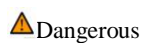


AC servo system

Brasiltec Technical Manual



Safety notification



Dangerous

Indicates an error in use, it will leads to hazardous conditions and result in death or serious injury.

- While the motor is running, please do not touch the rotating parts. If not, it will lead to injury.
- When installed on the machine running, please put the motor away at any time in advance the state of emergency stop. Otherwise it will lead to injuries, mechanical damage.
- Please don't touch the servo unit inside. Otherwise it will cause electric shock.
- In an energized state, please make sure it install the power supply terminal block cover. Doing so may cause an electric shock.
- After the power is turned off or withstand voltage test, during running lights, do not touch the power terminals. Otherwise they will be residual voltage caused by electric shock.
- Please follow the corresponding instructions in the user manual and product commissioning
- Servo motor installed in the machinery of the state, if there is an error, it will not only cause the mechanical damage, sometimes it may result in personal injury accidents.
- Except for special purposes, it is not necessary to change multi-turn limit on the number of turns. If you accidentally changed the data, it will be dangerous.
- When more inconsistent rotation laps limit alarm, please be sure to first make sure the parameters of the servo unit is correct.
- If it is under the parameter value error condition for multi-turn limit on laps, it will set the value of the error to the encoder. Although can remove alarm, due to detect the location of the deviation is very big, it cause mechanical moved to the location of the unexpected, and very dangerous.
- Please do not remove the main positive before the upper outer garment, cable, connectors, and choose a class in the condition of electricity. Otherwise it will cause electric shock.
- Please do not damage or pulling on the cable, and don't make the cable to bear too much force, under the weight or be clamped. Otherwise it will cause electric shock, product stop running or fire.
- Please don't modification to our products. Otherwise it will lead to injuries, mechanical damage or fire.
- In the mechanical side setting, please stop device to ensure safety.
- The servo motor with brake holding brake is not the stop device for ensuring safety. Otherwise it will cause injury.
- If the momentary power failure occurs during operation, then power is restored, and machinery may suddenly Power off and restart, so do not close to the machinery. Please take measures to ensure re-start without endangering personal safety. Otherwise it will cause injury.
- Please make sure it will connects the grounding and grounding of the servo unit. Otherwise it will cause electric shock or fire.
- Do not set, remove or repair by unauthorized persons. Otherwise it will cause electric shock or injury.
- when you designed the use of security functions(Hardware base block function)in the system, it must worked by the related safety standards of technical personnel in understanding the contents of this manual before operation. Otherwise it will lead to injuries, damage to the machine.

- Do not care, set up in the following conditions. Otherwise it will cause fire, electric shock or do damage to the machine.
- The place of direct sunlight
- when we use it, the environment temperature must higher than the place of custody and set the temperature condition.
- Relative humidity higher than the place of the custody and set humidity condition.
- The place of large temperature difference and condensation.
- Corrosive gas and combustible gas.
- The place where has more dust, dirt, salt and metal powder
- The place where is easy to splash water, oil and medicine, etc
- The place where the vibration or shock may spread to the main sites.
- vibration or shock may spread to the main sites.
- Do not hold the cable, the motor shaft or see the early handling. Otherwise it will cause injury or malfunction.
- Please do not put too much products together,(please according to the instructions.)Otherwise it will cause injury or malfunction.
- Need to deal with the packing of wooden materials (including wood, plywood, shelves), insecticidal processing, please make sure the method of fumigation outside. Example: heat treatment (material core temperature in 56 °C above, the processing time in more than 30 minutes) in addition, the processing, please before packaging for packing materials for processing, rather than after packing to deal with the whole. Use after fumigation treatment of wood packaging electrical products (monomer or installed on the mechanical product), the packaging materials produced by the gas and steam may cause fatal damage of electronic products. Especially halogen disinfectant (fluorine, chlorine, bromine, iodine, etc.) will cause corrosion to the capacitor inside.
- Installation Note
- Do not be splashed with water or place in an environment prone to corrosion and flammable gases and combustible materials in the vicinity of using this product. Doing so may cause an electric shock or fire.
- Do not sit on the product or put heavy objects on it. Otherwise it will cause injury or malfunction.
- Do not block the air inlet and exhaust ports. Do not make the foreign body into the inside of the product. Otherwise, it will due to aging of the internal components and cause a malfunction or fire.
- Must follow the requirements of the installation directions. Otherwise it will lead to failure.
- When installing ,without the servo unit and control cabinet surface or the other with a predetermined gap between machinery. It will cause fire or malfunction.
- Please do not apply too. Otherwise it will cause failure.
- wiring precautions
- Please correct and reliable wiring. Otherwise it will cause the motor control, personal injury, or malfunction.
- Please don't connect the servo unit in the servo motor and terminals U, V, W with the commercial power supply source.
- Otherwise it will cause injury or fire.
- Please firmly connected the power supply terminal with the motor terminals. Otherwise it will cause a fire.

- Do not make the main circuit cables and input and output signal cables / encoder cables use the same tube, do not put their banding together. When wiring the main circuit cable input and output signal cables should leave 30 cm or more.
- Please use the signal cable to input and output ,and the encoder cables use twisted-pair wire or suspicious double strand angle and the overall shield.
- Input and output signal wiring cable length: maximum of 3 m.Encoder cable: maximum of 20 m.
- Even if power is turned off, servo unit internal may still remain high voltage.Therefore, during the period of operation instructions (RUN) lights, do not touch the power supply terminals
- Please confirm operation instructions (RUN) in the lamp out, such as further connection and check the homework
- For main circuit wiring terminal row, please observe the following precautions.
- When main circuit terminals is the switch, please remove servo unit from the subject ,then wiring
- Please within the terminal row of a wire connector socket insert 1 wire. When inserted into the wire, please do not make the core of burr and the adjacent wire short circuit.
- Please use the specified power supply voltage. Otherwise it will cause fire or failure.
- In the case of a bad power supply, when using it, please ensure that the specified input voltage change within the scope of supply power. Otherwise it will cause damage to the machine
- Please set the circuit breaker and other safety devices to prevent external wiring short circuit. Otherwise it will cause a fire.
- When used in the following places, please take the appropriate measures.
- When electrostatic cause the interference
- The place where produce a strong electric field or magnetic field.
- There may be have the place where have the radiation.
- The place where has power cord nearby.
- Otherwise it will cause damage to the machine.
- When you connect the battery, please pay attention to the polarity. Otherwise cause the battery, servo unit and servo motor damage and explosion.
- Please wiring or check the homework by professional and technical personnel

Chapter 1 Product Inspection and Model Description

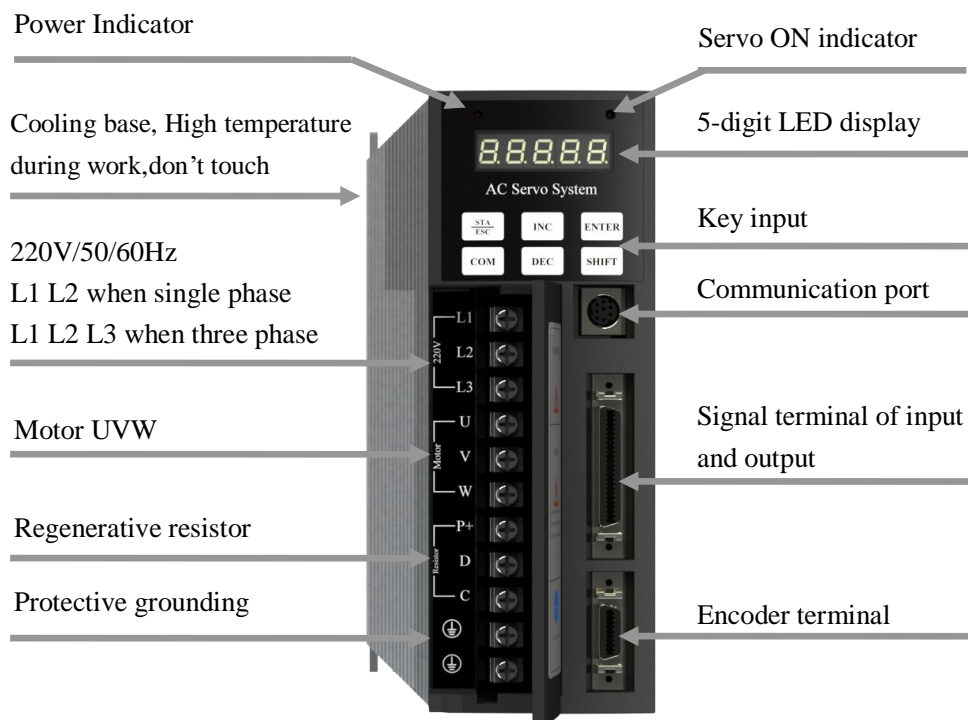
1.1 Inspection

- In order to prevent missing parts during packaging and transportation, please check the carefully:
- Is it the model you purchased: it can be found on the side of the drive body.
- Check if the appearance of the product is normal: if there is a strong impact or damage of the appearance.
- Whether the motor is working normal: the shaft can be smoothly rotated by hand means it's normal. However, motors with electromagnetic brakes cannot be rotated by hand.
- Is the screw loose or lost, If it is, please tighten it.
- A fully operational servo components shall include:
 - Servo driver
 - Servo motor
 - UVW power line
 - Encoder line
 - Input and output signal lines (optional)

1.2 Driver and motor model reference

Server driver model	Driver specification (output voltage / current)	Matched motor specification			
		Motor flange(mm)	Maximum rated power (kW)	Maximum rated torque (Nm)	Maximum rated speed (rev/min)
SC1-3003	220V/2.8A	60	0.4	1.27	3000
SC1-3010	220V/3A	80	0.75	2.39	3000
SC1-3011	220V/4.4A	80	1.0	4	2500

1.3 Driver appearance



Chapter 2 Installation

2.1 Notice

Please pay special attention to the following:

- 1) The connection between the driver and the motor cannot be tightened;
- 2) When fixing the driver, it must be locked at each fixed position;
- 3) The motor shaft must be in good alignment with the shaft of the equipment;
- 4) If the drive and motor are connected more than 20 meters, please thicken the UVW cable and the encoder cable;
- 5) The four screws of the motor must be locked.

