

HANPOSE "ASD" series Servo System Quick start guide



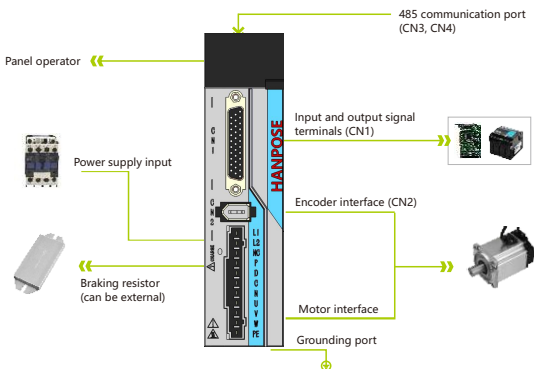
GUANGZHOU HANBUILD MOTOR CO.,LTD

Cautions

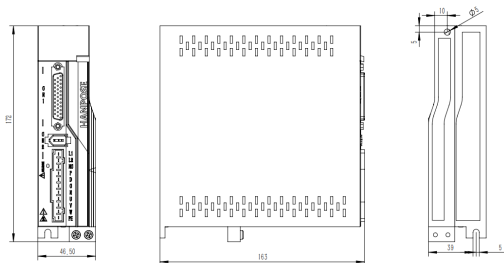
Thank you for using the HANPOSE "ASD" AC servo system! This operating manual provides information about the ASD series drivers and SS series motors. Before use, please read the manual carefully to ensure proper use!

- Please disconnect the power supply for more than 5 minutes before removing or disassembling the driver, otherwise it may cause electric shock due to residual voltage.
- Please never touch the inside of the servo driver, otherwise it may cause electric shock
- Please insulate the connection part of the power supply terminal, otherwise it may cause electric shock.
- Please do not damage or pull on the cable, subject the cable to excessive force, put it under heavy objects or clamp it. Doing so may result in electric shock, which may cause the product to stop or burn out.
- Unless designated personnel, please do not set up, disassemble or repair, otherwise it may cause electric shock or injury.
- Please do not remove the cover, cables, connectors and optional accessories while the power is on, otherwise it may cause electric shock and damage the drive.
- Please follow the steps required by this manual for trial operation.
- If an operation error occurs while the servo motor is connected to the machine, it will not only cause damage to the machine, but also sometimes cause personal accidents.
- Please do not change the maximum speed value, except for special purposes. Inadvertent change may damage the machine or cause injury.
- When the power is turned on and for a period of time after the power is cut off, the heat sink of the servo driver, the external braking resistor, and the servo motor may become hot. Please do not touch it, otherwise it may cause burns. To prevent accidental contact with hands or parts (cables, etc.), please take safety precautions such as installing an enclosure.
- Please do not touch the rotating part of the servo motor while it is running, as this may result in injury.
- If the servo motor is installed on the supporting machine and starts to run, make sure that the servo motor can be stopped at any time, otherwise you may get injured.
- Please install a stop device on the machine side to ensure safety.
- The brake of the servo motor with brake is not a stopping device to ensure safety. If a stop device is not provided, it may cause injury.
- If power is restored after a momentary power failure occurs during operation, the machine may restart suddenly, so please do not approach the machine.
- Please take measures to ensure that personal safety will not be endangered when restarting, otherwise it may cause injury.
- Please do not modify the product in any way, otherwise it may cause injury or mechanical damage.
- Please install the servo driver, servo motor, and external braking resistor on non-combustible materials, otherwise it may cause a fire.
- Between the power supply and the main circuit power supply of the servo driver (L1, L2 for single-phase, L1, L2, L3 for three-phase), please connect an electromagnetic contactor and a non-fuse circuit breaker. Otherwise, when the servo driver fails, the large current cannot be cut off, which may cause a fire.

Model combination list



Servo driver dimension drawing



List of standard model combinations

Motor base	Model	Rated power	Matching driver	Encoder cable	Power cable
40	40SS05	50W	ASD210(E)	HBBM-SV-YC3000	HBDL-SV-YC3000
	40SS10	100W	ASD210(E)	HBBM-SV-YC3000	HBDL-SV-YC3000
60	60SS20	200W	ASD240(E)	HBBM-SV-YC3000	HBDL-SV-YC3000
	60SS40	400W	ASD240(E)	HBBM-SV-YC3000	HBDL-SV-YC3000
80	80SS75	750W	ASD275(E)	HBBM-SV-YC3000	HBDL-SV-YC3000
	80SS100	1KW	ASD275(E)	HBBM-SV-YC3000	HBDL-SV-YC3000
110	110SS120-4030	1.2KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
	110SS150-5030	1.5KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
	110SS120-6020	1.2KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
	110SS180-6030	1.8KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
130	130SS130-5025	1.3KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
	130SS150-6025	1.5KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
	130SS200-7725	2.0KW	ASD2200(E)	HBBM-SV-3000	HBDL-SV-3000
	130SS250-10025	2.5KW	ASD3300(E)	HBBM-SV-3000	HBDL-SV-3000
	130SS230-15015	2.3KW	ASD3300(E)	HBBM-SV-3000	HBDL-SV-3000
	130SS380-15025	3.8KW	ASD3300(E)	HBBM-SV-3000	HBDL-SV-3000

