormal parameter for H02 and above function code

产生机理：参数的总个数发生变化，一般在更新软件后出现；H02 组及以后组的参数参数值超出上下限，一般在更新软件后出现。

Cause：Generally, changes in the number of parameters occurs after software updates.The situation that parameter value for H02 and above group exceeds upper and lower limits generally occurs after software updates.

代码/ Code	故障/Fault	产生机理/Cause	解决措施/Treatment
E201.0	P 相过流 Overcurrent in phase P	1. 增益设置不合理，电机振荡 Unreasonable gain setting, motor jitters	1. 电机参数设置错误，更改电机参数； Motor parameter setting error, change motor parameter; 2. 电流环参数异常，重新调整电流环参数； Abnormal parameter for current loop, adjust the parameter; 3. 速度环参数异常，伺服产生震荡； Abnormal parameter for speed loop, servo motor jitters; 4. 伺服驱动器异常，需更换伺服驱动器。 Servo drive anomaly, users need to replace the servo drive.
		2. 编码器接线错误、老化腐蚀，编码器插头松动 Encoder wiring errors, aging or corrosion, encoder plug loose.	重新焊接、插紧或更换编码器线缆。 Re-welding, tighten the plug, replace encoder cable.
		3. 制动电阻过流 Braking resistor overcurrent	重新选择制动电阻阻值和型号； 重新接线。 Re-choose resistance and model for braking resistor; re-wiring
		4. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E201.1 /E201.2	U 相过流 /V 相过流 Overcurrent in phase U/V	1. 电机线缆接触不良 Motor cable poorly connected	紧固有松动、脱落的接线。 Tighten cables that are loosen or dropped.
		2. 电机线缆接地 Motor cable grounding	绝缘不良时更换电机。 Replace the motor if there is poor insulation.
		3. 电机 U V W 线缆短路 Motor cables of U,V,W shorted	正确连接电机线缆。 Connect the motor cables correctly.
		4. 电机烧坏 Motor burnout	1. 正确连接电机线缆； Connect the motor cables correctly; 2. 不平衡则更换电机。 Replace the motor if there is imbalance
E201.4	N 相过流 Overcurrent in phase N	1. 增益设置不合理，电机振荡 Unreasonable gain setting, motor jitters	进行增益调整。 Adjust gain value
		2. 编码器接线错误、老化腐蚀，编码器插头松动 Encoder wiring errors, aging and corrosion, encoder plug loose.	重新焊接、插紧或更换编码器线缆。 Re-welding, tighten the plug, replace encoder cable.

		3. 制动电阻过流 Braking resistor overcurrent	重新选择制动电阻阻值和型号；重新接线。 Re-choose resistance and model for braking resistor; re-wiring
		4. 制动电流与相电流叠加导致过流 Overcurrent due to overlay of braking current and phase current.	增大加减速时间。 Increase decelerating time
		5. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E210.0	输出对地短路 Output shorted to ground	1. 伺服驱动器动力线缆(U V W)对地发生短路 Servo drive power line(U V W) shorted to ground.	重新接线或更换伺服驱动器动力线缆。 Re-wiring or replace servo drive power line.
		2. 电机对地短路 Motor shorted to ground	更换电机。 Replace motor
		3. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
		4. 对地检测时电机速度过高。 Motor overspeed in grounding detection	降低电机转速 Reduce motor speed
E234.0	飞车 Runaway	1. U V W 相序接线错误 U V W phase order wiring error	按照正确 U V W 相序接线。 Wiring correctly according to U V W phase order.
		2. 上电时，干扰信号导致电机转子初始相位检测错误 Motor rotor initiate phase detection error due to interference signal during power-on.	重新上电。 Power back on.
		3. 编码器型号错误或接线错误 Encoder model error or wiring error	更换为相互匹配的伺服驱动器及电机，采用汇川 SV630P 伺服驱动器与 18bit 伺服电机时，应确保 H00.00=14101。 重新确认电机型号，编码器类型，编码器接线。 Replace with servo drive and motor that match each other, please make sure that H100.00=14101, when using INOVANCE SV630P servo drive and 18bit servo motor; Re-confirm motor model, encoder type and encoder wiring.
		4. 编码器接线错误、老化腐蚀，编码器插头松动 Encoder wiring errors, aging and corrosion, encoder plug loose.	重新焊接、插紧或更换编码器线缆。 Re-welding, tighten the plug, replace encoder cable.
		5. 参数设置不合理导致伺服振动过大 Servo over-vibrate due to unreasonable parameter.	重设置合适的参数避免伺服运行振动过大。 Reset parameter in order to stop servo from over-vibrating.
		6. 垂直轴工况下，重力负载过大 Under vertical axis working condition, gravity overload	减小垂直轴负载，或提高刚性，或在不影响安全和使用的前提下，屏蔽该故障。 Reduce vertical axis load, improve its rigidity, or shield the fault without compromising safety or usability.

