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浙江禾川科技股份有限公司

浙江省衢州市龙游县工业园区亲善路 5 号

Zhejiang Hechuan Technology Co.,Ltd

No.5, Qinshan Road, Longyou Industrial Zone, Quzhou City, Zhejiang Province



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CN 安装说明

EN Instruction Sheet

## 1. 安全注意事项 (Safety precautions)

本说明书涉及产品为工业产品，并且均为开放型外壳设计。要求用户使用产品时，务必将产品安装于具有防尘、防潮以及免于电击 / 冲击等意外的控制柜内，并且需要设置保护措施以防止非维护人员不当操作或意外导致设备故障或损坏，造成不可避免的人员危险和财产损失。

The products in this manual are industrial products and are all open-type housing designs. It is essential to install these products within a control cabinet that is safeguarded against dust, moisture, and accidents such as electric shocks or physical impacts. Additionally, protective measures must be taken to prevent malfunctions or damage caused by improper operation or accidents involving non-maintenance personnel. Failure to do so may lead to serious risks to personnel safety and potential loss of property.

更详细的信息请参考 SV-D5 系列脉冲伺服用户手册。

Please refer to the SV-D5 series pulse servo user manual for more detailed information.

## 2. 命名规则 (Model identification)

SV-D5 A D - 1R0 - 0 A Y - 0000

| 1     | 产品系列 (Product series)                 |
|-------|---------------------------------------|
| SV-D5 | D5带旋转伺服系列<br>(D5 rotary servo series) |
| 2     | 控制方式 (Control mode)                   |
| A     | 脉冲型/RS485 (Pulse type / RS485)        |
| B     | EtherCAT总线型 (EtherCAT bus type)       |
| 3     | 电压等级 (Voltage class)                  |
| D     | DC 24~60V                             |

| 4   | 额定电流 (Rated current)                     |
|-----|------------------------------------------|
| 1R0 | 1A                                       |
| 3R5 | 3.5A                                     |
| 015 | 15A                                      |
| 021 | 21A                                      |
| 5   | 功能安全配置 (Functional safety configuration) |
| 0   | 无STO (No STO)                            |
| S   | STO机种 (STO model)                        |

| 6  | 产品类型 (Product type)                                                           |
|----|-------------------------------------------------------------------------------|
| A  | 标准 (Standard)                                                                 |
| 7  | 接口类型 (Interface type)                                                         |
| Y  | 端子侧出/不带外壳<br>(Terminal side outlet / Without housing)                         |
| V* | 端子正出/RJ45网口 (定制)<br>(Terminal front outlet / RJ45 Ethernet port (customized)) |
| U* | 端子侧出/带外壳 (定制)<br>(Terminal side outlet / With housing (customized) )          |
| 8  | 软件/固件定制代码 (Customized software/firmware code)                                 |
| X  | 0~9/A~Z/空 (N/A)                                                               |

\* 注：型号研发中。

\*Note: The model is under research and development.

## 3. 适用型号 (Applicable model)

| 额定功率 (Rated power) | 型号 (Model)      | 额定功率 (Rated power) | 型号 (Model)      |
|--------------------|-----------------|--------------------|-----------------|
| 10W                | SV-D5AD-1R0-0AY | 400W               | SV-D5AD-015-0AY |
| 100W               | SV-D5AD-3R5-0AY | 750W               | SV-D5AD-021-0AY |

