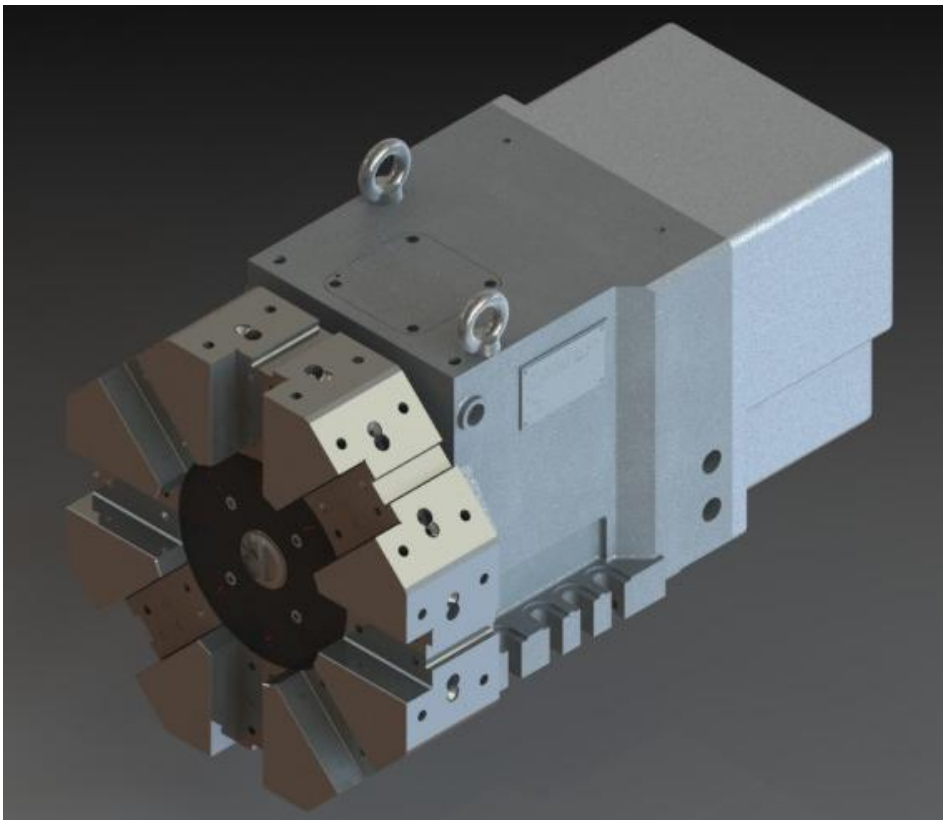
SLT series horizontal servo turret

Introduction

（Electronic section）



China ▪Changzhou

Contents

Ø Thanks very much for your generous support to Yaxing ▪ Xinshu's products.

Ø The main properties of the turret: driving by servo motor, gear reduction structure inside, accuracy and reliability of the movement; rotate in both directions and choose the nearest tool with fast and steady speed; 3-plate frontal teeth rings are used; change tools without uplifting, in good protection; hydraulic clamping system can generate a large locking force, stable and reliable, suitable for heavy cutting; compact structure, adopts the international standard installation dimension.

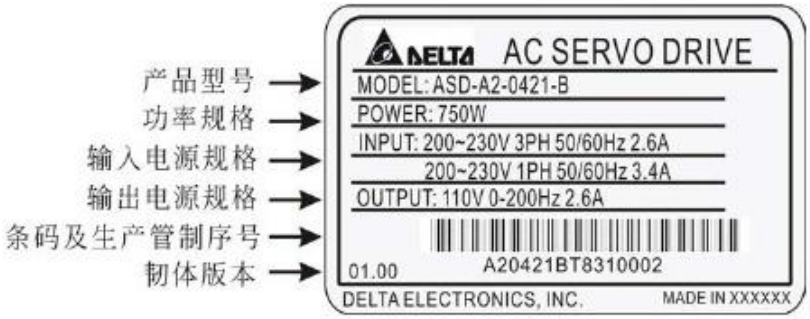
Ø This instruction is to specify the turret's installation, commissioning, usage maintenance and other considerations. Make sure you read this instruction before usage and operate performance, as to benefit your production.

Ø We are not responsible for the damage of the machine or part, and personal injury which are caused by operating without following this instruction.

1. General description

Product model

ASDA-A2 series servo drives



产品型号 product model
功率规格 Power specifications
输入电源规格 The input power supply specifications
输出电源规格 The output power supply specifications
条码及生产管制序号 The barcode and production control number
韧体版本 Firmware version

制造序号 Manufacturing serial number
生产周次 Weekof production
生产年份（8:2008 年） Year of production (8: 2008)
制造工厂（T：桃园厂； W：吴江厂）Manufacturing factory(T: Taoyuan factory, W: Wujiang factory)
生产机种 production models

Part name of servo drive

ASDA-A2 series servo drive

请参考上视图 Please refer to the top view

电源指示灯：若指示灯亮，表示此时 P_BUS 尚有高电压 Power light: Light on when the P_BUS has high voltage

全闭环：连接光学尺 The closed loop: Connect the optical ruler

CANopen: 通讯控制口 CANopen: Communication control interface

外部 DI 接点：可扩展六点 DI The external DI interface: Extensible six DI

显示部：由 5 位数七段 LED 显示伺服状态或异警 Displaying part: Display the servo state or abnormal alarm by 5 digit 7 segment LED

操作部：操作状态有功能、参数、监控的设定 Operation part：The operation state include the set of functions, parameters and monitoring
MODE:模式的状态输入设定 MODE：The input set of mode state
SHIFT: 左移键 SHIFT：The left key
UP: 显示部分的内容加一 UP: The content in the displaying part plus one
DOWN: 显示部分的内容减一 DOWN: The content in the displaying part minus one
SET: 确认设定键 SET: The set confirmation key

控制连接器：与可程序控制器（PLC）或是控制 I/O 连接 Control connector: And the program controller(PLC)or control the I/O connection

编码器连接器：连接伺服电机检测器（Encoder）的连接器 Encoder connector: The connector connecting the servo detector(Encoder)

RS-485&RS-232 连接器：连接上层控制器 RS-485&RS-232 connector：Connect the upper controller

USB 连接器：连接个人电脑 USB connector: Connect the PC

请参考下视图：Please refer to the bottom view

ASDA-A2_220V series servo drive (top view)

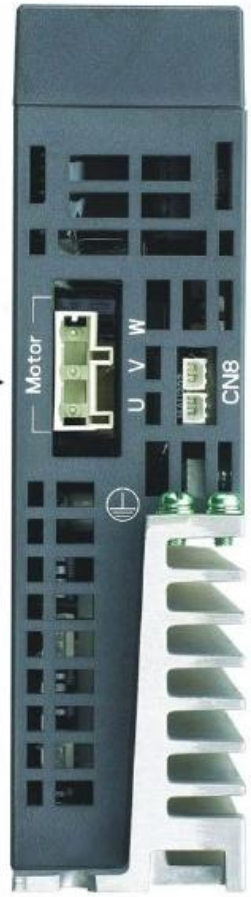
散热座：固定伺服器及散热之用 Heat sink: Fix the server and dissipate the heat

