AS1 Series

AC Servo Drive
User Manual（BriefEdition V1.5）

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Content

Chapter 1Selection of Servo System

1.1Drive specifications

Table 1-1 AS1 series servo drive basic specifications

Basic specifications	model	AS1-02B	AS1-04B	AS1-08B	AS1-10B	AS1-15B	AS1-30B
	Continuous output current Arms	1.6	2.8	4	5.5	7.6	11.6
	Maximum output current Arms	5.8	10	12	17	17	28
	Power supply input	220VAC	Main power supply	Single-phase / three-phase,AC200~230V, 50/60HZ			
			Control power supply	Single phase , AC200~230V, 50/60HZ			
	Use environment		Temperature	Operation temperature:0℃~50℃ Storage temperature:-20 ℃~85¡æ			
			Humidity	0 ~90% RH (no dew environment)			
			Using height	Elevation 1000m and below			
			Vibration/strike	<1G			
			IP Grade / contamination	IP20/Contamination Rating 2			
	Control method			IGBT PWM Space vector control			
	Encoder			2500-wire incremental/17bit serial incremental			
	I/O Ports	IO Signal	Input	9 (General)			
			Output	5 (General)			
		Analog Signal	Input	2 (12bit)			
			Output	2 (Analog monitor signal output)			
		Pulse Signal	Input	4 (Low speed pulse, high speed pulse)			
			Output	4 (3 frequency output, 1 open collector output)			
	Communication		USB	Connect with PC			
			RS-485	Multi-group parallel			
	Panel Operator			LED display			
	Regeneration Function			Built-in braking resistor for 750W and above models			
	Protection Function			Overcurrent, overload, overvoltage, low voltage, over speed, overheat, encoder error, communication error, position deviation			
	Control Mode			Position control; speed control; torque control;			
Function Specifications	Position Control Mode	Location Command Format		PULSE/DIR; CW/CCW; A,B Phase cross pulse			
		Position Input Circuit		Line Driver; Open Collector			
		Maximum Input Fequency		Line Driver low speed 500Kpps; Line Driver high speed 4Mpps;Open Collector 200Kpps			
		Smoothing Filter		Smoothing treatment for position command, ensuring motor running more stable			
		Electronic Gear		Two sets of electronic gear ratios available			
		Vibration Suppression Filter		Effectively inhibit external signal interference and the system resonant frequency, to ensure stable operation			
	Speed	Command Form		Analog voltage command input, internal			

	Control Mode			speed command
		Speed Change Fate	Voltage Fluctuation	Rated voltage ±10%：0.5%（Rated speed）
			Load Fluctuation	0-100% load：- 0.5%(Rated speed)
			Temperature Fluctuation	25±25℃：- 0.5%(Rated speed)
		Acceleration/Deceleration Setting Range		0-10S
		Analog Speed Command Input		-10V～+10V
	Torque Control Mode	Command Form		Analog torque command
		Analog Torque Command Input		-10V～+10V
	Common Spec	Self-tuning Function		Identifying inertia, rigidity tuning
		Encoder Feedback Electronic Gear		Free set
		Error Record		8 sets of historical information records

1.2Servo motors and drives model description

Drive model description

AS1 – 04B F I - XX

①②③④⑤⑥

①	AC servo series	AS1 : YAKO AS1 Series AC servo
②	Power	02: 200W 04: 400W 08: 800W 10: 1KW 15: 1.5KW 30: 3KW
③	Voltage level	B : 220V T : Three-phase 380V
④	Product type	F: General X: Basic typeN: Bus type A: High-Class
⑤	Installation methods	I: Baseboard installation
⑥	Customized design	xx : Customized design number

Servo motor type description

ASMD － 08 － 1030B－U111 － XX

①②③④⑤⑥⑦⑧⑨⑩

①	Serial number	YAKO AS1 Series servo motors
②	Properties	D: Small inertia J: Large inertia H: High inertia
③	Flange no.	04:40mm 06: 60mm 08: 80mm 09:90mm 10:100mm 11: 110mm 13: 130mm
④	Power	A5: 50W 01: 100W 02: 200W 04: 400W 08: 750W 10: 1KW 15: 1.5KW 30: 3KW
⑤	Rated speed (rpm)	10: 1000rpm 15: 1500 rpm 20: 2000 rpm 30: 3000 rpm
⑥	Voltage level	B：200V T：400V
⑦	Encoder type	U: 2500-wireincremental A: 17-bitincremental

		B: 17 bitabsolute
⑧	Shaft connection	1：Plain 2：Solid, key 3：Solid, key, screw hole 4：Solid, screw hole
⑨	Brake,oil seal	1：None 2：Seal 3：Brake 4： Seal+brake
⑩	Design number	1：Ver. 1
	Customization	xx：Customizationnumber

1.3Servo drives and servo motors accessory list

Table 1-2 Servo drive and motor matching

Servo motor models		Flange	Capacity	Rated speed	Max speed	The drive model AS1-□□B**	Drive SIZE
Small inertia	ASMD-04-A530B	40	50W	3000rpm	5000rpm	02B	B
	ASMD-04-0130B	40	100W	3000rpm	5000rpm	02B	B
	ASMD-06-0230B	60	200W	3000rpm	5000rpm	02B	B
	ASMD-06-0630B	60	600W	3000rpm	5000rpm	08B	B
	ASMD-06-0430B	60	400W	3000rpm	5000rpm	04B	B
	ASMD-06-0630B	60	600W	3000rpm	5000rpm	08B	B
	ASMD-08-0830B	80	750W	3000rpm	4500rpm	10B	B
Big inertia	ASMJ-06-0230B	60	200W	3000rpm	5000rpm	02B	B
	ASMJ-06-0430B	60	400W	3000rpm	5000rpm	04B	B
	ASMJ-08-0830B	80	750W	3000rpm	4500rpm	10B	B
	ASMJ-08-1025B	80	1KW	2500rpm	3000rpm	10B	B
	ASMJ-09-0830B	90	750W	3000rpm	3900rpm	08B	B
	ASMJ-09-1025B	90	1KW	2500rpm	3300rpm	08B	B

	ASMJ-10-1030B	100	1KW	3000rpm	4500rpm	15B	C
	ASMJ-11-0820B	110	800W	2000rpm	2400rpm	15B	C
	ASMJ-11-1230B	110	1.2KW	3000rpm	3500rpm	15B	C
	ASMJ-11-1530B	110	1.5KW	3000rpm	3100rpm	15B	C
	ASMJ-11-1830B	110	1.8KW	3000rpm	3200rpm	15B	C
	ASMJ-13-1025B	130	1KW	2500rpm	2600rpm	15B	C
	ASMJ-13-1325B	130	1.3KW	2500rpm	2700rpm	15B	C
	ASMJ-13-1525B	130	1.5KW	2500rpm	2900rpm	15B	C
	ASMJ-13-2625B	130	2.6KW	2500rpm	2700rpm	30B	C
	ASMJ-13-2025B	130	2KW	2500rpm	2700rpm	30B	C
High inertia	ASMH-13-1010B	130	1KW	1000rpm	1300rpm	15B	C
	ASMH-13-1215B	130	1.2KW	1500rpm	1800rpm	15B	C
	ASMH-13-1515B	130	1.5KW	1500rpm	1800rpm	15B	C
	ASMH-13-0915B	130	0.85KW	1500rpm	3000rpm	15B	C
	ASMH-13-1315B	130	1.3KW	1500rpm	3000rpm	30B	C
	ASMH-13-2315B	130	2.3KW	1500rpm	1700rpm	30B	C
Super performance	CSMT-A5B	40	50W	3000rpm	5000rpm	02B	B
	CSMT-01B	40	100W	3000rpm	5000rpm	02B	B
	CSMT-02B	60	200W	3000rpm	5000rpm	04B	B
	CSMT-04B	60	400W	3000rpm	5000rpm	08B	B
	CSMT-08B	80	800W	3000rpm	5000rpm	10B	B

1.4Application of motor numbers

Table 1-3 Motor number quick reference table

Motor Categories	Rated voltage	Servo motor models ASM□-□□-□□□□□-*****		Motor numbers (P01.00)
ASM	220V	Small inertia, small capacity	ASMD-04-A530B-U***	00001
			ASMD-04-0130B-U***	00002
			ASMD-06-0230B-U***	00003
			ASMD-06-0430B-U***	00004
			ASMD-08-0830B-U***	00005

			ASMD-06-0230B-U***-M	00011
			ASMD-06-0430B-U***-M	00010
			ASMD-06-0630B-U***-M	00013
			ASMD-06-0430B-U***-G	00014
			ASMD-06-0630B-U***-G	00015
		Big inertia, small capacity	ASMJ-06-0230B-U***	00006
			ASMJ-06-0430B-U***	00007
			ASMJ-08-0830B-U***	00008
			ASMJ-08-0830B-U***-M	00009
			ASMJ-09-0830B-U***	00012
		Big inertia, medium capacity	ASMJ-08-1025B-U***	00101
			ASMJ-08-1030B-U***	00111
			ASMJ-08-1030B-U***-B	00118
			ASMJ-09-1025B-U***	00115
			ASMJ-10-1030B-U***	00102
			ASMJ-11-1230B-U***	00112
			ASMJ-11-1530B-U***	00103
			ASMJ-11-1830B-U***	00108
			ASMJ-11-0820B-U***	00113
			ASMJ-13-1025B-U***	00104
			ASMJ-13-1325B-U***	00116
			ASMJ-13-1525B-U***	00105
			ASMJ-13-2025B-U***	00109
			ASMJ-13-2625B-U***	00110
		High inertia, medium capacity	ASMH-13-1010B-U***	00106
			ASMH-13-1215B-U***	00114
			ASMH-13-1515B-U***	00107
			ASMH-13-2315B-U***	00117
			ASMH-13-0915B-U***	00200
			ASMH-13-1315B-U***	00201
CSM	220V	Super performance, small capacity	CSMT-A5BR1ANT3	01300
			CSMT-01BR1ANT3	01301
			CSMT-02BR1ANT3	01302
			CSMT-04BR1ANT3	01303
			CSMT-08BR1ANT3	01304

Note：

17bit Inc. Encoder configuration, the fourth motor number is " 1 "
17bit Abs. Encoder configuration, the fourth motor number is " 2 "
For example, motor codes "01105"ASMJ-13-1525B-A***
For example, motor codes "02105"ASMJ-13-1525B-B***

1.5Auxiliary cable

Power cablenaming rule

P1 － AS1－03 P04 F

①②③④⑤

①	Wire type	P1: normal plug P2: Aviation plug
②	Drive series	AS1 series drives

③	Cable length	03：3 meter 05：5 meter 10：10 meter
④	Power	P08:800W P15: 1.5KW P30: 3KW
⑤	Installation methods	F： Fixed M：Movable

Motor Encoder Cable Naming Rules：

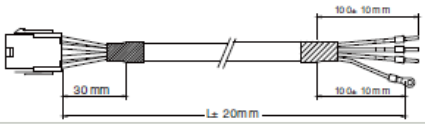
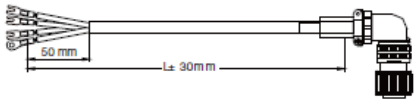
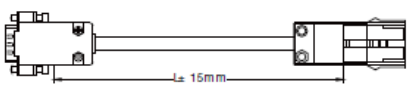
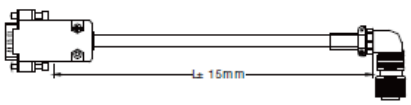
E1 — AS1 —03 A F

①②③④⑤

①	Cable type：	E1: normal plug E2: Aviation plug
②	Series	AS1 series drives
③	Cable length：	03：3 meter 05：5 meter 10：10 meter
④	Encoder spec：	A：17bit inc. B：17bit abs. U: 2500 wire
⑤	Installation：	F： Fixed M：Movable

Cable external view

Table 1-4 Cable appearance

Cable Name	Model	Length(mm)	SIZE-C
Power Cable	P1-AS1-03P04F	3000	
	P1-AS1-05P04F	5000	
	P1-AS1-10P04F	10000	
	P1-AS1-03P08F	3000	
	P1-AS1-05P08F	5000	
	P1-AS1-10P08F	10000	
	P2-AS1-03P15F	3000	
	P2-AS1-03P30F	3000	
	P2-AS1-05P15F	5000	
	P2-AS1-05P30F	5000	
	P2-AS1-10P15F	10000	
	P2-AS1-10P30F	10000	
Encoder Cable	E1-AS1-03UF	3000	
	E1-AS1-05UF	5000	
	E1-AS1-10UF	10000	
	E2-AS1-03UF	3000	
	E2-AS1-05UF	5000	
	E2-AS1-10UF	10000	

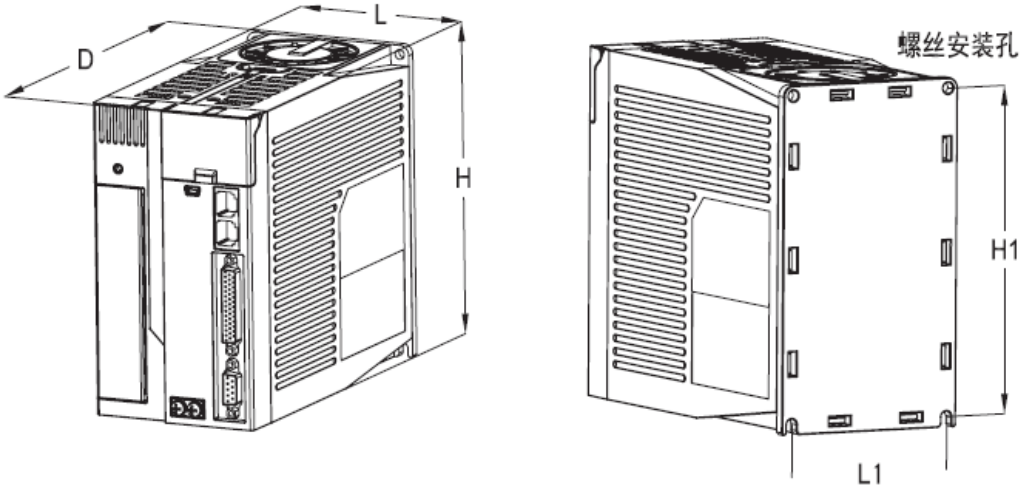
1.6Brake Resistance Specication

Table 1-5 Internal braking resistor specification

Servo drive model		Built-in brake resistor spec		Minimum resistance (Ω)	The maximum braking energy capacitor can absorb(J)
		resistance (Ω)	capacity (W)		
Single-Phase 220V	AS1-01BFI	-	-	50	9
	AS1-02BFI	-	-	50	9
	AS1-04BFI	-	-	45	18
Single-Phase 220V Three-Phase 220V	AS1-08BFI	50	50	40	26
	AS1-10BFI	25	80	20	26
Three-Phase 220V	AS1-15BFI	25	80	15	47
	AS1-30BFI	25	80	15	47

Chapter 2 Product mounting and overall dimensions

2.1 Servo drive dimensions



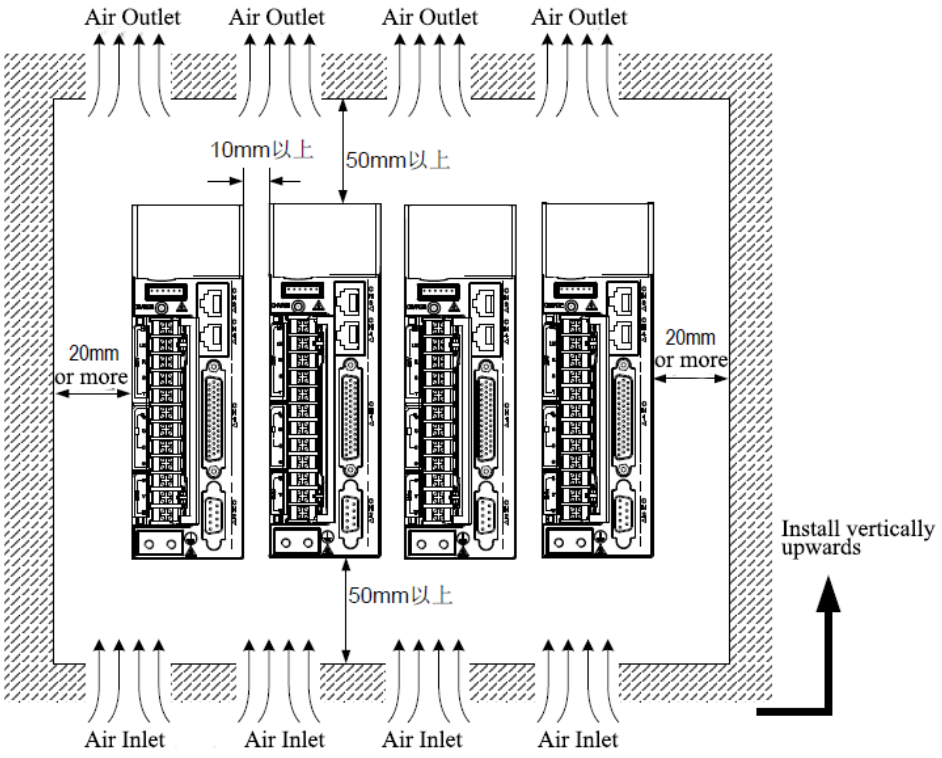
Frame B: AS1-02B, AS1-04B, AS1-08B,AS1-10B

Frame C: ,AS1-15B, AS1-30B

Table 2-1 Drive size

Model	L(mm)	H(mm)	D(mm)	L1(mm)	H1(mm)	D1(mm)	Screw holes
Frame C	90	160	183	80	150	75	4-M4
Frame B	58	160	177	48	150	75	

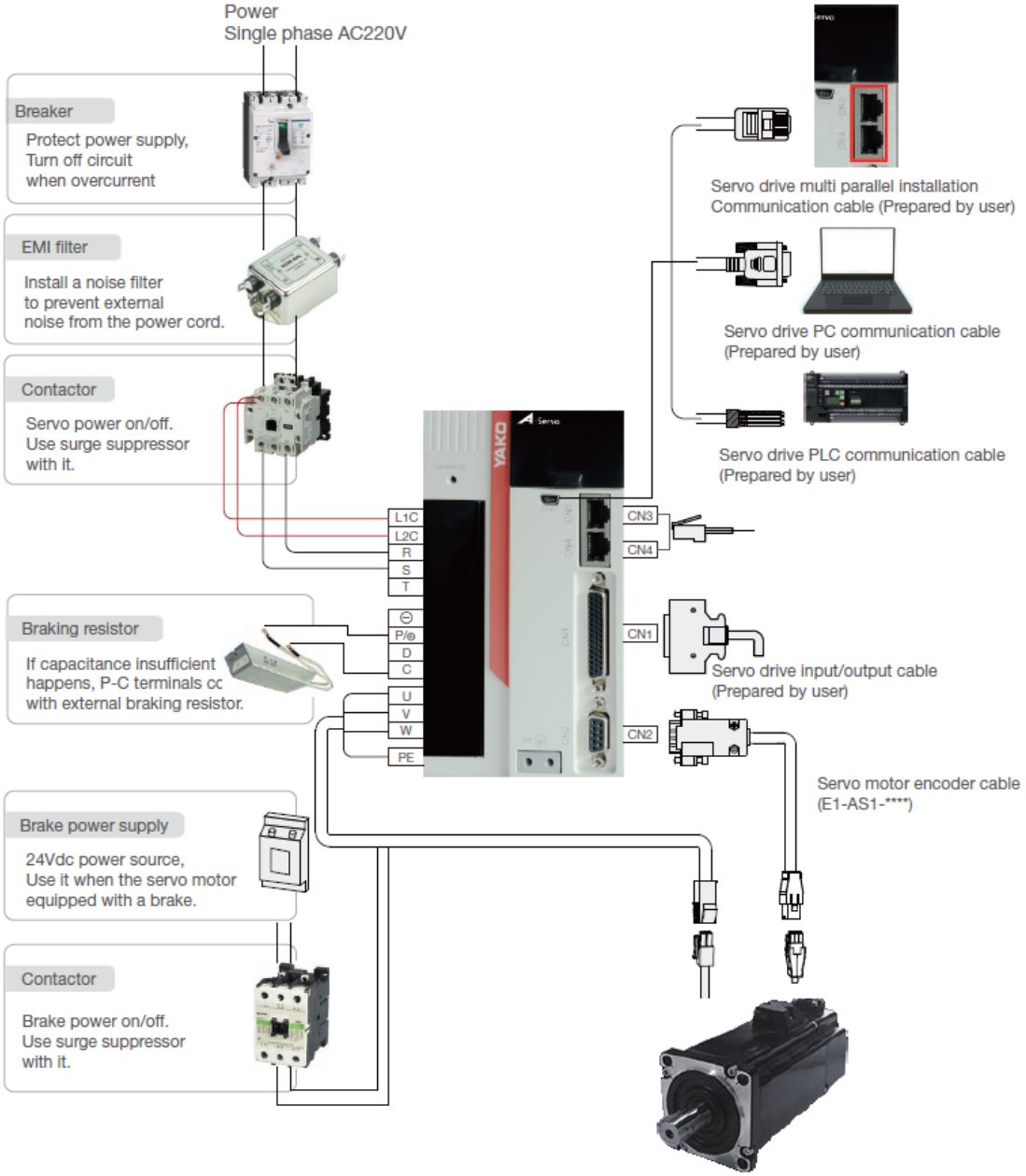
2.2 Servo-drive installation



2-1 Servo-drive installation

Chapter3 Servo drive and motor connections

3.1 System structure chart



3-1 System structure chart

Drive parts names, functions and specifications are as follows

Table 3-1 Main circuit terminals name and function of the servo drive

No.	Name	Description
1	L1C、L2C AC Control power supplyterminal	Input control circuit power supply
2	R、S、T AC Main power supply terminal	Main circuit power supply
3	P⊕、D、C External regenerative resistor terminal	Default P ⊕ D Shorted. When using an external regeneration resistor, first remove the short line between p⊕ d , then add external regeneration resistor between p⊕ c
4	U、V、W、PE	Connect the servo motor three-phase and ground

	Motor terminals	
5	USB Communication port CN5	By Mini USB PC Connection to monitor, run a test, the drive parameter changes
6	Communications control CN3,CN4	Can be used with RS485 Command device
7	Control terminalCN1	Connect to the host controller, IO Signal control
8	Encoder feedback terminal CN2	Access motor encoder feedback

3.2 Main circuit

3.2.1 Introduction

Each part of the main circuit function, and specifications are as follows.