## 4. 通用电气及环境规格 (General electrical and environmental specifications)

### 4.1 通用电气规格 (General electrical specifications)

| 项目 (Item)                                        | 参数规格 (Parameter specifications)                                                                                                 |
|--------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
| SV-D5AD-***- (0) AY                              | 1R0 3R5 015 021                                                                                                                 |
| 额定功率 (Rated power) [W]                           | 10 100 400 750                                                                                                                  |
| 额定电流 (Rated current) [Arms]                      | 1 3.5 15 21                                                                                                                     |
| 最大输出电流 (Max. output current) [Arms]              | 2.5 8.75 37.5 52.5                                                                                                              |
| 输入电源 (Input power supply)                        | 主回路电源 (Main circuit power supply) DC 24~60V<br>控制电电源 (Control circuit power supply) 从主电源取电 (Powered from the main power supply) |
| DI输入 (DI input)                                  | 电压 (Voltage) DC24V±10%<br>电流 (Current) 10mA                                                                                     |
| DO输出 (DO output)                                 | 电压 (Voltage) DC24V±10%<br>电流 (Current) 40mA                                                                                     |
| 外置制动电阻推荐 (Recommended external braking resistor) | 功率 (Power) ≥80W<br>阻值 (Resistance) 5Ω~10Ω                                                                                       |

### 4.2 环境规格 (Environmental requirements)

| 项目 (Item)                                                     | 规格 (Specifications)                               |
|---------------------------------------------------------------|---------------------------------------------------|
| 海拔高度 (Altitude)                                               | ≤1000m                                            |
| 使用环境 (Operating environment)                                  | 控制柜内安装，开放式及室内使用                                   |
| 环境空气 (Ambient air)                                            | 无腐蚀性气体、易燃性气体、潮气、油雾、粉尘                             |
| 耐热等级 (Heat resistance class)                                  | Class B                                           |
| 单装使用环境温度 (Single installation ambient operating temperature)  | -5~55℃                                            |
| 叠装使用环境温度 (Stacked installation ambient operating temperature) | -5~45℃                                            |
| 保存环境温度 (Storage ambient temperature)                          | -20~65℃                                           |
| 环境湿度 (Ambient humidity)                                       | 20~80%RH (无结露)                                    |
| 振动耐受 (Vibration resistance)                                   | <5.8m/s <sup>2</sup> (0.6g) 10~60Hz (共振频率时不可连续使用) |
| 污染等级 (Pollution degree)                                       | 污染度2                                              |
| 冷却方式 (Cooling method)                                         | 自然冷却                                              |
| 防护等级 (IP rating)                                              | IP00                                              |
| 外壳材质 (Enclosure material)                                     | 阻燃材料                                              |

\* 注：若设备未依制造商指定方式使用，设备所提供的保护可能会被减弱。

\*Note: If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

### 5.1 控制柜安装 (Installation within a control cabinet)

## 5.2 机柜背板安装 (Cabinet backplane mounting)

### 5.3 端子拆装 (Terminal block mounting and dismounting)

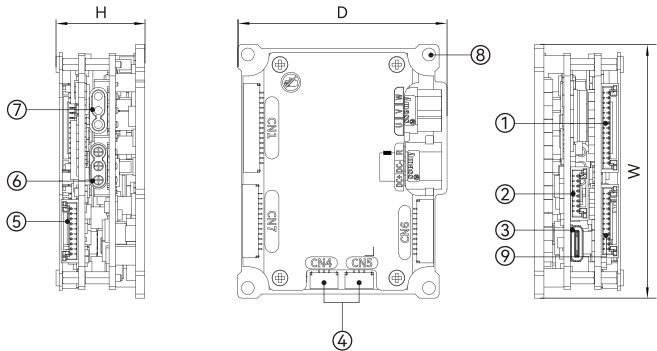
#### 5.4 线缆拆装\* (Cable connecting and disconnecting\*)

|  |                      |  |
|--|----------------------|--|
|  | 线径 (Wire width): AWG |  |
|--|----------------------|--|

\*注：需要线缆配件可联系禾川下单。

\*Note: To order cable accessories, please contact HCEA to place an order.