内外部回生电阻：
1）使用外部回生电阻时，P+、C 端电阻，P+、D 端开路
2）使用内部回生电阻时，P+、C 端开路，P+、D 端需短路
3）使用外部回生制动单元时，P+、-端接制动单元 P+、D 与 P+、C 开路
Internal and external retrogradation resistance:
1) When using external retrogradation resistance, P+、C is resistance，P+、D is open
2) When using internal tetrogradation resistance,P+、C is open，P+、Dis short out
3) when using the external anabiosis braking unit, P+、- connect the braking unit, P+、D and P+、C are open

控制回路电源：L1c、L2c 供给单/三相 200~230Vac，50/60Hz 电源
Control circuit power supply: L1c, L2c supply single/three phase 200 ~ 230 vac, 50/60 hz power supply
主回路电源：R、S、T 连结在商用电源 AC200~230V，50/60Hz 电源
Main circuit power supply: R, S, T link in commercial AC200~230V, 50/60 hz power supply

22ASDA-A2_220V series servo drive(Bottom view)

The output of the servo motor:
It should be connected to the motor power supply connector which is marked as U, V, W. It cannot be connected to the main circuit power supply. The servo drive may be destroyed if the connection is wrong,

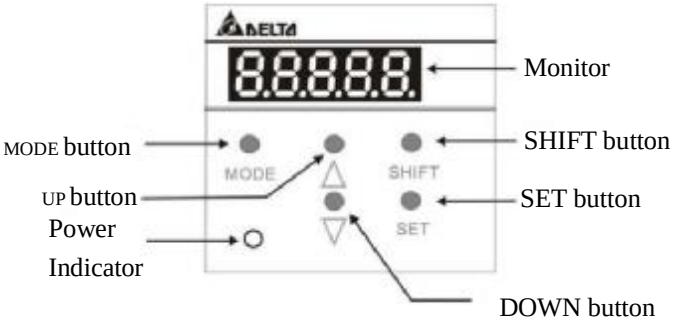


The connector as preparation.

Earthing protection terminal:
It should be connected to the earth wire of the electric source and the motor.

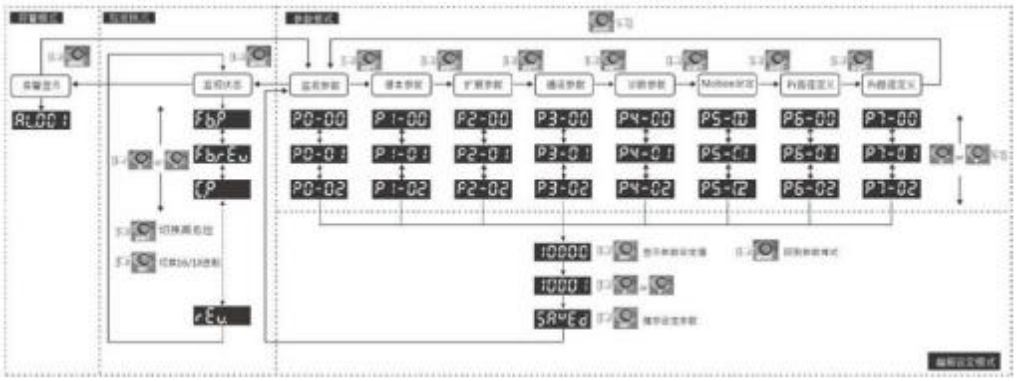
The instruction about the display of the panel and the operating

the display of the panel and the function keys



Name	Function
Monitor	Five groups of seven-segment display monitor is used to display the monitoring value, the parameter value and setpoint.
Power Indicator	Shows that the main power circuit capacity is charging.
MODE button	Switch the mode within the monitor mode, parameter mode and the alarm mode. Press the mode button to change to the parameter mode when the system is in edit mode.
SHIFT button	This button can change the group code when the system is in parameter mode. It can correct the larger character value which has been set when the system is in edit mode. It can switch the display between high and low digit when the system is in monitor mode.
UP Button	This button can change the monitor codes, parameter codes or setpoint.
DOWN Button	This button can change the monitor codes, parameter codes or setpoint.
SET Button	Users can look over and save the setpoint with this button. Displayed state can be switched between decimalist and hex when the system is in monitor mode. Press the SET button, then the system is switched to the edit mode when the system is in parameter mode.

The operation for setting



异警模式	异警显示	监视模式	监视状态	切换高地位	切换 10/16 进制
the alarm mode	The display when being abnormal	the monitor mode	Monitoring status	switch the display between high and low digit	switch the display between decimalist and hex
参数模式	监视参数	基本参数	扩展参数	通讯参数	Motion 设定
the parameter mode	Monitoring parameters	Basic parameters	Extended Parameters	Communicating parameters	The motion setting
Pr 路径定义	显示参数设定值	回到参数模式	储存设定参数	编辑设定模式	
The definition of Pr path	Display the setpoint of parameters	Back to the parameter mode	Save the parameters which is set	Edit the setting mode	

1． The display will show the monitored variable symbol for about 1 second, then the system will enter into the monitor mode after the drive is powered on.

2. The system can be switched within the parameter mode, monitoring parameters and the alarm mode. The alarm mode can be ignored if there is no alarm.

3. The system be switched to the alarm mode whatever it is in when a new alarm occurs. Press the MODE button to switch to other modes. The system will be switched back to the alarm mode automatically if there are not any buttons pressed for 20 seconds.

4. In the monitor mode, the monitor symbol can be switched by pressing UP or DOWN button. It will be displayed for about one second.

5. In the Parameter mode, the group codes can be changed by pressing SHIFT button. The last two parameter codes can be changed by pressing UP or DOWN button.

6. In parameter mode, the system will enter into the edit mode immediately after the SET button is pressed. The display will show the setpoint of the parameter at the same time. Then the parameters can be changed by pressing UP or DOWN button. The system can return to the parameter setting mode from the edit mode by pressing the MODE button.

7. In the edit settings mode, the flashing character can be moved to the left by pressing the SHIFT button. Then the larger setpoint can be corrected quickly by pressing UP or DOWN button.

8. Press the SET button after correcting the setpoint. Then the system will save the parameters or execute the order.
9. The display will show the code "SAVED" and return to the parameter mode automatically after the completion of parameter settings.

2. installation

2.1 notice

Users should pay attention to the following:
1) The wire which connects the drive with the motor cannot be stretched tight.
2) Users should make sure that every fixed place has been locked while fixing the drive.
3) The shaft of the motor must share the same axis with the shaft of the equipment.
4) Please use thicker connecting wire which is marked as U, V, W and make sure to use thicker wire which is connected to the coder if the wire which connects the drive with the motor is more than 20 meters long.
5) The four screws which fix the motor must be locked.

2.2 The environment for storage

The product must be placed in the packing chest before it is installed. If the product is not used immediately, users should pay attention to the following notices in order to make the product in accordance with the warranty of the company and maintenance in the future.
1) The product should be placed in a clean and dry place.
2) The temperature of the storage place must be within the range of -20 to +65.
3) The relative humidity of storage place must be within the range of 0% to 90% and there should not be condensations.
4) User should avoid storing the product in an environment containing corrosive gas or liquid.
5) It is better to do the appropriate packaging for the product and store it in the shelf or on the table.