E320.0	制动电阻过载 Braking resistor overload	制动电阻的累积热量超过制动电阻最大热容量 Braking resistor accumulated heat exceeds its maximum heat capacity.	1.检查母线电压是否过高造成制动电流过大； Check if braking current is too high due to over-high voltage on the bus cable; 2.避免电机被反向拖动，造成制动电流过大； Avoid that the motor is dragged in a reversed direction, leading to too high braking current; 3.更换伺服驱动器。 Replace servo drive
E400.0	主回路电过压 Main circuit over-voltage	1.主回路输入电压过高 Main circuit too high voltage	按照左边规格，更换或调整电源。 Replace or adjust power source according to the specification on the left.
		2.电源处于不稳定状态，或受到了雷击影响 Power source is unstable, or impacted by thunderbolt strike	接入浪涌抑制器后，再接通控制电和主回路电，若仍然发生故障时，则更换伺服驱动器。 After connected with the surge suppressor, connect control power and main circuit power. If faults still occur, please replace servo drive.
		3.制动电阻失效 Braking resistor loss efficacy	1.若阻值“∞”(无穷大)，则制动电阻内部断线； If impedance value is an infinity number, or ∞, it means that the there is a disconnection in the braking resistor; 2.若使用内置制动电阻，则调整为使用外接制动电阻(H02.25=1/2)，并拆除P ⊕ 、D之间短接线，电阻阻值可选为与内置制动电阻一致，电阻功率需不小于内置制动电阻； If built-in braking resistor is used, please use external braking resistor(H02.25=1/2), and disassemble the wire between P ⊕ and D. Users can choose impedance value that is consistent with the built-in braking resistor, and resistance power that is no less than built-in breaking resistor for the braking resistor. 3.若使用外接制动电阻，则更换新的电阻，重新接于P ⊕ 、C之间； If external braking resistor is used, please replace it with a new one. Install the new one between P ⊕ and C; 4.务必设置H02.26(外接制动电阻功率)、H02.27(外接制动电阻阻值)与实际使用外接制动电阻参数一致。 Please make sure that H02.26(external braking resistor power) and H02.27(external braking impedance value) is set in consistent with the using external braking resistor parameter.

		4. 外接制动电阻阻值太大，最大制动能量不能完全被吸收 Too high impedance value of externally connected braking resistor, maximum impedance value power cannot by fully absorbed	1. 更换外接制动电阻阻值为推荐值，重新接于 P+、C-之间； Replace external braking resistor with recommended impedance value, and install it between P+and C-; 2. 务必设置 H02.26(外接制动电阻功率)、H02.27(外接制动电阻阻值)与实际使用外接制动电阻参数一致。 Please make sure that H02.26(external braking resistor power) and H02.27(external braking impedance value) is set in consistent with the using external braking resistor parameter.
		5. 电机运行于急加减速状态，最大制动能量超过可吸收值 Motor is operating in a dramatic decelerating status, maximum braking power exceeds absorbable amount.	首先确保主回路输入电压在规格范围内，其次在允许情况下增大加减速时间。 First of all, please make sure that input voltage for main circuit is with specification range, and then increase time for acceleration and deceleration under allowable condition.
		6. 母线电压采样值有较大偏差 Big error of bus cable voltage sample value	咨询汇川技术支持。 Please contact INOVANCE for technical support
		7. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E410. 0	主回路电欠压 Main circuit under-voltage	1. 主回路电源不稳或者掉电 Main circuit unstable power supply or disconnected	提高电源容量。 Increase power capacity.
		2. 发生瞬间停电 Instant power cut occurs	
		3. 运行中电源电压下降 During runtime, power source voltage drop	
		4. 缺相，应输入 3 相电源运行的伺服驱动器实际以单相电源运行 Phase loss, servo drive that would otherwise operates under 3-phase power source is operating under single-phase power source.	更换线缆并正确连接主回路电源线：三相：R S T 。 Replace wires and connect to power source cable on the main circuit correctly: 3 phases:R S T
		5. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E410. 1	主回路断电 Main circuit power off	运行中电源断开 Power source disconnected during runtime	1. 提高电源容量。 Increase power capacity; 2. 更换线缆并正确连接主回路电源线：三相：R S T 。 Replace wires and connect to power source cable on the main circuit correctly: 3 phases:R S T; 3. 更换伺服驱动器。 Replace servo drive;