6. 接口和尺寸说明 (Interface and dimension description)



| 序号(No.) | 名称               | Name                                         | 功能              | Function                                                                 |
|---------|------------------|----------------------------------------------|-----------------|--------------------------------------------------------------------------|
| 1       | CN1: 功能IO接口      | CN1: Functional I/O interface                | 用户IO接口, 可配置     | Configurable user I/O interface                                          |
| 2       | CN2: STO安全接口     | CN2: STO safety interface                    | 安全扭矩关断          | Safe Torque Off (STO)                                                    |
| 3       | CN3: Type-C接口    | CN3: Type-C interface                        | 连接PC进行通讯        | Connects to PC for communication                                         |
| 4       | CN4/CN5: 485接口   | CN4/CN5: 485 interface                       | 485通讯接口         | 485 Communication interface                                              |
| 5       | CN6: 编码器接口       | CN6: Encoder interface                       | 连接电机编码器         | Connects to motor encoder                                                |
| 6       | DC+/DC-: 主电源输入接口 | DC+/DC-: Main power supply input interface   | DC24V电源输入       | DC24V power supply input                                                 |
|         | DC+/R: 制动电阻接口    | DC+/R: Power brake resistor interface        | 连接制动电阻          | Connects to braking resistor                                             |
| 7       | U/V/W: 电机动力输出接口  | U/V/W: Motor power output interface          | 伺服电机连接接口        | Servo motor connection interface                                         |
| 8       | PE接地接口           | PE grounding interface                       | 保护性接地           | Protective Grounding                                                     |
| 9       | CN7: 脉冲输入/分频输出   | CN7: Pulse input / Frequency division output | 脉冲指令差分输入及分频输出接口 | Pulse command differential input and frequency division output interface |

\* 注: 仅定制机型支持。  
\*Note: Only available for customized models.

| 外形尺寸 (Dimension) : cm |    |    | 孔径Φ<br>(Hole diameter Φ):mm | 重量 (Weight) : g |
|-----------------------|----|----|-----------------------------|-----------------|
| H                     | W  | D  |                             |                 |
| 21.3                  | 63 | 52 | 3.2                         | 64 approx.      |

7. 指示灯和面板说明 (Indicator and LED panel description)

| 丝印<br>(Screen printing) | 指示灯含义<br>(Indicator meaning) | 颜色<br>(Color) | 状态<br>(Status) | 说明    | Description |
|-------------------------|------------------------------|---------------|----------------|-------|-------------|
| D24                     | 电源<br>(Power supply)         | 绿色<br>(Green) | 熄灭 Not lit     | 电源未接通 | Power off   |
|                         |                              |               | 常亮 Lit         | 电源接通  | Power on    |
| D23                     | 系统故障<br>(System error)       | 红色<br>(Red)   | 熄灭 Not lit     | 无故障发生 | No error    |
|                         |                              |               | 常亮 Lit         | 发生故障  | Error       |
| D22                     | 运行<br>(Run)                  | 绿色<br>(Green) | 熄灭 Not lit     | 停止状态  | Stop        |
|                         |                              |               | 闪烁 Blinking    | 正常运行  | Run         |
|                         |                              |               | 常亮 Lit         | 待机状态  | Standby     |