Table 3-2 Servo drive main circuit terminals feature specifications

Name	Terminal marking	Features, specifications
The main circuit power supply input terminals	R、S	Single phase AC220V Power supply input
	R、S、T	Three-phase AC220V Power supply input
Control power supply input terminals	L1C、L2C	Control circuit power supply
External regenerative resistor connection terminals	P⊕、D、C	By default , P ⊕ -D Connected with short lines. When braking power is not enough, remove the line between P ⊕ -D (Removed short wiring). And connect brake resistorbetween p⊕-C. An external braking resistor need to be separately purchased.
DC bus terminal	P⊕、⊖	Servo DC bus terminal, common bus connections at parallel fans.
Servo motor connection terminals	U、V、W	Servo motor connection terminal
Grounding Terminal	PE	Two ground terminals, be sure to connect the entire system to ground

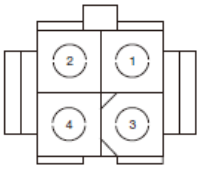
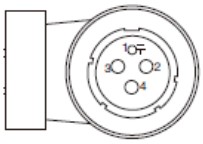
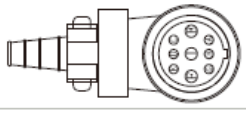
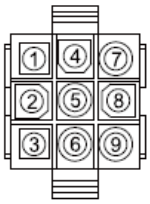
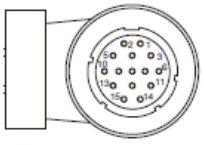
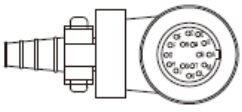
3.3Encoder interface

Encoders line driver-side connectors PIN distribution is as follows:

Table 3-3 Encoder cable servo drive-side terminals pin distribution

PIN	2500-wire Encoder Signal	17Bit Encoder Signal	Functional Description
1	A+	--	Encoder signal
2	A-	--	
3	B+	SD+	
4	B-	SD-	
5	Z+	--	
6	Z-	--	
7	+5V	+5V	Encoder + 5V power output
8	GND	GND	Encoder power ground output
9	--	--	
Shell	PE	PE	

Table 3-4 Servo motor connectors

Connector Outline	Terminal Pin Definition			Applicable Motor
	4 Pin connector			
	Pin Number	Signal Type		40、60、80、90
	1	U		Recommend： Plastic shell：AMP-172159-1 Terminal：AMP-170362-1
	2	V		
	3	W		
	4	PE		
	4 Pin aviation plug YD28K4TS-E			
	Pin Number	Signal Type		100、110、130
	1	PE		Aviation plug： YD28K4TS-E
	2	U		
	3	V		
	4	W		
	9 Pin aviation plug SMS3102A20-18P			
	Pin Number	Signal Type		130
	B	U		Military standard aviation plug： SMS3102A20-18P
	I	V		
	F	W		
	C	PE		
	D	BR+		
	E	BR-		
	9 Pin connector			
	Pin Number	2500-Wire Signal	17Bit Signal	40、60、80、90
	3	A+	--	Recommend： Plastic shell：AMP-172161-1 Terminal：AMP-170361-1
	6	A-	--	
	2	B+	SD+	
	5	B-	SD-	
	1	Z+	BAT+	
	4	Z-	BAT-	
	9	+5V	+5V	
	8	GND	GND	
	7	PE	PE	
	15 Pin aviation plug YD28K15TS-E			
	Pin Number	2500-Wire Signal	17Bit Signal	100、110、130
	2	+5V	+5V	Aviation plug： YD28K15TS-E
	3	GND	GND	
	4	A+	--	
	7	A-	--	
	5	B+	SD+	
	8	B-	SD-	
	6	Z+	BAT+	
	9	Z-	BAT-	
	1	PE	PE	
	17pin aviation plug SMS3102A20-29P			
	Pin Number	2500-Wire Signal	17Bit Signal	130
	A	+5V	+5V	Military standard aviation plug： SMS3102A20-29P
	B	GND	GND	
	C	A+	--	
	D	A-	--	
	E	B+	SD+	
	F	B-	SD-	
	G	PE	PE	
	J	Z+	BAT+	
	K	Z-	BAT-	

3.4Control signal

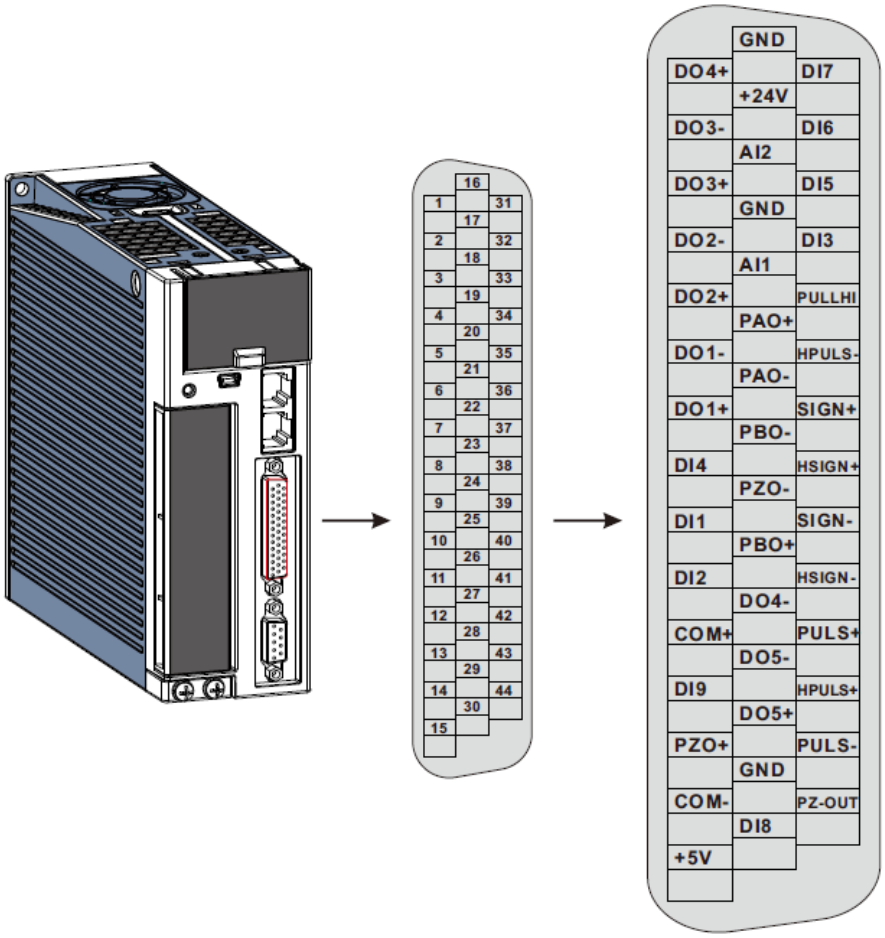
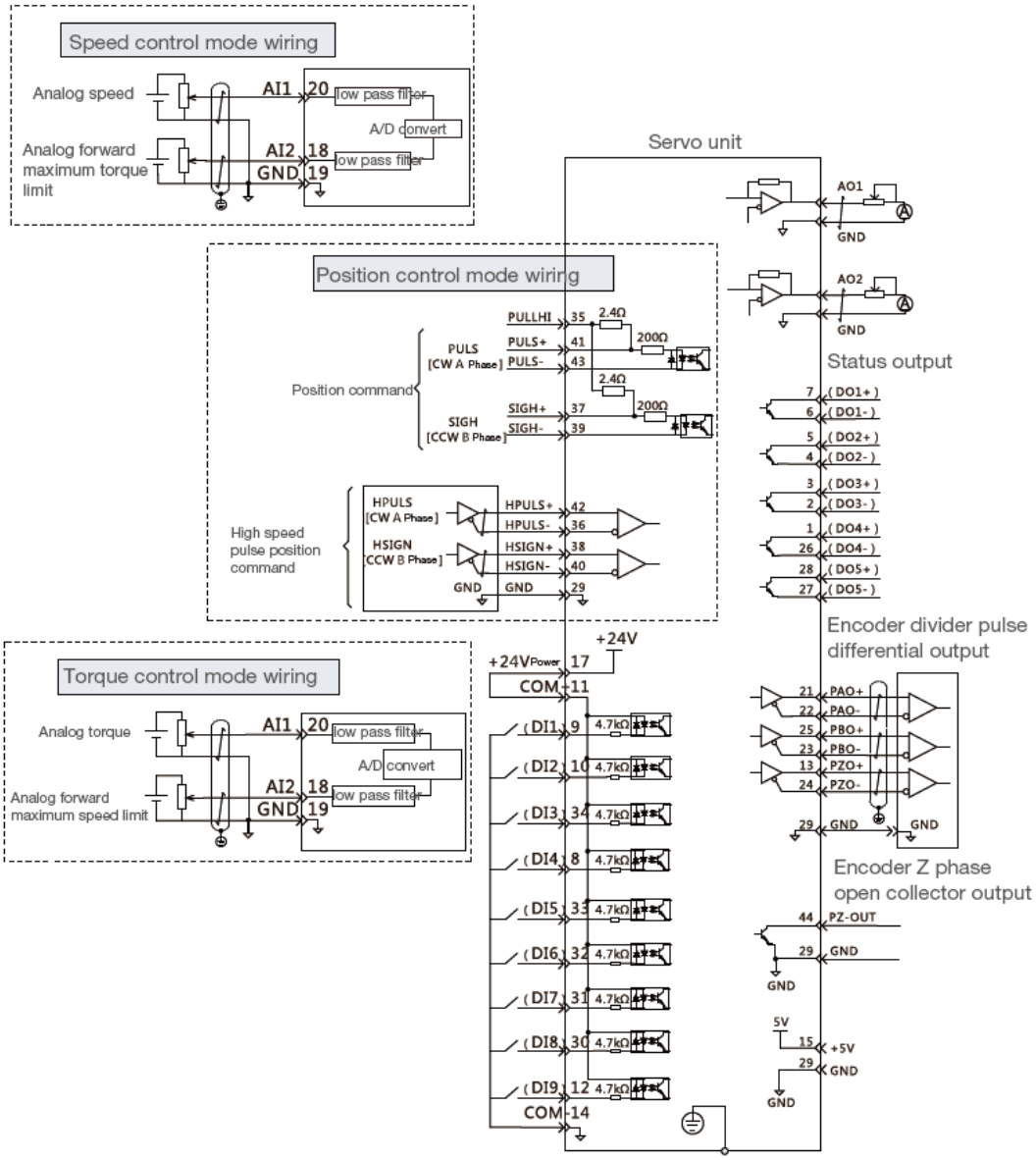


Table 3-5 Control port pin definition table

Definition		Pin	Spec.	
Position Command	PULS+	41	Low speed pulse command（below 500Kpps）: Pulse、CW、A Phase	Differential drive input or open collector input
	PULS-	43	Low speed pulse command（below 500Kpps）: Pulse、CW、A Phase	
	SIGN+	37	Low speed pulse command（below 500Kpps）: Dir、CCW、B Phase	
	SIGN-	39	Low speed pulse command（below 500Kpps）: Dir、CCW、B Phase	
	HPULS+	42	High-speed pulse command input, differential inputs required	
	HPULS-	36	High-speed pulse command input, differential inputs required	
	HSIGN+	38	High-speed pulse direction input, differential inputs required	
	HSIGN-	40	High-speed pulse direction input, differential inputs required	
	PULLHI	35	COM+，Power input port, internal connected with current limiting resistor	
	GND	29	Differential signal ground	
Encoder Output	PAO+	21	Encoder pulse frequency division output	
	PAO-	22	Encoder pulse frequency division output	
	PBO+	25	Encoder pulse frequency division output	
	PBO-	23	Encoder pulse frequency division output	
	PZO+	13	Encoder pulse frequency division output	
	PZO-	24	Encoder pulse frequency division output	

Encoder Output	PZ-OUT	44	Origin pulse open collector output	
	GND	29	Origin pulse open collector output signal ground; differential signal ground	
	+5V	15	Internal 5V power supply, maximum output 200mA	
	GND	16	Internal 5V power supply, maximum output 200mA	
	PE	Shell		
Analog Signal Input	AI1	20	Speed, torque analog command input, max ± 12V	
	AI2	18	Speed, torque analog command input, max ± 12V	
	GND	19	Analog signal ground	
General I/O Signal			Default Function	Function Description
	DI1	9	P-OT	Forbid forward drive
	DI2	10	N-OT	Forbid reverse drive
	DI3	34	INHIBIT	Forbid pulse
	DI4	8	ALM-RST	Alarm reset
	DI5	33	S-ON	Servo enable
	DI6	32	ZCLAMP	Zero fixed
	DI7	31	GAIN-SEL	Gain switching
	DI8	30	Home Switch	Origin switch
	DI9	12	Reserved	N/A
	+24V	17		Internal 24 power supply, voltage range +20 – 28V, maximum output current 200mA
	COM-	14		Internal 24V ground; open collector pulse input ground;
	COM+	11		Power input, 12–24V
	DO1+	7	S-RDY+	Servo ready
	DO1-	6	S-RDY-	Servo ready
	DO2+	5	COIN+	Position OK
	DO2-	4	COIN-	Position OK
	DO3+	3	ZERO+	Zero speed
	DO3-	2	ZERO-	Zero speed
	DO4+	1	ALM+	Fault output
	DO4-	26	ALM-	Fault output
	DO5+	28	WAN+	Warning output
	DO5-	27	WAN-	Warning output



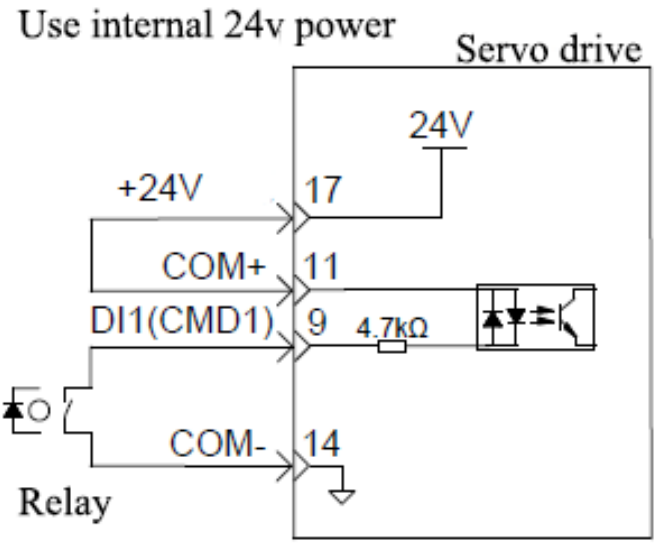
3-2 General layout of control mode

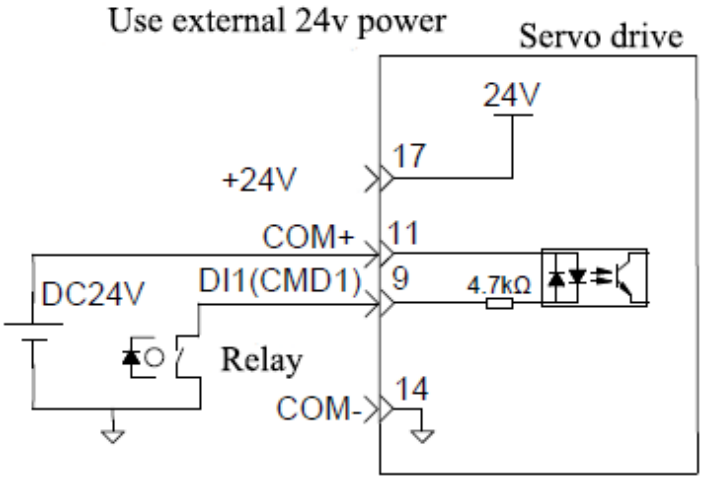
3.4.1Digital input and output signals

1)**Digital input circuit**

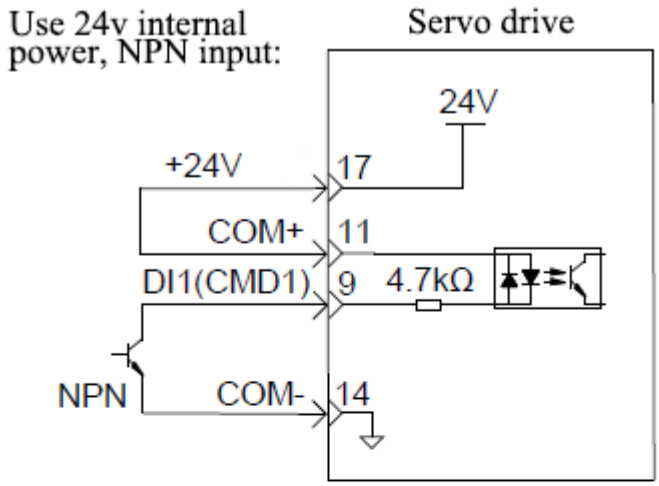
Take DI1 as an example, DI1~DI9

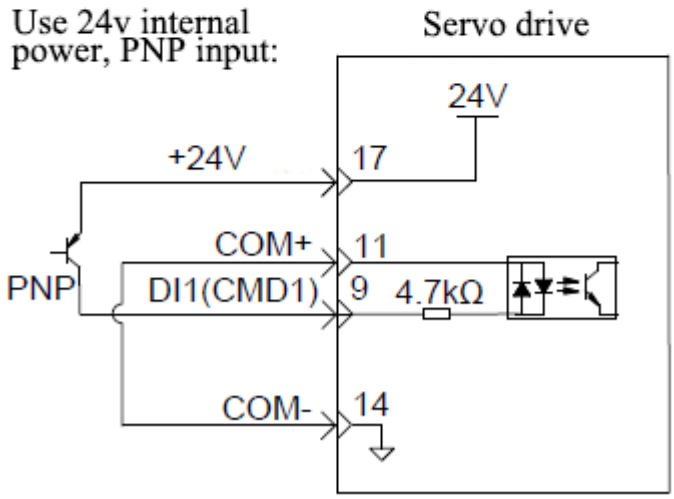
a） Host computer relay output

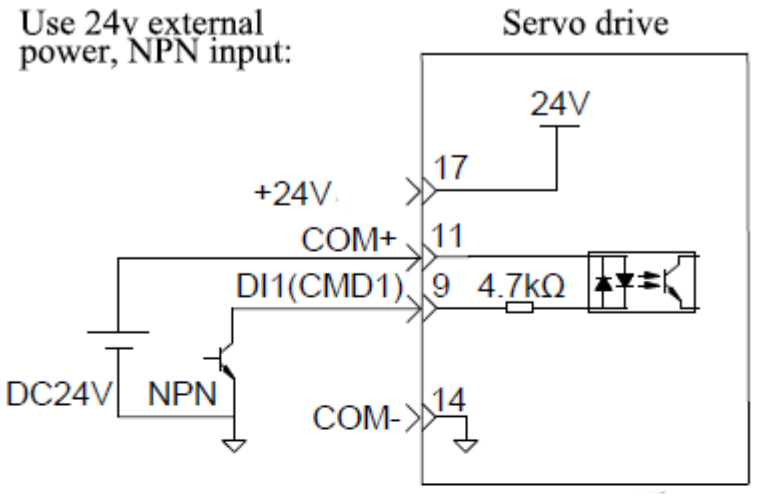


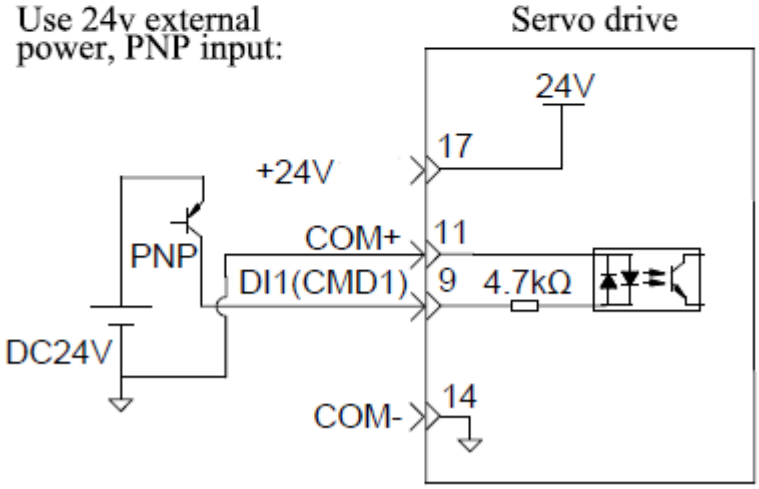


b） Host computer collector output


Use 24v internal power, NPN input:
Servo drive
24V
+24V
17
COM+
11
DI1(CMD1)
9
4.7kΩ
NPN
COM-
14


Use 24v internal power, PNP input:
Servo drive
24V
+24V
17
COM+
11
PNP
DI1(CMD1)
9
4.7kΩ
COM-
14