E420.0	主回路电缺相 Main circuit phase loss	1.三相输入线接线不良 Three phase input wire poor connected;	更换线缆并正确连接主回路电源线： Replace wires and connect to power source cable on the main circuit correctly
		2.三相规格的伺服驱动器运行在单相电源下 Three-phase servo drive is operating under single-phase power source;	对于 0.75kW 的三相伺服驱动器(伺服驱动器型号 H01.02=5，允许运行在单相电源下。 For 0.75kW three-phase servo drive(model H01.02=5，it's allowed to run under single-phase power source.
		3.三相电源不平衡或者三相电压均过低 Non-uniformed power source or undervoltage for three phases	若输入电压符合左边规格，可设置 H0A.00=2（禁止电源输入缺相保护的故障和警告)；其他情况，若输入电压不符合左边规格，请按照左边规格，更换或调整电源。 If input voltage complies with specification on the left, users can set H0A.00 to 2(disable alarm and fault for protection due to power source phase loss); for other situations, if input voltage is not comply with the specification on the lest, please replace or adjust power source according to the specification.
		4.伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E500.0	电机超速 Motor overspeed	1.电机线缆 U V W 相序错误 U V W phase order wiring error	按照正确 U V W 相序接线。 Wiring correctly according to U V W phase order.
		2.H0A.08 参数设置错误 H0A.08 incorrect parameter setting	根据机械要求重新设置过速故障阈值。 Reset over-speed fault threshold according to mechanical requirement.
		3.输入指令超过了过速故障阈值 Input command exceeds threshold of overspeed fault	● 位置控制模式/Position control mode: ● CSP：减小单个同步周期对应的位置指令增量，在上位机规划指令时，应增加位置斜坡；/Reduce instruction increment during single synchronization period, increase position ramp during master computer command planning; ● PP：减小 6081h，或增大加减速斜坡(6083h、6084h)；Reduce 6081h, or increase velocity ramp for acceleration or deceleration(6083h.6084h); ● HM：减小 6099.01h 和 6099.02h，或增大加减速斜坡(609Ah)；根据实际情况，减小齿轮比。 Reduce 6099.01h and 6099.02h, or increase velocity ramp for deceleration or acceleration(609Ah); Reduce gear ratio according to actual situation; ● 速度模式/Speed mode: ● 减小目标速度、速度限制、齿轮比，PV 模式下，可增大速度斜坡 6083h 和 6084h，CSV 模式下，上位机应增加速度斜坡处理。 Reduce targeted speed, speed limit and gear ratio, at PV mode, users can increase velocity ramp 6083h and 6084h, while at CSV mode, users should increase velocity ramp for

			master computer. ● 转矩控制模式/Torque control mode: ● 将速度限制值设置在过速故障阈值之下。 Set velocity limit under the threshold of overspeed fault.
		4. 电机速度超调 Motor speed overshoot	进行增益调整或调整机械运行条件。 Adjust gain value or condition for mechanical operation.
		5. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E602.2	UVW 三相相序接反 UVW phase order incorrect	角度辨识时检测到 UVW 接线错误 UVW wiring error during angle identification	更换 UVW 相序中任意两相，再启动辨识。 Replace any two phases of UVW phase order and restart to recognize.
E620.0	电机过载 Motor overload	1. 电机接线、编码器接线错误、不良 Motor connection, encoder wiring error, poor connected.	按照正确接线图连接线缆； Connect wires according to correct wiring diagram； 优先使用汇川标配的线缆； It is recommended to prioritize the use of standard cables provided by INOVANCE; 使用自制线缆时，请按照硬件接线指导制作并连接。 When using self-made cable, please make sure correct wiring for hardware according to wiring guidance.
		2. 负载太重，电机输出有效转矩超过额定转矩，长时间持续运转 Too high load, motor output effective torque exceeds rated torque for a long duration.	更换大容量伺服驱动器及匹配的电机；或减轻负载，加大加减速时间。 Replace servo drive or motor with larger capacity; or reduce load and increase time for acceleration or deceleration.
		3. 加减速太频繁或者负载惯量很大 Too frequent acceleration and deceleration, or too high load inertia.	增大单次运行中的加减速时间。 Increase time for acceleration or deceleration in one-time operation.
		4. 增益调整不合适、刚性太强 Inappropriate gain adjustment or too high rigidity.	重新调整增益。 Readjust gain value
		5. 伺服驱动器或者电机型号设置错误 Servo drive or motor model setting error.	查看伺服驱动器铭牌，设置正确的伺服驱动器型号(H01.10)和电机型号更新成匹配机型。 Set correct servo drive model(H01.10) and replace with motor of matching model according to servo drive nameplate.
		6. 因机械因素而导致电机堵转，造成运行时的负载过大 Overload at runtime due to motor stall caused by mechanical factor.	排除机械因素。 Exclude mechanical factor
		7. 伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive

E625.0/E626.0	抱闸异常生效 EBR anomaly take effect	抱闸松开时，出现异常的抱闸 When EBR, or electric brake release, is loosen, EBR anomaly occurs.	1 检查抱闸接线。 Check EBR wiring; 2 更换抱闸电机。 Replace EBR motor;
E630.0	堵转电机过热保护 Stalled motor overheat protection	1.伺服驱动器 U V W 输出缺相、断线、相序接错 Servo drive U V W output miss phase, disconnected or incorrect phase order	按照正确配线重新接线，或更换线缆。 Re-wiring according to correct wiring diagram, or replace wires.
		2.电机参数不正确：电机参数不对（尤其极对数）、电机未做角度辨识 Incorrect parameter for motor: if motor parameter is incorrect(Especially pole pairs), the motor has not undergone angle identification.	修正电机参数。 Correct motor parameter
		3.通讯指令受干扰 Communication command is interfered	检查上位机与伺服通讯线路是否受到干扰。 Check if connection between master computer and servo communication is interfered;
		4.因机械因素导致电机堵转 Motor stall due to mechanical factor	排查机械因素是否存在卡死、偶尔卡顿、偏心状况。 Check for mechanical factors such as jamming, occasional sticking, and eccentricity.
E640.0	逆变 IGBT 结温过高 Too high junction temperature of the inverter IGBT	1.环境温度过高 Too high environment temperature	改善伺服驱动器的冷却条件，降低环境温度。 Improve cooling condition for servo drive by reducing environment temperature
		2.过载后，通过关闭电源对过载故障复位，并反复多次 After overload, users repeatedly reset overload fault through turning power off, but still don’t work.	变更故障复位方法，过载后等待 30s 再复位。提高伺服驱动器、电机容量，加大加减速时间，降低负载。 Change fault resetting method, wait for 30s after overload before reset. Increase servo drive, motor capacity, increase time for acceleration or deceleration, or reduce load.
		3.风扇坏 The fan is broken	更换伺服驱动器。 Replace servo drive
		4.伺服驱动器的安装方向与其它伺服驱动器的间隔不合理 Unreasonable gap distance between mounting direction of servo drive and other servo drive.	根据伺服驱动器的安装标准进行安装。 Install according to installation standard for servo drive
		5.伺服驱动器故障 Servo drive fault	更换伺服驱动器。 Replace servo drive
E660.0	电机温度过高 Motor overheat	风冷电机的温度过高 Air-cooled motor overheat	电机降温。 Cool down motor temperature
E939.0	电机动力线断线 Motor power line broken	电机动力线断线、未接 Motor power line broken or disconnected	1.确认动力线是否有断线、接触不良，重新接线； Check if the power line is disconnected, broken or poor connected. Re-wiring; 2.更换伺服电机/Replace servo motor;