2.3 The environment for installation

The appropriate temperature for the using of the drive is within the range of 0 to 55. Please put the product in a well ventilated place if the ambient temperature is above 45. Long operation is recommended below 45 ℃ ambient temperature to ensure product reliability. The size of the power distribution box should be big enough and the ventilation conditions should be good enough so that there is no danger about overheating to all the electronic devices inside the box if the drive is installed in the power distribution box. It should also be considered that whether the vibrations of the machine will affect the electronic device in the distribution box. In addition, the conditions of the using are also included:
High fever means no place; no water droplets, steam, dust or oily dirt place.

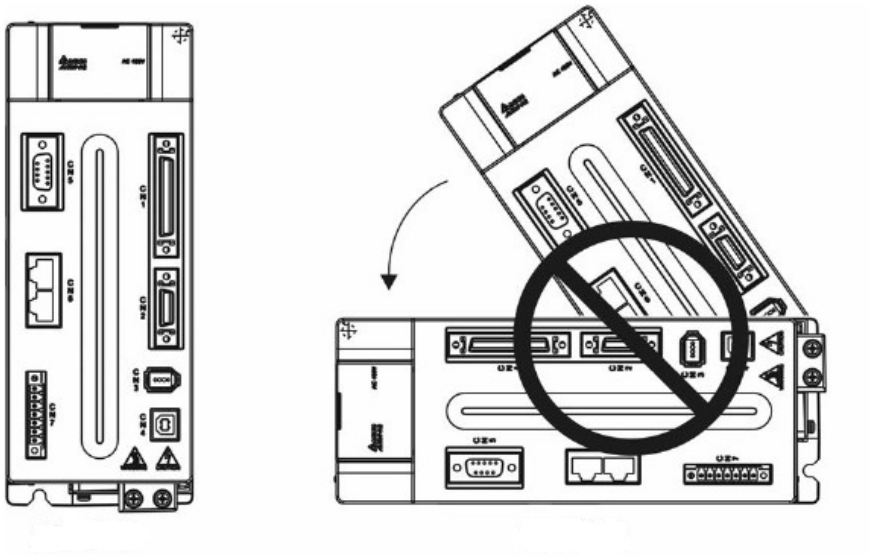
2.4 Direction and space for installation

Notice:

The direction for installation must be in accordance with regulations, otherwise it will cause of breakdown.

The outer border of the AC servo drive must maintain enough space with adjacent items and baffle (wall) when users install it so that the cooling cycle works well, otherwise it will cause of breakdown.

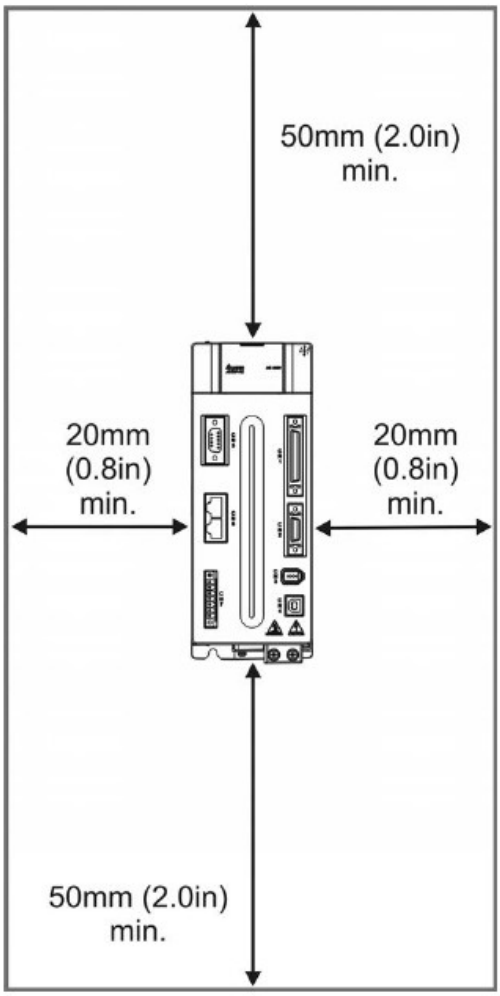
The suction hole and the vent hole of the AC servo drive should not be sealed up and it should be no dumping placed when users install it, otherwise it will cause of breakdown.



Right way Wrong way

Diagram about Installation:

Please observe the recommended distance for installation which is the distance between one AC servo drive and other AC servo drives so that there is relatively low drag to the cooling fan in order to discharge the heat effectively (The diagram is shown below).

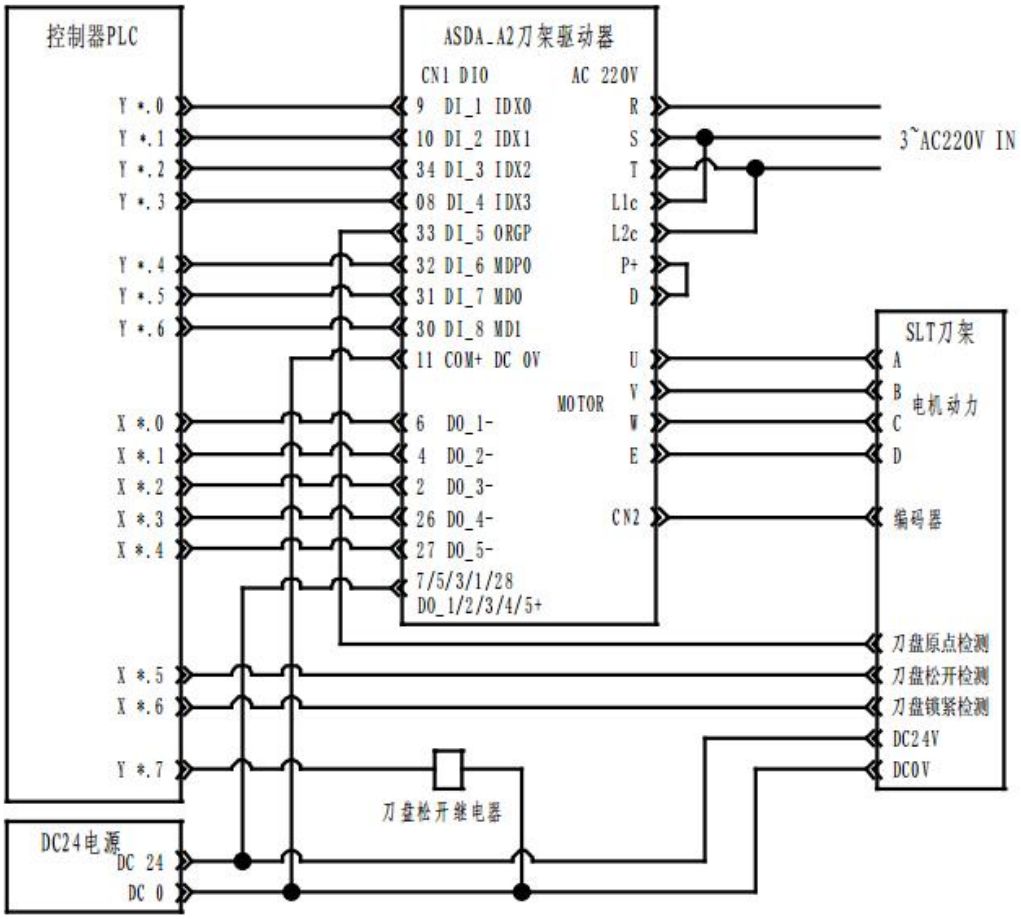


The distance of the picture and the text annotation are non-proportional size, please use the text annotation as the standard.