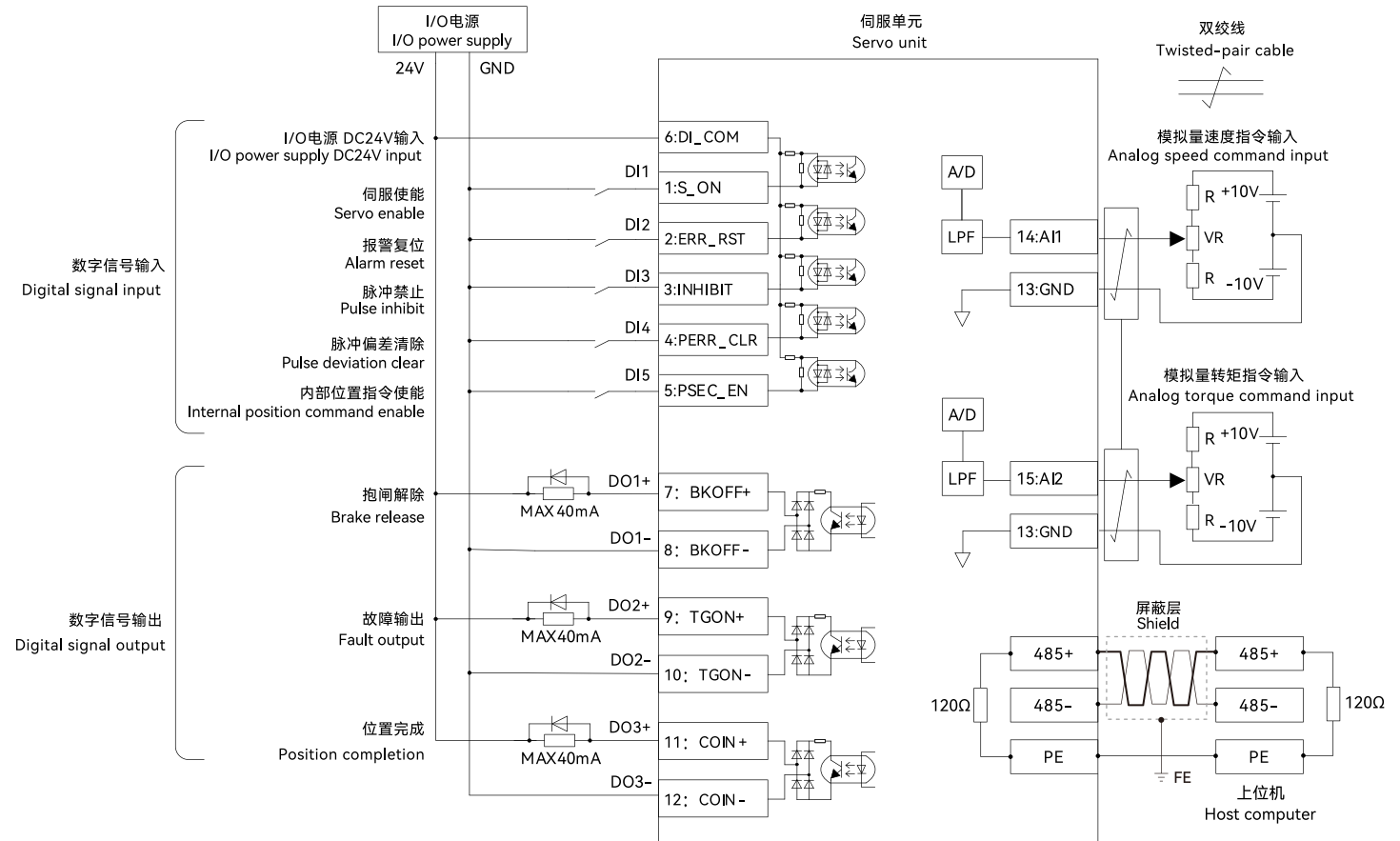


8. 端子及配线说明 (Terminal and wiring description)

| CN1(用户I/O)接口说明 (CN1 (User I/O) interface description)                                                                   |          |             |               |                                  |
|-------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------|----------------------------------|
| <div><div>1</div><div>15</div></div> | 针脚 (Pin) | 信号 (Signal) | 功能 (Function) |                                  |
|                                                                                                                         | 1        | DI1         | 伺服使能          | Servo enable                     |
|                                                                                                                         | 2        | DI2         | 报警复位          | Alarm reset                      |
|                                                                                                                         | 3        | DI3         | 脉冲禁止          | Pulse inhibit                    |
|                                                                                                                         | 4        | DI4         | 脉冲偏差清除        | Pulse deviation clear            |
|                                                                                                                         | 5        | DI5         | 内部位置指令使能      | Internal position command enable |
|                                                                                                                         | 6        | DI_COM      | 数字量输入公共端      | DI common terminal               |
|                                                                                                                         | 7        | DO1+        | 抱闸解除          | Brake release                    |
|                                                                                                                         | 8        | DO1-        |               |                                  |
|                                                                                                                         | 9        | DO2+        | 故障输出          | Fault output                     |
|                                                                                                                         | 10       | DO2-        |               |                                  |
|                                                                                                                         | 11       | DO3+        | 位置完成          | Position completion              |
|                                                                                                                         | 12       | DO3-        |               |                                  |
|                                                                                                                         | 13       | GND         | 模拟量参考地        | Analog reference ground          |
|                                                                                                                         | 14       | AI1         | 模拟量输入         | Analog input                     |
| 15                                                                                                                      | AI2      |             |               |                                  |