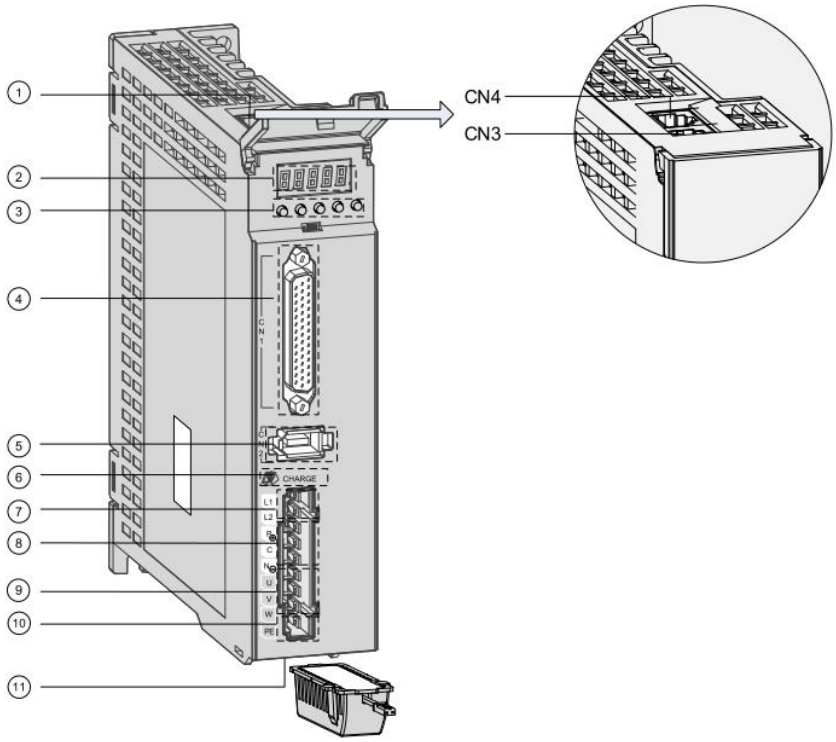
EB00.0	位置偏差过大 Too high position error	1.伺服驱动器 U V W 输出缺相或相序接错 Servo drive U V W output phases missing, or phase order is incorrect	按照正确配线重新接线，或更换线缆。 Re-wiring according to correct wiring, or replace cables
		2.伺服驱动器 U V W 输出断线或编码器断线 Servo drive UVW output line broken or encoder line broken	重新接线,伺服电机动力线缆与伺服驱动器动力线缆UVW必须一一对应。必要时应更换全新线缆，并确保其可靠连接。 Re-wiring, servo motor power line must be respectively corresponding to servo drive UVW cables. Replace with new cable whenever necessary, ensuring stable connection.
		3.因机械因素导致电机堵转 Motor stall due to mechanical factors	排查机械因素。 Exclude mechanical factor.
		4.伺服驱动器增益较低 Low gain for servo drive	进行手动增益调整或者自动增益调整。 Manually adjust gain or allow automatic adjustment for gain
		5.位置指令增量过大 Too high position instruction increment	● CSP：减小单个同步周期对应的位置指令增量，在上位机规划指令时，应增加位置斜坡。 CSP : Reduce instruction increment during single synchronization period, increase position ramp during master computer command planning; ● PP：减小 6081h，或增大加减速斜坡(6083h、6084h)。 PP: Reduce 6081h, or increase velocity ramp for acceleration or deceleration(6083h.6084h); ● HM：减小 6099.01h 和 6099.02h，或增大加减速斜坡(609Ah)； HM: Reduce 6099.01h and 6099.02h, or increase velocity ramp for deceleration or acceleration(609Ah); ● 根据实际情况，减小齿轮比。 Reduce gear ratio according to actual situation;
		6.相对于运行条件，故障值 6065h(H0A.10)过小 Too low fault value 6065h(H0A.10) compared with operation condition	增大 6065h 设定值。 Increase 6065h setting value
		7.伺服驱动器/电机故障 Servo drive/ motor fault	若位置指令不为零而位置反馈始终为零，请更换伺服驱动器/电机。 If position command is not 0 but position feedback is 0, please replace servo drive/motor

EB00.1	位置偏差溢出 Position error overflow	1.伺服驱动器 U V W 输出缺相或相序接错 Servo drive U V W output phase missing,or phase order is incorrect	按照正确配线重新接线，或更换线缆。 Re-wiring according to correct wiring, or replace cables
		2.伺服驱动器 U V W 输出断线或编码器断线 Servo drive U V W output line broken or encoder line broken	重新接线,伺服电机动力线缆与伺服驱动器动力线缆UVW必须一一对应。必要时应更换全新线缆，并确保其可靠连接。 Re-wiring, servo motor power line must be respectively corresponding to servo drive UVW cables. Replace with new cable whenever necessary,ensuring stable connection.
		3.因机械因素导致电机堵转 Motor stall due to mechanical factors	排查机械因素。 Exclude mechanical factors.
		4.伺服驱动器增益较低 Low gain for servo drive	进行手动增益调整或者自动增益调整。 Manually adjust gain or allow automatic adjustment for gain
		5.位置指令增量过大 Too high position instruction increment	● CSP：减小单个同步周期对应的位置指令增量，在上位机规划指令时，应增加位置斜坡。 CSP : Reduce instruction increment during single synchronization period, increase position ramp during master computer command planning; ● PP：减小 6081h，或增大加减速斜坡(6083h、6084h)。 PP:Reduce 6081h, or increase velocity ramp for acceleration or deceleration(6083h.6084h); ● HM：减小 6099.01h 和 6099.02h，或增大加减速斜坡(609Ah)。 HM: Reduce 6099.01h and 6099.02h, or increase velocity ramp for deceleration or acceleration(609Ah); ●根据实际情况，减小齿轮比。 Reduce gear ratio according to actual situation;
		6.相对于运行条件，故障值 6065h (H0A.10)过小 Too low fault value 6065h (H0A.10) compared with operation condition	增大 6065h 设定值。 Increase 6065h setting value
		7.伺服驱动器/电机故障 Servo drive/motor fault	若位置指令不为零而位置反馈始终为零，请更换伺服驱动器/电机。 If position command is not 0 but position feedback is 0, please replace servo drive/motor
EB03.0	电子齿轮比设定超限-H05.02 Gear ratio exceeds limit-H05.02	H05.02 折算的电子齿轮比超过齿轮比的最大值或小于齿轮比的最小值 H05.02 electronic gear conversion is beyond maximum and minimum gear ratio.	调整 H05.02。 Adjust H05.02。