2.2 Storage condition

This product must be placed in its packaging before installation. If not use now, please pay attention to the following instruction of storage:

- 1) Must be placed in a dust-free and dry place.
- 2) The temperature of storage must be in the range of -20 degree to +65 degree.

- 3) The relative humidity of the storage location must be in the range of 0% to 90% without condensation.
- 4) Avoid storage in environments containing corrosive gases and liquids.
- 5) It is best to store it properly on a shelf or countertop.

2.3 Installation environmental conditions

The using temperature range of our driver is 0 degree to 55 degree. If the temperature exceeds 45 degree, please place it in a well-ventilated place. Long-term operation is recommended at an the temperature below 45 degree to ensure product reliability. If it's installed in a power distribution box, please assure that all internal electronic devices are not at risk of overheating. Also, please pay attation to the vibration of machine. In addition to this, the conditions used include:

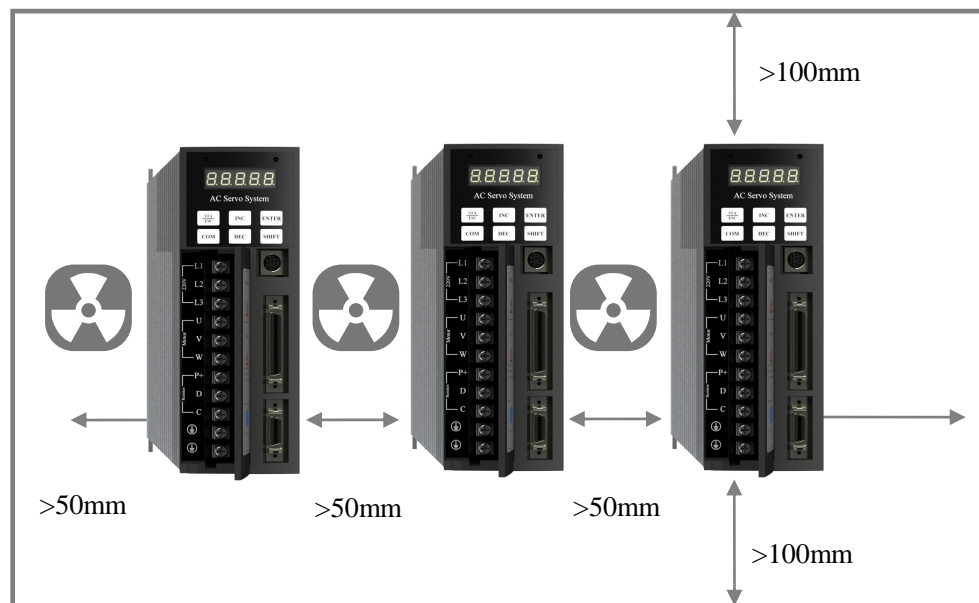
- 1) no high heat device around;
- 2) free of water droplets, vapors, dust and oily dust;
- 3) non-corrosive, flammable gases and liquids;
- 4) non-floating dust and metal particles;
- 5) Strong and vibration-free places;
- 6) without electromagnetic noise interference.

2.4 Installation direction and space

Please install the driver correctly according to the following picture, so as not to cause unnecessary loss!

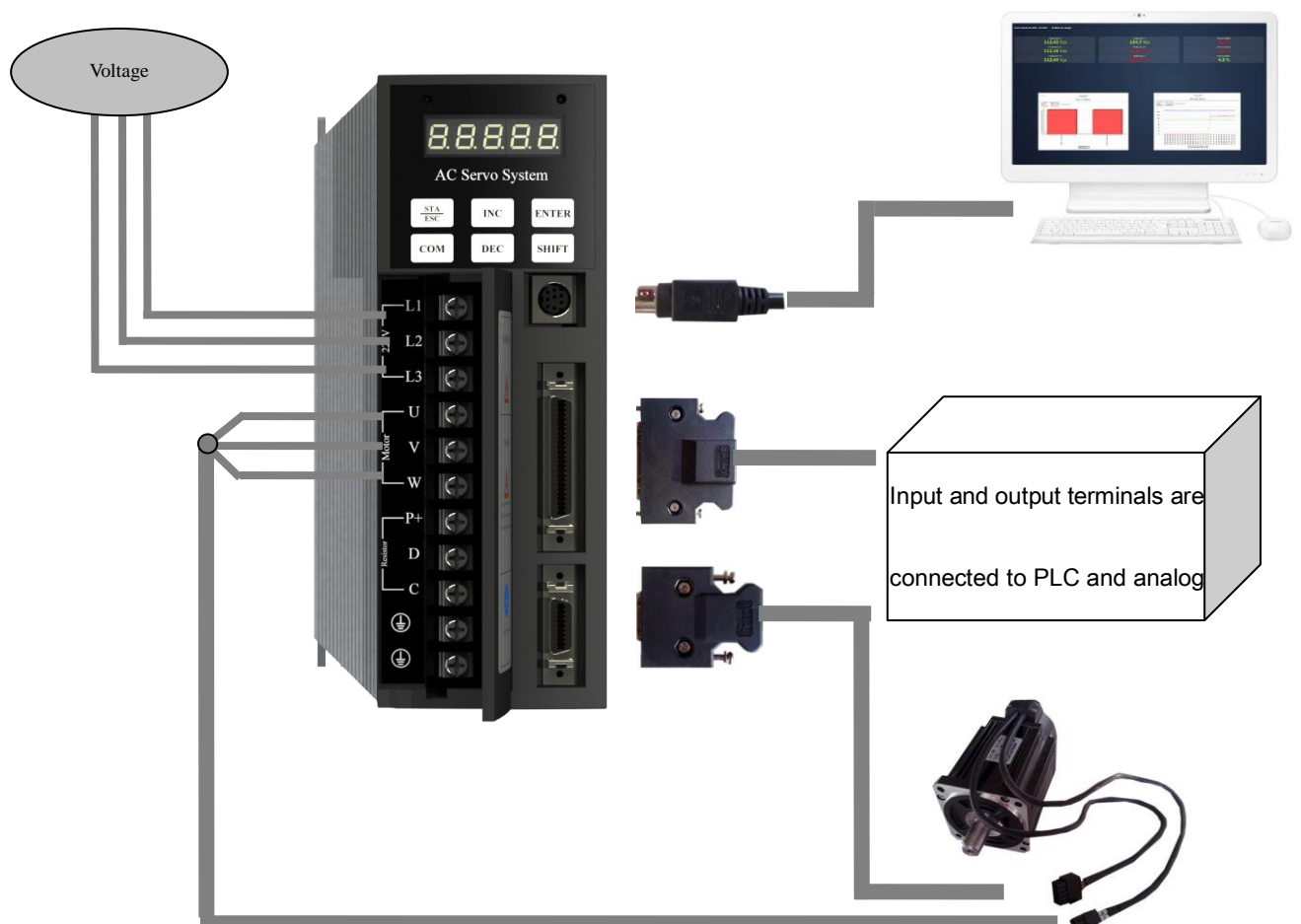


Please install in strict accordance with the specified installation spacing to ensure good ventilation and heat dissipation.




Chapter 3 Wiring

3.1 Servo system schematic



3.2 Driver terminal and connection instructions

Terminal symbol	Name	Fuction
L1 L2 L3 R S T	Power terminal	Three/single phase 220V to 240V 50/60Hz. (If single phase connect L1 & L2)
U V W	Motor power line terminal	Connect with motor
P+ D C	Regenerative braking resistor Terminals	Connected to the regenerative resistor, the external resistor is connected between P+ and C
	Ground terminal	Connect to the power ground wire, ground protection
CN1	Input and output terminal	Input and output signal DI/DO wiring
CN2	Encoder terminal	Encoder terminal connected to motor encoder
COM1	Communication port	Communicate with the host computer to support 485, RS232 communication

3.3 Braking resistor

Function : Discharge, to ensure the stability of the DC bus voltage. In servo motor control, the back EMF generated by the motor is feed back to the bus capacitor, causing the bus voltage to rise. When the voltage reaches the alarm limit (P0-14), the servo output alarm EN-03

Therefore, to ensure that the bus voltage does not exceed the voltage limit of device, the system will conduct the discharge terminal when the voltage rises to the limit, and quickly balance the bus voltage through the brake resistor.