* Driver with E is EtherCAT function

** Wiring is 3 meters as standard, other specifications please specify when ordering

Servo cable list

Naming of AC servo supporting cables

HB BM-SV-YC 3000

1

2

3

4

1 Hanbuild cable type

2 Cable category
BM-Encoder extension cable
DL-Motor power cable

3 Motor type
SV-Servo motor use
SP-Stepper motor use

4 Cable length
3000: 3000mm length
YC: 80mm and below
none: 110 and 130mm

Cable of 80mm and below

Motor cable HBDL-SV-YC3000

Color definition:

U	V	W	PE
Red	Blue	Brown	Yellow-green



110mm / 130mm Cable

Motor cable HBDL-SV-3000

Color definition:

U	V	W	PE
Red	Blue	Brown	Yellow-green



Motor model description

60 SS P 40-G 13 30

1 2 3 4 5 6 7

1 Motor flange size

60: 60mm 13:130mm

2 Motor Type

SS: Standard servo motor

SB: Ball screw of shaft

SK: Hollow shaft

SF: Telescopic shaft

3 Brake

P: With off power brake
none: without

4 Motor power

40: 400w 75: 750w

5 Encoder resolution

none: 17 bit Single-turn absolute encoder

G: 17bit magnetic Multi-turn absolute encoder

6 Motor rated torque

13: 1.3nm

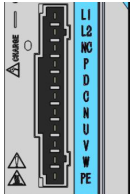
Standard can be omitted

7 Motor rated speed

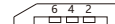
30: 3000rpm

Standard can be omitted

Main circuit wiring definition

Functions	Terminal symbol	Description	Diagram
Input power supply	L1	Single-phase 220 VAC	
	L2		
Braking resistance	P	When using an internal braking resistor, short P and D	
	D	When using an external braking resistor, P and D are short-circuited and disconnected, and then the external braking resistor wiring is connected between P and C respectively. P and N are forbidden to connect.	
	P		
	D		
Motor wiring	U	Connect the motor extension cable	
	V		
	W		
	PE		

CN2 Encoder terminal wiring definition

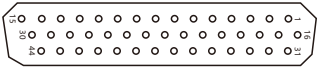
Pin numbers	Terminal symbol	Description	Diagram
5	Vcc	The encoder power supply is provided by the driver	
6	Gnd		
1	SD+	Encoder communication terminal	
2	SD-		
3	Reserved		
4	Reserved		

CN3,CN4 Communication 485 interface

Pin num	Description	Color	Diagram
1	—	orange&white	
2	E 0V	orange	
3	CAN H	green&white	
4	RS485-A	blue	
5	RS485-B	blue&white	
6	CAN L	green	
7	GND	brown&white	
8	—	brown	

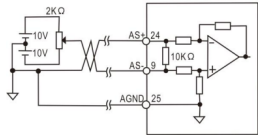
Dual RS-485 interface

CN1-DB44 control signal interface definition

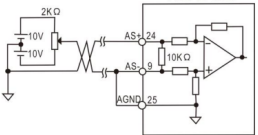


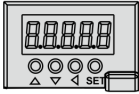
Functions	Signal	Pin number	Signal definition	Default function	Description
External pulse interface	PUL+	5	Differential pulse positive		Differential input 5-24V
	PUL-	21	Differential pulse negative		
	DIR+	6	Differential direction positive		
	DIR-	22	Differential direction negative		
	PULLHI	7	Additional 24V power input interface for command pulse		
	GND	11	Internal digital signal gnd		
Digital input	DI1(SV-ON)	20	Input 1	Servo enable	Photoelectric isolation input, function programmable, defined by P3 group parameters P3-0~P3-17. Note: The COM terminal is a common anode or common cathode interface, and the input level is 12V-24V.
	DI2(ALMRST)	4	Input 2	Alarm clear	
	DI3(NOT)	19	Input 3	Positive limit	
	DI4(NOT)	3	Input 4	Negative limit	
	INCOM	16	Input common terminal		
Digital output	DO1+	31		Servo is ready+	Photoelectric isolation output, function programmable, defined by P3 group parameters P3-20~P3-23.
	DO1-	32		Servo is ready-	
	DO2+	33		Alarm Output+	
	DO2-	34		Alarm Output-	
	DO3+	35		Positioning completed+	
	DO3-	36		Positioning completed-	
	DO4+	37		Brake positive	
	DO4-	38		Brake negative	
Internal isolated power output	E0V	43		Internal 0V	Internal isolated 24V power output, voltage range 20V~28V, maximum output current 100mA.
	E24V	44		Internal 24V	
Analog command input	AS+, AT+	24			Analog input of speed/rotation, range: -10V~+10V.
	AS+, AT+	9			
	AGND	25			