EB03.1	电子齿轮比设定超限-第一组电子齿轮比 Gear ratio exceeds limit -first set electronic gear ratio	第一组电子齿轮比超过齿轮比的最大值或小于齿轮比的最小值 First set electronic gear ratio is beyond maximum and minimum gear ratio.	调整第一组电子齿轮比 H05.07/H05.09。 Adjust the first set electronic gear ratio H05.07/H05.09。
EB03.2	电子齿轮比设定超限-第二组电子齿轮比 Gear ratio exceeds limit -second set electronic gear ratio	第二组电子齿轮比超过齿轮比的最大值或小于齿轮比的最小值 Second set electronic gear ratio is beyond maximum and minimum gear ratio.	调整第一组电子齿轮比 H05.11/H05.13。 Adjust the second set electronic gear ratio H05.11/H05.13。

3.4 伺服驱动器介绍

3.4 Introduction to Servo Drive



编号/NO.	部件名称/Component Name	说明/Description
1	CN3、CN4(通信端子) CN3, CN4(Communication Terminals)	内部并联，与 RS-232、RS-485 通信指令装置连接 Internal parallel connection, connecting with RS-232, RS-485 communication command control device.
2	数码管显示器 LED Display Screen	5 位 7 段 LED 数码管用于显示伺服的运动状态以及参数设定 5-digit and 7-segment LED screen, displaying the servo operation status and parameter settings.
3	按键操作器 Button Controller	MODE:依次切换功能码 MODE: Switch function codes in turns △:增加当前闪烁位设置值 Increase the setting value of the flicker bit. ▽:减少当前闪烁位设置值 Reduce the setting value of the flicker bit. ◁◁:当前闪烁位左移 Shift the current flicker bit to the left. (长按:显示多于 5 位时翻页) (Long press: turn pages when more than 5 digits are displayed) SET: 保存修改并进入下一级菜单 SET: Save edits and enter the sub-menu
4	CN1(控制端子) CN1(Control Terminal)	指令输入信号以其他输入输出信号端口。 Command input signal and other signal input and output terminals.

5	CN2(编码器连接用端子) CN2(Encoder Connection Terminal)	与电机编码器端子连接。 Connecting with motor encoder terminal.
6	CHARGE(母线电压指示灯) CHARGE (Indicator Light of Bus Voltage)	用于指示母线电容处于有电荷状态。指示灯亮时，即使主回路电源 OFF，伺服单元内部电容器可能仍存有电荷。 Used to indicate if the bus is electrified. When the indicator light is on, even when the main electrical circuit is turned OFF, the internal capacitors of the servo unit can still be charged. 因此，灯亮时请勿触摸电源端子，以免触电。 Therefore, please do not touch the power supply terminal when the light is on.
7	L1、L2（电源输入端子） L1, L2(Power Input Terminals)	参考铭牌额定电压等级输入端子。 Please see the rated voltage range of the input power supply on the nameplate.
	P+, N-（伺服母线端子） P+, N- (Servo Bus Terminal)	直流母线端子，用于多台伺服共直流母线。 Direct-current bus terminal for multiple servos.
8	P+, C-（外接制动电阻连接端子） P+, C-(External Braking Resistor Terminal)	需要外接泄放电阻时，将其接于 P+、C-之间。 When connecting external bleeder resistors, please put it between P+and C-.
9	U、V、W（伺服电机连接端子） U,V,W(Servo Connection Terminal)	连接伺服电机 U、V、W 相。 U,V,W motor phase connection
10	电机接地端子 Motor Grounding Terminal	与电机接地端子连接，进行接地处理。 Connecting with the motor grounding terminal so as to ground.
11	电池盒安装位 Battery Box Mounting Position	使用绝对值编码器时，将电池盒安装至该位置。 Please install the battery box on the position while using absolute encoder.