3. the instruction and the connection of the electrical system

3.1The connection of the peripheral devices and the main power supply circuit

The wiring diagram about the peripheral device



控制器 PLC	DC24 电源	ASDA_A2 刀架驱动器	刀盘松开继电器	SLT 刀架	电机动力	编码器
Controller PLC	Source DC24	Turret drive ASDA_A2	Relay for releasing the tool disk	Turret SLT	Power of motor	Encoder

刀盘原点检测	刀盘松开检测	刀盘锁紧检测				
Origin detection of tool disk	Releasing detection of tool disk	Locking detection of tool disk				

Installation Notes:

1) Make sure the R, S, T and L1c, L2c power and wiring is correct.

2) Confirm servo motor output U, V, W terminal wiring phase sequence is correct, then the wrong motor may not turn or milling.

3) When using an external regenerative resistor, the need to P, ends open, D external regenerative resistor should be connected to P, C terminal, if using internal regenerative resistor, you need to P, D terminal is shorted and P, C terminal open.

4) When the first alarm or emergency stop, use ALARM or WARN output electromagnetic contactor (MC) and cut off the power servo drives.

Drive connector and terminal

<table>
<tr><td>Terminal symbol</td><td>Name</td><td colspan="4">Explanation</td></tr>
<tr><td>L1c、L2c</td><td>Control circuit power supply input terminal</td><td colspan="4">Connected to single-phase AC power supply</td></tr>
<tr><td>R、S、T</td><td>Main circuit power input</td><td colspan="4">Connected to three-phase AC power supply</td></tr>
<tr><td rowspan="6">U、V、W、FG</td><td rowspan="6">Motor connecting line</td><td colspan="4">Connected tomotor</td></tr>
<tr><td>Terminal symbol</td><td>Color</td><td colspan="2">Explanation</td></tr>
<tr><td>U</td><td>Red</td><td colspan="2" rowspan="3">Three-phasemains power line of motor</td></tr>
<tr><td>V</td><td>White</td></tr>
<tr><td>W</td><td>Black</td></tr>
<tr><td>FG</td><td>Green</td><td colspan="2">Connected to grounding of the drive</td></tr>
<tr><td>P ,C, D</td><td>Regenerative resistor terminal</td><td colspan="4">Using the internal resistanceP, D terminal is short circuit, P, C terminal opencircuit</td></tr>
<tr><td>⏚Double</td><td>Ground terminal</td><td colspan="4">Connected to ground wire of power supply and motor</td></tr>
<tr><td>CN1</td><td>I/O connector</td><td colspan="4">Connected to host controller</td></tr>
<tr><td rowspan="8">CN2</td><td rowspan="8">Encoder connector</td><td colspan="4">Connected to motor encoder</td></tr>
<tr><td>Terminal symbol</td><td>Color</td><td colspan="2">Pin No</td></tr>
<tr><td>T+</td><td>Blue</td><td colspan="2">5</td></tr>
<tr><td>T-</td><td>Blue-black</td><td colspan="2">4</td></tr>
<tr><td>Retention</td><td>-</td><td colspan="2">-</td></tr>
<tr><td>Retention</td><td>-</td><td colspan="2">-</td></tr>
<tr><td>+5V</td><td>Red/Red-white</td><td colspan="2">14 16</td></tr>
<tr><td>GND</td><td>Black/Black-white</td><td colspan="2">13 15</td></tr>
<tr><td>CN3</td><td>Communication connector</td><td colspan="4">Connected toRS-485orRS-232</td></tr>
<tr><td>CN4</td><td>USB connector</td><td colspan="4">Connected to personal computer</td></tr>
</table>

Precautions when wiring

1)Before the lights go out, do not touch the R, T and U, V, S, W power line conduits. Because the internal drive large capacitance contains a lot of charge

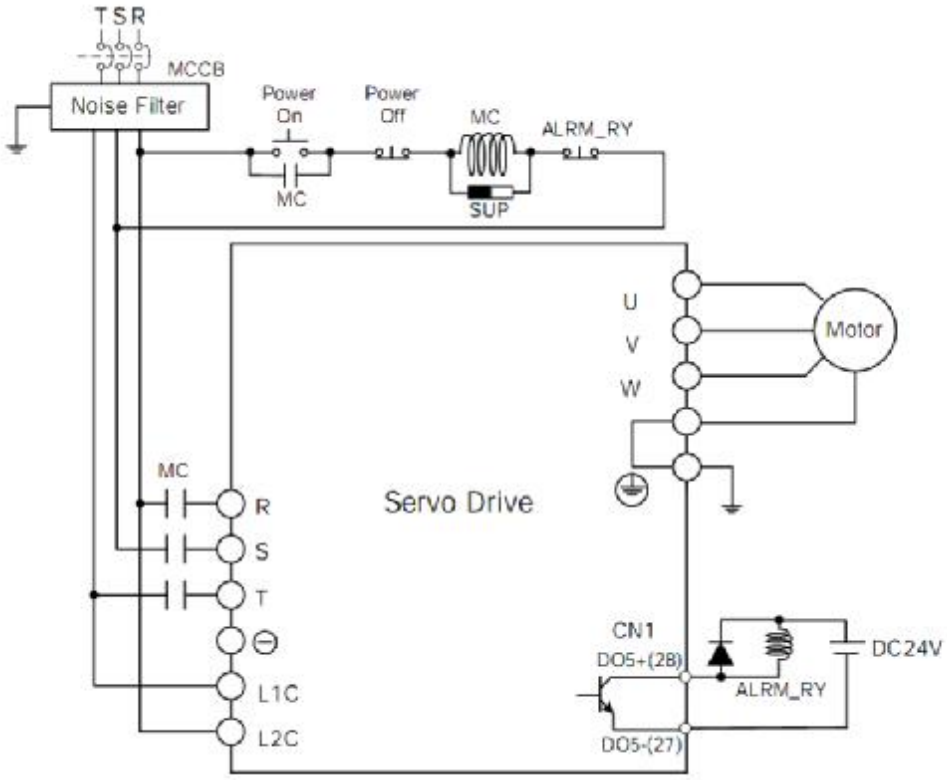
2) R, T and U, W conduits from power lines and other signal lines do not close, S, V, as at intervals of 30 cm (11.8 inches) or more.

3) If the encoder position feedback signal connector CN2 or CN5 cable is too short, please use a twisted shielded signal lines to ground. Do not over 20 meters (65.62 feet), if you want more than 20 meters, use diameter doubled

Signal lines to ensure that the signal does not attenuate much. About 20 noodle long encoder wiring specifications, use wire size AWG26, and in accordance with UL 2464 standard metal braided shielded twisted pair cable (Metal braided shield twisted-pair cable).

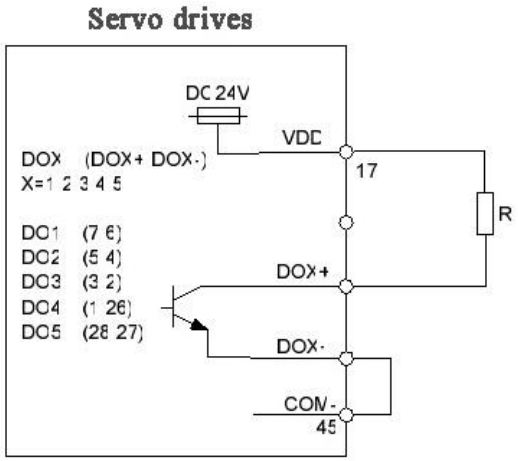
4) When using CANopen, please use twisted-pair cables SHIELDING to ensure communication quality.