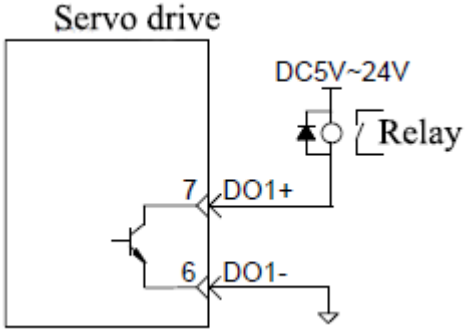


Note：don’t support NPN and PNP be mixed

2）Digital output circuit

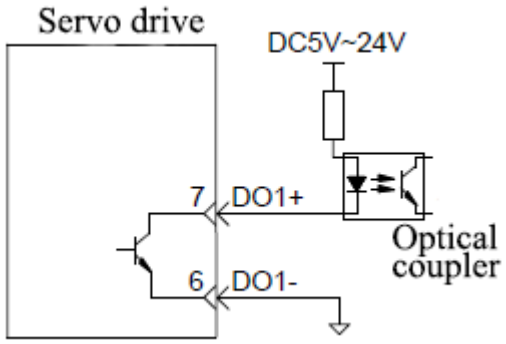
Use DO1 ss an example, DO1~DO5 Interface circuit is the same.

a） When the host relayinput



Note: when the host computer is relay input, please be sure to add the freewheeling diode with right direction, or it may damage DO Port.

b） When the host computer is optocoupler input



Note：1、Be sure to access current-limiting resistor；

2、Servo drive optocoupler circuits maximum voltage, maximum current is as follows：

Voltage: DC30V (Max)

Current: DC50mA (Max)

3.4.2 Analog input signal

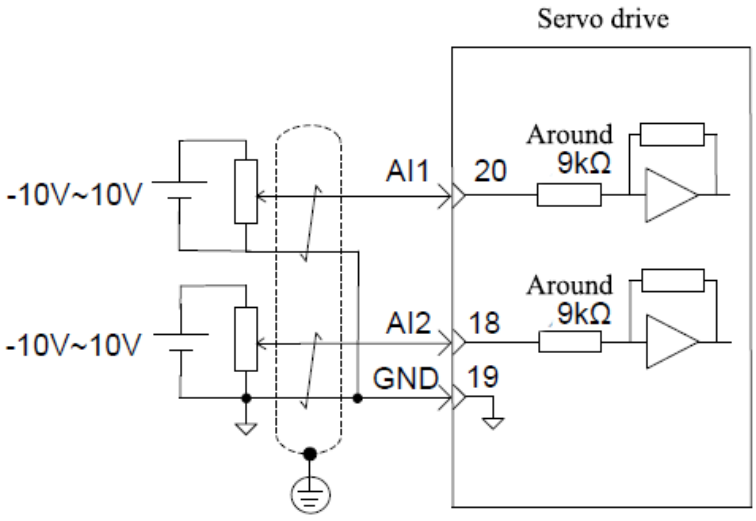
Signal name	Default functionality	PIN number	Function description
Analog	AI1	20	Analog input signal 12bit , Range: -10V ~ +10V
	AI2	18	
	GND	19	Analog input ground signal

Speed and torque analog input port, voltage value command please reference P02 group settings;

Input voltage range: -10V ~ +10V Resolution 12bit

The maximum allowable voltage: ± 12V

Input resistance is about 9K Ω



3.4.3 Position command input signal

Table 3-6 Relationship between input pulse frequency and pulse width

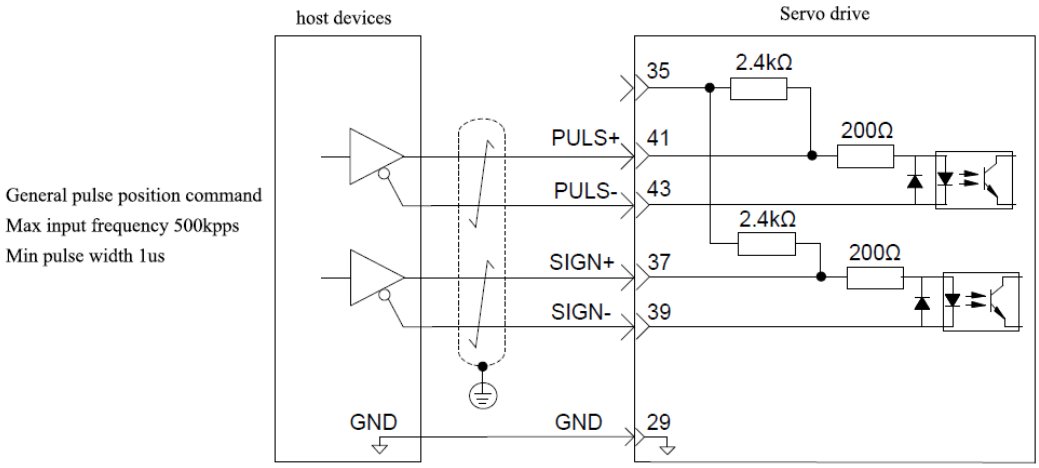
Pulse mode	The maximum frequency (HZ)	Minimum bandwidth

			(us)
Ordinary	Difference	500K	1
	Collector	200K	2.5
High-speed differential		4M	0.125

Note: PC hostpulse width cannot be less than the minimum pulse width, as it may cause the drive receive pulse error

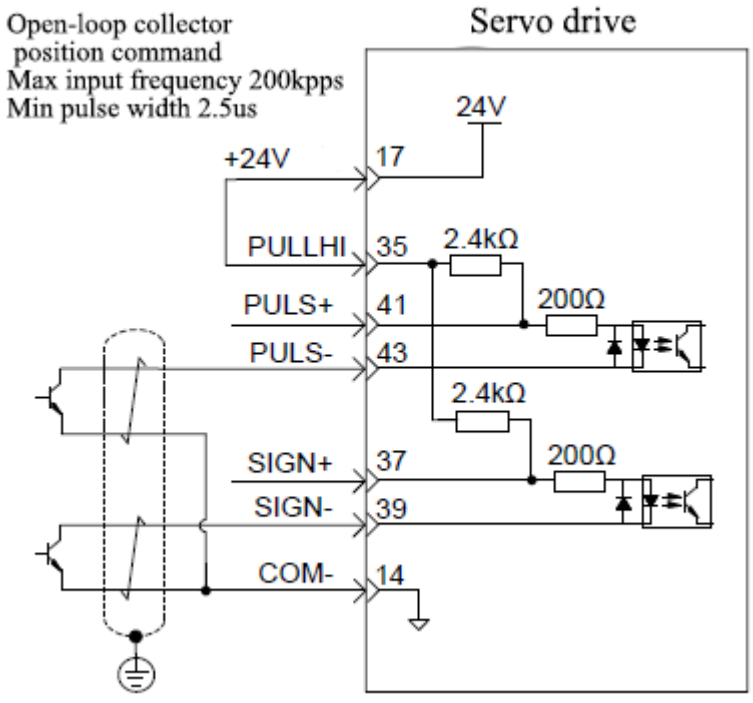
1） Normal pulse command input

a） Differencial mode



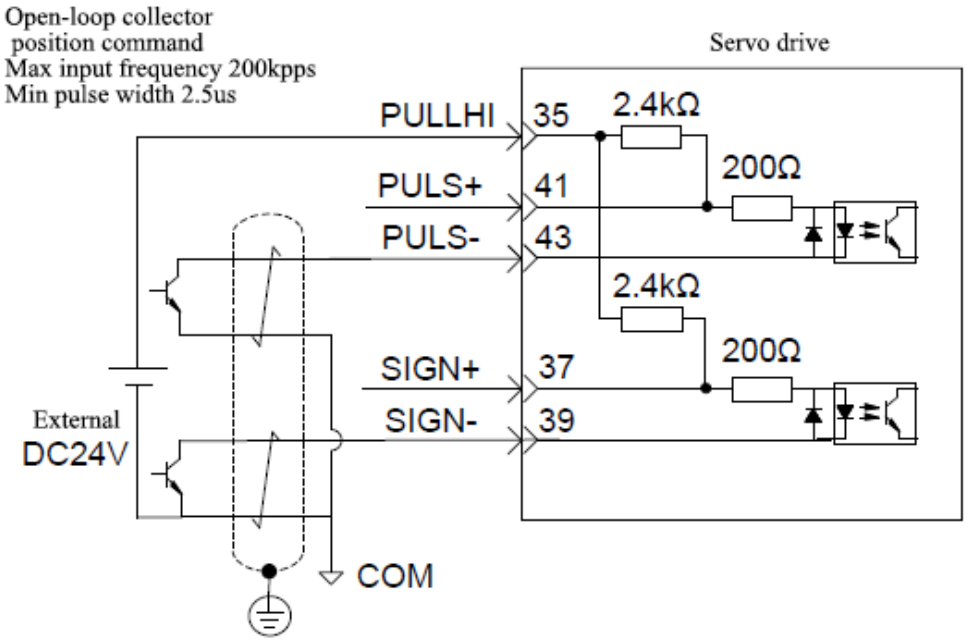
b） Collector open loop

① Use drive internal 24V Power supply

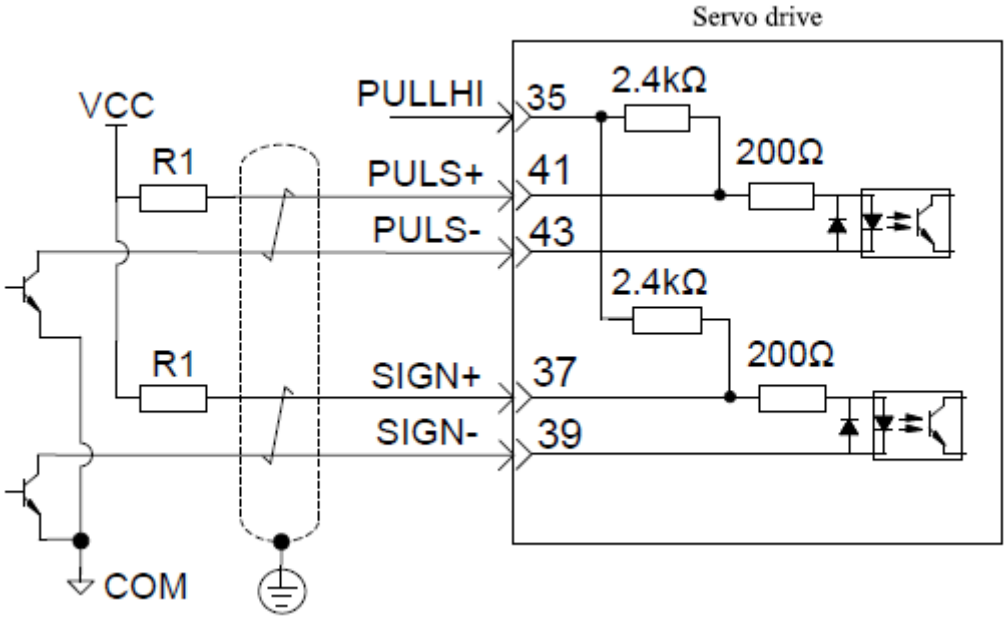


② Use an external power supply

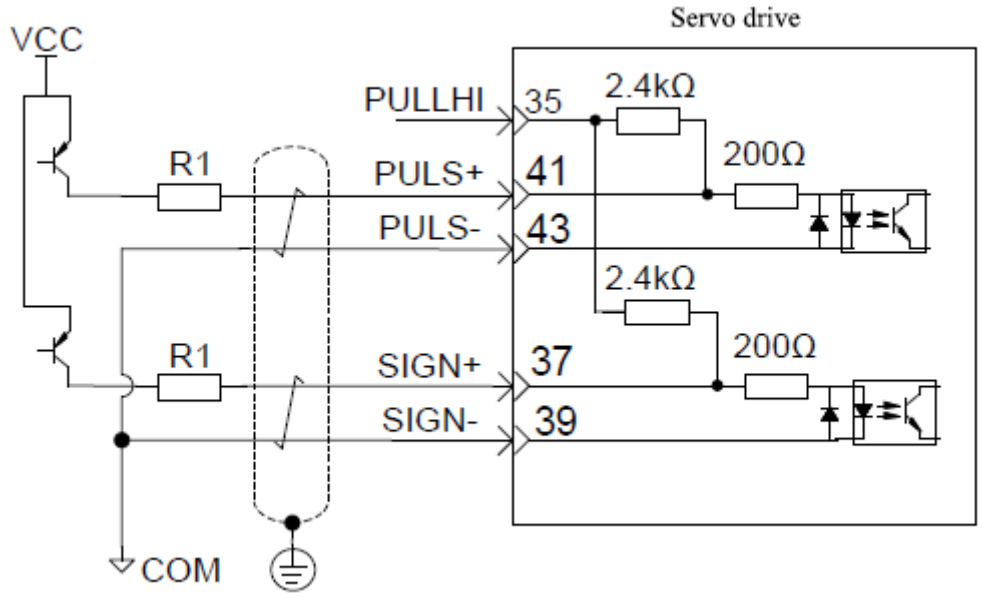
Option one: using the resistance inside the drive (recommended)



Option two: using an external resistor and NPN type



Option three: using an external resistor and PNP type



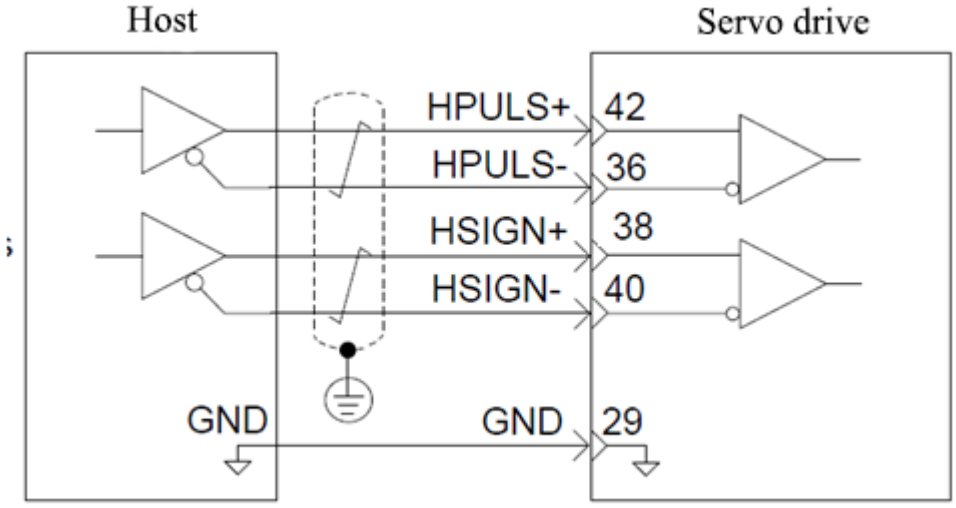
Resistance R1 select formulas：$\frac{V_{CC}-1.5}{R1+200}=10mA$

R1 Recommended values

VCC Voltage	R1 Resistance	R1 Power
24V	2.4K Ω	0.5W
12V	1.5K Ω	0.5W
5V	200 Ω	0.5W

2） High-speed pulse command input

High-speed pulse command only supports differential input.



Please make sure that the differential input is 5V, or the input pulse or servo drive will be unstable. Results in the following situations:

●When you enter a command pulse, pulse loss occurred；

●Enter the directioncommand, there is inversion phenomenon.。

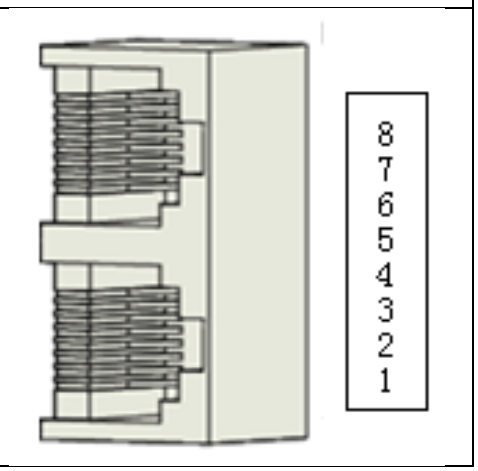
Make sure the host device 5V ground is connected with drive GND Connection, in order to reduce the noiseinterference.

3.5Communication signals

3.5.1 Industrial bus port CN3/CN4

CN3 CN4 Industrial bus communication port

Table 3-7 Communication connector pin definition

PIN	Define	Function	PIN distribution
1	--		
2	--		
3	GND-ISO		
4	RS485+	RS485Communication port	
5	RS485-		
6			
7	--		
8	--		
Shell	PE	Shield	

3.5.2 Mini USB CommunicationsCN5

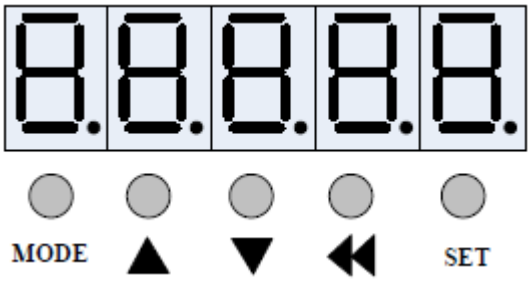
By CN5 , You can set up PC & drive communications and to monitor drive status, test-run, parametersread and write, etc.

Chapter4 Operation and adjustment

4.1 Panel operation description

4.1.1 Interface introduction

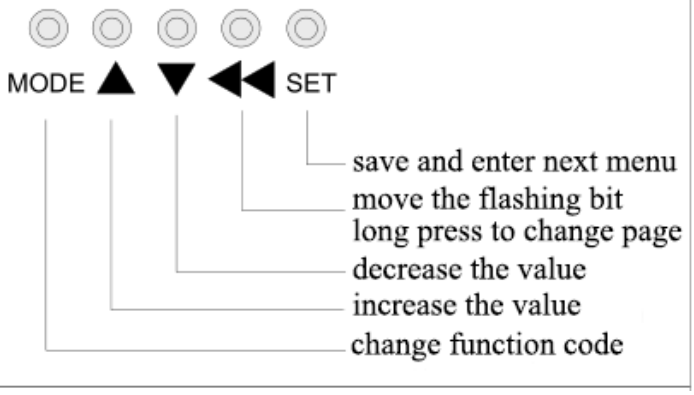
Servo drive interface 5 Digital control and 5 Keys, and interface for servo drive display and parameter setting. Interface is as follows:



Operation and display interface

1、 Key names and functions

2、

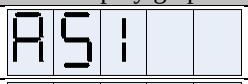
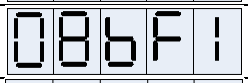
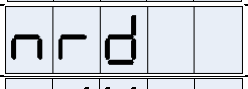
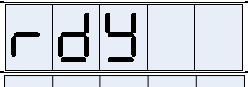
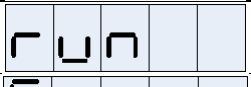
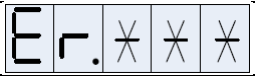
LED display	5 digit 7 part LED display to show servo status and setting
Button	

Note: when an alarm occurs, first rule out the cause of alert, and then reset.

2、Servo-drive status displays

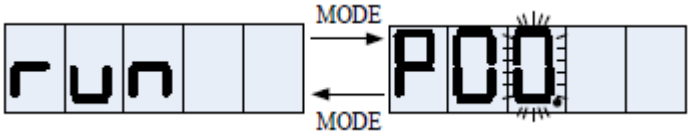
Servo drive operating status display by 5 character, shown in the following tablerespectively:

Table 4-1 Displays status descriptions

Symbol	LED Display graphics	Status describes
“AS1”		Power on initialization state digital display that character to indicate the drive series
“08bF1”（example）		Power on initialization state digital display that indicate a drive model
“nrd”		Start or after reset is complete, servo is not ready, such as main circuit does not power up.
“rdy”		Self-check normal, waiting for the upper control unit send servo enable signal.
“run”		Servo runs normally, at this time, through P18 Group function code , we can review state and variables.
“Er. xxx”		Servo system fails, " xxx " indicates three-digit fault code, fault codes refer to Chapter 6.

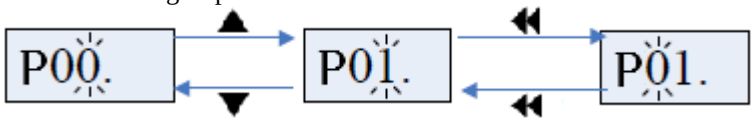
3、Methods of servo driveparameters’ query and modify

To view the status of servo parameters, you need press MODE button to switch to a function code P** Group, then select the appropriate function code：

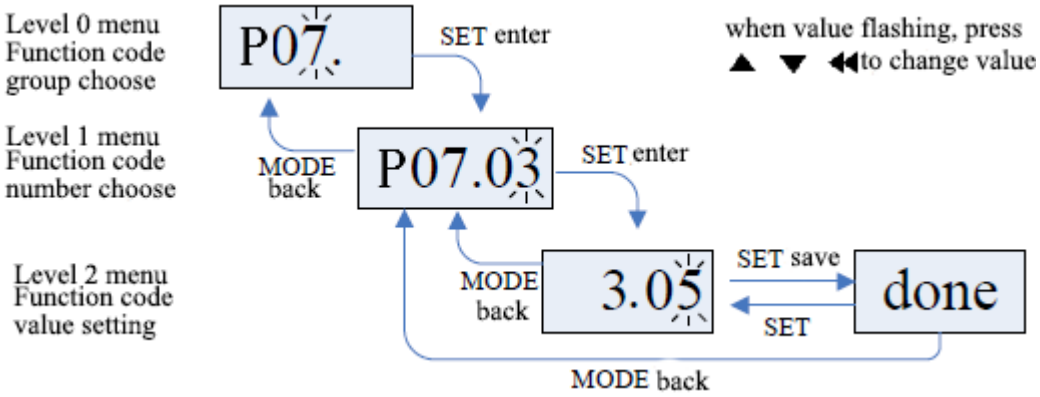


Operating status displayParameters viewing or setting
（Level 0 of the menu）

Switching to parameter display mode, the parameter group number is shown first,with " Pxx. "Three displays, also known as"Level 0 of the menu. "One of them shows the display status offlash, press keys ▲ or ▼， the flash number will increase the 1 or minus 1； press ◀◀ ， flash position move, to set to the desired group：



When you set the desired group number, press SET Button, you can enter the parameter settings in the group,appears " Pxx.xx " also called " Level I of the menu ". when set to the required function code after the number, press SET Button, you can enter the code of the function parameters, also called " Level II of the menu ", if the parameters can be modifie, the lowest parameter will flashing, then press ◀◀ / ▲ / ▼ to change parameters，like the following picture：



When you modify and press the SET, After the parameter was successfully saved, it appears " done ". If modified values are not changed, there will be no display of " done ". Press MODE key to exit State monitoring mode, enter the parameter mode to view and modify operation parameters.