| CN4/CN5接口说明 (CN4/CN5 interface description)                                                                            |          |             |               |                               |
|------------------------------------------------------------------------------------------------------------------------|----------|-------------|---------------|-------------------------------|
| <div><div>1</div><div>3</div></div> | 针脚 (Pin) | 信号 (Signal) | 功能 (Function) |                               |
|                                                                                                                        | 1        | 485-        | RS485<br>通讯接口 | RS485 communication interface |
|                                                                                                                        | 2        | 485+        |               |                               |
|                                                                                                                        | 3        | -           | 空             | N/A                           |

CN1/CN4/CN5接线图 (CN1/CN4/CN5 wiring diagram)



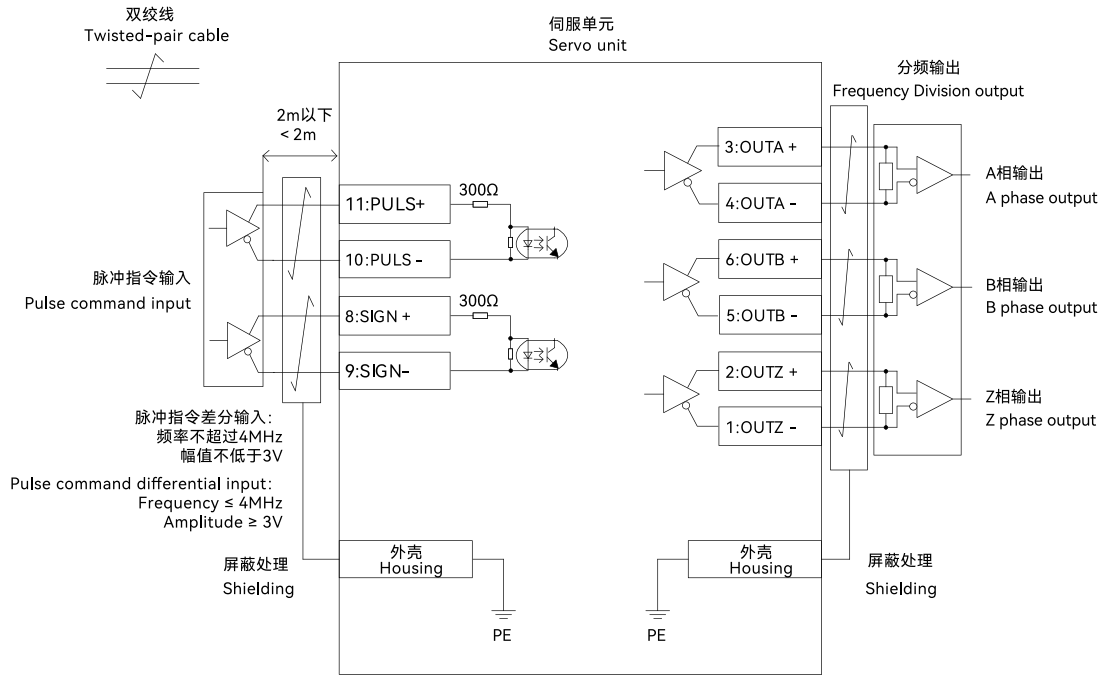
CN2接口说明 (CN2 interface description)

| 针脚 (Pin) | 信号 (Signal) | 功能 (Function)                                 |
|----------|-------------|-----------------------------------------------|
| 1        | -           | -                                             |
| 2        | -           | -                                             |
| 3        | STO1+       | 关闭功率模块驱动信号, 切断伺服电源                            |
| 4        | STO1-       |                                               |
| 5        | STO2+       | 安全功能信号监视输出                                    |
| 6        | STO2-       |                                               |
| 7        | STO_OUT+    |                                               |
| 8        | STO_OUT-    | Monitor the output of safety function signals |