Analog differential input

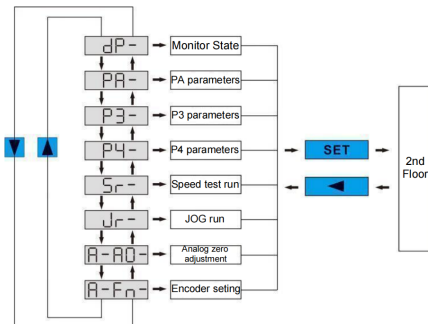


Analog single-ended input



Display and panel operation			
Functions	Symbol	Description	Diagram
Esc key	◀	Escape key	
Increase	▲	Switch up selection or increase value	
Decrease	▼	Switch down selection or decrease the value	
Confirm	SET	Confirm operation	

The first layer is the main menu, there are 8 operation modes, press ▲, ▼ keys to change the mode, press the SET key to enter the second layer, perform specific operations, and press ◀ to return to the main menu from the second layer.



The parameter is represented by parameter segment + parameter number, the hundreds digit is the segment number, and the tens and one digits are the parameter number. For example, parameter PA53, the segment number is "PA", the parameter number is "53", and the display shows "PA-53".

Select parameter setting "P-" in the main menu, and press SET key to enter the parameter setting mode. First, use the ▲, ▼ keys to select the parameter section, after selecting it, press the "SET" key to enter the parameter number selection of this section. Next, use the ▲, ▼ keys to select the parameter number, after selecting it, press the "SET" key to display the parameter value.

Use the ▲, ▼ keys to modify the parameter value. Press the ▲ or ▼ key once, the parameter increases or decreases by 1, press and hold the ▲ or ▼ key to continuously increase or decrease the parameter. When the parameter value is modified, press the SET key, the decimal point of the rightmost LED digital tube lights up and flashes twice, that is, the modification is completed, and the modified value will be reflected in the control immediately (some parameters need to be saved and then powered on to take effect.).

Alarm and handling method

Alarm code	Alarm name	run state	reason	Treatment method
1	speeding	Appears when the control power is turned on	1. Control circuit board failure. 2. Encoder failure.	1. Replace the servo drive. 2. Replace the servo motor.
		Occurs when the motor is running	The input command pulse frequency is too high.	Set the input command pulse correctly.
			The acceleration/deceleration time constant is too small, making the degree of overshoot too large.	Increase the acceleration/deceleration time constant.
			The input electronic gear ratio is too large.	set correctly.
			Encoder failure.	Replace the servo motor.
			Defective encoder cable.	Replace the encoder cable.
			The servo system is unstable, causing overshoot.	1. Reset the relevant gain value. 2. If the gain cannot be set to an appropriate value, reduce the load moment of inertia ratio.
		Appears when the motor has just started	The load is too high.	1. Reduce load. 2. Change to a higher power drive and motor.
			1. Encoder zero point error. 2. The motor UVW leads are wrongly connected. 3. Encoder cable leads are connected incorrectly.	1. Replace the servo motor. 2. Ask the manufacturer to reset the encoder zero point. 3. Correct wiring.

Alarm and handling method

Alarm code	Alarm name	run state	reason	Treatment method
2	The main circuit overvoltage	Appears when the control power is turned on	Circuit board failure.	Replace the servo drive.
		Appears when mains power is turned on	1. The power supply voltage is too high. 2. The power supply voltage waveform is abnormal.	Check the power supply.
		Occurs when the motor is running	Brake resistor wiring disconnected.	Rewire.
			1. Brake transistor damaged. 2. Internal braking resistor damaged.	Replace the servo drive.
			Insufficient brake circuit capacity.	1. Reduce the start-stop frequency. 2. Increase the acceleration/deceleration time constant. 3. Decrease the torque limit value. 4. Reduce load inertia. 5. Change to a higher power drive and motor.
3	The main circuit undervoltage	Appears when mains power is turned on	1. Circuit board failure. 2. Damaged power fuse. 3. Soft-start circuit faulty. 4. The rectifier is damaged.	Replace the servo drive.
			1. Power supply voltage is low. 2. Temporary power outage for more than 20ms.	Check power.
		Occurs when the motor is running	1. The power supply capacity is not enough. 2. Instantaneous power down.	Check power.
			The radiator is overheating.	Check the load condition.