Model selection:

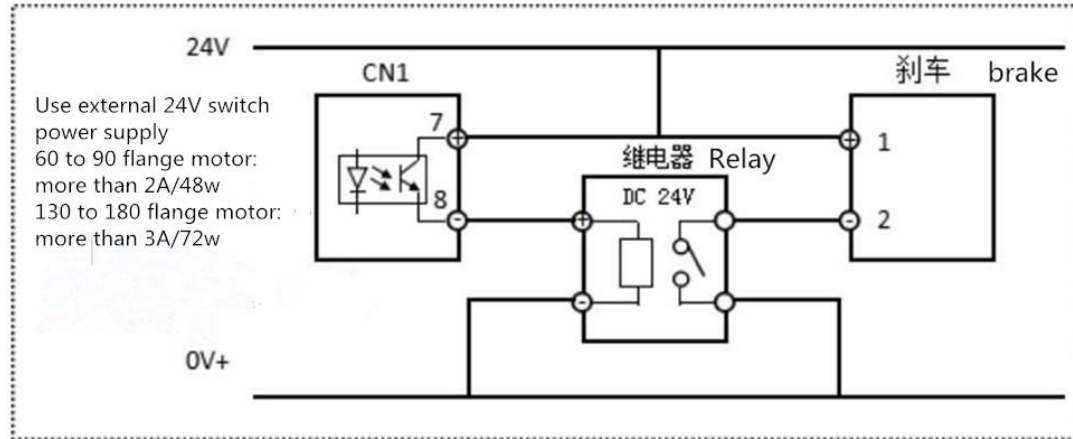
Braking resistor model selection				
Model	Output current	Resistance range	Power range	Recommended resistance value
CZ-A	13A	50~100Ω	》 =100W	50Ω
CZ-B	30A	50~100Ω	》 =200W	50Ω
CZ-C	40A	40~50Ω	》 =500W	40Ω
CZ-E	50A	25~35Ω	》 =1000W	35Ω
CZ-E	75A	20~35Ω	》 =2000W	35Ω
Notice: For 220V servo, discharge voltage is 370V;and 380V discharge voltage is 700V; The discharge current can not exceed 80% of maximum output current when resistance value is selected; more power can be selected when starting and stopping frequently				

Wiring terminals:

Servo series	Terminal
A/B/C series	P+ and C
E series	P+ and PB

3.4 Brake wiring

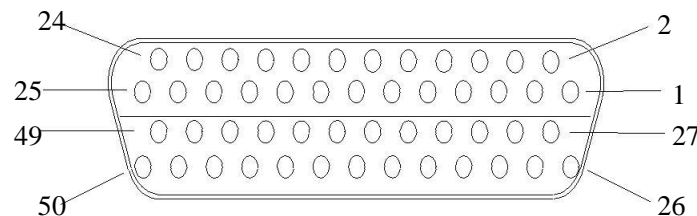
In a vertical mechanism, when power off or the servo is enable OFF, the workpiece will fall due to gravity. So we need to use the servo motor with brake to avoid it's slide down



Parameter setting: P5-24 set 0084; P5-26 set 0000; then power off the driver and restart. If the workpiece is slightly down when enable OFF, increase P5-06 around 100ms or decrease the value of P5-08, and fine tune according to the situation; when the speed is lower than the setting value of P5-07, the brake is on.

3.5 CN1 input and output signal line and terminal description

3.3.1 CN1 connector terminal arrangement is as follows (face to solder tab):



Pin	Name	Signal	Pin	Name	Signal	Pin	Name	Signal	P in	Name	Signal
			1	SO1	Output1				2 6	SI-COM	Input Public side 24V
2	SO1-COM	Output 10V	3	SO2	Output2	27	SI-COM	Input Public side 24V	2 8	SI1	Input 1
4	SO2-COM	Output 20V	5	SO3	Output3	29	SI2	Input 2	3 0	SI3	Input 3
6	SO3-COM	Output 30V	7	SO4	Output4	31	SI4	Input 4	3 2	SI5	Input 5
8	SO4-COM	Output	9	SO4	Output4	33	SI6	Input 6	3	SI7	Input

	M	40V							4		7
10	SO4-CO M	Output 40V	11			35	AGND	Input negative of analog	3 6	AGND	Input negative of analog
12			13			37	V-REF	Speed analog	3 8	T-REF	Torque analog
14			15	PULS-	Pulse Input	39	-10V	Output	4 0	+10V	Output
16			17	PULS +5V	Pulse 5V	41	485 A	Bus communic ation	4 2	485 B	Bus line Communicatio n
18			19	PULS +24V	Pulse24 V	43			4 4		
20			21	DIR-	Direction	45	B+	Encoder feedback	4 6	B-	Encoder feedback
22	ZOC-	Z pulse Negative electrode	23	DIR +5V	Direction 5V	47	A+	Encoder feedback	4 8	A-	Encoder feedback
24	ZOC+	Z pulse negative electrode	25	DIR +24V	Direction 24V	49	Z+	Encoder feedback	5 0	Z-	Encoder feedback

3.3.2 Input and output signal wiring

The input and output signals of the servo unit and its connection to the host device:

(1) Analog input circuit

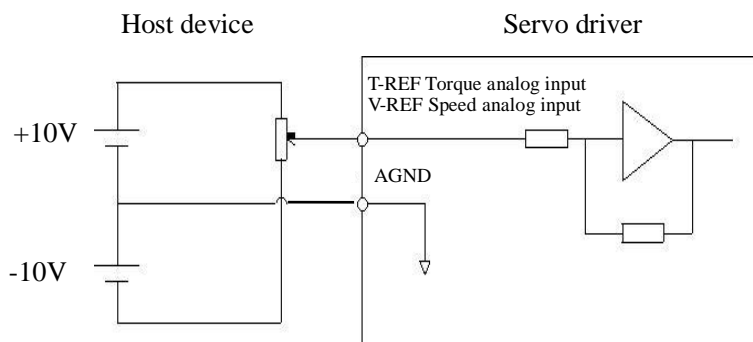
Application mode: Speed control (analog voltage) P0-01: parameter setting 4

Torque Control (Analog Voltage) P0-01: Parameter setting 2

Circuit parameters: Input impedance $R_I = 13K\Omega$

Input voltage $V_{max} \leq 10V$

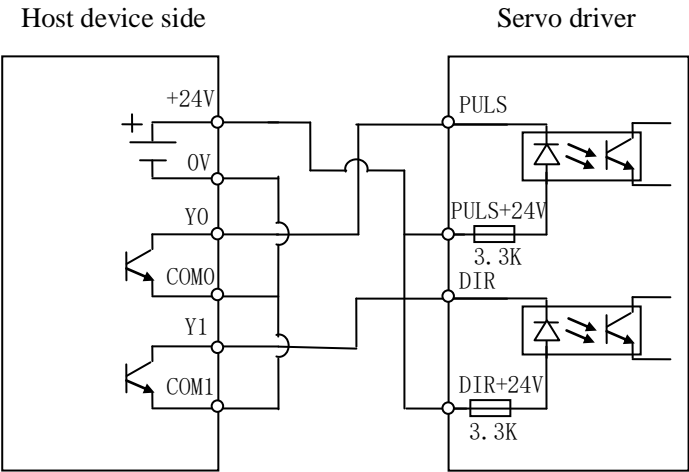
Analog input circuit



(2) Pulse input circuit

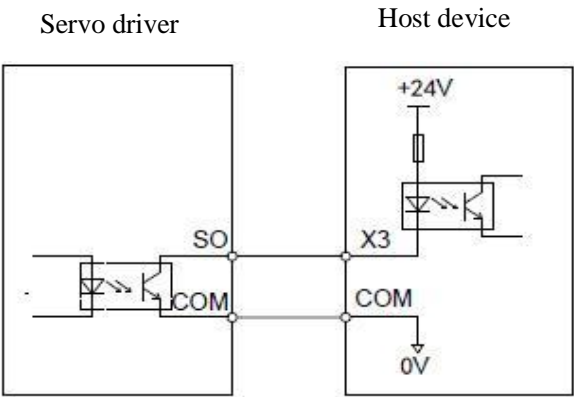
Application mode: Position control (external pulse) P0-01 Parameter setting 6
 Speed Control (External Pulse) P0-01 Parameter setting 7

Pulse command input wiring

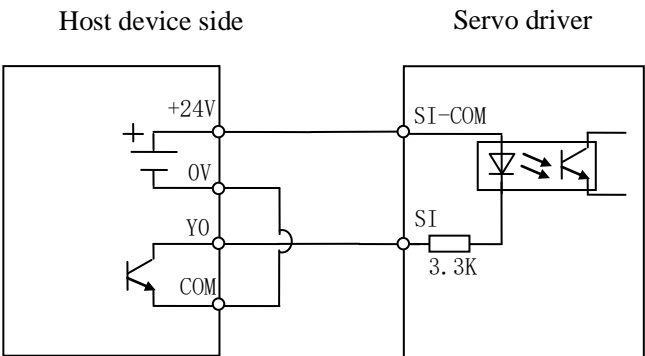


(3) Input and output signal circuit

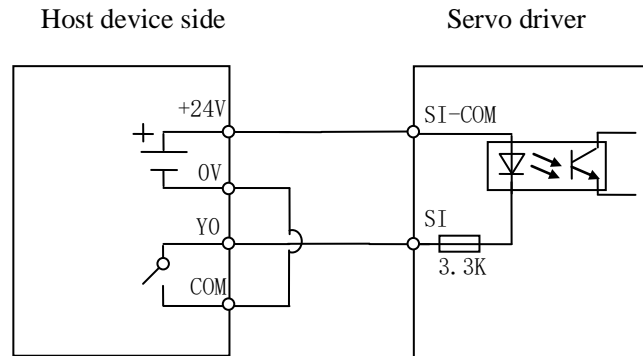
Optocoupler output circuit



Collector open drain input

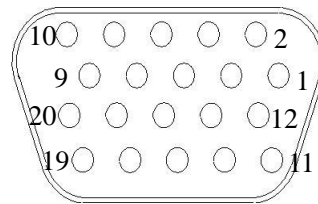


Relay input



3.6 CN2 encoder wiring and terminal description

CN2 connector terminal arrangement is as follows (face to solder tab):



Driver interface	Name	Driver interface	Name	Driver interface	Name	Driver interface	Name
1	A+	2	A-	11	U+	12	U-
3	B+	4	B-	13	V+	14	V-
5	Z+	6	Z-	15	W+	16	W-
7	5V	8	5V	17	GND	18	GND
9	5V	10	5V	19	GND	20	GND

3.7 Communication port

COM connector terminal arrangement is as follows(face to solder tab):



(8 芯 DB 接口)

Pin	Name	Instruction
1	A	RS485-A
3	B	RS485-B
4	RXD	RS232 receiving terminal
5	TXD	RS232 sending terminal
8	GND	RS232 ground
2	GND	Downloader