4.1.2 Parameter setting and display

1、Properties of modify the parameter and display features

Some parameters can only check, cannot be modified, such as operating parameters, at the entrance to Level II,if parameters are displayed without flashing,press ◀◀ ， ▲/▼， SET, the servo will not respond.

Some parameters can only be set in stop status, before you modify the parameters, need to make the servo stop working.

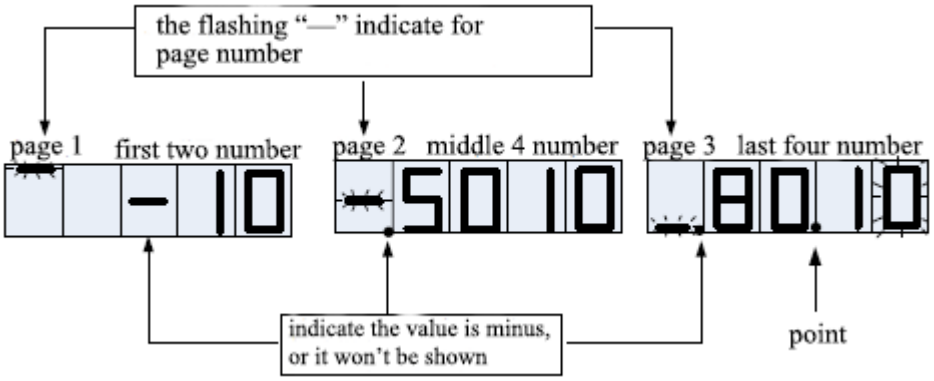
2、Five bits parameters set

When setting the parameter " -9999 ~ 99999 "Within the five-digit parameter display, 5 digit display screen can be displayed or edited at once.

3、Six and more bits parameters set

When setting parameter scope beyond " -9999 ~ 99999 ", more than the five-digit display, needs six or more digital characters. In the system, up to 4*3 display method to display the page, where each screen with a blinking character in the leftmost, to indicate the current page.

For example the parameter values to be displayed as-10501080.10，It would be【-10】【5010】【80.10】three pages to display， press ◀◀ to change page.As shown in the following figure：



When youpress SHIFT, it'll automatically switches to the corresponding display. For example: assuming that the current Flash number is thousand, press SHIFT will shift automatically to themiddle four numbers, and the rightmost bit display flash, press ▲/▼, the increments is 10000. For the parameters that you can modify, through ◀◀ shifting can be modified accordingly. If it is a read-only parameter, only by long pressing ◀◀ keys for page display.

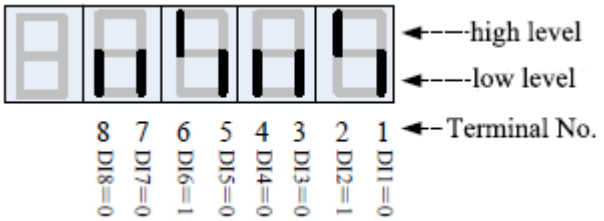
4.1.3 Monitoring parameter list

Monitor display is set for servo drive of the command value, input/output signal status and internal state of servo drive features. Monitor display feature codes shown in the table below.

Note: DI/DO Terminal State display method

1. One digital display show two DI/DO , Short line above indicate high level, short line below indicate low level. All instructions corresponds to a physical DI/DO.

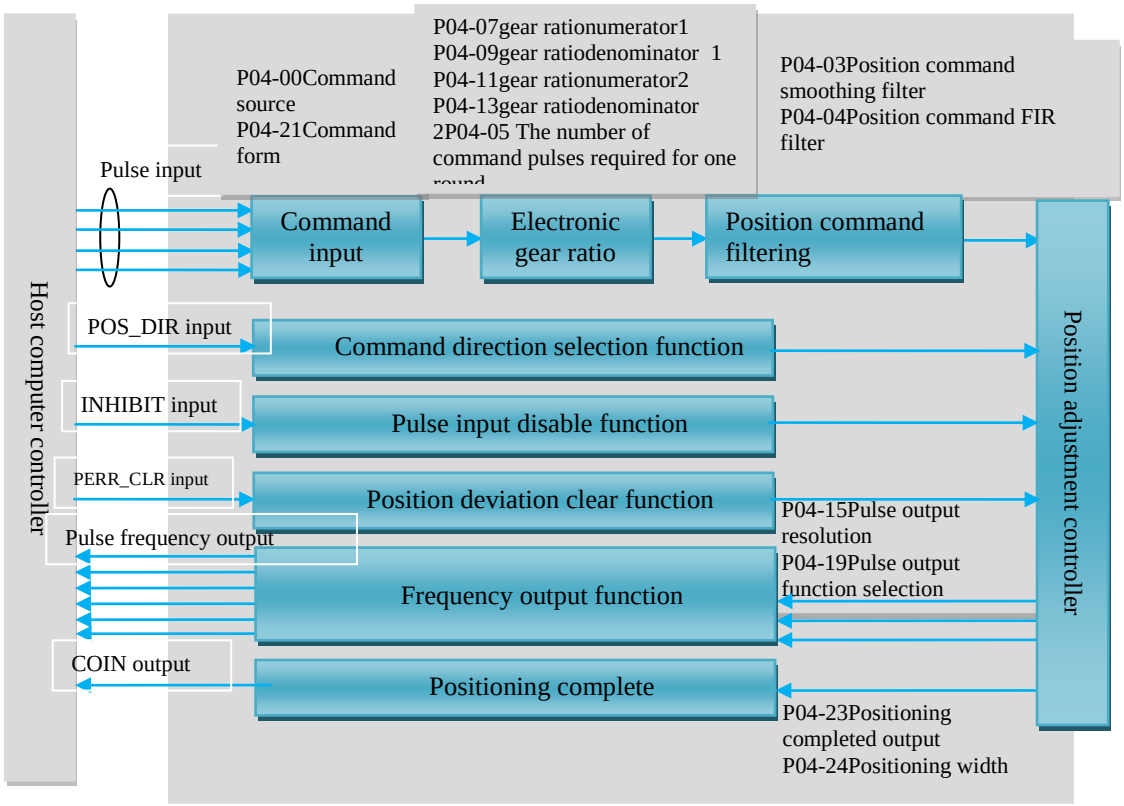
2.DIDO was indicated by 8 bits, now standard DI 8 line, DO 5 line, the graph below shows the DI Input terminal status.



Instructions in the diagram above as follows:DI1＝0；DI2＝1；DI3＝0；DI4＝0；DI5＝0；DI6＝1；DI7＝0；DI8＝0.

4.2Instructions for operating mode

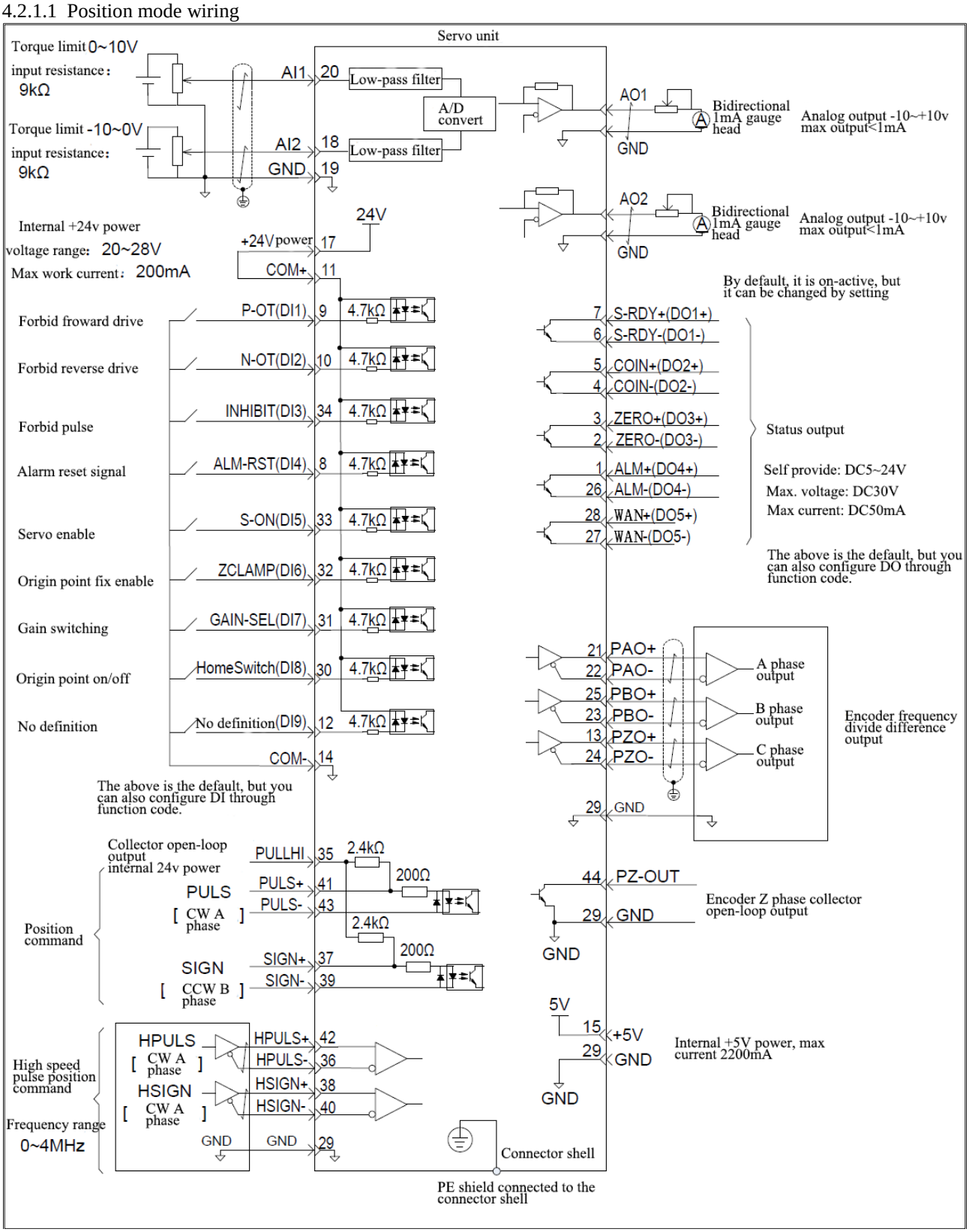
4.2.1Position mode



Position mode is the common mode of the servo-drive, the main steps are as follows:

1. properly connect servo main circuit and control circuit power supply, motor cable and encoder cable, after power on, servo panel displays "RDY" that means the servo power connection correct, motor encoder wiring right.
2. Through press button to carry out JOG trail operation, confirm the motor working correctly.
3. Refer to wiring instructions, connect CN1 terminal of the direction pulse input and pulse commands input as well as the necessary DI/DO signals, such as servo enable, position finish.
4. Position mode setting. Set DI/DO according to actual situation, function code refer to P02 group. Sometimes need to set the origin point return, frequency output and other functions, please refer to product manuals.
5. enable the servo, PC host control servo motor rotation in position. First, rotate the motor at low speed, and confirm that the direction of rotation and electronic gear ratio is normal, then proceed to gain control, refer to charpter 4.4 in the section of debugging steps.

4.2.1.1 Position mode wiring



Note：1. Signal cable and power cable must be separated at least 30 cm；

2. When signal cable length is not enough, must connect the shielding right, to ensure shielding and grounding normal.

3.+ 5 V take GND as a reference, + 24 V take COM- as reference. Do not exceed the maximum allowable current, otherwise the drive won't work.

4.2.1.2Position control mode function code set

Position control mode parameters setting, including mode, command pulses, electronic gear ratio, DI/DO and so on.

1) Position command input settings

a) Source of position controlcommand

Set the function code P04-00=0， Location instruction comes from low-speed pulse instructions , or set to other value according to the actual situation.

Function code		Name	Setting range	Min. unit	Factory settings	Effective time	Type	Related mode
P04	00	Main source of instruction	0- Low speed pulse command 1- High speed pulse command 2- Step quantumgiven 4- Multi location command given 5- Communication given	1	0	Effective immediately	Setting when Shutdown	P

b) Position command switch direction

By setting the DI function FunIN.24 , You can use the DI control command of position to switch direction, to meet the need of switching directions.

Coding	Name	Function name	Setting range	Notes
FunIN.24	POS_DIR	Position direction	Invalid: no direction change Valid: direction change	Recommended terminal logic option settings: edge effective

c) Pulse command form choice

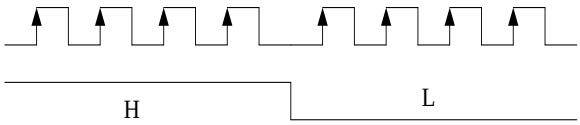
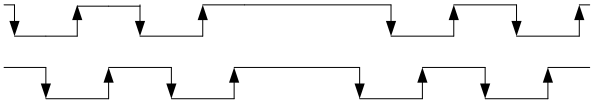
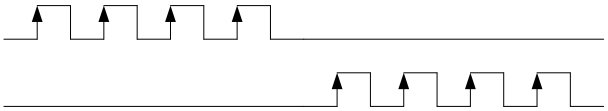
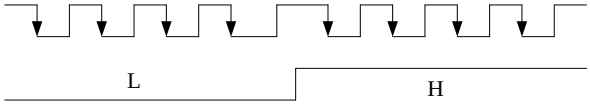
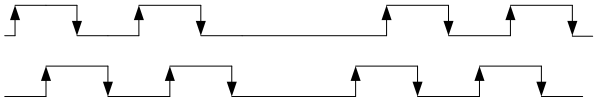
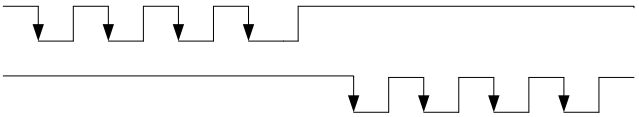
Set the function code P04-21 , Select the external pulse form of command, including " Direction+ Pulse (Positive and negative logic) " , "Quadrature Impulse" , " CW+CCW " three forms.

Function code		Name	Setting range	Min. unit	Factory settings	Effective time	Type	Related mode
P04	21	Pulse shape	0- Direction+ Pulse, positive logic. (The default value) 1- Direction+ Pulse, negative logic 2-A phase +B phase, quadraturepulses, positive logic 3- A phase +B phase, quadrature pulses, negative logic 4- CCW+CW, Positive logic 5- CCW+CW, Negative logic	1	0	Re-power	Setting when Shutdown	P

Three pulse command principles are as follows.

Principle of pulse command form

P04-21	Polar	Pulse instruction forms	Forward	Reverse

0	Positive logic	PULS SIGN	
2	Positive logic	PULS SIGN	
4	Positive logic	PULS SIGN	
1	Negative logic	PULS SIGN	
3	Negative logic	PULS SIGN	
5	Negative logic	PULS SIGN	

d) Pulse inputinhibit

By setting the DI function FunIN.12 to inhibit pulse command input.

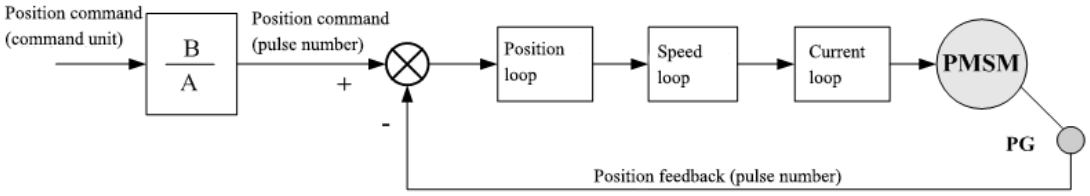
Coding	Name	Function name	Setting range	Notes
FunIN.12	INHIBIT	Pulse inhibit	Invalid: allows command pulse input Valid: inhibit command pulse input	Position command prohibits, including internal and external position command. Logical selection of the corresponding terminal must be set to pulse active.

2) Electronic gear ratio setting

Base on the machine and PC host to set electronic gear ratio.

Function code		Name	Setting range	Min. unit	Factory settings	Effective time	Type	Related mode
P04	07	electronic gear ratio1numerator	1~1073741824	1	4	Effective immediately	Runtime settings	P
P04	09	electronic gear ratio1denominator	1~1073741824	1	1	Effective immediately	Runtime settings	P
P04	11	electronic gear ratio2numerator	1~1073741824	1	4	Effective immediately	Runtime settings	P
P04	13	electronic gear ratio 2denominator	1~1073741824	1	1	Effective immediately	Runtime settings	P

Electronic gear ratios diagram were as follows:



a）If P04-05=0, motor and the load are connected through a gear, assuming that the motor shaft and mechanical load shaft reduction ratio is n/m (Motor shaft rotate m round, Load shaft rotate n round), the electronic gear ratio is calculated as follows:

$$\text{electronic gear ratio}\frac{B}{A}=\frac{P04-07}{P04-09}=\frac{\text{Encoder resolution}}{\text{command number (pulse) of one round for load shaft rotation}}\times\frac{m}{n}$$

This model drives supporting up to 2 group of electronic gear ratio, you can use the electronic gear ratio switch FunIN.23 to select gear ratio.

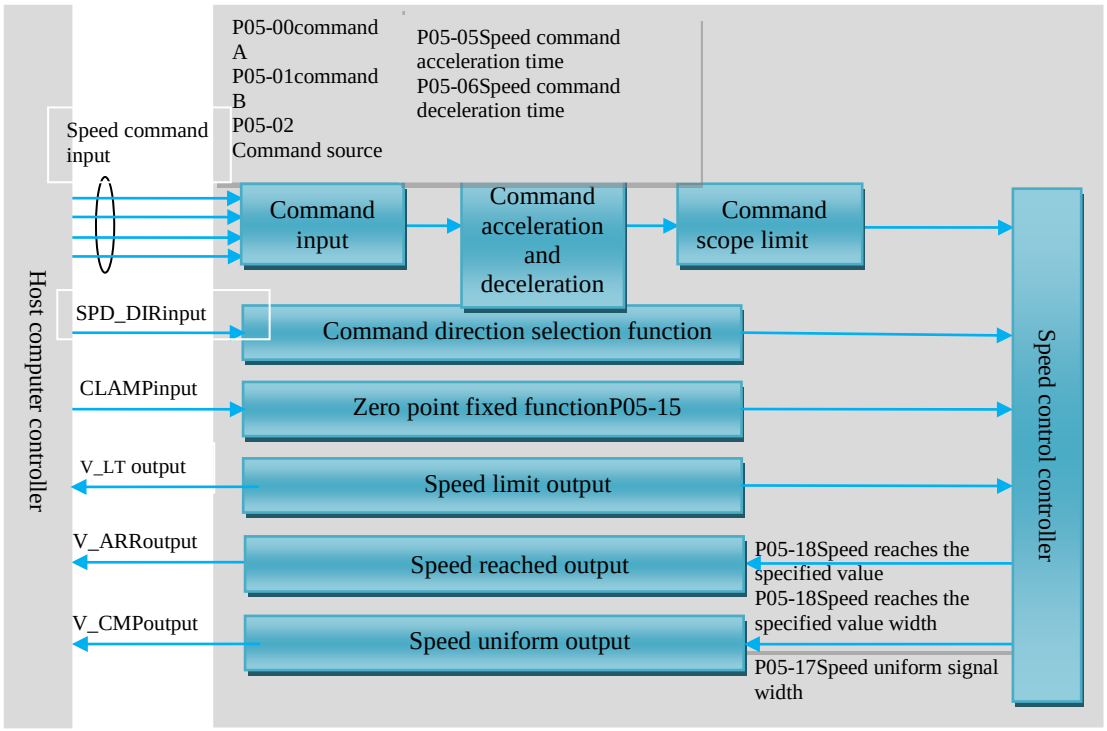
b) If P04-05≠0：

$$\text{electronic gear ratio}\frac{B}{A}=\frac{\text{Encoder resolution}}{P04-05}$$

Function code		Name	Setting range	Min. Unit	Factory settings	Effective time	Type	Related mode
P04	05	Required command pulse for motor for one round	0P/Rev~1048576P/Rev	1P/Rev	0P/Rev	Re-power	Setting when Shutdown	P