Alarm and handling method

Alarm code	Alarm name	run state	reason	Treatment method
4	Location out of tolerance	Appears when the control power is turned on	Circuit board failure.	Replace the servo drive.
		Turn on the main power supply and control line, input the pulse command, the motor does not rotate or reverse	1. The encoder zero point changes. 2. Encoder failure.	1. Readjust the encoder zero point. 2. Replace the servo motor.
		Occurs when the motor is running	The detection range of the set position out-of-tolerance is small.	Increase the detection range of position out-of-tolerance.
			Position proportional gain is too small.	Increase gain value.
			Insufficient torque.	1. Check torque limit value. 2. Reduce load capacity. 3. Change to a higher power drive and motor.
			The command pulse frequency is too high.	Reduce frequency.
5	driver overheat	Appears during drive operation	1. Circuit board failure. 2. Drive temperature is too high.	1. Reduce drive temperature. 2. Replace the servo drive.
6	Speed amplification Saturation fault	Occurs when the motor is running	1. The load is too high. 2. The motor is mechanically stuck.	1. Reduce load. 2. Change to a higher power drive and motor. 3. Check the mechanical part of the load.
7	drive forbidden stop abnormal		The CCW/CW drive inhibit input terminals are both disconnected.	Check wiring.
8	Position deviation counter overflow		1. The motor is mechanically stuck. 2. The input command pulse is abnormal.	1. Check the mechanical part of the load. 2. Check command pulse. 3. Check that the motor rotates according to the command pulse.

Alarm and handling method

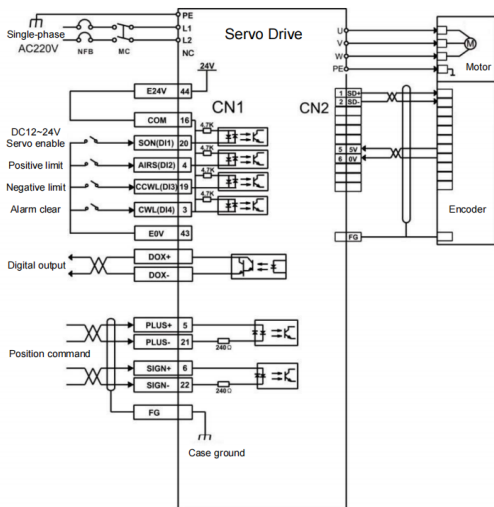
Alarm code	Alarm name	run state	reason	Treatment method
11	IPM mode block failure	Appears when the control power is turned on	Circuit board failure.	Replace the servo drive.
		Occurs when the motor is running	1. Supply voltage is low. 2. overheat.	1. Check the drive. 2. Power cycle. 3. Replace the drive.
			Short circuit between driver UVW.	Check wiring.
			Poor grounding.	Properly grounded.
			Damaged motor insulation.	Replace the motor.
			disturbed.	1. Add line filter. 2. Stay away from sources of interference.
13	overload	Appears when the control power is turned on	Circuit board failure.	Replace the servo drive.
		Occurs when the motor is running	Exceed the rated torque operation.	1. Check the load. 2. Reduce start-stop frequency. 3. Decrease the torque limit value. 4. Change to a higher power drive and motor.
			Keep the brake off.	Check the holding brake.
			The motor oscillates erratically.	1. Adjust gain. 2. Increase the acceleration/deceleration time. 3. Reduce load inertia.
			1. UVW has a phase disconnection. 2. Encoder connection error.	Check wiring.
14	brake failure		Brake circuit failure.	change drive

Alarm and handling method

Alarm code	Alarm name	run state	reason	Treatment method
18	relay switch failure		The relay is damaged.	Return to factory for repair.
19	Brake delay not open		The parameter value of PA94 is set too large, the control pulse is coming, and the brake has not been opened.	Decrease the value of parameter PA94.
20	EEPROM error		Damaged chip or circuit board.	1. Replace the servo drive. 2. After repairing, you must reset the drive model (refer to PA10), and then restore the default parameters.
twenty one	FPGA module failure		The FPGA module is not functioning properly.	Replace the drive.
twenty three	Current acquisition circuit failure		The current acquisition circuit is faulty.	Replace the servo drive.
29	User torque Overload alarm		1. The parameters of PA30 and PA31 are unreasonable. 2. Unexpectedly large loads occur.	1. Change parameters. 2. Overhaul machinery.
42	AC input Voltage is too low		1. When powered: normal. 2. Running : External AC voltage input is too low.	Check AC220V input.
47	The main circuit voltage is too high when powered on		1. The external AC voltage input is too high. 2. Main circuit failure.	1. Check AC220V input. 2. Change the drive.