3.8 MODBUS Protocol

1. Servo single register value setting:

Sending		Servo correct feedback		Servo error feedback	
Hexadecimal		Hexadecimal		Hexadecimal	
Station No.	01	Station No.	01	Station No.	01
Function code	06	Function code	06	Function code 0x80	86
Starting address H	00	Starting address H	00	Error code	**
Starting address L	01	Starting address L	01	CRCH	**
Set value H	00	Set value H	00	CRCL	**
Set value L	05	Set value L	05		
CRCH	**	CRCH	**		
CRCL	**	CRCL	**		

Eg: Set P0-01 data Use the default parameters of the servo the station number is 1

sending data: 01 06 00 01 00 05 CRCH CRCL

Reading correct feedback data: 01 06 00 01 00 05 CRCH CRCL

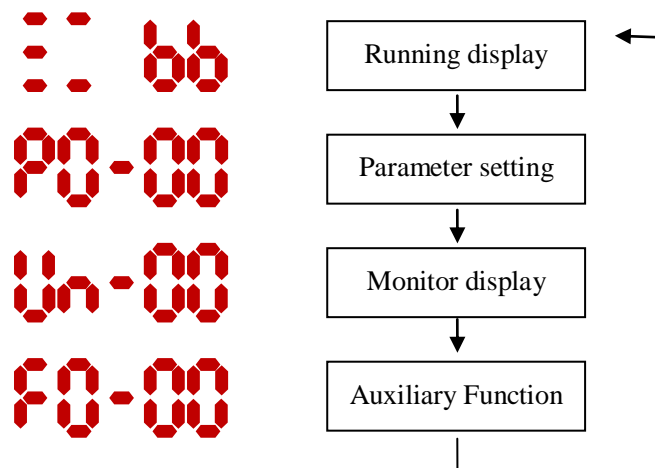
Reading error feedback data: 01 86 ** CRCH CRCL /*** error code

2. Continuously setting servo multiple register values:

Sending		Servo correct feedback		Servo error feedback	
Hexadecimal		Hexadecimal		Hexadecimal	
Station No.	01	Station No.	01	Station No.	01
Function code	10	Function code	06	Function code 0x80	86

A	speed control: Synchronous speed detection Position control: end of positioning
B	Speed control: torque limit Position control: approaching
C	Speed control: rotation detection Position control: rotation detection
D	Speed control: zero clamp
E	Speed control: speed limit

4.2 basic state switching



After pressing the STA/ESC key, the states can be switched as the upper figure showed

Parameter setting P0-00
Monitoring status Un-00
Alarm status En-XX
Accessibility Help

a. System Information View F0

b. Torque / speed command offset adjustment F1

Select F1-00 into the analog offset automatic adjustment feature , this time status display : F--, and - blink , about 5 seconds or so current detection offset automatic adjustment is completed, then display : F-F, inform the user automatically adjusting complete.

Select F1-01 to enter the torque control analog offset automatic adjustment function (same operation)

c. F2 alarm View

d. Serial External Communications F3

Select F3-00 into the external serial communication mode , prompting COE, which is in an external monitor status , serial port 1 (COM1) effective monitoring panel failure , this time, through the host computer (PC) of the servo unit for tuning. Press the STA / ESC to return , and exit the COE, restore panel monitor .

e. Restore factory defaults F4

In bb condition,select F4-00 to enter the factory default settings , suggesting rEt--, stay in a wait state , press Ent settings, wait for showing rEt-E, then power off and power on,now finish restore the factory defaults.
f. J-OG mode

In bb condition,choose F5-00,press shift to 0 blink,press Ent into show J-OG,press INC to show P motor running,press DEC to show N motor reverse running,short press motor jog,long press motor continuous running,jog speed setting:P3-04.

g. Panel give enable signal S-ON,F6-00

In bb condition,short press STA,show F0-00,press INC,show F6-00,press shift to 0 blink,press Ent to show E-,press shift again, E-n driver enable,get in and press DEC to cancel enable;can used for correct current,set P0-00 to 2,P0-01,give enable signal about 10 seconds,compelet the current examine;different from F1-00 analog current check,here correct the UVW control current calibration

h. Program download

Long press ESC before power on,then power on and shows P000,now can use the series to download program(COM port 2pin short-circuited with 8pin)

4.3 Parameter setting

Here's the example of change the parameter of P2-09 from 2000 to 1000.

1. Press the STATUS/ESC key to enter the parameter setting state,then press the ENTER key.

P0-00

2.At this time, the second LED from left flashes, press INC or DEC key to modify the group number , change it to 3, then short press ENTER to confirm .

P2-00

3.At this time, the right number two digital tube flashes, press INC, DEC or ENTER key to select the number 9 , long press the ENTER key for confirm.

P2-09





4.Now, display the data in P2-09 , the lowest position "0 " flashes , then short press the ENTER key allows the blinking one move one bit to the left. Press INC , DEC or ENTER key , the data is changed to 1000 , long press ENTER to confirm the modification.

1 000

Thus, the user parameter P3-09 changes 2000 to 1000. Need to further change the value , repeat the above operations of 2 to 4 .

5.Press the STATUS / ESC key to return to the other group or state you want to do modify

4.4 Brief description of code display

code	Display content
	In standby mode Servo OFF status (The motor is powered off)
	Running Servo enable(The motor is powered on)
	Prohibition of forward rotation P-OT OFF status. Please refer to "Overtravel Setting".
	Prohibition of reverse rotation N-OT OFF status. Please refer to "Overtravel setting"

4.5 Restore factory setting

- Restore all user parameters to factory settings, including P0-11 motor code
- Please confirm the parameters before resetting, or it will not be able to recover.
- When need to restore the factory settings?
 - Alarm EN-02, parameter damage
 - An abnormal operation caused by setting parameters during debugging
 - There is a command send to motor, but it does not run, no alarm, check if P3-09 value is 0, if it is, then restore the factory setting.

Steps:

1. Turn off the enable signal first. (External enable: Please disconnect the external signal; Internal power-on enable: set P0-01 to n.0101 and then power off and restart)
2. Enter F4-00
(Refer to e in section 4.2)
3. Check the motor parameters (take the drive SC1-3010/AMS80-02430Z as an example)
 - a) Check motor code power code F0-00 :display 750 means 750W
 - b) Check motor model code F0-24: shows 02430 indicates 2.4N·M, 3000 rpm
 - c) Check input voltage level and flange F0-25:display 2080 indicates 220V, 80 flange

If the alarm is EN-02, also need current check, please refer to section 4.6

4.6 Current check

Function: Eliminate motor control instability or abnormal noise caused by inaccurate current sampling, which caused by hardware drift

Method:

- Turn off the enable signal first.
- (External enable: Please disconnect the external signal; Internal power-on enable: set P0-01 to n.0101 and then power off and restart)
- Setting parameters
- (Setting P0-00 to 2; P0-01 to 0)
- Enter F6-00 to set the enable signal
- (In the bb state, press the STA button shortly, when F0-00 appears, press INC, then F6-00 appears, press shift to 0 to flash, press Ent to display E-, then press shift again to display E-n drive enable; Wait 10 seconds to complete the verification, press DEC to cancel the enable)

Chapter 5 Trial and tuning steps

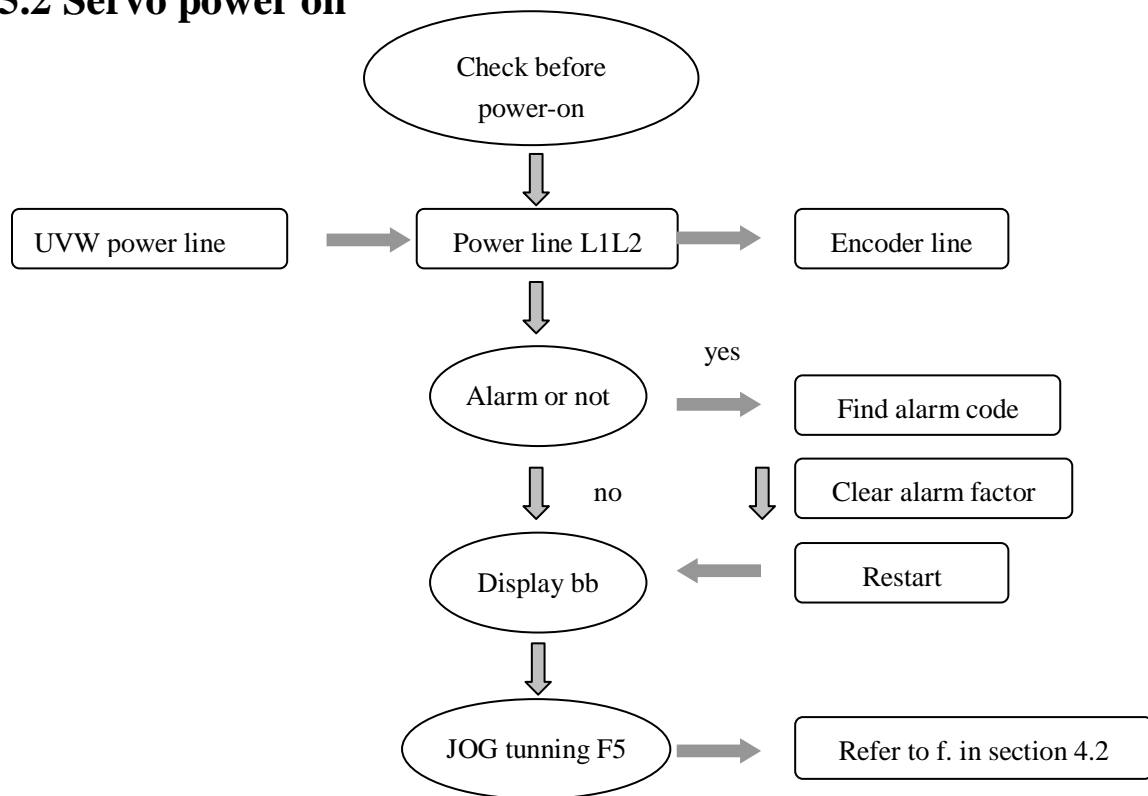
5.1 No-load detection

To avoid damage the servo driver or mechanism, first remove the load connected to the servo motor (including the coupler and other accessories). Then doing testing according to normal operating procedures. After testing is OK, can connect with load.