2 Group of electronic gear and electronic gear switching function is not valid in this situation.

4.2.2Speed mode

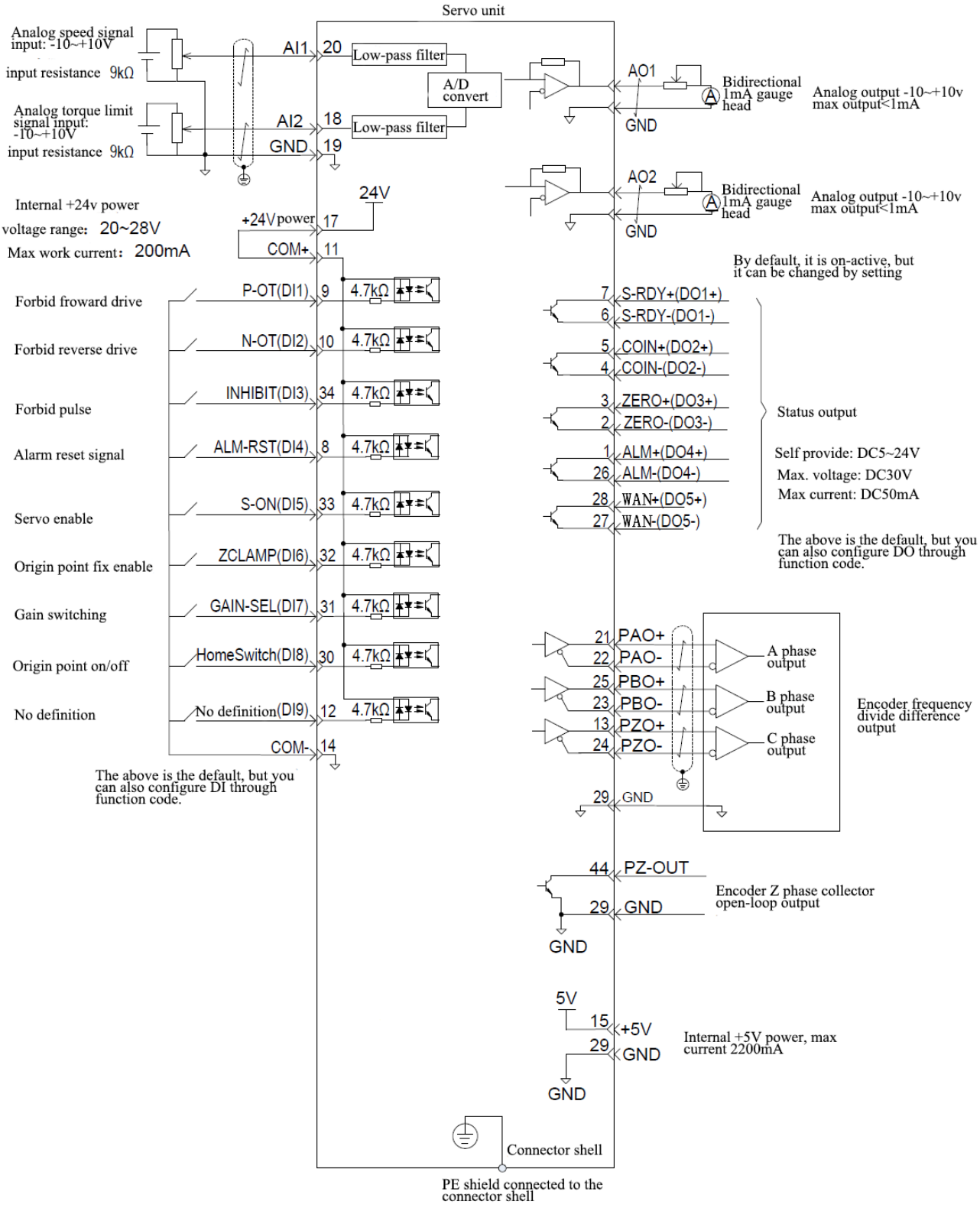


Speed control mode using in the following steps:

1. properly connect servo main circuit and control circuit power supply, motor cable and encoder cable, after power on, servo panel displays "RDY" that means the servo power connection correct, motor encoder wiring right.
2. Through press button to carry out JOG trail operation, confirm the motor working correctly.
3. Refer to speed mode wiring description, connect CN1 terminal of necessary DI/DO signal and analog speed command.
4. Speed mode-related setting.
5. Enable the servo, first rotate the motor at low speed, and judge whether the direction of rotation is normal, then proceed to gain control.

Please refer to Charpter 5.2 debugging steps section.

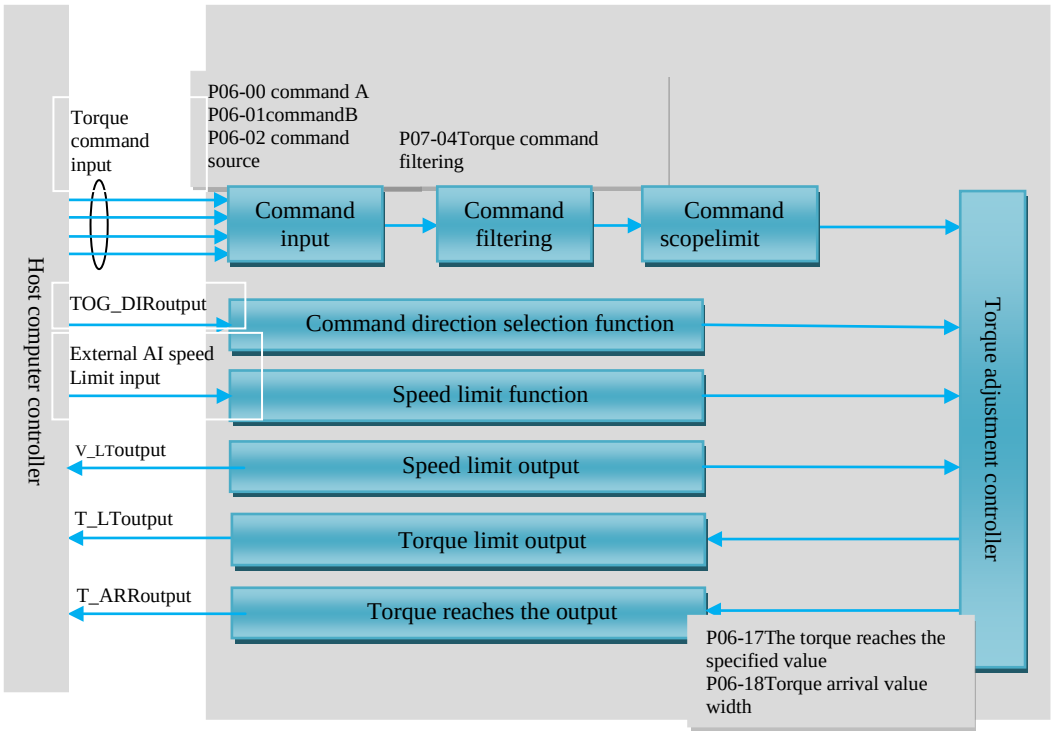
4.2.2.1 Speed mode wiring diagram



Note：

1. Signal cable and power cable must be separated at least 30 cm；
2. When signal cable length is not enough, must connect the shielding right, to ensure shielding and grounding normal.
3. + 5 V take GND as a reference, + 24 V take COM- as reference. Do not exceed the maximum allowable current, otherwise the drive won’t work.

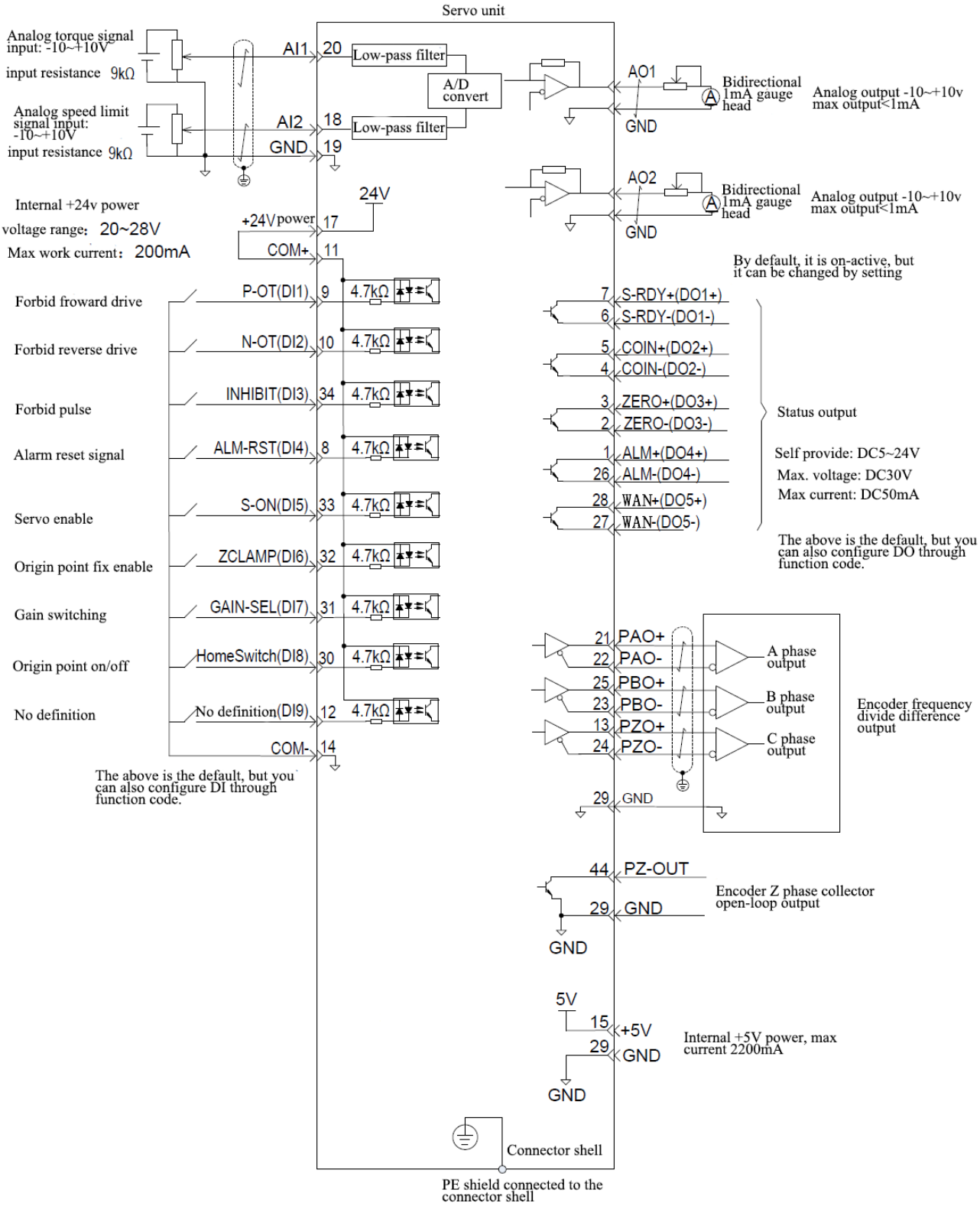
4.2.3Torque mode



Torque control mode using in the following steps:

1. Properly connect servo main circuit and control circuit power supply, motor cable and encoder cable, after power on, servo panel displays "RDY" that means the servo power connection correct, motor encoder wiring right.
2. Through press button to carry out JOG trail operation, confirm the motor working correctly.
3. Refer to wiring instructions to connect CN1 terminals of the necessary DI/DO and torque command source, speed limits, etc.
4. Torque mode related settings.
5. Enable the servo, and set a lower speed limit, put a forward or reverse servo torque command, confirm that the motor rotation direction is correct, speed is properly limited, you can start to useif it’s normal.

4.2.3.1 Wiring of torque mode



Note：

1. Signal cable and power cable must be separated at least 30 cm；

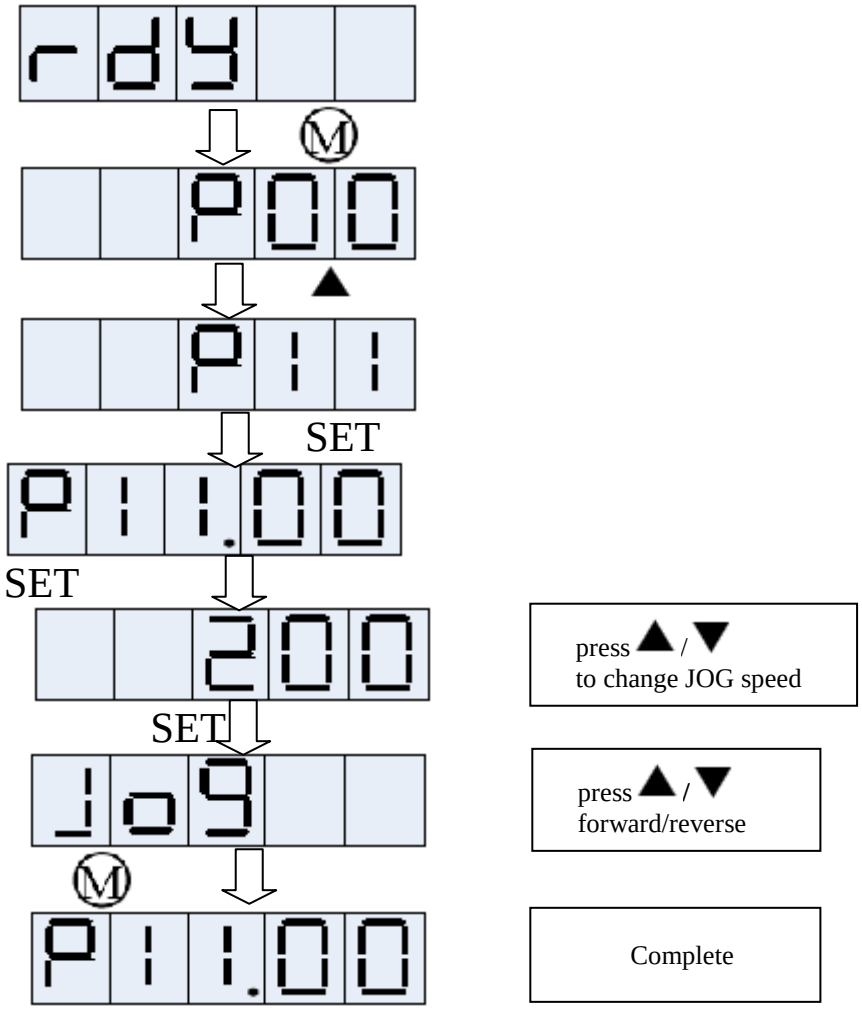
2. When signal cable length is not enough, must connect the shielding right, to ensure shielding and grounding normal.

3. + 5 V take GND as a reference, + 24 V take COM- as reference. Do not exceed the maximum allowable current, otherwise the drive won’t work.

Chapter 5Auxiliary Function

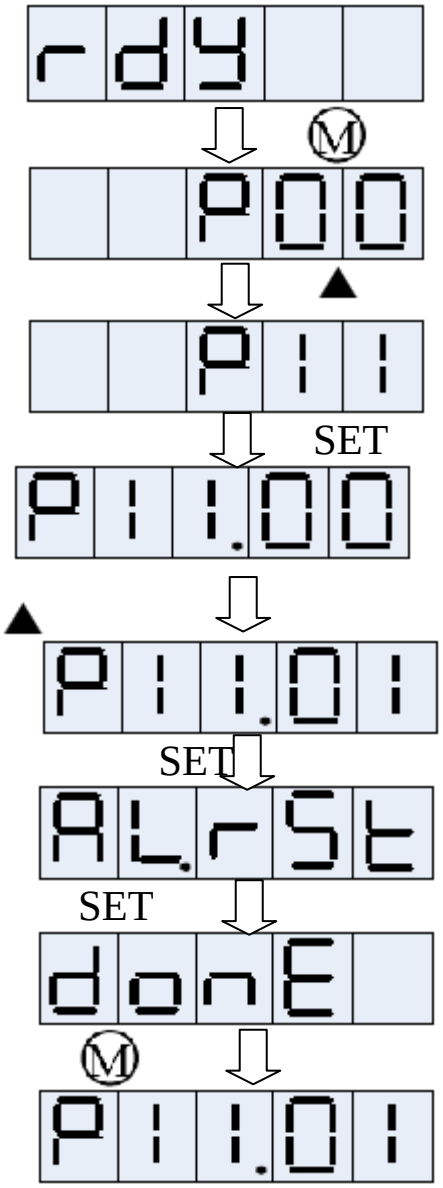
5.1 JOG run

JOG operation flow chart



5.2Alarm reset

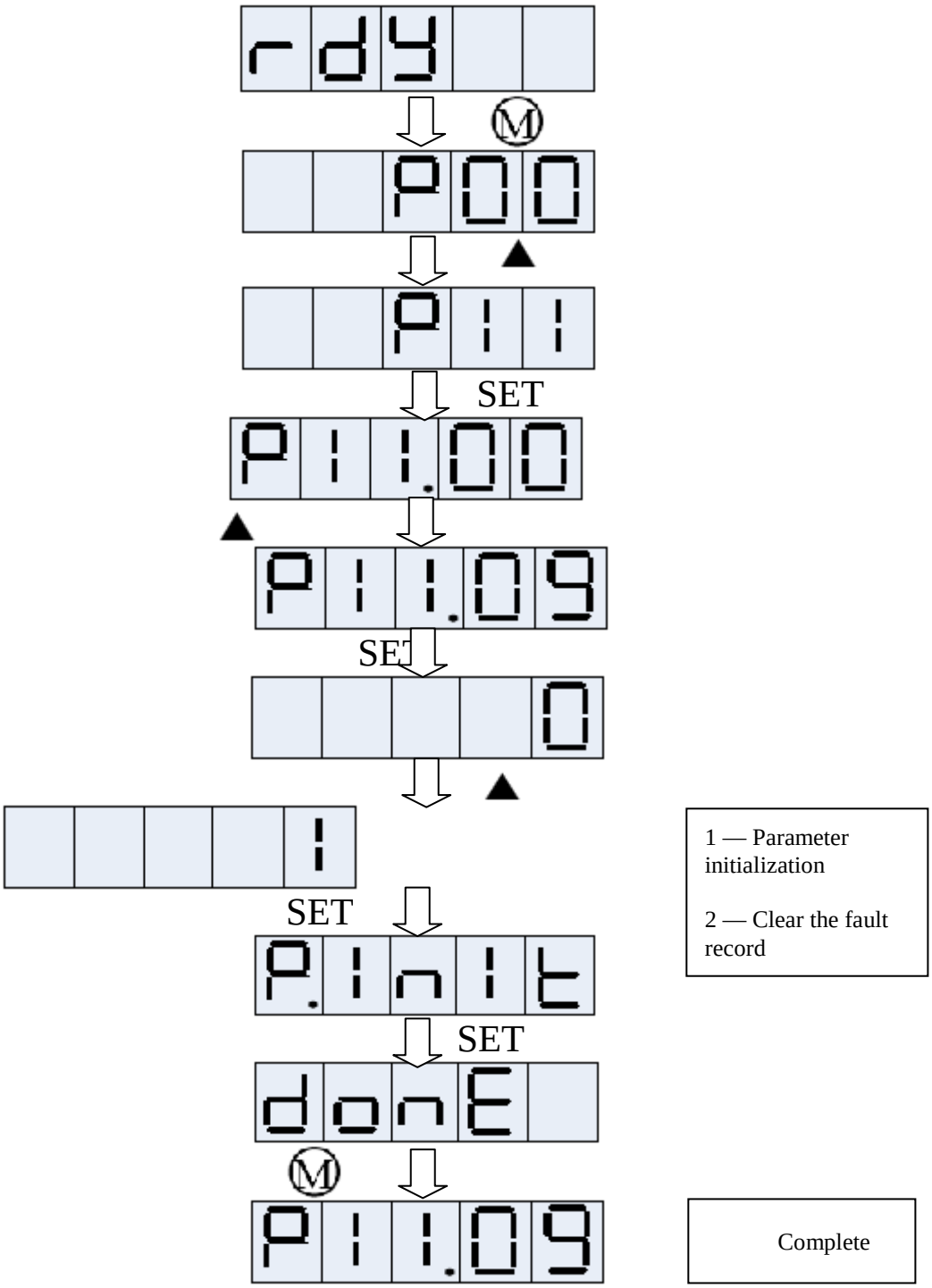
Alarm reset flow chart



Complete

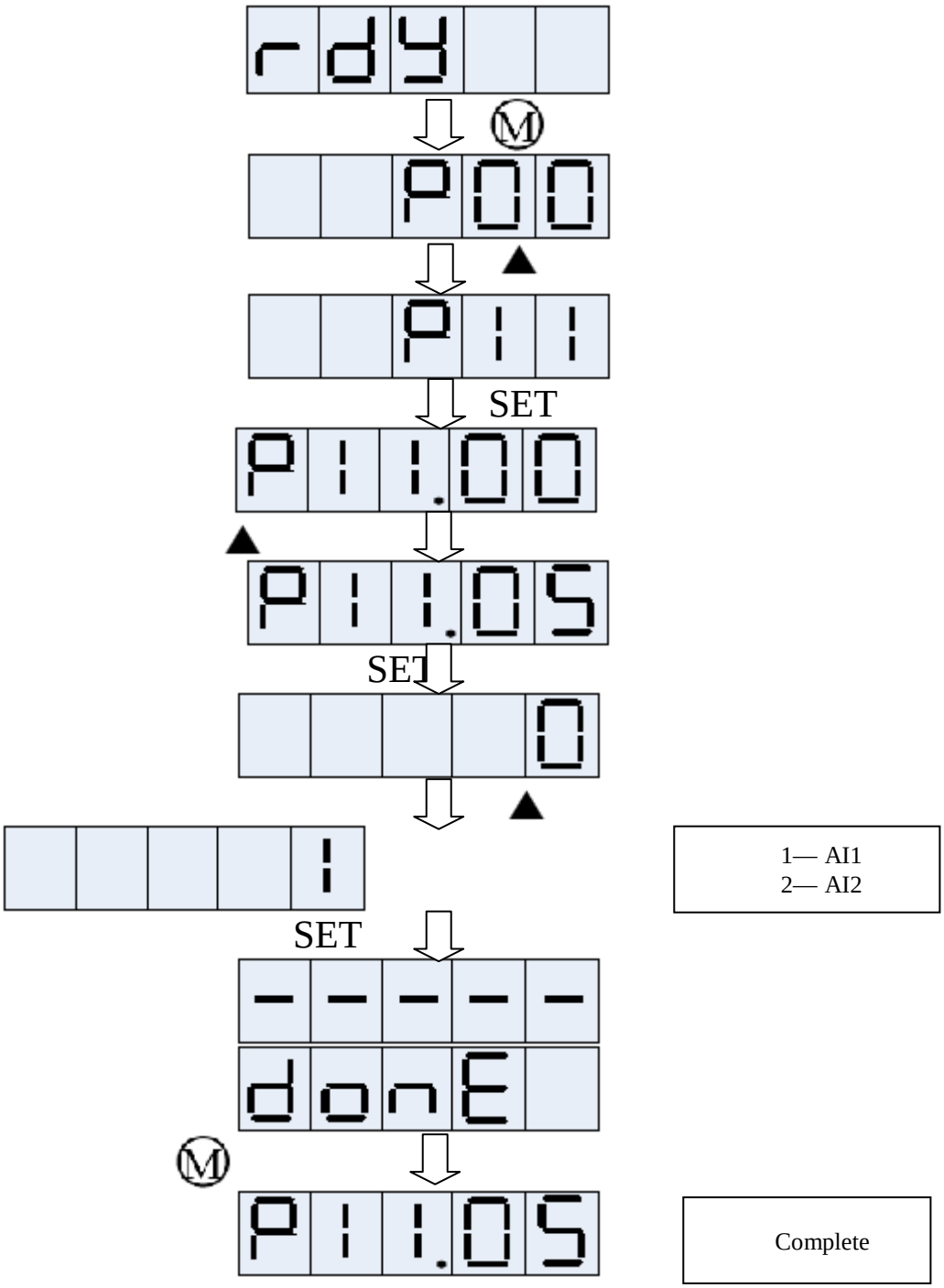
5.3 Parameter initialization

Parameter initialization flow chart



5.4Analog command offset adjustment

Analog command offset adjustment flow chart



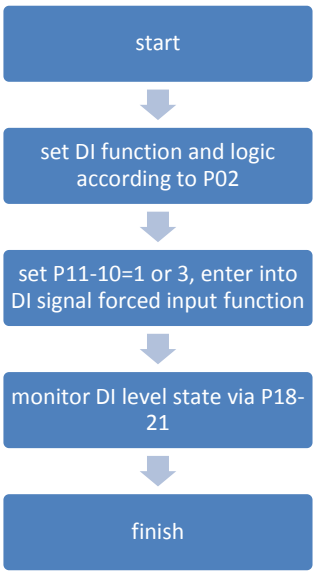
5.5 Force I/O function of digital signal

Servo drive has function of forcing to I/O DI/DO, and the forcing DI input can be used to test drive's DI function, while the forcing DO used to check the connection of DO between PC and drive. The physical DI and virtual DI are given by forcing input when use digital signals force input/output function.