Alarm and handling method

Alarm code	Alarm name	run state	reason	Treatment method
55	CRC check error 3 times in a row		The CRC check of the data received by MODBUS communication is wrong three times in a row	Replace the drive.
56	MODBUS frame too long error		1. Communication protocol mismatch. 2. disturbed.	1. Confirm the frame length. 2. Add a line filter to keep away interference.
57	MODBUS communication format is abnormal		1. Improper setting of communication parameters. 2. The communication address or value is incorrect.	Replace the drive.
58	lap wrong position value		The single-turn position offset value stored by the drive exceeds the encoder resolution.	Power on again.
59	Encoder Report a CF error		The encoder continuously reports errors in the CF field, and the encoder needs to be reset.	Reset the encoder again.
50	Encoder communication failure		There is no communication connection between the drive and the encoder.	Connect the encoder cable and power on again.
51	Encoder Communication exception		After the encoder communication is established, there is an interruption and the connection is disconnected.	Connect the encoder cable and power on again.
52	Encoder battery low voltage alarm		The encoder battery voltage is low enough to alarm, the information is not lost but needs to be replaced as soon as possible.	Replace the encoder battery.
53	Encoder battery voltage error alarm		The encoder battery voltage error alarm, the stored information has been wrong, and the encoder needs to be reset.	The encoder battery is exhausted and must be replaced.
54	Encoder Error alarm		The encoder is not a battery alarm, but the encoder needs to be reset.	Reset the encoder again.

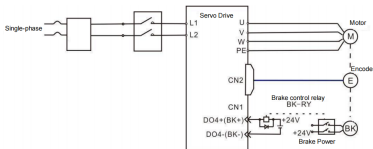


Remarks:

Position mode is a common working mode of servo drives, and its main use steps are as follows:

- 1) Correctly connect the power supply of the servo main circuit and control circuit, as well as the motor power line and the encoder line. After power-on, the servo panel displays "r 0", which means that the servo power supply and encoder wiring are correct.
- 2) Press the button to perform the servo JOG test run to confirm whether the motor can run normally.
- 3) Refer to the wiring instructions in the diagram to connect the pulse direction input and pulse command input in the CN1 terminal and the required DI/DO signals, such as servo enable, alarm clear, positioning completion signal, etc.
- 4) Set the position mode related settings. Set the DI/DO used according to the actual situation.
- 5) Servo enable, control the rotation of the servo motor through the position command issued by the host computer. First, rotate the motor at low speed, and confirm whether the rotation direction and electronic gear ratio are normal, and then adjust the gain.

Wiring diagram of holding brake



Remarks:

Brake wiring The connection of the brake input signal has no polarity, and the user needs to prepare a 24V power supply. The standard wiring example of the brake signal BK and the brake power supply is shown in the figure above

Basic parameters of position control

Parameters to be adjusted in position control mode

• Gain and smoothing filter parameter adjustment

Required parameters	Parameter Description	parameter value	Factory default
PA4	Control method selection	0	0
PA9	Position proportional gain	1-1000	80
PA19	Position command smoothing filter	0-1000×0.1ms	100
PA100	Command filter selection	0-1	0

• DI input related parameter adjustment

Required parameters	Parameter Description	parameter value	Factory default
PA11	The number of command pulses for 1 revolution of the motor	0-30000	10000
PA12	Position command pulse electronic gear first numerator	1-32767	0
PA13	Position command pulse electronic gear denominator	1-32767	10000
PA14	Position command pulse input method	0-3	0
PA15	Position command pulse direction inversion	0-1	0
PA59	Command pulse valid edge	0-1	0
PA77	Position command pulse electronic gear ratio second numerator	1-32767	0
PA78	Position command pulse electronic gear ratio third numerator	1-32767	0
PA79	Position command pulse electronic gear ratio fourth numerator	1-32767	0
PA80	Command direction signal effective level	0-1	0
PA81	Command pulse PULS signal filtering	0-15	4
PA82	Command pulse SIGN signal filtering	0-15	4