Test items:

Pre-boot detection (cut off the power supply)	<ul style="list-style-type: none">● Ensure that the servo driver and motor have no mechanical damage● Ensure that the terminal wiring is secure and there is no danger of electric shock● Ensure that the wiring is complete and correct● Ensure that the external input signal meets the standard● Guarantee no other errors or dangers
Running time detection (power on)	<ul style="list-style-type: none">● Ensure that the wires are not pulled or abrasion during operation● Does the motor have strong shake or abnormal sound?● Does the indicator light normal?● Is there any alarm display? If there is an alarm, please first find the alarm code in the alarm parameter table, and then clear the alarm after eliminating the alarm factor.● When modifying parameters, please confirm the parameter modification and effective time.● Check if the device execute according to preset modes and parameters

5.2 Servo power on



Chapter 6 Control Function

6.1 Operating mode selection

The driver has seven basic operating modes: speed, position and torque control, can through internal command control, external pulse signal and analog voltage control.

	Mode name	P0-01 parameters	Instruction
Main mode	Test mode	0	Debug mode
Submode	Torque mode (internal command)	1	Set the internal parameters of the driver, directly control the torque
	Torque mode (analog voltage)	2	Connect outside analog voltage signal Adjust the voltage Proportional control of torque Proportion can be set
	Speed mode (internal command)	3	Set the internal parameters of the drive directly Control speed Support for setting multiple speeds at the

			same time Selection signal switching through speed
	Speed mode (analog voltage)	4	Connect outside analog voltage signal Adjust the voltage Proportional control of torque Proportion can be set
	Position mode (internal command)	5	Set the internal parameters of the driver directly Control the number of rotation pulses and number of turns Trigger pulse transmission via CTRG signal
	Position mode (external pulse)	6	External pulse signal Number of transmitted pulses Control motor rotation Can also set the electronic gear ratio to realize the proportional control of pulse number and frequency
	Speed mode (external pulse)	7	External pulse signal Adjust pulse frequency Control motor speed
	Mixed mode		Set submode 1 and submode 2 to different modes Switch by CSEL signal, 0: submode 1 1: submode 2

6.2 Basic function setting

Parameter	Name	Refer
P5-10	Servo ON Setting/S-ON	6.2.1
P0-05	Switching direction of motor rotation	6.2.2
P0-06	Motor stop mode setting	6.2.3
P4-06	Servo emergency stop torque	6.2.3
P5-12	Forbid forward rotation	6.2.4
P5-13	Forbid reverse rotation	6.2.4

6.2.1 Start servo (/SON)

The servo start signal is directly related to whether the servo motor is powered on. When the servo start signal is invalid, the motor will not run.

⓪P5-10	H: /S-ON L: Input signal distribution mode		0X050a
Parameter	Setting value	meaning	
Description	n.0101 (default)	When the SI1 terminal is turned on, the servo motor will run	

	n.8001	Power-on start (no external input signal required)
--	--------	--

Initial value: n. 01 01

(H L)

Control mode: all

Unit: ~

Setting range: ~

Modify effective time: “●”Can be modified at any time, take effect by re-powered on

Parameter function:

H: 00: Set the signal to always be invalid 01: Input positive signal from SI1 terminal

02: Input positive signal from SI2 terminal 03: Input positive signal from SI3 terminal

04: Input positive signal from SI4 terminal 05: Input positive signal from SI5 terminal

06: Input positive signal from SI6 terminal 07: Input positive signal from SI7 terminal

08: Input positive signal from SI8 terminal

80: Set the signal to always be active 81: Input reverse signal from SI1 terminal

82: Input reverse signal from SI2 83: Input reverse signal from SI3

84: Input reverse signal from SI4 85: Input reverse signal from SI5

86: Input reverse signal from SI6 87: Input reverse signal from SI7

L: 00: External input is completely based on factory settings, the setting of **P5-10.H~P5-19.H** is invalid

01: External input signal can be set freely, the setting of **P5-10.H~P5-19.H** is valid.

6.2.2 Motor rotation direction

◎P0-05	Direction selection	Note: After switching the direction, the signal received by servo is reversed.	0X0005
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Initial value: 0

Control mode: 1,2,3,4,5,6,7

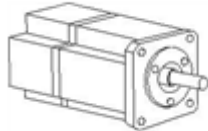
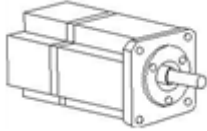
Setting range: 0,1

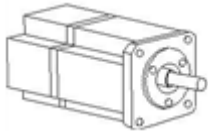
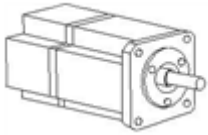
Modify effective time: “●”Can be modified at any time, take effect by re-powered on

Parameter function:

0: Forward direction (from the load side is "counterclockwise rotation")

1: Forward direction (from the load side is "clockwise rotation")

P0-05	Forward	Reverse
0	 <p>CCW</p>	 <p>CW</p>

1		
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6.2.3 Motor stop mode

◎P0-06	P0-06H: Overtravel shutdown method P0-06L: Servo OFF and alarm shutdown method	0X0006
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Initial value: n. 02 02

(H L)

Control mode: All

Unit: ~

Setting range: 0~3

Modify effective time: “●”Can be modified at any time, take effect by re-powered on

Parameter function: H: 0~1: Inertial operation stops. After stopping, keep inertia.

2: Deceleration running stops. After stopping, change to zero clamp.Torque value setting: Emergency stop torque of P4-06

3 : Deceleration running stops 。 After stopping, change to inertial operation.Torque value setting: Emergency stop torque of P4-06

Note: (1) When the overtravel stop mode is 0 or 1, the servo enable signal is forcibly turned OFF when the overtravel signal arrives; when the overtravel stop mode is 3, the servo enable signal is forcibly turned OFF when the motor stops at the overtravel signal arrives; when the overtravel stop mode is 2, as long as the servo enable signal is always active, it will not be forced OFF.

The criterion of stop condition is the rotation speed detection P5-02, unit:rpm.

L:0~2 inertial operation stop.After stopping, keep inertia.(SC1 series servo drive does not have a built-in DB brake, so no matter the value of P0-06.L, it defaults to inertial operation stop.)

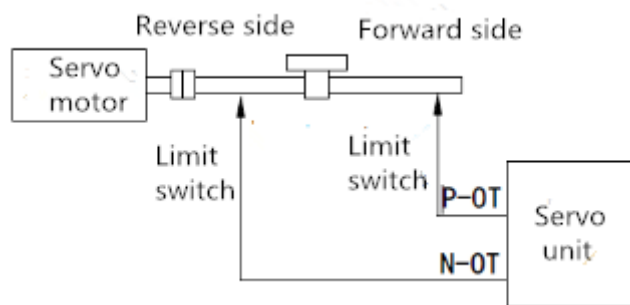
6.2.4 Overtravel setting (P-OT, N-OT)

When the movable part of the machine may exceed the movable setting area, a limit switch is needed to limit the movement of the movable part.The overtravel setting is generated for this purpose. When the limit switch signal is connected to the servo unit and is valid, the servo system will be forcibly stopped.

(1) Use of overtravel signals

Please connect the input signal of the overtravel limit switch to the pre-assigned input terminal.

In the case of linear drive, etc., in order to prevent mechanical damage, be sure to connect the limit switch as below.



(2) Overtravel signal setting

Parameter	Signal name	Set	Meaning	Modify	Take effect
P5-11.H	/P-OT	03	Input positive signal from SI3	arbitrarily	Re-power on
P5-12.L	/N-OT	04	Input positive signal from SI4	arbitrarily	Re-power on

1./P-OT, /N-OT signals can be assigned to other input interfaces via user parameters P5-11, P5-12.
2. When in position control, when the overtravel signal is used to stop the motor, there will be a position offset pulse. To clear the position offset pulse, please input the clear signal /CLR.
3.During position control, when the motor is stopped by the overtravel signal, if the servo unit still receives the pulse, these pulses will accumulate until the servo unit alarms.

(3) Please refer P0-06H for the overtravel shutdown method

6.2.5 Input and output signal assignment instructions

Hardware: In the CN1 terminal of the servo driver, there are 7 input signals of SI1~SI7 and four output signals of SO1~SO4.

Signal: All input and output signals can be assigned to any input and output port through the address P5-XX setting; be careful not to repeat the assignment; if you want to assign the terminal yourself, you must set P5-10.L to 01; the setting will take effect after power off and restart.

Input and output signal assignment address is expressed in hexadecimal

The address P5-xx. H indicates the high position n.xx--; the address P5-xx. L indicates the low position n.--xx

Eg: P5-11 default value is n.0302

The signal P-CON address is P5-11.L default value is 02, indicating that this signal is input from port SI2.

The signal P-OT address is P5-11.H default value is 03, indicating that this signal is input from port SI3.

Input signal assignment reference to P5-10

- H: 00: Set the signal to always be invalid
 02: Input positive signal from SI2 terminal
 04: Input positive signal from SI4 terminal
 06: Input positive signal from SI6 terminal
 08: Input positive signal from SI8 terminal
 80: Set the signal to always be active
 82: Input counter signal from SI2 terminal
 84: Input counter signal from SI4 terminal
 86: Input counter signal from SI6 terminal
 01: Input positive signal from SI1 terminal
 03: Input positive signal from SI3 terminal
 05: Input positive signal from SI5 terminal
 07: Input positive signal from SI7 terminal
 81: Input counter signal from SI1 terminal
 83: Input counter signal from SI3 terminal
 85: Input counter signal from SI5 terminal
 87: Input counter signal from SI7 terminal

L: 00: External input is completely based on factory settings, the change of **P5-10.H~P5-19.H** are invalid.