3.5 电机参数

3.5 Motor Parameter

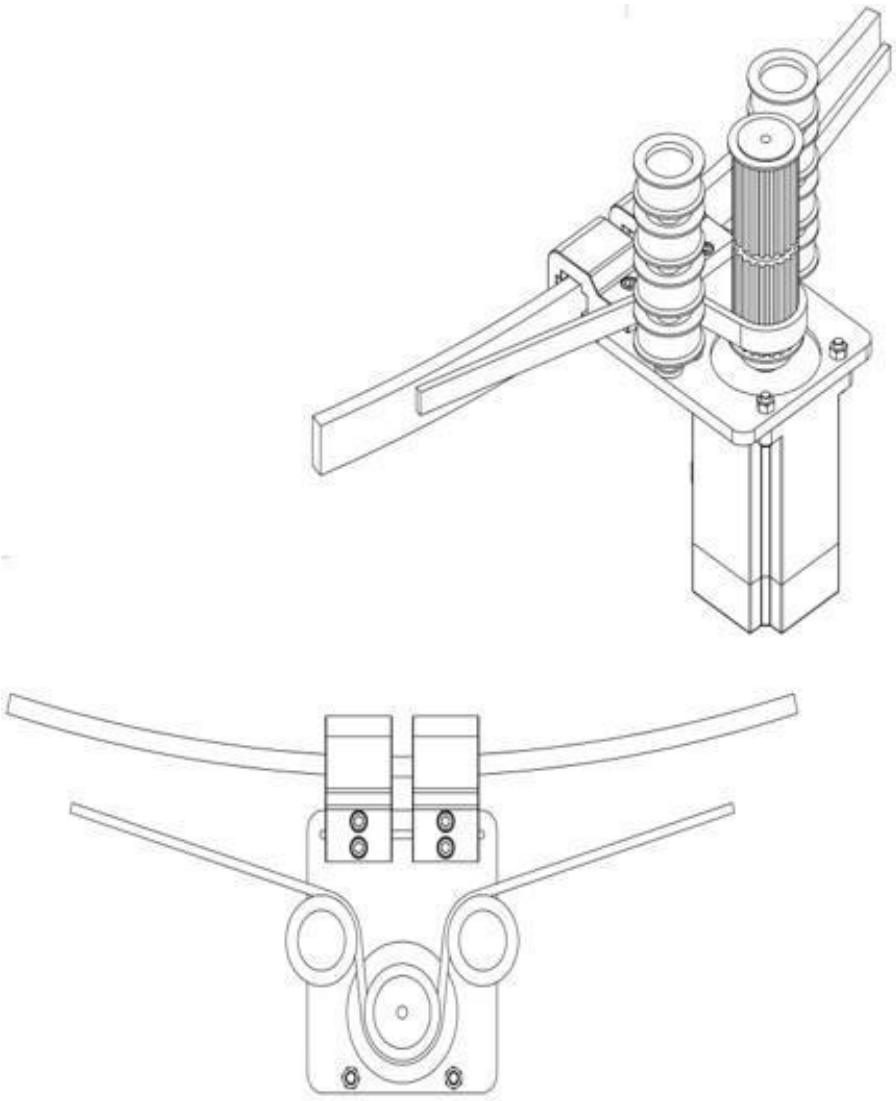
电机型号/Motor Model	KMT-MF-S1V110C
额定输出功率/Rated Output Power	1.0 Kw
工作电压/Working Voltage	220V AC
最高转速/Maximum Speed	3000 r/min
额定转矩/Rated Torque	3.5 N.m
额定频率/Rated Frequency	250 Hz
额定电流/Rated Current	5.5 A
绝缘等级/Insulation Class	Ins.F
相数/Phase Number	3PH AC
防护等级/Protection Level	IP67
工作方式/Work Mode	Duty S1

四 安装方式

IV. Installation Method

1）马达安装位置及方式

Mounting position and method for motors

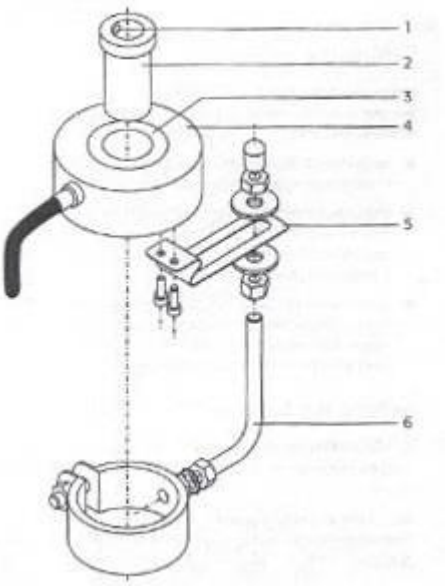


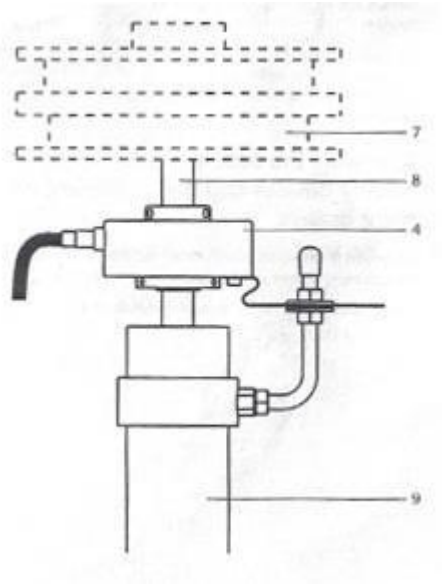
注：一个马达带动一条皮带，同一层可通过调节齿轮上下来选择送纱器的上下段.

NOTE: One motor drive one belt. The upper or lower section of the yarn feeder can be selected by adjusting the gear up or down at the same layer.