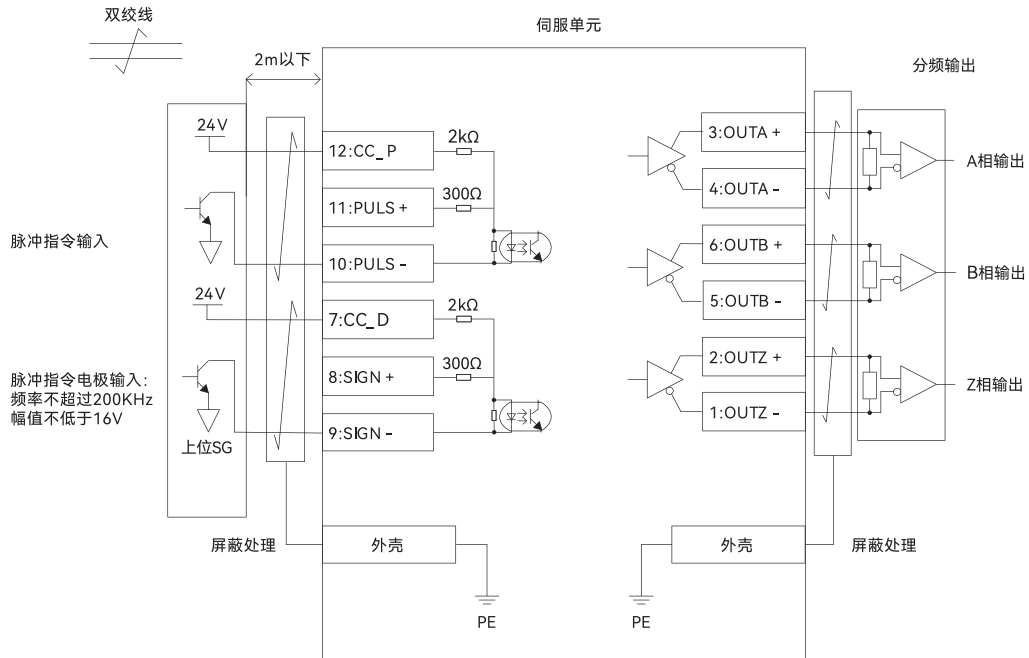
CN3接口说明 (CN3 interface description)

| 针脚 (Pin) | 信号 (Signal) | 功能 (Function) |
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| 1        | -           | -             |
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脉冲指令差分输入 (Pulse command differential input)



脉冲指令24V集电极开路输入 (Pulse command 24V open-collector input)



主回路电源及制动电阻输入接口说明  
(Main circuit power supply and braking resistor input interface description)

| 序号<br>(No.) | 丝印 (Screen<br>printing) | 功能 (Function)                                 |
|-------------|-------------------------|-----------------------------------------------|
| 1           | DC+                     | 电源输入正<br>Power supply input+                  |
| 2           | DC-                     | 电源输入负<br>Power supply input-                  |
| 3           | R                       | DC+/R制动电阻接口<br>Power brake resistor interface |

电机动力线输出接口说明 (Motor power cable output interface description)

| 序号<br>(No.) | 丝印 (Screen<br>printing) | 功能 (Function)                        |
|-------------|-------------------------|--------------------------------------|
| 1           | U                       | 电机U相输出<br>Motor power U-phase output |
| 2           | V                       | 电机V相输出<br>Motor power V-phase output |
| 3           | W                       | 电机W相输出<br>Motor power W phase output |

注: 接入电源时请接入电解电容 (10~100W 220μF/100V; 200~750W 330μF/100V)。

Note: When connecting to the power supply, please connect an electrolytic capacitor (10~100W 220μF/100V; 200~750W 330μF/100V).