- DO output related parameter adjustment**

Required parameters	Parameter Description	parameter value	Factory default
PA16	Positioning complete range	0-3000 pulses	130
PA17	Position out-of-tolerance detection	0-30000×100 pulses	6000
PA18	Position out of tolerance error is invalid	0-1	0
PA83	CWL, CCWL direction prohibition method	0-1	0
PA84	Positioning complete hysteresis	0-32767	65
PA85	Positioning proximity range	0-32767	6500
PA86	Positioning close to hysteresis	0-32767	650

- Input and output terminal related parameter adjustment**

Required parameters	Parameter Description	parameter value	Factory default
PA55	Input terminal effective level control word	0000-1111	0000
PA57	Output terminal effective level control word	0000-1111	0000
PA58	IO input terminal debounce time constant	1-20ms	2
P3-0	Digital input DI1 function	0-99	1
P3-1	Digital input DI2 function	0-99	2
P3-2	Digital input DI3 function	0-99	3
P3-3	Digital input DI4 function	0-99	4
P3-15	Digital input DI is forced to be valid 1	00000000-11111111	00000000
P3-16	Digital input DI is forced to be valid 2	00000000-11111111	00000000
P3-17	The digital input DI is forced to be valid 3	00000000-11111111	00000000
P3-20	Digital output DO1 function	0-99	2
P3-21	Digital output DO2 function	0-99	3
P3-22	Digital output DO3 function	0-99	5
P3-23	Digital output DO4 function	0-99	8

● **Internal position Pr mode position command description and related parameters**

Pr position command source is the use of parameters (P4-2, P4-3)-(P4-23, P4-24) 8 groups of built-in position command registers, which can be used with external I/O (CN1, POS0-POS 2 and CTRG) Choose one of eight groups to use as a position command :

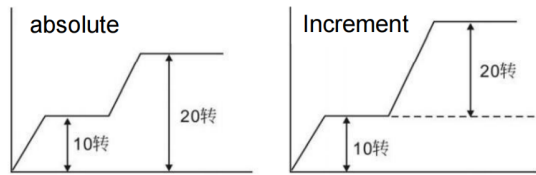
location command	POS2	POS1	POS0	CTRG	correspond parameter	illustrate	moving speed register
P1	0	0	0	↑	P4-2	Number of turns (+/-30000)	P4-4 _ (V1)
					P4-3 _	Pulse (+/-max cnt)	
P2	0	0	1	↑	P4-5 _	Number of turns (+/-30000)	P4-7 _ (V2)
					P4-6 _	Pulse (+/-max cnt)	
P3	0	1	0	↑	P4-8 _	Number of turns (+/-30000)	P4-10 _ (V3)
					P4-9 _	Pulse (+/-max cnt)	
P4	0	1	1	↑	P4-11 _	Number of turns (+/-30000)	P4-13 _ (V4)
					P4-12 _	Pulse (+/-max cnt)	
P5	1	0	0	↑	P4-14 _	Number of turns (+/-30000)	P4-16 _ (V5)
					P4-15 _	Pulse (+/-max cnt)	
P6	1	0	1	↑	P4-17 _	Number of turns (+/-30000)	P4-19 _ (V6)
					P4-18 _	Pulse (+/-max cnt)	
P7	1	1	0	↑	P4- 20	Number of turns (+/-30000)	P4- 22 (V7)
					P4- 21	Pulse (+/-max cnt)	
P8	1	1	1	↑	P4- 23	Number of turns (+/-30000)	P4- 25 (V8)
					P4- 24	Pulse (+/-max cnt)	

Status of POS0-2: 0 represents contact open circuit (open), 1 represents contact access (close). CTRG

↑ represents the moment when the connection changes from open circuit (0) to open circuit (1). max represents the command pulse for one revolution of the motor.

The application of absolute position register is very wide, which is equivalent to a simple program control.

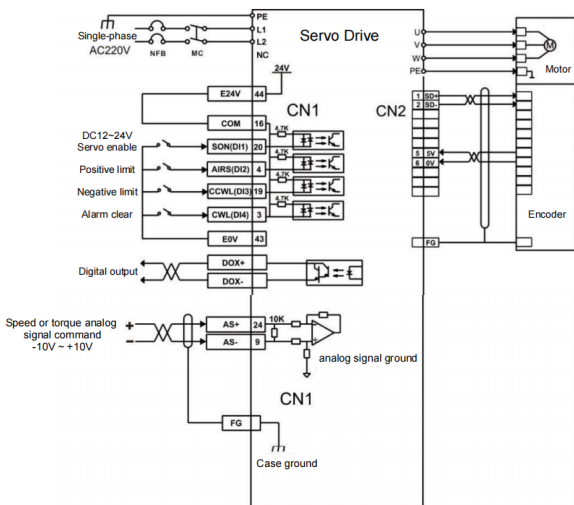
The user can easily complete the periodic operation by using the above table. For example, the position command P1=10 revolutions, P2=20 revolutions, first issue the position command P1, and then issue the position command P2. The difference between the two is as follows:



Speed Mode Description

The main steps to use the speed mode are as follows:

- 1) Correctly connect the power supply of the servo main circuit and control circuit, as well as the motor power line and encoder line. After power-on, the servo panel displays " r 0 ", which means that the servo power supply and encoder wiring are correct.
- 2) Press the button to perform the servo JOG test run to confirm whether the motor can run normally.
- 3) Refer to Figure 5.4 for wiring instructions to connect the required DI/DO signals in the CN1 terminal, such as servo enable, alarm clear, positioning completion signal, etc.
- 4) Set the speed mode related settings. Set the DI/DO used according to the actual situation.
- 5) Servo enable, control the rotation of the servo motor through the position command issued by the host computer. First, rotate the motor at low speed, and confirm whether the rotation direction and electronic gear ratio are normal, and then adjust the gain.



Parameters to be adjusted in speed control mode

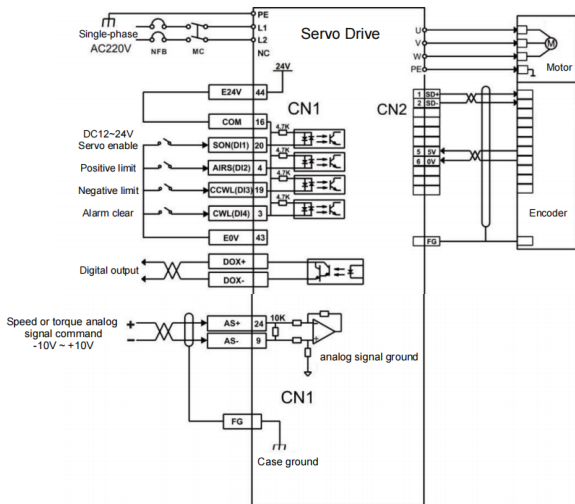
● Related parameters to be adjusted in the speed control mode

Required parameters	Parameter Description	parameter value	Factory default
PA4	Control method selection	1	0
PA5	Speed proportional gain	5-2000Hz	150
PA6	Speed integral constant	1-1000ms	75
PA22	Internal and external speed command selection	0-5	0
PA24	Internal speed 1	-6000-6000r/min	100
PA25	Internal speed 2	-6000-6000r/min	500
PA26	Internal speed 3	-6000-6000r/min	1000
PA27	Internal speed 4	-6000-6000r/min	2000
PA28	Arrival speed	0-3000r/min	3000
PA40	Acceleration time constant	1-10000ms	100
PA41	Deceleration time constant	1-10000ms	100
PA42	S-type acceleration/deceleration time constant	0-1000ms	0
PA43	Analog speed command input gain	10-3000r/min/v	300
PA44	Reverse the direction of the analog speed command	0-1	0
PA45	Analog speed command zero offset compensation	-5000-5000	0
PA46	Analog speed command filter	1-300Hz	300
PA75	Zero speed detection point	0-1000r/min	10
PA76	Speed consistent setting value	0-1000r/min	10
PA87	Arrival speed hysteresis	0-5000r/min	30
PA88	Arrival velocity polarity	0-1	0
PA92	Zero speed detection hysteresis	0-1000r/min	5

Torque control mode

The main steps of using torque mode are as follows:

- 1) Correctly connect the power supply of the servo main circuit and control circuit, as well as the motor power line and encoder line. After power-on, the servo panel displays "r 0", which means that the servo power supply and encoder wiring are correct.
- 2) Press the button to perform the servo JOG test run to confirm whether the motor can run normally.
- 3) Refer to Figure for wiring instructions to connect the required DI/DO signals in the CN1 terminal, such as servo enable, alarm clear, positioning completion signal, etc.
- 4) Set the torque mode related settings. Set the DI/DO used according to the actual situation.
- 5) Servo enable, control the rotation of the servo motor through the position command issued by the host computer. First, rotate the motor at low speed, and confirm whether the rotation direction and electronic gear ratio are normal, and then adjust the gain.