01: External input signal can be set freely, the change of **P5-10.H~P5-19.H** is valid

Output signal assignment reference to P5-21

- L: 00: No output to the terminal
 02: Output positive signal from SO2 terminal
 04: Output positive signal from SO4 terminal
 81: Output counter signal from SO1 terminal
 83: Output counter signal from SO3 terminal
 01: Output positive signal from SO1 terminal
 03: Output positive signal from SO3 terminal
 82: Output counter signal from SO2 terminal
 84: Output counter signal from SO4 terminal
 H: The same as P5-21.L

6.3 Position mode (external pulse)

Introduction: Position control mode is applied to the occasion of precise positioning. The angle of the motor rotation can be controlled by pulse numbers; the motor speed can be controlled by controlling the pulse frequency; the SC1 servo system can accept pulse input up to 500KHz. It is equivalent to 3000r/min.

Basic parameters		
Parameters	Name	Reference
P0-01	Control mode selection	6.3.1
P2-02	Electronic gear ratio (molecular)	6.3.2
P2-03	Electronic gear ratio (denominator)	6.3.2
P5-10	Servo ON signal/SON	6.2.1

Optional parameter			
Keyword	Parameter	Function	Reference
Instruction filter	P2-01	Filter selection	6.3.3
Pulse deviation clear	P5-17.H	Pulse deviation clear/CLR	6.3.4
Positioning completed	P5-21.L	Positioning completion signal. Out/COIN	6.3.5
	P5-00	Positioning completion width	6.3.5
Positioning close	P5-25.L	Positioning proximity	6.3.6

		signal.Out/NEAR	
	P5-04	With of positioning close signal	6.3.6
Pulse inhibit	P5-16.H	Inhibit signal of command pulse/INHIBIT	6.3.7

6.3.1 Control mode

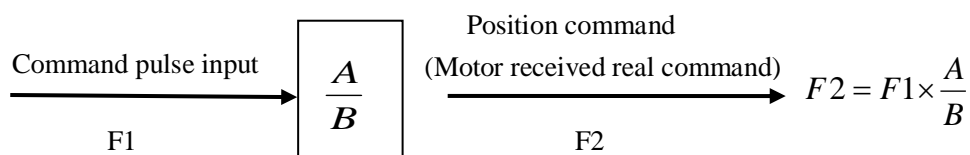
Parameter	Setting value	Meaning	Modify	Take effect
P0-01	6	Position (External pulse)	Servo OFF	immediate

6.3.2 Electronic gear ratio

◎P2-02	Electronic gear ratio (molecular)		0X0202
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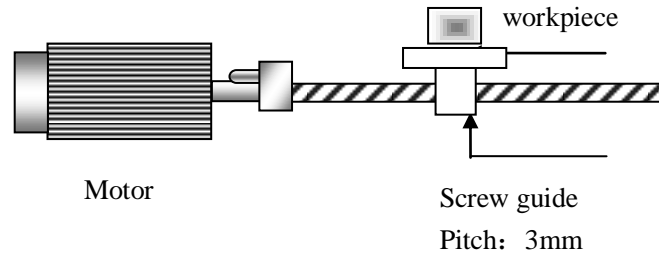
◎P2-03	Electronic gear ratio (denominator)		0X0203
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$$\text{Electronic gear ratio} = \frac{A}{B} = \frac{P2-02}{P2-03}$$



In position control mode, the motor drives the screw to rotate, and motor rotates one circle(requires 10,000 pulse commands), and the workpiece moves one pitch (3mm). Then the motor moves: $3\text{mm}/10000=3\mu\text{m}$ by receive one pulse.

For easy control,to realize 1um per puls,we use electronic gear ratio.



	Electronic gear ratio	The move distance of workpiece by receiving each pulse
Not use electronic gear ratio	$\frac{1}{1}$	$\frac{3 \times 1000 \mu\text{m}}{10000 \text{ puls}} = \frac{3000}{10000} \mu\text{m} \text{ (reciprocal)}$
Use electronic gear ratio	$\frac{10000}{3000} = \frac{10}{3}$	$1 \mu\text{m}$

Note: The electronic gear ratio has effect to speed: In the position (external pulse) mode, the rotation speed of the motor depends on the command pulse frequency, and the real pulse frequency received by the motor = external pulse frequency x electronic gear ratio.

6.3.3 Instruction filtering

◎P2-01	Position command filter selection		0X0201
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Initial value: 2

Control mode: 6,7

Unit: ~

Setting range: 0,1 (Can be modified when the servo in OFF, and take effect by power off and restart)

Parameter function: 0: first-order inertial filtering

1: smoothing filtering

◎P2-04	Position command acceleration/deceleration time parameter (ms)		0X0204
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Initial value: 0

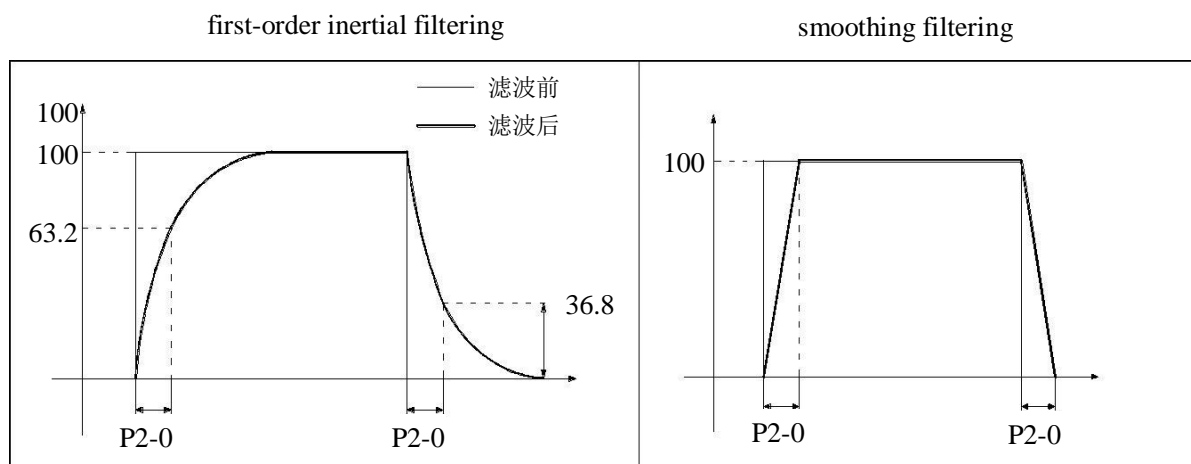
Control mode: 6

Unit: 1ms

Setting range: 0~100

Modify effective time: “●”Can be modified at any time, and take effect by power off and restart

Parameter function: P2-04 difference between the first-order inertial filtering and smoothing filtering modes is as follows:



6.3.4 Pulse deviation clear (/CLR)

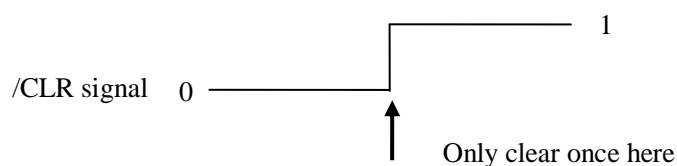
Pulse deviation value: In position control mode, the difference between the command pulse of the command controller (such as PLC) and the servo unit feedback. The unit is 1 command unit, which is related to the command unit determined by the electronic gear ratio.

Parameter	Signal name	Factory setting	Meaning	Application mode	Modify	Take effect
P5-17.H	/CLR	00	Unallocated	5、6	Arbitrary	Power off and restart

Note: 1. /CLR signal can be assigned to the input terminal by parameter setting

2. pulse deviation value can be monitored by U-08

Function description: After the /CLR signal is turned ON, the deviation counter inside the servo unit is set to “0”, and the position loop reference position is set to the current position. Only on the rising edge of the /CLR signal can do clear.



So after the clear signal is already ON, if the servo unit is still receiving pulse, the deviation will

continue to accumulate.

6.3.5 Positioning completion signal (/COIN)

Means the servo motor positioning is completed when on position control, and it is used when the command controller needs to confirm the positioning completion.

Parameter	Signal name	Factory setting	Meaning	Application mode	Modify	Take effect
P5-21.L	/COIN	n.0001	Positioning completion signal output from the SO1 terminal	5、6	Arbitrary	Power off and restart

Note: The positioning completion signal /COIN output can be assigned to other terminals via parameters

Parameter	Signal name	Factory setting	Unit	Application mode	Modify	Take effect
P5-00	Positioning completion width	7	One pulse	5、6	Servo OFF	immediate

Function : When the pulse deviation value of the servo driver is lower than the setting value ,the positioning completion signal (/COIN) is output. The pulse deviation value can be monitored via parameter U-08.

6.3.6 Positioning proximity signal (/NEAR)

◎P5-25	L:/NEAR proximity	0X0518
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Initial value: n. 02 00
(H L)

Control mode: ~

Unit: ~

Setting range: ~

Modify effective time:“●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

◎P5-04	Proximity output signal width/NEAR	0X0504
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Initial value: 50

Control mode: 5,6

Unit: 1 command

Setting range: 0~10000

Modify effective time: “○”can modify when servo OFF , and take effective by servo ON
 Parameter function: When the servo driver's pulse deviation value is lower than the set value of this parameter, output positioning proximity signal (/NEAR) . Please set this parameter to be larger than the positioning completion width. The pulse deviation value can be monitored by parameter U-08.