3.2 Three-phase power supply wiring method (all series are applicable)

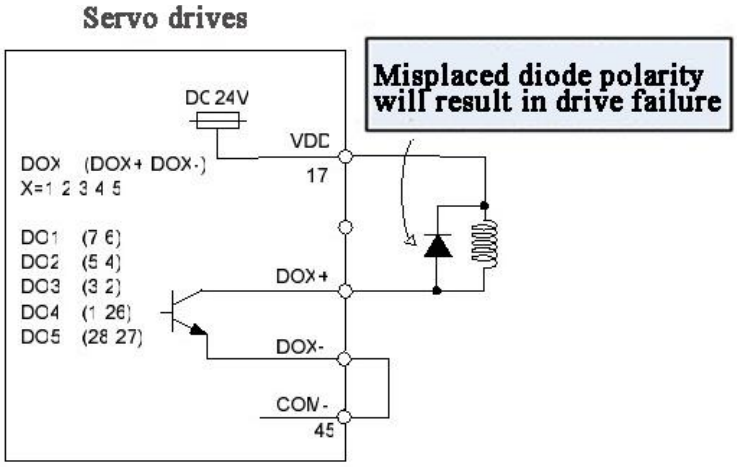


3.3 interface wiring diagram (CN1)

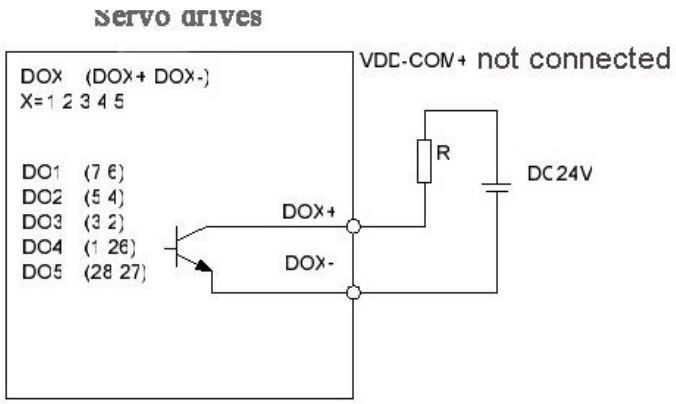
C5：DOWiring, internal power supply, general load



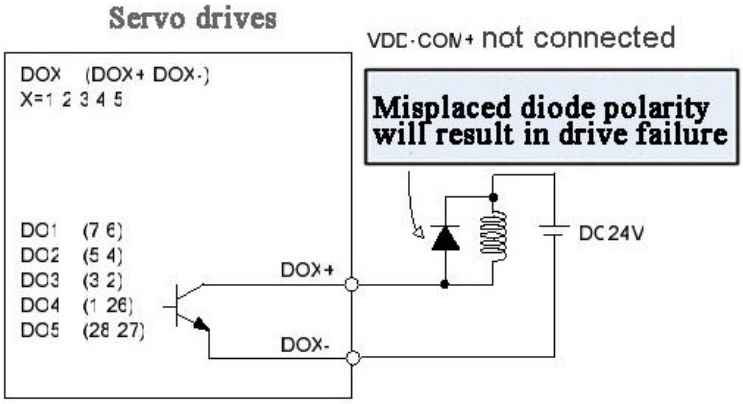
C6：DOWiring, internal power supply, Inductive load



C7：DOWiring, external power supply, general load



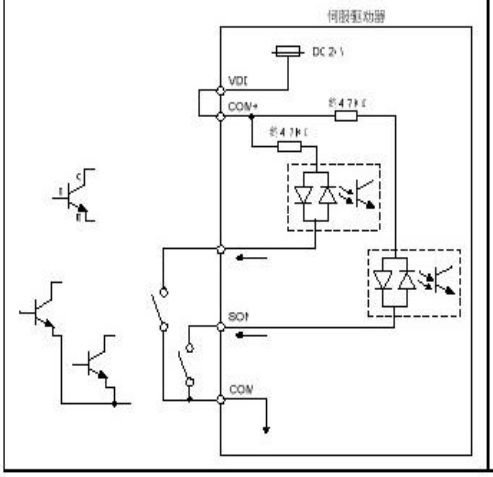
C8：DOWiring, external power supply, Inductive load



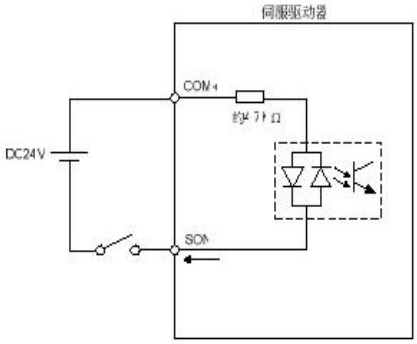
The input signal through relay or open collector transistor

NPN Crystal，Common emitter（E）Pattern（SINK Pattern）

C9：DI Wiring，Internal power source

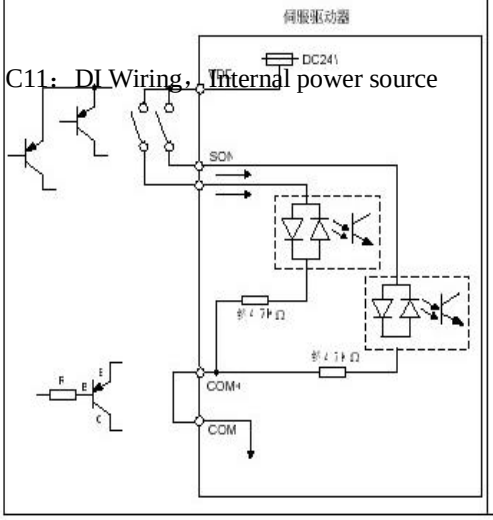


C10：DI Wiring，Internal power source

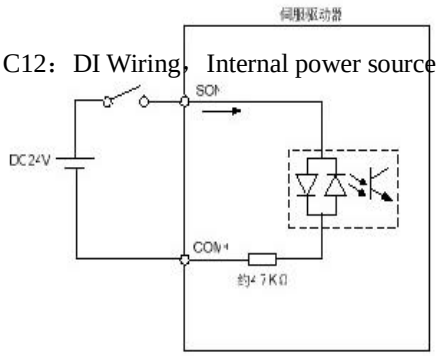


PNP Crystal，Common emitter（E）Pattern（SOURCE Pattern）

C11：DI Wiring，Internal power source



C12：DI Wiring，Internal power source



Strongly recommended：Don't dual power input in case of burning。

3.4 CN2 The encoder signal wiring

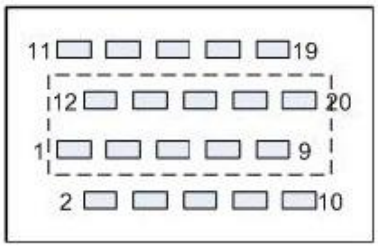
The terminals appearance of Connector and pin number as shown below

(一)、Encoder connector end：

CN2 Connector (female)