2）编码器安装位置及方式

Mounting Position and Method for Encoder





1. 固定螺丝/Fixing screw

2. 轴套（内 径 mm：17、19、20三种规格）编码器内径25mm

Shaft sleeve（inner diameter mm：three specification of 17,19,20）on encoder inner diameter 25mm

3. 码器卡箍（固定好编码器位置后应把卡箍螺丝锁紧）

Encoder clamp(Tighten screw on the clamp after fixing encoder position)

4. 编码器/ Encoder

5. 固定片/Fixing plate

6. L型螺杆/L-shaped screw

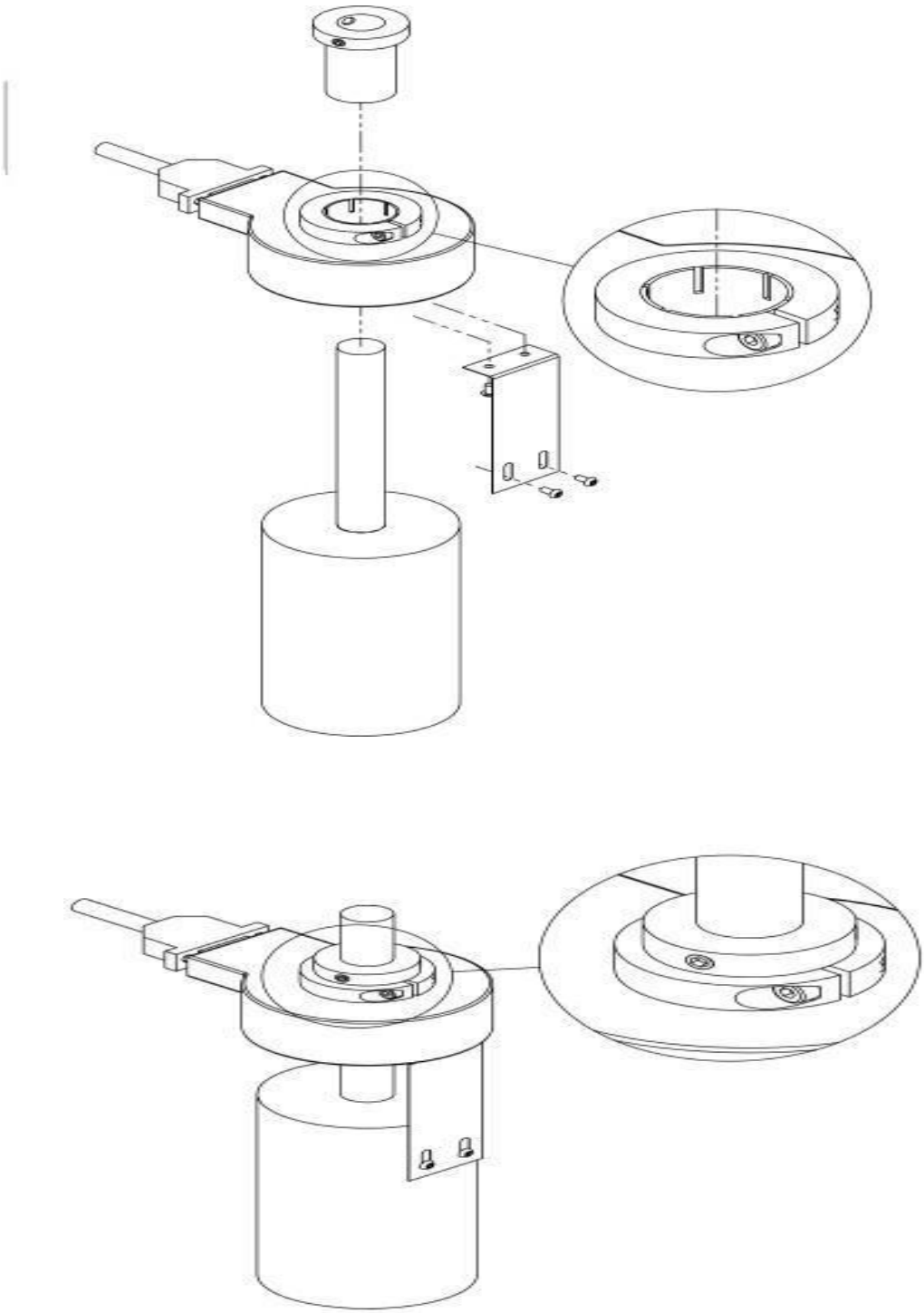
7. 送纱铝盘/Yarn feeding aluminum tray

8. 送纱轴/Yarn feeding shaft

9. 送纱盘支撑杆/Support bar for yarn feeder tray

3）编码器的安装方式

Installation method of encoder



针织纬编机数字化智慧工厂整体解决方案服务商

Independent Servo Yarn Feeding Controller User Manual

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