6.3.7 Command pulse prohibition (/INHIBIT)

◎P5-16	H:/INHIBIT Command pulse prohibition	0X0510
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Initial value: n. 03 03
 (H L)

Control mode: all

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: the same as P5-10.H

6.4 Position mode (internal command)

Basic parameters					
Parameter address	Function	Unit	Default value	Setting range	Effective time
P0-01	Control mode				
P5-18.H	/CTRG Pulse trigger signal				
P2-25	Multi-segment position mode				
P2-26	First pulse number	1	0	-9999~+9999	√
P2-27	First pulse number	10000	0		√
P2-28	First speed	0.1rpm	0		√
P2-29	First waiting time	ms	0		√
P2-30	First instruction filtering time				
P2-31	Second pulse number	1	0		√
P2-32	Second pulse number	10000	0		√
P2-33	Second speed	0.1rpm	0		√
P2-34	Second waiting time	ms	0		√
P2-35	Second instruction filtering time				
P2-36	Third pulse number	1	0	-9999~+9999	√
P2-37	Third pulse number	10000	0		√

P2-38	Third speed	0.1rpm	0		√
P2-39	Third waiting time	ms	0		√
P2-40	Third instruction filtering time				
P2-41	Fourth pulse number	1	0	-9999~+9999	√
P2-42	Fourth pulse number	10000	0		√
P2-43	Fourth speed	0.1rpm	0		√
P2-44	Fourth waiting time	ms	0		√
P2-45	Fourth instruction filtering time				
P5-14.H	/SPD-A				
P5-15.L	/SPD-B				

Optional parameter			
Key words	Parameter	Name	Refer
Instruction filtering	P2-01	Filter selection	6.3.3
Deviation pulse clear	P5-17.H	Pulse deviation clear/CLR	6.3.4
Positioning completed	P5-21.L	Positioning completion signal output/COIN	6.3.5
	P5-00	Positioning completion width	6.3.5
Positioning proximity	P5-25.L	Positioning proximity signal output/NEAR	6.3.6
	P5-04	Positioning proximity signal width	6.3.6

6.4.1 Control mode

Parameter	Setting value	Meaning	Modify	Take effect
P0-01	5	Position(internal command)	Servo OFF	immediate

6.4.2 Pulse trigger signal/CTRG

Parameter	Name	Setting	Function
P5-18.H	Pulse trigger/CTRG	Need to be assigned to the input port	Send a pulse when the signal is valid

6.4.3 Multi-section position description

Parameter	Function	Unit	Factory setting	Application mode	Modify time	Effective time
P0-01	Internal position	-	n.0000	5	Servo off	Power off and restart
	Setting value	Function	Factory setting	Setting range	Setting value	Function
	n.□xxx	Inhibit signal is valid	0: Stop at the current location 1: Stop in the full circle			

P2-25	n.x□xx	Waiting mode	0	0~1	0	Waiting for positioning complete
					1	Not waiting for positioning complete
	n.xx□x	Step change mode	0	0~3	0	Change step when the signal ON, it can be cycled
					1	Change step on signal rising edge, single step execution
					2	Start on the signal rising edge, execute in sequence
	Signal \ Speed		/SPD-B	/SPD-A	3	Trigger on the signal rising edge, select the position segment by /SPD-A/B/C/D signal
	Section 1 position		0	0		
	Section 2 position		0	1		
	Section 3 position		1	0		
	Section 4 position		1	1		
	n.xxx□	Positioning mode	0	0~1	0	Relative positioning
					1	Absolute positioning

Mode Instruction

(1) Waiting mode

n.X□XX	Meaning	Application
0: Waiting for positioning complete	After the driver completes a position command, waiting for the positioning completion signal output, then after the waiting time (settable), start next position	All step change mode
1: Not wait for positioning to complete	After the drive completes a position command, it does not wait for the positioning completion signal output, and only through the waiting time (settable) to start the next position	

(2) Step change mode

n.XX□X	Meaning
0: Change the step when the signal is ON, it can be cycled	1: When the /CTRG signal is always active, the servo unit will cycle execution the first and second position; 2: When the /CTRG signal fails while executing a certain position, the servo will continue to execute the segment instead of executing the next segment.
1: Change step on signal rising edge, single step execution	When this setting is made, the waiting time is invalid; After a command is completed, the next command can be triggered immediately if the signal is NO
2: Start on the signal rising edge,	The trigger signal is invalid until a loop is completed.

execute in sequence,no cycle	
3: Trigger on the signal rising edge, select the position segment by /SPD-A/B/C/D signal	This setting can select any position by the /SPD-A/B/C/D signal, which is triggered by the /CTRG signal.

(3) Positioning mode

n.xxx□		Meaning
0:Relative positioning		Each position instruction is executed independently
1:Absolute positioning		Each position is referenced to the origin. Taking two positions as an example,first position set 5000 pulses,second position set 10000 pulses, and 5000 pulses are driven when the first position is triggered. When the second position is triggered, the driver will execute pulse command number is 10000 minus 5,000 pulses

6.5 Speed (analog voltage)

Basic Parameter		
Parameter	Name	Reference
P0-01	Control method selection	6.5.1
P3-00	Rated speed corresponds to analog	6.5.2
P5-10.H	Servo ON signal/S-ON	6.2.1
P5-14.H	/SPD-A Forward	
P5-15.L	/SPD-B Reverse	

Optional Parameter			
Keyword	Parameter	Function	Reference
Zero drift adjustment	F1-00	Automatic adjustment of analog voltage speed command offset	6.5.3
Proportional action	P5-11.L	Proportional action instruction/P-CON	6.5.4
Zero clamp	P5-16.L	Zero clamp/ZCLAMP	6.5.5
	P5-01	Zero clamp speed	6.5.5
Synchronous speed detection	P5-21.H	/V-CMP Synchronous speed detection output	6.5.6

	P5-03	Synchronous speed signal detection width/V-CMP	6.5.6
Torque limit	P4-02	Forward torque limit	6.5.7
	P4-03	Reverse torque limit	6.5.7
	P0-07	T-REF distribution	6.5.7
	P4-04	Forward external torque limit	6.5.7
	P4-05	Reverse external torque limit	6.5.7
	P5-13.L	Forward external torque limit/P-CL	6.5.7
	P5-13.H	Reverse external torque limit/N-CL	6.5.7
Soft start	P3-05	Soft start acceleration	6.5.8
	P3-06	Soft start deceleration	6.5.8
Filter	P3-07	Speed command filter time parameter	6.5.9
	P3-08	Speed feedback filter time parameter	6.5.9

6.5.1 Control method selection

Parameter	Setting value	Meaning	Modify	Take effect
P0-01	4	Speed (analog)	Servo OFF	Immediate

6.5.2 Rated speed corresponds to analog

⊙P3-00	Rated speed corresponds to analog		0X0300
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Initial value: 1000

Control mode: 4

Unit: 0.01V

Setting range: 150~3000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Set the speed command voltage (V-REF) according to the servo motor operation at the rated speed

Eg: P3-00=500,when the analog input voltage is 5.00V, the motor runs at the rated speed;

P3-00=800,when the analog input voltage is 8.00V, the motor runs at the rated speed.

6.5.3 Automatic adjustment of speed command offset (F1-00)

When the analog voltage speed mode is used,even the command voltage is 0V, the motor still will rotate at a small speed. This micro-motion occurs when the command voltage of the superior

control device or the external circuit is shifted by a small amount (mV Unit). In this case, can use panel to do automatically adjust of command offset.

Press the STA button to switch to F1-00; press the ENTER button to enter, and wait until the F-F appears, the adjustment is complete.

6.5.4 Proportional action command (/P-CON)

◎P5-11	L:/P-CON Proportional action command	0X050b
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Initial value: n. 03 02
(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same at P5-10.H

L: P-CON Proportional action command

The signal is valid: Operation in P (proportional) control mode (can reduce the jog caused by the speed input command drift, but at the same time the rigidity of the servo motor will decrease, and the output torque will be small when stopped)

Invalid signal: Operation in PI (proportional integral) control mode

6.5.5 Zero clamp (/ZCLAMP)

◎P5-16	L:/ZCLAMP Zero clamp input signal	0X0510
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The higher-level device uses the "speed command" input, without configuration "position loop" system ,using this function.This means using it even if the input voltage of the speed command "V-REF" is not "0V", stop the motor and keep the servo in locked state. When the "zero clamp" Function is set to "ON", the position loop is temporarily placed inside, so the motor clamps within ± 1 pulse at this position. Even if it is rotated by an external force, it will return to the zero clamp position.

◎P5-01	Zero clamp speed/ZCLAMP	0X0501
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Initial value: 10

Control mode: 3,4,7

Unit: rpm

Setting range: 0~300

Modify effective time: “○”can modify when servo OFF , and take effective by servo ON

Parameter function: When the zero clamp signal (P5-16) is valid and the motor rotation speed command is less than the set value of P5-01, the motor is clamped and stops.

6.5.6 Synchronous speed detection signal (/V-CMP)

◎P5-21	H:/V-CMP Synchronous speed detection output	0X0514
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	signal	
--	---------------	--

◎P5-03	Synchronous speed signal detection width	0X0503
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Initial value: 10

Control mode: 3,4,7

Unit: rpm

Setting range: 1~250

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON.Take effect by restart

Parameter function: The absolute value of the difference between the motor speed and the command speed. If the actual detected value is lower than the set value of P5-03, then output /V-CMP synchronous speed signal

6.5.7 Torque limit

6.5.7.1 Internal torque limit

◎P4-02	Internal positive torque limit	0X0402
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Initial value: 300

Control mode: ALL

Unit: 1%

Setting range: 0~300

Modify effective time: “√” can modify at any time, immediately take effect.

Parameter function: The setting value of this parameter is always valid.If this value is smaller than the external torque limit value, the final limit value is based on this setting value.

◎P4-03	Internal anti-torque limit	0X0403
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Initial value: 300

Control mode: ALL

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time, immediately take effect.

Parameter function: The setting value of this parameter is always valid.If this value is smaller than the external torque limit value, the final limit value is based on this setting value.; the Unit is % of motor's rated torque, 300% of the rated torque is set at the factory, and the actual output maximum torque will vary depending on the model.