1) Forced input DI signal

Once open this function, every DI only controlled by the setting of forced input (P11-11), nothing to do with external DI state.

a) Operation method



Step diagram of DI forced input setting

Related function code

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P11	10	force DI/DO enable	0- no operation 1-force DI 2- force DO 3- force DIDO	1	0	effective immediatly	Running setting	PST
P11	11	DI given	0-0x01FF	1	0x01FF	effective immediatly	Running setting	PST
P11	12	DO given	0-0x001F	1	0	effective immediatly	Running setting	PST

P11-11 is used to force DI level, screen display hexadecimal, once onverted into binary, "1" said high level while "0" said low level.

Set DI logic choice through P02 parameter group. P18-21 is used to monitor DI level status, and display level. The background software read P18-21 is decimal number.

for example:

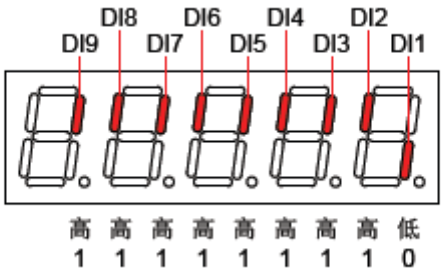
"The corresponding function DI of DI1 is valid, while DI2-DI9 are invalid", its setting method as below; （all the 9 logic of DI2-DI9 are effective low level）"

"1" means high level, "0" means low level, the corresponding binary is "11111110", hexadecimal is "1FE", so parameter P11-11 can be set "1FE" via display.

P11-21 monitors the level status of DI:

If DI function has no error, the display value of P11-11 is same as that of P18-21. So on display DI1 is low level, DI2-9 is high level.

Display as below:



DI level status of P18-21

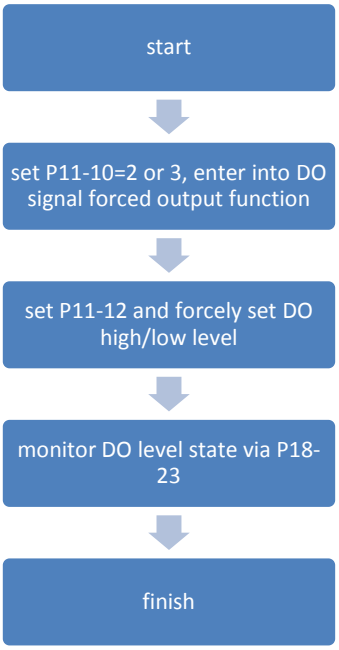
b) Exit function

DI force input function won't be saved after power-off, it would be restore normal DI once power-on, or switch to normal DI mode via setting P11-10=0.

2) DO forced output

Once open this function, every DO only controlled by the setting of forced output (P11-12), nothing to do with internal DO state.

a) Operation method



Step diagram of DO forced output setting

P11-12 are used to set DO function valid or not,hexadecimal display.Once it changed to binary, "0" means DO function invalid while "1" means DO function valid. P18-23 is used to monitor DO level status, and display level. P18-23 are decimal no.

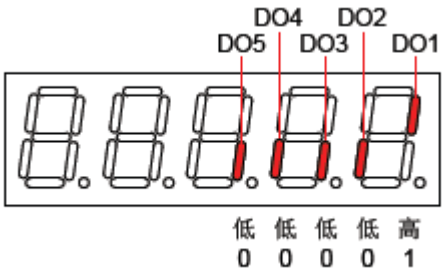
for example:

"The corresponding function DO of DO1 is invalid, while DO2-DO5 are valid", its setting method as below:

As "1" means DO function valid, "0" means DO function invalid,the corresponding binary is "11110", hexadecimal is "1E", so parameter P11-12 can be set "1E" via display.

P11-23 monitors the level status of DO:

.



DO level display of P18-23

b) Exit function
DO forced input function won't be saved after power-off, it would be restore normal DO once power-on, or switch to normal DO mode via setting P11-10=0.

VI Fault and Solution

Two levels of servo alarm

level	name	definition
Level 1	fault	Servo drive has serious alarm, it cant work normally, have to stop work. DO port outputs ALM signal.
Level 2	warning	Servo drive happens warning, which needs solution soon. DO port outputs WARN signal.

6.1 Fault and solution

Faults can be divided into：

- cant reset NO.1 fault;
- can reset NO.1 fault;
- can reset NO.2 fault.

Reset means after dealing with the fault, it can reset via P11-01 or FunlN2:ALM-RST of DI and clear servo fault state.
Cant reset means after dealing with the fault, it needs to restart.
NO.1, NO.2 have different stop method. No1 stop freely, keep free running state; NO.2 set by P00-12.
Reset method of NO.1 and No.2: close servo enable signal(S-ON set to OFF), then set P11-01=1 or use DI function 2.
“Er.xxx”。Once there is fault, drive LED will display “Er.xxx”.

6.1.1 Cant reset NO.1 fault

Er_	Fault name	Fult reason	Stop method	Reset or not
1	system para. abnormal	Abnormaty of servo internal para.	No.1	NO
2	Wrong product model	invalid motor model or drive model	No.1	NO
3	wrong motor data check	Motor ROM check wrong or no data.	No.1	NO
4	Fault in para. storage	1 wrong storage device 2 over frequently write and read; 3 control power not stable; 4 drive fault	No.1	NO
5	FPGA fault	1 FPGA initialization abnormal 2 FPGA logic version abnormal 3 FPGA check abnormaty	No.1	NO
6	program abnormal	1 system para. abnormal 2 drive internal fault	No.1	NO

7	undervoltage of control power	undervoltage of control power	No.1	NO
8	GND short circuit fault	1 servo motor/drive para. wrong; 2 UVW short circuit; 3 motor fired; 4 short circuit of motor to GND.; 5 servo drive fault;	NO.1	NO
9	overcurrent A	1 servo motor/drive para. wrong; 2 UVW short circuit; 3 motor fired; 4 short circuit of motor to GND; 5 servo drive fault;	NO.1	NO
10	overcurrent B	1 wrong motor connection; 2 software detects overcurrent of power transistor;	No.1	NO
11	Encoder offline	Encoder offline	No.1	NO
12	Abnormity of encoder AB signal	Abnormal of encoder AB signal	No.1	NO
13	Abnormity of encoder check	abnormity of encoder zero point check	No.1	NO
14	Abnormity of motor initial angle check	abnormity of motor initial angle check	No.1	NO
15	Direction/short circuit fault	1 wrong phase sequence setting of motor UVW 2 UVW wrongly connection 3 wrong initial position or wrong setting of encoder parameters	No.1	NO
16	Current sampling fault	Current sampling fault	No.1	NO

6.1.2 Can reset NO.1 fault

Er_	Fault name	Fult reason	Stop method	Reset or not
20	Overvoltage	1 the DC voltage of main circuit is abnormally high	No.1	yes
21	Undervoltage	1 the DC voltage of main circuit is abnormally low	No.1	yes
22	Over speed	1 the speed command is over the max speed setting value 2 wrong phase sequence of UVW 3 speed response is seriously over adjust range 4 drive fault	No.1	yes
27	DI setting fault	different DI be assigned the same function;	No.1	yes

28	DO setting fault	different DO be assigned the same output.	No.1	yes
30	Reference position fault	reference position fault	No.1	yes

6.1.3 Can reset NO.2 fault

Er_	Fault name	Fult reason	Stop method	Reset or not
43	Position deviation	when servo on, the position deviation is out of max deviation value. (P09.09)	No.2	yes
44	Main circuit lose input phase	when choose para. P09-00=0(enable fault, no alarm) or P09-00=1(enable,alarm) for losing phase protection of power input : 1 wrong input connection of 3 phase 2.3 phase drive is running in single phase power	No.2	yes
46	Servo drive over load	the load is over the drive's max load ability; wrong connection of UVW or losing phase;	No.2	yes
47	Motor over load	the load is over motor's max load; wrong connection of UVW or losing phase;	NO.2	yes
49	Wrong setting of electronic gear	Electronic gear ratio is out of range [0.001,4000]	No.2	yes
50	Radiator over heat	servo radiator over the setting fault value	No.2	yes
51	battery failure of absolute encoder	not connect with battery or the battery voltage is lower than 2.6V	No.2	yes
52	Wrong multi-ring counting of absolute encoder	wrong multi-ring counting of absolute encoder	No.2	yes
53	Overflow of absolute encoder multi-ring counting	overflow of absolute encoder multi-ring counting	No.2	yes

6.2 Warning reason and solution

EE_	Wrning name	Rason
81	Servo drive over load alarm	the load up to 80% of drive's overload value
82	Motor over load alarm	alarm before fault, the value depends on P09_05

83	restart once parameter changed	it needs power-on again once para.changed.
86	warining of positive overrun.	Pot terminal of positive overrun switch is effective.
87	warining of negative overrun.	Pot terminal of negative overrun switch is effective.
88	setting fault of frequency pulse output	encoder frequency pulse no. is not in setting range.
89	oversize deivation of AI1	oversize deivation of AI1
90	oversize deivation of AI2	oversize deivation of AI2
91	The external regenerative discharge resistance is too small	external discharge resistance is smaller than the min. value drive requires or para.setting wrong.
92	RS485 COM fault	RS485 COM fault
94	DI emergent stop	external emergent stop E_STOP trigger
95	Low voltage of absolute encoder	battery voltage is lower than 3.2V.
96	timeout of back home	1 home switch fault; 2 time is not enough to search home point. 3 speed to search home point is not high enough.
97	wrong setting of mechanical origin deviation	1.when origin reset para.P16-09=8 or P16-09=14 or P16-09=6,the mechanical origin deviation P16-14 is over 0. 2 when origin reset para.P16-09=7or P16-09=9or P16-09=15, mechanical origin deviation P16-14 is under 0.
98	Main circuit lose input phase	When choose P09-00=1(enable fault, alarm), rated power 0.8/1.0/1.5/3.0kw drive and main circuit input voltage is single phase, it will alarm.

VII Parameter list

Para. Group no.	Function
P00	basic control parameters
P01	servo motor parameters
P02	digital I/O parameters
P03	analogue I/O parameters
P04	position control parameters
P05	speed control parameters
P06	holding torque control parameters
P07	gain parameters
P09	fault and protection parameters
P10	COM parameters
P11	auxiliary function
P12	keyboard display parameters
P13	multi section position function parameters
P14	multi section speed function parameters
P16	special function parameters
P17	drive parameters
P18	Display paramters

P00 group Basic control parameters

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P00	00	control modes	0-position mode 1-speed mode 2-torque mode 3-speed and torque mode 4-position and speed mode 5-position and torque mode 6- close-loop mode	1	0	immediate effect	stop setting	PST
P00	01	Rotation direction	0-CCW positive direction (A in front of B) 1-CW positive direction （reverse mode, A behind of B）	1	0	electrify again	stop setting	PST
P00	02	definition of positive pulse output	0-CCW positive direction (output pulse OA in front of OB) 1- CW positive direction （reverse mode, OA behind OB）	1	0	electrify again	stop setting	PST
P00	03	self-adjust mode	0-invalid 1-standard mode 2-positioning mode	1	0	immediate effect	stop setting	PST
P00	04	Rigidity grade setting	0~31	1	20	immediate effect	run setting	PST
P00	05	inertia ratio 1	0~30.00	0.01	0.00	immediate effect	run setting	PST
P00	06	inertia ratio 2	0~300.00	0.01	0.00	immediate effect	run setting	PST
P00	07	Max system speed	0~10000rpm	1rpm	6000rpm	immediate effect	stop setting	PST
P00	08	Max system torque	0~5.00(5 times of holding torque)	0.01	3.00	immediate effect	stop setting	PST
P00	09	reserved parameter	0～65535	1	0	N/A	reserved parameter	PST
P00	10	servo stop mode: OFF	0- freely run stop, keep free 1- zero speed stop, keep free.	1	0	immediate effect	stop setting	PST
P00	11	reserved parameter	0～65535	1	0	N/A	reserved parameter	PST
P00	12	2 stop modes of fault	0- freely run stop, keep free 1- zero speed stop, keep free.	1	0	immediate effect	stop setting	PST

P00	13	stop mode of overrun	0-freely run stop 1- set emergency torque as the max torque to decelerate to stop motor, then enter into locked state 2- set emergency torque as the max torque to decelerate to stop motor, then enter into free running state.	1	1	immediate effect	stop setting	PST
P00	14	brake output is ON until there is delay on receiving command.	0ms～10000ms	1ms	200ms	immediate effect	run setting	PST
P00	15	stationary state, brake output is off till there is no delay on power-on	10ms～10000ms	1ms	200ms	immediate effect	run setting	PST
P00	16	rotation state, the threshold value of rotation speed when the brake output is off.	0rpm～1000rpm	1rpm	50rpm	immediate effect	run setting	PST
P00	17	rotation state, servo enable is OFF until brake output OFF is delay.	10ms～1000ms	1ms	500ms	immediate effect	run setting	PST
P00	18	Energy resistance setting	0- use internal energy resistance 1- use external energy resistance and cool naturally 2- use external energy resistance and air cooling 3- don’t use energy resistance, absolutely us capacitor to absorb.	1	0	immediate effect	stop setting	PST
P00	19	external resistance capacity	1W～65535W	1W	Model parameter	immediate effect	stop setting	PST
P00	20	external resistance value	Users can set it themselves 1Ω～1000Ω	1Ω	Model parameter	immediate effect	stop setting	PST
P00	21	heating time of external resistance	Users can set it themselves 1ms~7000ms	1ms	Model parameter	immediate effect	stop setting	PST
P00	22	start voltage of energy brake	0V~1000V	1	Model parameter	immediate effect	run setting	PST
P00	23	acceleration/deceleration mode	0-line 1-curve	1	0	immediate effect	stop setting	PST
P00	33	user password	0～65535	1	0	immediate effect	stop setting	PST
P00	34	Current limit of initial angle identification	0～200.0%	0.1%	50.0%	immediate effect	reserved parameter	PST

P02 group Digital terminal I/O parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P02	00	FunINL signal unassigned state（HEX）	0～0xFFFF Bit0-correspond FunIN.1; Bit1- correspond FunIN.2; …… Bit15- correspond FunIN.16	1	0	Electrify again	run setting	PST
P02	01	DI1 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	13	immediate effect	run setting	PST
P02	02	DI2 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40）	1	14	immediate effect	run setting	PST
P02	03	DI3 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	12	immediate effect	run setting	PST
P02	04	DI4 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	2	immediate effect	run setting	PST
P02	05	DI5 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	1	immediate effect	run setting	PST
P02	06	DI6 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	11	immediate effect	run setting	PST
P02	07	DI7 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	3	immediate effect	run setting	PST
P02	08	DI8 function choice	input function code: 0，1-40 0：no definition 1～40：FunIN.1～40	1	32	immediate effect	run setting	PST
P02	10	FunINH signal unassigned state（HEX）	0～0xFFFF Bit0-correspond FunIN.17; Bit1- correspond FunIN.18; …… Bit15- correspond FunIN.32	1	0	electrify again	run setting	PST
P02	11	DI1 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST

P02	12	DI2 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	Run setting	PST
P02	13	DI3 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST
P02	14	DI4 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST
P02	15	DI5 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST
P02	16	DI6 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST
P02	17	DI7 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST

P02	18	DI8 logic choice	Input polar：0-4 0-low level is effective 1-high level is effective 2-rising edge is effective 3-falling edge is effective 4-falling/rising edge are both effective	1	0	immediate effect	run setting	PST
P02	21	DO1 logic choice	Output code：1～20 0：no definition 1～20：FunOUT.1～20 reference DIDO code definition	1	1	immediate effect	stop setting	PST
P02	22	DO2 logic choice	Output code：1～20 0：no definition 1～20：FunOUT.1～20 reference DIDO code definition	1	7	immediate effect	stop setting	PST
P02	23	DO3 logic choice	Output code：1～20 0：no definition 1～20：FunOUT.1～20 reference DIDO code definition	1	5	immediate effect	stop setting	PST
P02	24	DO4 logic choice	Output code：1～20 0：no definition 1～20：FunOUT.1～20 reference DIDO code definition	1	2	immediate effect	stop setting	PST
P02	25	DO5 logic choice	Output code：1～20 0：no definition 1～20：FunOUT.1～20 reference DIDO code definition	1	3	immediate effect	stop setting	PST
P02	31	DO1 logic level choice	Reversal setting of output polarity：0-1 0-valid, turn-on normally open contacts 1-valid, turn-off normally close contacts	1	0	immediate effect	stop setting	PST
P02	32	DO2 logic level choice	Reversal setting of output polarity：0-1 0-valid, turn-on normally open contacts 1-valid, turn-off normally close contacts	1	0	immediate effect	stop setting	PST
P02	33	DO3 logic level choice	Reversal setting of output polarity：0-1 0-valid, turn-on normally open contacts 1-valid, turn-off normally close contacts	1	0	immediate effect	stop setting	PST
P02	34	DO4 logic level choice	Reversal setting of output polarity：0-1 0-valid, turn-on normally open contacts 1-valid, turn-off normally close contacts	1	0	immediate effect	stop setting	PST

P02	35	DO5 logic level choice	Reversal setting of output polarity：0-1 0-valid, turn-on normally open contacts 1-valid, turn-off normally close contacts	1	0	immediate effect	stop setting	PST

P03 group Analog I/O parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P03	00	AI1 min. input	-10.00V～10.00V	0.01V	-10.00V	immediate effect	stop setting	PST
P03	01	AI1 min. value corresponds setting value	-100.0%～100.0%(100% torque corresponds system max torque; 100% speed corresponds system max speed.	0.1%	-100.0%	immediate effect	stop setting	PST
P03	02	AI1 max input	-10.00V～10.00V	0.01V	10.00V	immediate effect	stop setting	PST
P03	03	AI1 max. value corresponds setting value	-100.0%～100.0%	0.1%	100.0%	immediate effect	stop setting	PST
P03	04	AI1 zero trim	-600.0mV～600.0mV	0.1mV	0.0mV	immediate effect	run setting	PST
P03	05	AI1 dead-zone	0.0mV~500.0mV	0.1mV	0.0mV	immediate effect	run setting	PST
P03	06	AI1 filtering time of input	0.0ms～6553.5ms	0.1ms	2.0ms	immediate effect	stop setting	PST
P03	07	AI2 min. input	-10.00V～10.00V	0.01V	-10.00V	immediate effect	stop setting	PST
P03	08	AI2 min. value corresponds setting value	-100.0%～100.0%	0.1%	-100.0%	immediate effect	stop setting	PST
P03	09	AI2 max input	-10.00V～10.00V	0.01V	10.00V	immediate effect	stop setting	PST
P03	10	AI2 max. value corresponds setting value	-100.0%～100.0%	0.1%	100.0%	immediate effect	stop setting	PST
P03	11	AI2 zero trim	-600.0mV～600.0mV	0.1mV	0.0mV	immediate effect	run setting	PST
P03	12	AI2 dead-zone	0.0mV~500.0mV	0.1mV	0.0mV	immediate effect	run setting	PST
P03	13	AI2 filtering time of input	0.0ms～6553.5ms	0.1ms	2.0ms	immediate effect	stop setting	PST