Parameters to be adjusted in speed control mode

● Torque control mode needs to adjust parameters

Required parameters	Parameter Description	parameter value	Factory default
PA4	Control method selection	2	0
PA29	Analog torque command input gain	Set as needed	30
PA32	Internal and external torque command selection	0-2	0
PA33	Reverse the input direction of the analog torque command	0	0
PA39	Analog torque command zero offset compensation	0	0
PA50	Speed limit during torque control	Set as needed	Rated speed
PA64	Internal torque 1	-300-300	0
PA65	Internal torque 2	-300-300	0
PA66	Internal torque 3	-300-300	0
PA67	Internal torque 4	-300-300	0
PA83	Prohibited way	0-1	0
PA89	Arrival torque	-300%-300%	100
PA90	Reaching torque hysteresis	0%-300%	5
PA91	Arrival torque polarity	0-1	0

Origin return function and related parameter description

Related setting parameters

Required parameters	Parameter Description	parameter value	Factory default
P4-32	Type of origin detector and setting of search direction	0-5	0
P4-33	Short-distance movement method setting to reach the origin	0-2	0
P4-34	Origin trigger start mode	0-2	0
P4-35	Origin stop mode setting	0-1	0
P4-36	The first stage of high-speed origin return speed setting	1-2000r/min	1000
P4-37	The second stage of low-speed origin return speed setting	1-500r/min	50
P4-38	Origin return offset circles	+/-30000	0
P4-39	Origin return offset pulse number	+/-max cnt	0

A. Origin trigger start mode (P4-34)

The origin trigger start mode is divided into two categories: automatic execution of origin return function and contact trigger origin return function:

P4-34 =0: Turn off the origin return function. When P4-34 is set to 0, no matter what other setting values are, the origin return function cannot be activated.

P4-34 =1: Automatically execute the origin return function when the power is turned on. This function is only valid for one time when the power supply and servo start are turned on, that is, it is used under the working conditions that the return to the origin does not need to be repeated during the servo operation. Use this function to omit an input contact for performing home return.

P4-34 =2: The origin return function is triggered by the SHOM input contact. When setting this function, any register in the input pin function planning register (P3-0~P3-3) must be set as the SHOM trigger origin input function. During the servo operation, the SHOM contact can be triggered at any time, and the origin return function can be executed.

B. Type of origin detector and setting of search direction (P4-32)

The origin detector can use the left limit or right limit switch as the origin reference point, or additional detectors (such as proximity or shutter switches) can be used as the origin reference point. When the servo motor only moves within one revolution, the Z pulse can also be set as the origin reference point.

P4-32 =0: Find the origin in the forward direction, and take the CCWL limit input point as the rough reference point of the origin. When the origin positioning is completed, the CCWL will switch to the limit input function. Subsequent retriggering will generate a limit warning. When using the limit input point as the rough reference point of the origin, it is recommended to set the Z pulse (P4-33 = 0) to return to find the precise mechanical origin.

P4-32 =1: Reverse the direction to find the origin, and take the CWL limit input point as the rough reference point of the origin. When the origin positioning is completed, CWL turns to the limit input function. The subsequent retriggering will generate a limit warning. When using the limit input point as the rough reference point of the origin, it is recommended to set the return to find Z pulse (P4-33 =0) as the precise mechanical origin.

P4-32 = 2: search for the origin in the forward rotation direction, and take ORGP (input point of external detector) as the reference point of the origin. At this time, the precise mechanical origin can be set to return to search (P4-33 = 0) or not to return to search (P4-33 =1) Z-phase pulse. When the Z-phase pulse is not used as the machine origin, the positive edge of ORGP can also be set as the machine origin (P4-33 =2).

P4-32 =3: Reverse the direction to find the origin, and take ORGP (external detector input point) as the reference point of the origin. At this time, the precise mechanical origin can be set as the Z-phase pulse for returning to search (P4-33 =0) or not to return to search (P4-33 =1). When the Z-phase pulse is not used as the machine origin, the positive edge of ORGP can also be set as the machine origin (P4-33 =2).

P4-32 = 4: Directly search for the zero point of the single-turn absolute position in the forward rotation direction. This function is usually used for the motion control of the servo motor with only one rotation range. At this time, no external detection switch is required.

P4-32 = 5: Directly search for the zero point of the single-turn absolute position in the reverse direction. This function is usually used for the motion control of the servo motor only in

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Provide a one-year warranty for its products from the date of shipment, and our company will provide free maintenance services for the products during the warranty period.

Not covered by warranty

- Improper wiring, such as reversed power supply polarity and live plugging and unplugging of motor leads.
- Use beyond electrical and environmental requirements.
- Unauthorized changes to internal devices.

Repair process If you need to repair the product, follow the process below:

- 1) Contact our customer service personnel to obtain permission for repair.
- 2) A written description of the drive failure phenomenon and the sender's contact information and mailing method are attached with the goods.

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