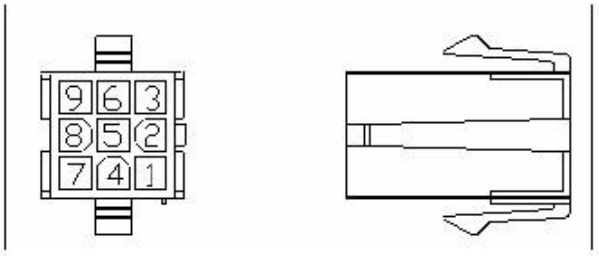
Side view

Rear view



CN2 The terminal on the back of Connector

(二)、Outlet end of motor：



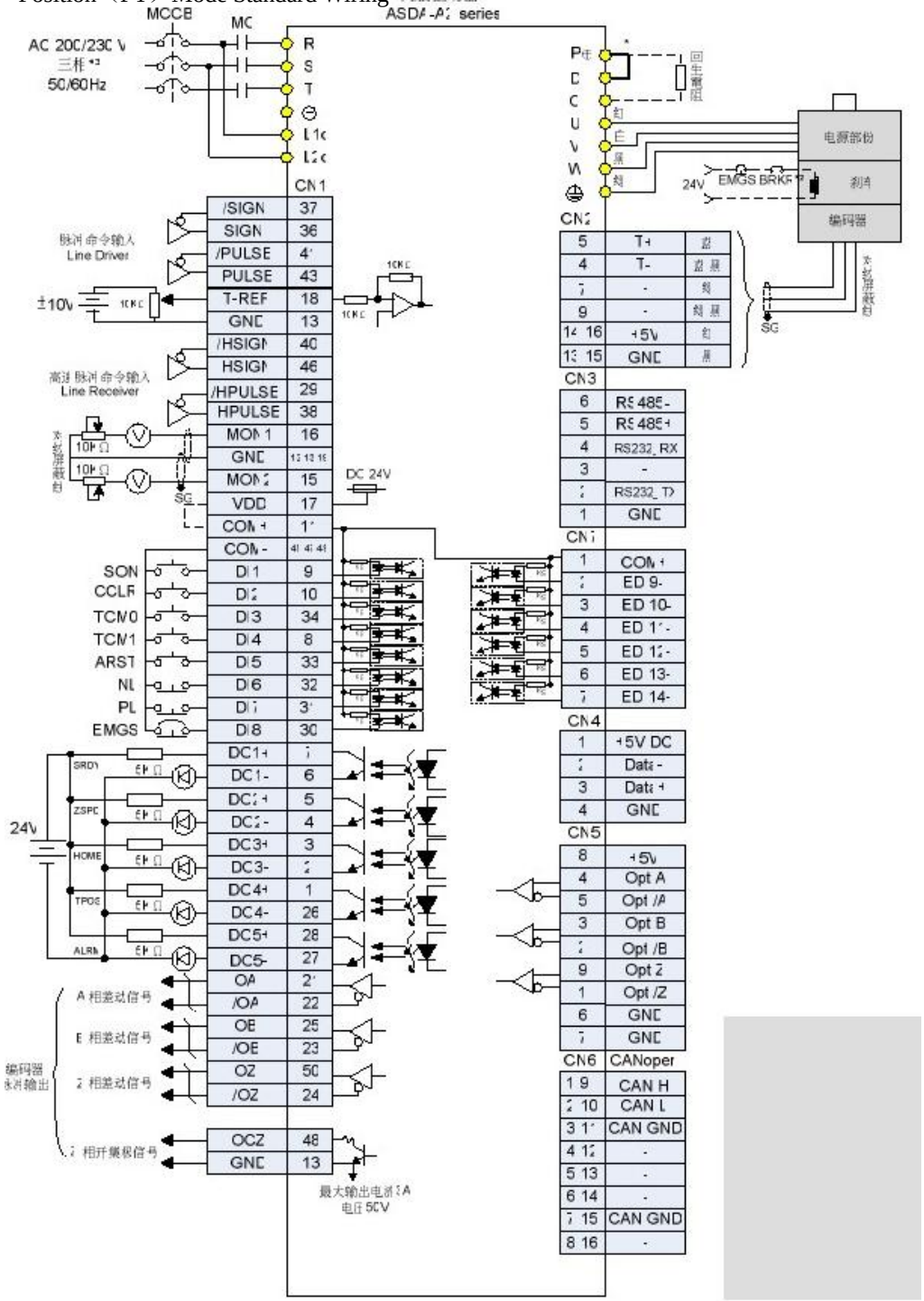
Fast joint

HOUSING：AMP (1-172161-9)

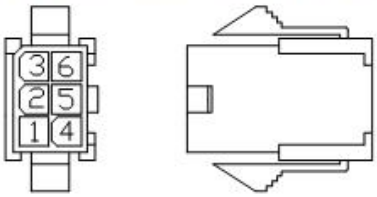
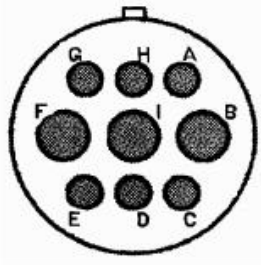
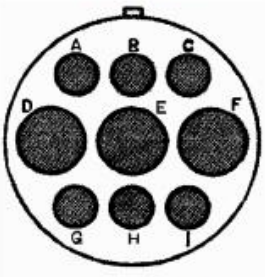
Military Joint

3.5 220V Standard wiring method

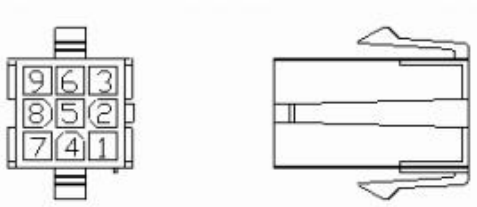
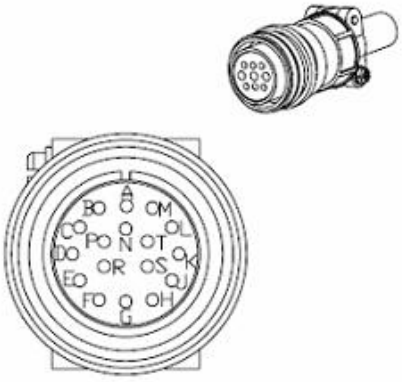
Position（PT）Mode Standard Wiring 伺服驱动器



3.6 The connecting head specification of leading-wiring frommotor U、V、W

Motor type	U、V、W/Electromagnetic brake connector	Terminal Definition
ECMA-C10401☐S (100W) ECMA-C10602☐S (200W) ECMA-C10604☐S (400W) ECMA-C10804☐7 (400W) ECMA-C10807☐S (750W)	 HOUSING: JOWLE (C4201H00-2*2PA)	A
ECMA-C10401☐S (100W) ECMA-C10602☐S (200W) ECMA-C10604☐S (400W) ECMA-C10804☐7 (400W) ECMA-C10807☐S (750W) *☐：with brake	 HOUSING: JOWLE (C4201H00-2*3PA)	B
ECMA-G11303☐S (300W) ECMA-E11305☐S (500W) ECMA-G11306☐S (600W) ECMA-G11309☐S (900W) ECMA-C11010☐S (1000W) ECMA-E11310☐S (1000W) ECMA-E11315☐S (1500W) ECMA-C11020☐S (2000W) ECMA-E11320☐S (2000W)	 3106A-20-18S	C
ECMA-E11820☐S (2000W) ECMA-E11830☐S (3000W) ECMA-F11830☐S (3000W) ECMA-F11845☐S (4500W) ECMA-F11855☐3 (5500W)	 3106A-24-11S	D