P03	20	AO1 signal choice	0- motor speed （1V/1000rpm） default 1- speed command （1V/1000rpm） 2- torque command （1V/100%） 3-position deviation （0.05V/1 command unit） 4-position amplifier bias（0.05V/1 encoder pulse unit） 5-position command speed（1V/1000 rpm） 6- positioning finish command（finish positioning：5V，not finish：0V） 7-speed feedforward （1V/1000rpm） 8、9 reserved	1	0	immediate effect	run setting	PST
P03	21	AO1 bias voltage	0-10000mV	1mV	5000mV	immediate effect	run setting	PST
P03	22	AO1 ratio	-99.99～99.99	0.01	1.00	immediate effect	run setting	PST
P03	23	AO2 signal choice	0- motor speed （1V/1000rpm） default 1-speed command （1V/1000rpm） 2-torque command （1V/100%） 3-position deviation （0.05V/1 command unit） 4- position amplifier bias （0.05V/1encoder pulse unit） 5- position command speed （1V/1000 rpm） 6-positioning finsh command (finish positioning：5V，not finish：0V） 7-speed feedforward （1V/1000rpm） 8、9 reserved	1	0	immediate effect	run setting	PST
P03	24	AO2 bias voltage	0-10000mV	1mV	5000mV	immediate effect	run setting	PST
P03	25	AO2 ratio	-99.99～99.99	0.01	1.00	immediate effect	run setting	PST

P04 group Position control parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P04	00	A source of main position command	0- low speed pulse command 1-high speed pulse command 2-step quantity given 4-multi-section position command given 5- communication given	1	0	immediate effect	Stop sestting	P
P04	01	reserved parameter		1	0	N/A	reserved parameter	P
P04	02	step quantity	-9999 command unit～9999 command unit	1Unit	50Unit	immediate effect	Stop sestting	P
P04	03	Smoothing filter of position command	0.0ms～6553.5ms	0.1ms	0.0ms	immediate effect	Stop sestting	P
P04	04	Position command FIR filter	0.0ms～128.0ms	0.1ms	0.0ms	immediate effect	Stop sestting	P
P04	05	unit command of motor's one ring（32bit）	16 Unit/Turn ～ 1073741824 Unit/Turn	1Unit	0Unit	electrify again	Stop sestting	P
P04	07	electronic gear 1 numerator (32bit）	1～1073741824	1	4	immediate effect	run setting	P
P04	09	Electronic gear 1 denominator (32bit）	1～1073741824	1	1	immediate effect	run setting	P
P04	11	Electronic gear 2 numerator (32bit）	1～1073741824	1	4	immediate effect	run setting	P
P04	13	Electronic gear 2 denominator (32bit）	1～1073741824	1	1	immediate effect	run setting	P
P04	15	Pulse output resolution (32bit)	16PPR～ 1073741824PPR	1PPR	10000PPR	electrify again	Stop setting	P
P04	18	Polar Z of pulse output	0-Z It's high level when pulse is coming 1-Z It's low level when pulse is coming	1	0	N/A	reserved parameter	P
P04	19	function choice of pulse output	0-encoder division output 1-synchronous output of pulse command	1	0	electrify again	Stop sestting	P
P04	20	pulse form of frequency division	0-AB positive signal 1-pulse+direction	1	0	electrify again	Stop sestting	P
P04	21	Pulse series shape	0-pulse+direction, positive logic (default)) 1-direction+pulse, negative logic 2-A+B phase positive pulse, positive logic 3- A+B phase positive pulse, negative logic 4- CCW+CW, positive logic 5- CCW+CW, negative logic	1	0	electrify again	Stop sestting	P

P04	22	Clear function of position deivation	0- servo off and fault happens 1- clear position deviation pulse when fault happens 2-clear via DI input function（PERR-CLR）	1	0	immediate effect	Stop sestting	P
P04	23	（COIN） output of positioning finish	0- absolue value of postion deviation is less than the output of positioning range 1- absolute value of position deviation is less than positioning range and position command is 0 output 2- absolute deviation value is less than the position range and the position command output is 0.	1	0	immediate effect	Stop sestting	P
P04	24	positioning finish range	1P～65535P	1P	7P	immediate effect	Stop sestting	P
P04	25	Approach range	1P～65535P	1P	65535P	immediate effect	Stop sestting	P

P05 group Speed control parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P05	00	A resource of main speed command	0- digital given （P0503） 1-AI1 2-AI2 3- multi-section speed command 4-communication given	1	0	immediate effect	Stop sestting	S
P05	01	B resource of auxiliary speed command	0- digital given （P0503） 1-AI1 2-AI2 3- multi-section speed command 4-communication given	1	3	immediate effect	Stop sestting	S
P05	02	speed command choice	0- A resource of main speed command 1- B resource of auxiliary speed command 2-A+B 3-A/B switch	1	0	immediate effect	Stop sestting	S
P05	03	keyboard setting value of speed command	-9000rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	S
P05	04	setting value of jog speed	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	S
P05	05	acceleration time of speed command	0ms-10000ms	1ms	0ms	immediate effect	reserved parameter	S
P05	06	deceleration time of speed command	0ms-10000ms	1ms	0ms	immediate effect	reserved parameter	S

P05	07	limit choice of speed command	0-positive P05.08、negative P05.09 internal limit（default） 1-AI1 2-AI2 （limited by system max speed）	1	0	immediate effect	run setting	S
P05	08	speed positive limit	0rpm-9000rpm	1rpm	9000rpm	immediate effect	run setting	S
P05	09	speed negative limit	0rpm-9000rpm	1rpm	9000rpm	immediate effect	run setting	S
P05	15	fixed speed given value of zero point	0rpm～6000rpm	1rpm	10rpm	immediate effect	run setting	S
P05	16	speed gate limit of motor rotation signal	0rpm～1000rpm	1rpm	20rpm	immediate effect	run setting	PS
P05	17	Speed consistent signal width	0rpm～100rpm	1rpm	10rpm	immediate effect	run setting	PS
P05	18	speed up the given vaule	0rpm～6000rpm	1rpm	1000rpm	immediate effect	run setting	PST
P05	19	speed up to given width	0rpm～100rpm	1rpm	10rpm	immediate effect	reserved parameter	PST
P05	20	zero speed threshold	0rpm～6000rpm	1rpm	10rpm	N/A	run setting	PST

P06 group Torque control parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P06	00	A resource of main torque command	0-digtal given（P06-05） 1-AI1 2-AI2 3-COM given	1	0	immediate effect	Stop sestting	T
P06	01	B resource of auxiliary torque command	0-digital given（P06-05） 1-AI1 2-AI2 3-COM given	1	1	immediate effect	Stop sestting	T
P06	02	torque command choice	0- A resource of main torque command 1- B resource of auxiliary torque command 2-A+B resource 3-A/B switch	1	0	immediate effect	Stop sestting	T
P06	05	keyboard given value of torque command	-300.0%～300.0%(based on motor holding torque）	0.1%	0.0%	immediate effect	run setting	T

P06	06	torque limit source	0-positive/negative internal torque limit(default) 1- positive/negative external torque limit （use P_CL，N_CLto choose） 2- T-LMT used as external torque limit input 3- set the min.value of positive/negative external torque and T-LMT as torque limit （use P_CL，N_CLto choose） 4- positive/negative internal torque limit and external T-LMT torque limit（use P_CL，N_CLto choose）	1	0	immediat e effect	run setting	PST
P06	07	T-LMT choice	1-AI1 2-AI2	1	2	immediat e effect	run setting	PST
P06	08	positive internal torque limit	0.0%~500.0%(based on motor holding torque）	0.1%	300.0%	immediat e effect	run setting	PST
P06	09	negative internal torque limit	0.0%~500.0%(based on motor holding torque）	0.1%	300.0%	immediat e effect	run setting	PST
P06	10	Positive side external torque limit	0.0%~500.0%(based on motor holding torque）	0.1%	300.0%	immediat e effect	run setting	PST
P06	11	negative side external torque limit	0.0%~500.0%(based on motor holding torque）	0.1%	300.0%	immediat e effect	run setting	PST
P06	12	Emergency stop torque	0.0%~300.0%(based on motor holding torque）	0.1%	100.0%	immediat e effect	run setting	PST
P06	13	speed limit resorce choice when under torque control	0- internal speed limit （P06.15、P06.16 setting value） 1- V-LMT used to limit the external speed input	1	0	immediat e effect	run setting	T
P06	14	V-LMT choice	1-AI1 2-AI2	1	3	immediat e effect	run setting	T
P06	15	positive speed limit under torque control	0rpm-9000rpm	1	3000	immediat e effect	run setting	T
P06	16	negative speed limit under torque control	0rpm-9000rpm	1	3000	immediat e effect	run setting	T
P06	17	torque up to the command basic value	0.0%～500.0% （100% correspond motor holding torque）	0.1%	0.0%	immediat e effect	run setting	PST
P06	18	torque up to the effective deviation threshold.	0.0%～500.0% （100% correspond motor holding torque）	0.1%	20.0%	immediat e effect	run setting	PST
P06	19	torque up to the invalid deviation threshold	0.0%～500.0% （100% correspond motor holding torque）	0.1%	10.0%	immediat e effect	run setting	PST

P07 group Gain parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P07	00	position loop gain 1	1.0Hz～2000.0Hz	0.1HZ	39.0HZ	immediate effect	run setting	P
P07	01	speed loop gain 1	1.0Hz～2000.0Hz	0.1HZ	22.0HZ	immediate effect	run setting	PS
P07	02	integration time of speed loop 1	0.15ms～512.00ms	0.01ms	25.00ms	immediate effect	run setting	PS
P07	03	speed check filter 1	0.00ms～100.00ms	0.01ms	0.60ms	immediate effect	run setting	PST
P07	04	torque command filter 1	0.00ms～100.00ms	0.01ms	1.08ms	immediate effect	run setting	PST
P07	05	position loop gain 2	1.0Hz～2000.0Hz	0.1HZ	46.0HZ	immediate effect	run setting	P
P07	06	speed loop gain 2	1.0Hz～2000.0Hz	0.1HZ	22.0HZ	immediate effect	run setting	PS
P07	07	integration time of speed loop 2	0.15ms～512.00ms	0.01ms	500.00 ms	immediate effect	run setting	PS
P07	08	speed check filter 2	0.00ms～100.00ms	0.01ms	0.00ms	immediate effect	run setting	PST
P07	09	torque command filter 2	0.00ms～100.00ms	0.01ms	1.03ms	immediate effect	run setting	PST
P07	10	DI function GAIN-SWITCH	0-speed loop regulator P(1)/PI(0)switch, gain is always the first group 1-1st gain（0)、2nd gain(1)switch	1	0	immediate effect	run setting	PS
P07	11	gain switch mode	0- 1st gain fixed 1- 2nd gain fixed 2-use DI input（GAIN-SWITCH） 3- torque command big 4-big change of speed command 5-speed command big 6- big position deviation（P) 7- position command（P) 8- positinning not finish（P) 9-big true speed（P) 10- position command and true speed.（P)	1	0	immediate effect	run setting	PS
P07	12	gain switch delay	0~1000.0ms	0.1ms	5.0ms	immediate effect	run setting	PS
P07	13	gain switch level	0~20000（unit：depends on gain switch mode instruction）	1	50	immediate effect	run setting	PS
P07	14	hysteresis of gain switch	0~20000（unit：depends on gain switch mode instruction）	1	33	immediate effect	run setting	PS
P07	15	position gain switch time	0~1000.0ms	0.1ms	3.3ms	immediate effect	run setting	PS
P07	16	PDFF coefficient of speed regulator	0~100.0%	0.1%	100.0%	immediate effect	run setting	PS
P07	19	feedforward control choice of speed	0- no speed feedforward 1- internal speed feedforward 2- use AI1 as the speed feedforward input 3- use AI2 as the speed feedforward input 4- COM given	1	0	immediate effect	Stop sestting	P

P07	20	feedforward gain of speed	0.0%～100.0%	0.1%	0.0%	immediate effect	run setting	P
P07	21	feedforward filter time para. Of speed	0.00ms～64.00ms	0.01ms	0.00ms	immediate effect	run setting	P
P07	22	torque feedforward choice	0- no torque feedforward 1- internal torque feedforward 2- use AI1 as the speed feedforward input 3- use AI2 as the speed feedforward input 4- COM given	1	0	immediate effect	Stop sestting	PS
P07	23	torque feedforward gain	0.0%～100.0%	0.1%	0.0%	immediate effect	run setting	PS
P07	24	feedforward filter time para. Of torque	0.00ms～64.00ms	0.01ms	0.00ms	immediate effect	run setting	PS

P09 group Fault and protection

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P09	00	lose phase protection choice of power input	0- enable fault, forbit alarm 1- enable fault and alarm 2- forbit fault and alarm	1	2	immediate effect	run setting	PST
P09	01	lose phase protection choice of power output	0- enable protection 1- forbit protection	1	0	immediate effect	run setting	PST
P09	03	wrong mask bit of encoder	Bit7-invalid encoder battery Bit6-encoder battery voltage low Bit5-wrong encoder multi-ring counting* Bit3-overflow of encoder multi-ring counting *	1	255	immediate effect	run setting	PST
P09	04	Speed protection function	0-open protection 1- close protection	1	0	immediate effect	run setting	PST
P09	05	overload warning value	1%～100%	1%	100%	immediate effect	run setting	PST
P09	06	motor overload protection coefficient	10%～300%	1%	100%	immediate effect	run setting	PST
P09	07	Under voltage protection point	50%～100%（100% correspond default under voltage point）	1%	100%	immediate effect	run setting	PST
P09	08	over speed fault point	50%~120%（100% correspond motor max speed）	1%	120%	immediate effect	run setting	PST
P09	09	threshold value of over deviation(32 bit)	1P~1073741824P(encode unit)	1P	32767P	immediate effect	run setting	PST
P09	11	max pulse input frequency	50k~4000kHZ	1kHZ	4000kHZ	immediate effect	Stop sestting	PST
P09	12	filter time of command pulse input pin	0-255ns	20ns	360ns	electrify again	Stop sestting	P
P09	13	postive encoder filter time	0-255ns	20ns	720ns	electrify again	Stop sestting	PST

P09	14	output width of encoder Z signal	0-60000ns	20ns	200us	electrify again	Stop sestting	PST

P10group COM parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P10	00	COM address	0~247，0 is broadcast address	1	1	immediate effect	run setting	PST
P10	01	COM group net choice	0-Modbus 1-CANOpen 2-EtherCAT	1	0	electrify again	run setting	PST
P10	02	Modbus baud rate setting	0-2400 1-4800 2-9600 3-19200 4-38400 5-57600 6-115200	1	6	immediate effect	run setting	PST
P10	03	Modbus data format	0-no check,2 stop bits 1-even check，1stop bit 2-odd check，1stop bit 3- no check，1stop bit	1	0	immediate effect	run setting	PST
P10	04	COM write-in function has been updated to EEPROM or not	0-no update EEPROM 1-update to EEPROM except P11 and P18 group.	-	0	immediate effect	run setting	PST

P11 group Auxiliary function parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P11	00	keyboard JOG try	0- no operation 1-start JOG	1	0	immediate effect	Stop sestting	PST
P11	01	fault reset	0- no operation 1- fault reset	1	0	immediate effect	Stop sestting	PST
P11	02	software reset	0- no operation 1- software reset	1	0	immediate effect	Reserve parameter	PST
P11	03	inertia identification function	0- no operation 1- start inertia identification	1	0	immediate effect	Stop sestting	PST
P11	04	initial angle identification	0- no operation 1- start angle initialization	1	0	immediate effect	Reserve parameter	PST
P11	05	auto-adjust of analog input	0- no operation 1~2- AI1~AI2 adjust	1	0	immediate effect	Stop sestting	PST
P11	06	absolute encoder reset	0- no operation 1- clear related alarm and fault records of absolute encoder 2- Reset multi-ring data of absolute encoder.	1	0	immediate effect	Stop sestting	PST
P11	09	system initialization function	0- no operation 1-restore factory setting(except P1 and P17 group para. 2- clear fault records	1	0	immediate effect	Stop sestting	PST
P11	10	DIDO force I/O enable	0- no operation 1-force DI enable 2-force DO enable 3-force DIDO enable	1	0	immediate effect	run setting	PST
P11	11	DI force input given	0-0x01FF	1	0x01FF	immediate effect	run setting	PST
P11	12	DO force output	0-0x001F	1	0	immediate	run setting	PST

		given				effect		

P12 Keyboard display parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P12	00	LED warning display choice	0-LED output warning info. immediately 1-LED don't output warning info.	1	0	immediate effect	run setting	PST
P12	01	default display setting		1	1	immediate effect	run setting	PST
P12	03	speed display filter time	0~1000.0ms	0.1ms	5.0ms	immediate effect	run setting	PST
P12	12	main software version no.	VV.B.DD	1	0	N/A	display para.	
P12	13	FPGA version	VV.B.DD	1	0	N/A	display para.	
P12	14	product series code	PP.XXX	1	0	N/A	display para.	

P13 group Multisegment position

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P13	00	multisegment position running mode	0- single running finish to stop（P1301 choose segment） 1-cycle running （P1301 choose segment） 2-DI switch 3-sequential running P1301 (choose segment）	1	1	immediate effect	Stop sestting	P
P13	01	given start segment	1～16	1	1	immediate effect	Stop sestting	P
P13	02	given end segment	1～16	1	1	immediate effect	Stop sestting	P
P13	03	allowance process method	other 3 modes are effective except D1 mode: 0：continue to run the rest segment 1：run from 1st segment	1	0	immediate effect	Stop sestting	P
P13	04	waitting time unit	0-ms 1-s	1	0	immediate effect	Stop sestting	P
P13	05	position control mode	0- incremental position control 1- absolute position control	1	0	immediate effect	Stop sestting	P
P13	08	1st segment displacement (32bit)	-1073741824～ 1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	10	max speed of 1st displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	11	acceleration/deceleration time of 1st displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	12	waiting time after finishing 1st displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	13	2nd segment displacemen	-1073741824～ 1073741824(command	1Unit	10000Unit	immediate effect	run setting	P

		(32bit)	unit)					
P13	15	max speed of 2nd displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	16	acceleration/deceleration time of 2nd displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	17	waiting time after finishing 2nd displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	18	3rd segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	20	max speed of 3rd displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	21	acceleration/deceleration time of 3rd displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	22	waiting time after finishing 3rd displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	23	4th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	25	max speed of 4th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	26	acceleration/deceleration time of 4th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	27	waiting time after finishing 4th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	28	5th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	30	max speed of 5th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	31	acceleration/deceleration time of 5th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	32	waiting time after finishing 5th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	33	6th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	35	max speed of 6th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	36	acceleration/deceleration time of 6th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	37	waiting time after finishing 6th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	38	7th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	40	max speed of 7th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	41	acceleration/deceleration time of 7th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	42	waiting time after finishing 7th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	43	8th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	45	max speed of 8th	0rpm～9000rpm	1rpm	200rpm	immediate	run setting	P

		displacement				effect		
P13	46	acceleration/deceleration time of 8th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	47	waiting time after finishing 8th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	48	9th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	50	max speed of 9th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	51	acceleration/deceleration time of 9th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	52	waiting time after finishing 9th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	53	10th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	55	max speed of 10th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	56	acceleration/deceleration time of 10th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	57	waiting time after finishing 10th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	58	11th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	60	max speed of 11th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	61	acceleration/deceleration time of 11th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	62	waiting time after finishing 11th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	63	12th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	65	max speed of 12th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	66	acceleration/deceleration time of 12th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	67	waiting time after finishing 12th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	68	13rd segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	70	max speed of 13th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	71	acceleration/deceleration time of 13th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	72	waiting time after finishing 13th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	73	14th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	75	max speed of 14th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	76	acceleration/decel	0~65535	1ms(1s)	10ms(s)	immediate	run setting	P

		eration time of 14th displacement				effect		
P13	77	waiting time after finishing 14th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	78	15th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	80	max speed of 15th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	81	acceleration/deceleration time of 15th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	82	waiting time after finishing 15th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P
P13	83	16th segment displacemen (32bit)	-1073741824～1073741824(command unit)	1Unit	10000Unit	immediate effect	run setting	P
P13	85	max speed of 16th displacement	0rpm～9000rpm	1rpm	200rpm	immediate effect	run setting	P
P13	86	acceleration/deceleration time of 16th displacement	0~65535	1ms(1s)	10ms(s)	immediate effect	run setting	P
P13	87	waiting time after finishing 16th displacement	0～10000	1ms(s)	1000ms(s)	immediate effect	run setting	P

P14 Multisegment speed command

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P14	00	running mode of multisegment speed command	0- single running finish to stop（P1401 choose segment） 1-cycle running（P1401 choose segment） 2-switch via external DI	1	1	immediate effect	Stop sestting	S
P14	01	segment no.choice of speed command termination	1～16	1	16	immediate effect	Stop sestting	S
P14	02	unit choice of running time	0-s 1-min	1	0	immediate effect	Stop sestting	S
P14	03	acceleration/deceleration time 1	0ms-65535ms	1ms	10ms	immediate effect	Stop sestting	S
P14	04	acceleration/deceleration time 2	0ms-65535ms	1ms	10ms	immediate effect	Stop sestting	S
P14	05	acceleration/deceleration time 3	0ms-65535ms	1ms	10ms	immediate effect	Stop sestting	S
P14	06	acceleration/deceleration time 4	0ms-65535ms	1ms	10ms	immediate effect	Stop sestting	S
P14	07	1st segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	08	running time of 1st segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	09	speed up/down time of 1st segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2	1	0	immediate effect	Stop sestting	S

			3-acceleration/deceleration time 3 4-acceleration/deceleration time 4					
P14	10	2nd segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	11	running time of 2nd segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	12	speed up/down time of 2nd segment	0- zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	13	3rd segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	14	running time of 3rd segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	15	speed up/down time of 3rd segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	16	4th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	17	running time of 4th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	18	speed up/down time of 4th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	19	5th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	20	running time of 5th segment	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S

		command						
P14	21	speed up/down time of 5th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	22	6th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	23	running time of 6th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	24	speed up/down time of 6th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	25	7th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	26	running time of 7th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	27	speed up/down time of 7th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	28	8th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	29	running time of 8th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	30	speed up/down time of 8th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2	1	0	immediate effect	Stop sestting	S

			3-acceleration/deceleration time 3 4-acceleration/deceleration time 4					
P14	31	9th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	32	running time of 9th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	33	speed up/down time of 9th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	34	10th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	35	running time of 10th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	36	speed up/down time of 10th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	37	11th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	38	running time of 11th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	39	speed up/down time of 11th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	40	12th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	41	running time of 12th segment	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S

		command						
P14	42	speed up/down time of 12th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	43	13rd segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	44	running time of 13th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	45	speed up/down time of 13th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	46	14th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	47	running time of 14th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	48	speed up/down time of 14th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S
P14	49	15th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	50	running time of 15th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	51	speed up/down time of 15th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2	1	0	immediate effect	Stop sestting	S

			3-acceleration/deceleration time 3 4-acceleration/deceleration time 4					
P14	52	16th segment command	-9000～+9000rpm	1rpm	0rpm	immediate effect	Stop sestting	S
P14	53	running time of 16th segment command	0～6553.5	0.1s(min)	5.0s(min)	immediate effect	Stop sestting	S
P14	54	speed up/down time of 16th segment	0-zero acceleration/deceleration time 1-acceleration/deceleration time 1 2-acceleration/deceleration time 2 3-acceleration/deceleration time 3 4-acceleration/deceleration time 4	1	0	immediate effect	Stop sestting	S

P16 Special function parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P16	08	enable control of home reset	0- close home reset function; 1- input HomingStart signal via DI to start home reset function; 2- start home reset function once power-on; 3- start home reset immediately; 4- keep the current position as home point;	1	0	immediate effect	Stop sestting	P

P16	09	home reset model	0- back home in positive direction, deceleration point and origin point are origin switch; 1- back home in negative direction, deceleration point and origin point are origin switch; 2- back home in positive direction, deceleration point and origin point are motor's Z signal; 3- back home in negative direction, deceleration point and origin point are motor's Z signal;; 4- back home in positive direction, deceleration point is origin switch, origin point is motor's Z signal; 5- back home in negative direction, deceleration point is origin switch, origin point is motor's Z signal; 6- back home in positive direction, deceleration point and origin point are positive over-run switch; 7- back home in negative direction, deceleration point and origin point are negative over-run switch; 8- back home in positive direction, deceleration point is positive over-run switch,, origin point is motor's Z signal; 9- back home in negative direction, deceleration point is negative over-run switch,, origin point is motor's Z signal; 10- back home in positive direction, no deceleration point, origin point is origin switch; 11- back home in negative direction, no deceleration point, origin point is origin switch; 12- back home in positive direction, no deceleration point, origin point is motor's Z signal; 13- back home in negative direction, no deceleration point, origin point is motor's Z signal;	1	0	immediate effect	Stop sestting	P

P16	10	high speed of searching origin switch signal	10 rpm -3000 rpm	1 rpm	100 rpm	immediate effect	Stop sestting	P
P16	11	low speed of searching origin switch signal	10 rpm -1000 rpm	1 rpm	10 rpm	immediate effect	Stop sestting	P
P16	12	limited speed of searching origin switch signal	0-65535ms	1ms	1000ms	immediate effect	Stop sestting	P
P16	13	limited time of searching origin point	0-65535ms	1ms	10000ms	immediate effect	Stop sestting	P
P16	14	deviation value of mechanical origin point(32bit)	-1073741824 ~ 1073741824(command unit)	1Unit	0 Unit	immediate effect	Stop sestting	P

P18 Display parameter

Function code		Name	Setting range	Min unit	Default setting	Effective time	Group	Mode
P18	00	servo state	rdy、run、Err.00~99（error）,AL.00~10(alarm）	1	-	N/A	Display parameter	PST
P18	01	feedback of motor speed(32 bit)	-9000rpm~9000rpm	1rpm	-	N/A	Display parameter	PST
P18	03	Speed command	-9000rpm~9000rpm	1rpm	-	N/A	Display parameter	PST
P18	04	internal torque command	-500.0%~500.0%	0.1%	-	N/A	Display parameter	PST
P18	05	phase current effective value	0.00A~655.35A	0.01A	-	N/A	Display parameter	PST
P18	06	Bus voltage	0V~1000V	0.1V	-	N/A	Display parameter	PST
P18	07	absolute position counter(32 bit)	-1073741824 ~ 1073741824(command unit)	1Unit	-	N/A	Display parameter	PST
P18	09	Electrical angle	0.0~360.0 angle	0.1 angle	-	N/A	Display parameter	PST
P18	10	mechanical angle	0.0~360.0 angle	0.1 angle	-	N/A	Display parameter	PST
P18	11	reserved parameter		1	-	N/A	Reserve parameter	PST
P18	12	input position command corresponding speed info.	-9000rpm~9000rpm	1rpm	-	N/A	Display parameter	PST
P18	13	position deviation counter(32 bit)	-1073741824 ~ 1073741824(min. encoder resolution unit)	1P	-	N/A	Display parameter	PST
P18	15	pulse counter of input command (32 bit)	-1073741824 ~ 1073741824(command unit)	1Unit	-	N/A	Display parameter	PST
P18	17	feedback pulse counter (32 bit)	-1073741824 ~ 1073741824(min. encoder resolution unit)	1P	-	N/A	Display parameter	PST
P18	19	command unit of position deviation counter(32 bit)	-1073741824 ~ 1073741824(command unit)	1Unit	-	N/A	Display parameter	PST
P18	21	monitor digital input signal	-	-	-	N/A	Display parameter	PST
P18	23	monitor digital output signal	-	-	-	N/A	Display parameter	PST
P18	25	total power-on time(32 bit)	0.0-429496729.6s	0.1s	-	N/A	Display parameter	PST
P18	27	AI1 sampling voltage	-	1mV	-	N/A	Display parameter	PST

P18	28	AI2 sampling voltage	-	1mV	-	N/A	Display parameter	PST
P18	29	AI1 origin voltage	-	1mV	-	N/A	Display parameter	PST
P18	30	AI2 origin voltage	-	1mV	-	N/A	Display parameter	PST
P18	31	module temperature	-	1° C	-	N/A	Display parameter	PST
P18	32	single-ring data of absolute encoder	-	pulse	-	N/A	Display parameter	PST
P18	34	multi-ring data of absolute encoder	-	turn	-	N/A	Display parameter	PST
P18	40	error records	0-current error 1-one error before 2-two errors before …… 9-nine errors before	1	0	immediate effect	Run setting	PST
P18	41	error code	-	-	-	N/A	Display parameter	PST
P18	42	the time of selected errors(32 bit)	-	0.1s	-	N/A	Display parameter	PST
P18	44	current rpm of selected errors	-	1rpm	-	N/A	Display parameter	PST
P18	45	current of selected errors U	-	0.01A	-	N/A	Display parameter	PST
P18	46	current of selected errors V		0.01A		N/A	Display parameter	PST
P18	47	bus voltage of selected errors	-	0.1V	-	N/A	Display parameter	PST
P18	48	input terminal state when errors happen	-	-	-	N/A	Display parameter	PST
P18	49	output terminal state of selected errors	-	-	-	N/A	Display parameter	PST

DIDO Assign basic function definition

Introduction of input signal function				
Code	Name	Function name	Introduction	State
FunIN.1	S_ON	servo enable	invalid-forbit servo motor enable valid-servo motor enable of power-on	assigned
FunIN.2	ALM_RST	alarm reset signal	Depends on alarm types, after reset some alarms, the servo can continue to work. This function is edge effective level.	assigned
FunIN.3	GAIN_SWITCH	profortional action/gain switch	invalid-speed control loop is PI control valid-speed control loop is P control	assigned
FunIN.4	CMD_SWITCH	main/vice command switch	invalid-current command is A valid-current command is B	assigned
FunIN.5	PERR_CLR	clear pulse deviation	suggest to set rising edge/falling edge effective invalid-no operation valid-clear pulse deviation	assigned
FunIN.6	CMD1	multi-segment running command switch CMD1	16 segements command choice	assigned
FunIN.7	CMD2	multi-segment running command switch CMD2	16 segements command choice	assigned
FunIN.8	CMD3	multi-segment running command switch CMD3	16 segements command choice	assigned

FunIN.9	CMD4	multi-segment running command switch CMD4	16 segements command choice	assigned
FunIN.10	MODE_SWITCH	Mode switch M1-SEL	switch speed,positon and torque according to control mode(3.4.5)	assigned
FunIN.11	ZERO_CLAMP	zero position clamp signal	valid-use zero position clamp function; invalid-forbit zero position clamp function	assigned
FunIN.12	INHIBIT	pulse forbit	valid-forbit input command pulse invalid-input command pulse	assigned
FunIN.13	P_OT	positive over-run	It enters in over-run protection function once mechanical movement out of movable range. valid-positive over-run, forbit positive drive invalid-normal range, positive drive	assigned
FunIN.14	N_OT	negative over-run	It enters in over-run protection function once mechanical movement out of movable range. valid-negative over-run, forbit negative drive; invalid-normal range, positive drive	assigned
FunIN.15	P_CL	Positive external torque limit	Switch torque limit source according to choice of P06-06. When P06-06=1: valid-positive external torque limit is valid; invalid-positive internal torque limit is valid When P06-06=3 and limit value of AI is bigger than that of external limit: valid- positive external torque limit is valid invalid-AI torque limit is valid When P06-06=4: valid-AI torque limit is valid; invalid-positive internal torque limit is valid	assigned
FunIN.16	N_CL	negative external torque limit	Switch torque limit source according to choice of P06-06. When P06-06=1: valid-negative external torque limit is valid; invalid-negative internal torque limit is valid When P06-06=3 and limit value of AI is smaller than that of negative external limit: valid- negative external torque limit is valid invalid-AI torque limit is valid When P06-06=4: valid-AI torque limit is valid; invalid-negative internal torque limit is valid	assigned
FunIN.17	P_JOG	positive JOG	valid-input given command invalid-stop input command	assigned
FunIN.18	N_JOG	negative JOG	valid-negative input according to given command invalid-stop input command	assigned
FunIN.23	GEAR_SWITCH	electronic gear choice	invalid-electronic gear ratio 1; valid-electronic gear ratio 2	assigned
FunIN.24	POS_DIR	position reverse	invalid- not reverse; valid-reverse	assigned
FunIN.25	SPD_DIR	speed reverse	invalid- not reverse; valid-reverse	assigned
FunIN.26	TOG_DIR	torque reverse	invalid- not reverse; valid-reverse	assigned
FunIN.29	PSEC_EN	internal multi-segment position enable signal	edge effective invalid-ignore internal multi-segment command; valid-start internal multi-segment	assigned
FunIN.30	XINT_FINISH	interrupt fixed length to finish external signal confirmation	edge effective invalid-no response; valid-trigger interruption	assigned
FunIN.31	XINT_DISABLE	diable interruption	level effective invalid-no response; valid-trigger interruption	assigned
FunIN.32	HOME_SWITCH	home switch signal	mechanical home switch	assigned
FunIN.33	HOME_START	home enable signal	start home reset	assigned
FunIN.34	ESTOP	emergency stop		assigned

Introduction of input signal function				
Code	Name	Function name	Introduction	State
FunOUT.1	S_RDY	servo ready	servo is ready to receive valid S-ON signal. valid-servo is ready 无 invalid-servo is not ready	assigned
FunOUT.2	ALM	alarm output signal	state is valid when find out errors.	assigned
FunOUT.3	WARN	warning output signal	warning output signal is valid	assigned
FunOUT.4	TGON	motor rotation output signal	when motor's max rpm is higher than speed gate limit(P05-16), Valid-motor rotation signal is valid Invalid-motor rotation signal is invalid	assigned
FunOUT.5	V_ZERO	zero velocity signal	output signal when servo motor stop movement. valid motor RPM is zero, invalid motor RPM is not zero.	assigned
FunOUT.6	V_CMP	velocity matching	Under speed control, when the absolute difference value between servo motor velocity and velocity command is less than the speed deviation setting value, it's valid.	assigned
FunOUT.7	COIN	position complete	under position control, when position deviation pulse up to position complete P04-24, it's valid.	assigned
FunOUT.8	NEAR	Positioning approach signal	under position control, when position deviation pulse up to the setting value of its approach signal P04-24, it's valid.	assigned
FunOUT.9	T_LT	torque limit signal	confirmation signal of torque control valid-motor torque is limited. invalid-motor torque is not limited.	assigned
FunOUT.10	V_LT	velocity limit signal	cofirmation signal of velocity limit under torque control. valid-motor rpm is limited. invalid-motor rpm is not limited.	assigned
FunOUT.11	BKOFF	brake-off signal output	brake-off signal output: valid-brake off and motor shaft is free; estore, motor shaft is locked.	assigned
FunOUT.12	T_ARR	torque feedback arrive at setting range	valid-torque absolute value arrives at setting value invalid-torque absolute value is less than setting value.	assigned
FunOUT.13	V_ARR	velocity feedback arrives at setting range	valid-velocity feedback arrives at setting value invalid-velocity range hasn't arrived at setting value	assigned
FunOUT.14	ANG_ESTED	angle identification done		assigned
FunOUT.15	ALM1	output 3 bits of alarm code	output 3 bits of alarm code	assigned
FunOUT.16	ALM2	output 3 bits of alarm code	output 3 bits of alarm code	assigned
FunOUT.17	ALM3	output 3 bits of alarm code	output 3 bits of alarm code	assigned
FunOUT.18	XINT_DONE	suspend fixed length done signal	suspend fixed length done signal	assigned
FunOUT.19	HOME_ATTAIN	home back done signal	output of home back done	assigned

Appendix A： Motor Code

Motor series	Rated voltage	Model No. ASM□-□□-□□□□□-*****		Motor NO. (P01.00)
ASM	220V	Low inertia, small capacity	ASMD-04-A530B-U***	00001
			ASMD-04-0130B-U***	00002
			ASMD-06-0230B-U***	00003
			ASMD-06-0430B-U***	00004
			ASMD-08-0830B-U***	00005
			ASMD-06-0230B-U***-M	00011
			ASMD-06-0430B-U***-M	00010
			ASMD-06-0630B-U***-M	00013
			ASMD-06-0430B-U***-G	00014
			ASMD-06-0630B-U***-G	00015
		Large inertia, small capacity	ASMJ-06-0230B-U***	00006
			ASMJ-06-0430B-U***	00007
			ASMJ-08-0830B-U***	00008
			ASMJ-08-0830B-U***-M	00009
			ASMJ-09-0830B-U***	00012
		Large inertia, mid-capacity	ASMJ-08-1025B-U***	00101
			ASMJ-08-1030B-U***	00111
			ASMJ-08-1030B-U***-B	00118
			ASMJ-09-1025B-U***	00115
			ASMJ-10-1030B-U***	00102
			ASMJ-11-1230B-U***	00112
			ASMJ-11-1530B-U***	00103
			ASMJ-11-1830B-U***	00108
			ASMJ-11-0820B-U***	00113
			ASMJ-13-1025B-U***	00104
			ASMJ-13-1325B-U***	00116
			ASMJ-13-1525B-U***	00105
			ASMJ-13-2025B-U***	00109
			ASMJ-13-2625B-U***	00110
		High inertia, mid-capacity	ASMH-13-1010B-U***	00106
			ASMH-13-1215B-U***	00114
			ASMH-13-1515B-U***	00107
			ASMH-13-2315B-U***	00117
			ASMH-13-0915B-U***	00200
			ASMH-13-1315B-U***	00201
CSM	220V	High performance, small capacity	CSMT-A5BR1ANT3	01300
			CSMT-01BR1ANT3	01301
			CSMT-02BR1ANT3	01302
			CSMT-04BR1ANT3	01303
			CSMT-08BR1ANT3	01304

Remarks：

17bit Inc. encoder, the 4th. Number of motor is “1”;

17bit Abs. encoder, the 4th. Number of motor is “2”

Appendix B：Alarm Code

Alarm code Er_	Fault	Fault cause	Stop method	Reset or not
1	System para. abnormal	data abnormity of internal parameter of servo unit	No.1	No
2	Wrong production model	invalid motor model or drive model	No.1	No
3	Motor data check fault	data check error of motor ROM or no data	No.1	No
4	Storage alarm	1 storage device fault 2 too frequently read-write para. 3 control power unstable 4 servo drive fault	No.1	No
5	FPGA fault	1 FPGA initialize fault 2 FPGA logic version fault 3 FPGA detect abnormity	No.1	No
6	Program exception	1 system para.exception 2 servo drive internal fault	No.1	No
7	Undervoltage	undervoltage of control power	No.1	No
8	GND short circuit fault	1 servo motor/drive para. wrong; 2 UVW short circuit; 3 motor fired; 4 short circuit of motor to GND.; 5 servo drive fault;	NO.1	No
9	Overcurrent A	1 servo motor/drive para. wrong; 2 UVW short circuit; 3 motor fired; 4 short circuit of motor to GND; 5 servo drive fault;	NO.1	No
10	Overcurrent B	1 wrong motor connection; 2 software detects overcurrent of power transistor;	No.1	No
11	Encoder offline	Encoder offline	No.1	No
12	Abnormity of encoder AB signal	Abnormal of encoder AB signal	No.1	No
13	Abnormity of encoder check	abnormity of encoder zero point check	No.1	No
14	Abnormity of motor initial angle check	abnormity of motor initial angle check	No.1	No
15	Direction/short circuit fault	1 wrong phase sequence setting of motor UVW 2 UVW wrongly connection 3 wrong initial position or wrong setting of encoder parameters	No.1	No
16	Current sampling fault	sampling fault of motor current	No.1	No
20	Overvoltage	1 the DC voltage of main circuit is abnormally high	No.1	Yes
21	Undervoltage	1 the DC voltage of main circuit is abnormally low	No.1	Yes

22	Over speed	1 the speed command is over the max speed setting value 2 wrong phase sequence of UVW 3 speed response is seriously over adjust range 4 drive fault	No.1	Yes
27	DI setting fault	different DI be assigned the same function;	No.1	Yes
28	DO setting fault	different DO be assigned the same output.	No.1	Yes
30	Reference position fault	reference position fault	No.1	Yes
43	Position deviation	when servo on, the position deviation is out of max deviation value. (P09.09)	No.2	Yes
44	Main circuit lose input phase	when choose para. P09-00=0(enable fault, no alarm) or P09-00=1(enable,alarm) for losing phase protection of power input : 1 wrong input connection of 3 phase 2.3 phase drive is running in single phase power	No.2	Yes
46	Servo drive over load	the load is over the drive’s max load ability; wrong connection of UVW or losing phase;	No.2	Yes
47	Motor over load	the load is over motor’s max load; wrong connection of UVW or losing phase;	NO.2	Yes
49	Wrong setting of electronic gear	Electronic gear ratio is out of range [0.001,4000]	No.2	Yes
50	Radiator over heat	servo radiator over the setting fault value	No.2	Yes
51	battery failure of absolute encoder	not connect with battery or the battery voltage is lower than 2.6V	NO.2	Yes
52	Wrong multi-ring counting of absolute encoder	wrong multi-ring counting of absolute encoder	No.2	Yes
53	Overflow of absolute encoder multi-ring counting	overflow of absolute encoder multi-ring counting	No.2	Yes

Alarm code EE_	Alarm name	Alarm reason
81	Servo drive over load alarm	the load up to 80% of drive’s overload value
82	Motor over load alarm	alarm before fault, the value depends on P09_05
83	restart once parameter changed	it needs power-on again once para.changed.
86	warining of positive overrun.	Pot terminal of positive overrun switch is effective.
87	warining of negative overrun.	Pot terminal of negative overrun switch is effective.
88	setting fault of frequency pulse output	encoder frequency pulse no. is not in setting range.

89	oversize deivation of AI1	oversize deivation of AI1
90	oversize deivation of AI2	oversize deivation of AI2
91	The external regenerative discharge resistance is too small	external discharge resistance is smaller than the min. value drive requires or para.setting wrong.
92	RS485 COM fault	RS485 COM fault
94	DI emergent stop	external emergent stop E_STOP trigger
95	Low voltage of absolute encoder	battery voltage is lower than 3.2V.
96	timeout of back home	1 home switch fault; 2 time is not enough to search home point. 3 speed to search home point is not high enough.
97	wrong setting of mechanical origin deviation	1.when origin reset para.P16-09=8 or P16-09=14 or P16-09=6,the mechanical origin deviation P16-14 is over 0. 2 when origin reset para.P16-09=7or P16-09=9or P16-09=15, mechanical origin deviation P16-14 is under 0.
98	Main circuit lose input phase	When choose P09-00=1(enable fault, alarm), rated power 0.8/1.0/1.5/3.0kw drive and main circuit input voltage is single phase, it will alarm.