3.7 The connecting head specification of Encoder

Motor type	Encoder connector	Terminal Definition
ECMA-C10401☐S (100W) ECMA-C10602☐S (200W) ECMA-C10604☐S (400W) ECMA-C10804☐7 (400W) ECMA-C10807☐S (750W)	 HOUSING：AMP (1-172161-9)	A
ECMA-G11303☐S (300W) ECMA-E11305☐S (500W) ECMA-G11306☐S (600W) ECMA-G11309☐S (900W) ECMA-C11010☐S (1000W) ECMA-E11310☐S (1000W) ECMA-E11315☐S (1500W) ECMA-C11020☐S (2000W) ECMA-E11320☐S (2000W) ECMA-E11820☐S (2000W) ECMA-E11830☐S (3000W) ECMA-F11830☐S (3000W) ECMA-F11845☐S (4500W) ECMA-F11855☐3 (5500W) ECMA- F11875☐3 (7500W)	 3106A-20-29S	B

Connection name	T+	T-	Reserved	Reserved	Reserved	Reserved	DC+5V	GND	BRAID SHELD
Terminal definition A	1 (BLUE)	4 (BLUE BLACK)	-	-	-	-	7 (RED/ RED WHITE)	8	9
Terminal definition B	A	B	-	-	-	-	S	R	L

Please use multi core line with a shielding cable for selecting the wire, and keep the shield cable to be connected with the SHIELD end.

3.8 Cable selection

The suggested cable that used for each drive terminal and signal cable is introduced in the following table

驱动器与对应电机型号		电源配线－线径 mm² (AWG)			
		L1C, L2C	R, S, T	U, V, W	P⊕, C
ASD-A2-0121-□	ECMA-C10401□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
ASD-A2-0221-□	ECMA-C10602□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
ASD-A2-0421-□	ECMA-C10604□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
	ECMA-C10804□7	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
	ECMA-E11305□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
	ECMA-G11303□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
ASD-A2-0721-□	ECMA-C10807□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
	ECMA-G11306□S	1.3（AWG16）	2.1（AWG14）	0.82（AWG18）	2.1（AWG14）
ASD-A2-1021-□	ECMA-C11010□S	1.3（AWG16）	2.1（AWG14）	1.3（AWG16）	2.1（AWG14）
	ECMA-E11310□S	1.3（AWG16）	2.1（AWG14）	1.3（AWG16）	2.1（AWG14）
	ECMA-G11309□S	1.3（AWG16）	2.1（AWG14）	1.3（AWG16）	2.1（AWG14）
ASD-A2-1521-□	ECMA-E11315□S	1.3（AWG16）	2.1（AWG14）	1.3（AWG16）	2.1（AWG14）
ASD-A2-2023-□	ECMA-C11020□S	1.3（AWG16）	2.1（AWG14）	2.1（AWG14）	2.1（AWG14）
	ECMA-E11320□S	1.3（AWG16）	2.1（AWG14）	2.1（AWG14）	2.1（AWG14）
	ECMA-E11820□S	1.3（AWG16）	2.1（AWG14）	3.3（AWG12）	2.1（AWG14）
ASD-A2-3023-□	ECMA-E11830□S	1.3（AWG16）	2.1（AWG14）	3.3（AWG12）	2.1（AWG14）
	ECMA-F11830□S	1.3（AWG16）	2.1（AWG14）	3.3（AWG12）	2.1（AWG14）
ASD-A2-4523-□	ECMA-F11845□S	1.3（AWG16）	3.3（AWG12）	8.4（AWG8）	3.3（AWG12）
ASD-A2-5523-□	ECMA-F11855□3	1.3（AWG16）	3.3（AWG12）	13.3（AWG6）	3.3（AWG12）
ASD-A2-7523-□	ECMA-F11875□3	1.3（AWG16）	5.3（AWG10）	13.3（AWG6）	3.3（AWG12）

表格中中文：驱动器与对应电机型号（The drive and its corresponding motor type）
电源配线-线径 （Power cable- cable dimension）

驱动器型号	编码器配线 — 线径mm² (AWG)			
	芯线尺寸	芯线条数	线种规范	标准线长
ASD-A2-0121-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-0221-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-0421-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-0721-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-1021-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-1521-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-2023-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-3023-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-4523-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-5523-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）
ASD-A2-7523-□	0.13（AWG26）	10 条（4 对）	UL2464	3 公尺（9.84 英呎）

表格中中文：驱动器型号（The drive type） 编码器配线-线径 （Encoder cable-dimension） 芯线尺寸（Cored wire dimension）芯线条数（Cored wire number）线种规范（Cored wire standard） 标准线长（Standard length）

1） Please use Shielded twisted-pair cable（双绞屏蔽线）as encoder cable to reduce the noise interference

2） Shielding mesh must be connected with SHIELD terminal

3） Please follow the cable selection to avoid the happening of dangerous event

4） The mode number of drive is ASDA-A2，and please refer to the information the actual purchased product when operating

5）Servo motor is a kind of braking or keyway/ oil sealing(刹车或键槽 / 油封) type

3.9 Parameter of the proximity switch

Operating voltage：10-24V DC（allowed pulsating voltage≤20%）

Load current：200mA

No-load current：≤10mA

Drop voltage：≤2.0V

Temperature range：-25℃ to +65℃

Function：Turret end-tooth indexing table off/locking check；Origin check.

Structural logic：PNP NC(normally open，positive logic）

Wiring table of proximity switch

Function	Off check	Locking check	Origin check	0 v	+24v	
Terminal seat subscript	1	2	3	4	5	6

4. The point definition of control signal

4.1 Introduction to DI signaling function

Signal name	Function
DI1(IDX0)	Index selection by inputting point 0
DI2(IDX1)	Index selection by inputting point1
DI3(IDX2)	Index selection by inputting point2
DI4(IDX3)	Index selection by inputting point3
DI5(ORGP)	Origin sensor input
DI6(MDP0)	Manual continuing operation
DI7(MD0)	Mode switching by inputting 0
DI8(MD1)	Mode switching by inputting1

Definition of data input (DI)

DI1	DI2	DI3	DI4	Tool-position number
0	0	0	0	1
1	0	0	0	2
0	1	0	0	3
1	1	0	0	4
0	0	1	0	5
1	0	1	0	6
0	1	1	0	7
1	1	1	0	8
0	0	0	1	9
1	0	0	1	10
0	1	0	1	11
1	1	0	1	12
0	0	1	1	13
1	0	1	1	14
0	1	1	1	15
1	1	1	1	16

Function defining of mode switching

MDPn	State	MD0	MD1	Option description
0	1	0	0	Torque reduction
0	2	0	1	Indexing position trigger
0	3	1	0	Origin trigger
0	4	1	1	Emergency

				shutdown
1		0	1	Reverse manual operation
1		1	0	Positive manual operation

4.2 Introduction to DO signaling function

組合 DO 輸出定義

項目	DO5	DO4	DO3	DO2	DO1	功 能 說 明
1	0	0	0	0	0	ALRM:當伺服發生警示時，此訊號輸出訊號
2	0	0	0	0	1	SRDY :當控制與主電路電源輸入至驅動器後，若沒有異常發生，此訊號輸出訊號
3	0	0	0	1	0	原點復歸中，此訊號輸出訊號
4	0	0	0	1	1	原點復歸完成後，此訊號輸出訊號
5	0	0	1	0	0	切換分度位置命令運轉中，此訊號輸出訊號
6	0	0	1	0	1	分度位置編號 1
7	0	0	1	1	0	分度位置編號 2

8	0	0	1	1	1	分度位置編號 3
9	0	1	0	0	0	分度位置編號 4
10	0	1	0	0	1	分度位置編號 5
11	0	1	0	1	0	分度位置編號 6
12	0	1	0	1	1	分度位置編號 7
13	0	1	1	0	0	分度位置編號 8
14	0	1	1	0	1	分度位置編號 9
15	0	1	1	1	0	分度位置編號 10
16	0	1	1	1	1	分度位置編號 11
17	1	0	0	0	0	分度位置編號 12
18	1	0	0	0	1	分度位置編號 13
19	1	0	0	1	0	分度位置編號 14
20	1	0	0	1	1	分度位置編號 15
21	1	0	1	0	0	分度位置編號 16
22	1	0	1	0	1	分度位置編號 17
23	1	0	1	1	0	分度位置編號 18
24	1	0	1	1	1	分度位置編號 19
25	1	1	0	0	0	分度位置編號 20
26	1	1	0	0	1	分度位置編號 21
27	1	1	0	1	0	分度位置編號 22
28	1	1	0	1	1	分度位置編號 23
29	1	1	1	0	0	分度位置編號 24
30	1	1	1	0	1	分度位置編號 25
31	1	1	1	1	0	分度位置編號 26
32	1	1	1	1	1	分度位置編號 27

1 ALRM: The output signal represent that the servo system is warning

2SRDY: The output signal represent that there is no exception occurs when control and general power current is sent into the drive

3 The output signal represent that it is returning to the origin

4 The output signal represent that it has finished the origin return

5 The output signal represent the operating changing of the indexing location

6 The number of indexing location is 1

7 The number of indexing location is 2

4.3 Notes aboutediting PLC and wiring

1) This product is motored with Dlta ADSA-A2 series servo motor. DI in use is 0V drive set while DO is output of switching signal.
2) If the encoder of servo motor is incremental type. Zero-point response action is needed when turn on the main power or the servo occurs abnormal alarm.
3) If the encoder of servo motor is absolute encoder. The tool holder needs to back to zero point in order to confirm absolute coordinate when it is used the first time. There is no need of zero returning operation until replace the motor battery.
4) Can't disarmed the alarm until turn on the servo motor power again when the motor occurs abnormal alarm.
5) Must install no-fuse switch, in order to avoid overloading instantaneous current or instantaneous voltage because of external power short or other reason that damage the motor.
6) 24V external power is suggested. Wiring to COM+ COM- common port of the motor CN1
7)Tool selection control: when reaching the target position, the output of DO is corresponding tool position reached the target position.
8) Zero-point regression: when reaching the target position, the output of DO is NO.1 tool position reached the target position.
9)To avoid the possibility of DI7 DI8 offline or short causing the collision while machining. Edit DI6 to needing operating zero-point or turn tool choosing control SERVO ON. After the operating switch DI6 to SERVO OFF.
10)Oil pressure pushing the internal mechanism of the tool holder. Delay 50ms to operate tool selection control or zero-point regressafter Loosen/Lock detect the proximity switch action.

5. Abnormality remove

5.1MalfunctionStatement

 : Overcurrent	Need DI: ARST Clear
 : Overvoltage	Need DI: ARST Clear
 : Low Voltage	Voltage response auto clear
 : Motor magnetic field abnormal	Re Power on clear
 : Regeneration error	Need DI: ARST Clear
 : Overload	Need DI: ARST Clear
 : Speed error oversize	Need DI: ARST Clear
 : Abnormal impulse control order	Need DI: ARST Clear
 : Position control error oversize	Need DI: ARST Clear
 : Chip timeout	Can not clear
 : Encoder error	Re Power on clear
 : Correction error	Remove CN1 wiring and operating auto correct clear
 : Emergency stop	Relieve DI EMGS auto clear
 : Reverse limitation error	Need DI: ARST Clear or Servo Off clear or after remoted auto clear
 : Forward limitation error	Need DI: ARST Clear or Servo Off clear or after remoted auto clear
 : IGBT temperature error	Need DI: ARST Clear
 : Storage error	If occurred when power on it has to be reset parameter. If occurred when operating, use DI ARST clear
 : Detector output error	Need DI: ARST Clear

AL019: Series communication error	Need DI: ARST Clear
AL020: Series communication timeout	Need DI: ARST Clear
AL022: Main circuit power missing phase	Need DI: ARST Clear
AL023: Pre-overload warning	Need DI: ARST Clear
AL024: Encoder initial magnetic field error	Re Power on clear
AL025: Encoder internal error	Re Power on clear
AL026: Encoder error	Re Power on clear
AL030: Motor collision error	Need DI: ARST Clear

5.2Tool holdermalfunction cause and disposal

malfunction	cause	Maintenance measures	Measures Implementers
The center height is not correct, and the tool disk is relative to the cutter-fixed disk dislocation.	A collision occurs when the rotating turret is locked.	Turn the tool disk to a position , align and regulate the cutter and tool disk	Master Factory service personnel Turret factory service personnel
Tool disk does not rotate	Gear damage	Replace damaged parts	Turret factory service personnel
	Motor or driver damage, signal output abnormal	Check whether the line is disconnected Check whether the signal is normal	Master Factory service personnel Turret factory service personnel
Rotating turret can not be locked	Shaft is relative to the cutter-fixed disk dislocation.	Align the shaft and the cutter fixed disk	Turret factory service personnel
	Lock proximity switch no signal	Check proximity switch, adjust or replace	Turret factory service personnel

The tool disk rotate in one direction only	Servo setting error	Debugging servo driver	Turret factory service personnel
Tool disk parked in the incorrect location or located at severe attack position	Servo setting error	Debugging servo drive	Turret factory service personnel
Lubricating oil leakage	Seal damage	Replace damaged parts	Turret factory service personnel
Cutting fluid can not be discharged	Cutting fluid valve damage	Replace damaged parts	Turret factory service personnel
	Cutting fluid valves, catheter blockage	Use air pressure gun to blow through the cutting fluid valves, catheters	Turret factory service personnel
Cutting fluid appear in the gap between tool disk and rotating turret	Cutting fluid valve damage	Replace damaged parts	Turret factory service personnel

6. Parameter Description

6.1 Related parameters of servo tool holder

parameter	Factory value	Regulation description
Tool change	Nearest tool selection	The value has been set up, if the driver setting value is not reset without adjustment.
Number of pockets	8/12	The value has been set up, if the driver setting value is not reset without adjustment.
Tool-changing Speed	3000rpm	Drive internal address P5-75
Acceleration and deceleration time	200ms	The value has been set up, if the driver setting value is not reset without adjustment.
Reduction ratio	36:1/35:1/60:1	The value has been set up, if the driver setting value is not reset without adjustment.
Zero offset	Depending on the different tool holder	Drive internal address P6-01, the parameter has been set up, if the tool holder suffered a severe attacklead to inaccurate zero point in the use, you must adjust the parameter
Backlash value	Depending on the different tool holder	Drive internal address P7-01, the parameter has been set up, the value is for the compensation of gear clearance, if the gear gap becomes larger in the use, you must adjust the parameter