6.5.7.2 External torque limit

◎P4-04	External positive torque limit	0X0404
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Initial value: 100

Control mode: ALL

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time, immediately take effect.

Parameter function: The external torque limit is used when mechanical operation or torque limit is required at a certain timing. For example, it is used for applications such as pressing stop motion or robot workpiece holding.

◎P4-05	External anti-torque limit	0X0405
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Initial value: 100

Control mode: ALL

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time, immediately take effect.

Parameter function: the same as external positive torque limit

6.5.7.3 External torque limit (via analog voltage command)

A function that arbitrarily performs torque limitation via analog voltage command. T-REF is used as the analog voltage command terminal, so this limit function cannot be used when using external analog torque control.

◎P0-07	T-REF distribution	0X0007
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Initial value: 2

Control mode: Speed mode

Unit: ~

Setting range: 0~3

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function 0: No definition

1: Use T-REF as an external torque limit input

2: No definition

3: When P-CL N-CL is ON, use T-REF as the torque limit input.

6.5.7.4 Output torque reaches limit value of output

◎P5-23	L:/CLT Torque limit output	0X0516
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Initial value: n. 00 00

(H L)

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

6.5.8 Soft start

◎P3-05	Soft start acceleration time	0X0305
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Initial value: 0

Control mode: 3,4,7

Unit: 1ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Setting the appropriate acceleration time can prevent motor shake caused by excessive acceleration, but if the value set too big will affect the system response time.

◎P3-06	Soft start deceleration time	0X0306
---------------	-------------------------------------	---------------

Initial value: 0

Control mode: 3, 4,7

Unit: 1ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Setting the appropriate deceleration time can prevent motor shake caused by excessive deceleration, but if the value set too big will affect the system response time.

6.5.9Filter

◎P3-07	Speed command filtering time parameter	0X0307
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Initial value: 0

Control mode: 3,4,5,6,7

Unit: 0.01ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: The speed command input is passing through one time delay filter to smooth the speed command. If the setting value is too large, it will affect response.

◎P3-08	Speed feedback filter time parameter	0X0308
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Initial value: 20

Control mode: 3,4,5,6,7

Unit: 0.01ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Smoothing the feedback of the speed. If the setting value is too large, the speed feedback will be distorted and will effect control.

6.6 Speed control (internal command)

Basic Parameter		
Parameter	Name	Refer
P0-01	Control method selection	6.6.1
P5-10.H	Servo ONsignal/S-ON	6.2.1
P3-01	Internal speed 1	6.6.2
P3-02	Internal speed 2	6.6.2
P3-03	Internal speed 3	6.6.2

P5-14.L	/SPD-D	6.6.3
P5-14.H	/SPD-A	6.6.3
P5-15.L	/SPD-B	6.6.3

Optional Parameter		
Keyword	Parameter	Name
Proportional action instruction	P5-11.L	Proportional action instruction/P-CON
	P5-16.L	Zero clamp/ZCLAMP
	P5-01	Zero clamp speed
Synchronizing speed inspection	P5-21.H	/V-CMP Synchronizing inspection signal output
	P5-03	Synchronizing signal inspection width /V-CMP
	P4-02	Forward torque limit
Torque limit	P4-03	Reverse torque limit
	P0-07	T-REF distribution
	P4-04	Forward external torque limit
	P4-05	Reverse external torque limit
	P5-13.L	Forward external torque limit/P-CL
	P5-13.H	Reverse external torque limit/N-CL
Soft start	P3-05	Soft start acceleration time
	P3-06	Soft start deceleration time
Filter	P3-07	Speed command filtering time parameter
	P3-08	Speed feedback filtering time parameter

6.6.1 Control method selection

Parameter	Setting value	Meaning	Modify	Take effect
P0-01	3	Speed (internal command)	Servo OFF	immediate

6.6.2 Internal speed setting

◎P3-01	Internal setting speed 1	0X0301
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Initial value: 0

Control mode: Speed control (internal speed setting selection)

Unit: r/m(rpm)

Setting range: -3000~3000

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Set value of speed 1

⊙P3-02	Internal setting speed 2	0X0302
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Initial value: 0

Control mode: Speed control (internal speed setting selection)

Unit: r/m(rpm)

Setting range: -3000~3000

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Set value of speed 2

⊙P3-03	Internal setting speed 3	0X0303
---------------	---------------------------------	---------------

Initial value: 0

Control mode: Speed control (internal speed setting selection)

Unit: r/m(rpm)

Setting range: -3000~3000

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Set value of speed 3

6.6.3 Speed selection and direction

Speed 1, speed 2, speed 3 can be switched by external input signals /SPD-A, /SPD-B, and the direction is changed by /SPD-D (/SPD-D, /SPD-A, /SPD-B input signal need to assigned to the output port first)

Input signal			Meaning
/SPD-D	/SPD-A	/SPD-B	Speed
0: Forward	0	0	Internal command 0 speed
	0	1	Speed 1 (P3-01)
1: Reverse	1	1	Speed 2 (P3-02)
	1	0	Speed 3 (P3-03)

6.7 Speed (external pulse)

Basic Parameter		
User Parameter	Name	Refer
P0-01	Control method selection	6.7.1
P5-10.H	Servo ON signal/S-ON	6.2.1
P2-06	Command pulse frequency at rated speed	6.7.2
P2-07	Speed command pulse filtering time	6.7.3

Optional Parameter			
Keyword	Parameter	Name	Refer
Proportional action instruction	P5-11.L	Proportional action instruction/P-CON	6.5.4
Zero clamp	P5-16.L	Zero clamp/ZCLAMP	6.5.5

	P5-01	Zero clamp speed	6.5.5
Synchronizing speed inspection	P5-21.H	/V-CMP Synchronizing inspection signal output	6.5.6
	P5-03	Synchronizing signal inspection width /V-CMP	6.5.6
Torque limit	P4-02	Forward torque limit	6.5.7
	P4-03	Reverse torque limit	6.5.7
	P0-07	T-REF distribution	6.5.7
	P4-04	Forward external torque limit	6.5.7
	P4-05	Reverse external torque limit	6.5.7
	P5-13.L	Forward external torque limit/P-CL	6.5.7
	P5-13.H	Reverse external torque limit/N-CL	6.5.7
Filter	P3-08	Speed feedbackfiltering time parameter	6.5.9

6.7.1 Control method selection

Parameter	Setting value	Meaning	Modify	Take effect
P0-01	7	Position (external pulse)	Servo OFF	Immediate

6.7.2 Command pulse frequency at rated speed

⊙P2-06	Command pulse frequency at rated speed	0X0206
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Initial value: 5000

Control mode: 7

Unit: 100Hz

Setting range: 1~10000

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function:When P2-06 Parameter is set to 1000, the command pulse frequency corresponding to the rated speed is 100KHz;

:When the P2-06 Parameter is set to 300, the command pulse frequency corresponding to the rated speed is 30KHz;

6.7.3 Speed command pulse filter time

⊙P2-07	Speed command pulse filter time	0X0207
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Initial value: 20

Control mode: 7

Unit: 0.1ms

Setting range: 0~1000

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: When the command pulse frequency is relatively low, setting this parameter appropriately can reduce the fluctuation of the speed.

6.8 Torque (analog voltage)

Basic Parameter		
Parameter	Name	Refer
P0-01	Control method selection	6.8.1
P4-00	Rated torque corresponding to analog	6.8.2
P5-10	Servo ON signal/S-ON	6.2.1

Optional Parameter			
Keyword	Parameter	Name	Refer
Filter	P4-01	Torque command filter time parameter	6.8.3
Torque limit	P4-07	Internal speed limit during torque control	6.8.4
	P3-09	Maximum speed limit	6.8.4
	P0-08	V-REF Function distribution	6.8.4
	P5-23.L	Speed reaches the limit output	6.8.4

6.8.1 Control method selection

Parameter	Setting value	Meaning	Modify	Take effect
P0-01	2	Torque (analog)	Servo OFF	Immediate

6.8.2 Rated torque corresponding to analog

⊙P4-00	Rated torque corresponding to analog	0X0400
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Initial value: 1000

Control mode: 2

Unit: 0.01V

Setting range: 150~3000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Set the speed command voltage (T-REF) required to operate the servo motor at the rated speed.

Eg: P4-00=500, When the analog input voltage is 5.00V, the motor runs at rated torque;

P4-00=800, When the analog input voltage is 8.00V, the motor runs at rated torque.

6.8.3 Torque command filter time parameter

⊙P4-01	Torque command filter time parameter	0X0401
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Initial value: 0

Control mode: 1,3,5,6,7

Unit: 0.01ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: The torque command input through the primary delay filter to smooth the torque command. If the setting is too large, it will reduce responsiveness.

6.8.4 Speed limit

◎P4-07	Speed limit during torque control	0X0407
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Initial value: 2000

Control mode: 1,2

Unit: rpm

Setting range: 0~5000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Even if the setting value of speed is greater than the rated speed, the speed limit of the actual is only the rated speed.

◎P3-09	Maximum operating speed	0X0309
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Initial value: 4000

Control mode: ALL

Unit: rpm

Setting range: 0~5000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: No matter what mode the motor is running, the running speed will not exceed this parameter setting value.

External speed limit

◎P0-08	V-REF distribution	0X0008
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Initial value: 2

Control mode: Torque mode

Unit: ~

Setting range: 0~3

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function 0: no definition

1: Use V-REF as the external speed limit input.

Speed reaches the limit value output

©P5-23	H:/VLT Speed limit detection	0X0516
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Initial value: n. 00 00
(H L)

Control mode: ~

Unit: ~

Setting range: ~

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

Chapter 7 Parameter and Function

7.1 Parameter definition

There are 9 parameters of SC1 series servo driver:

Function parameter : P0-XX (Set basic functions such as running mode)

Control parameter : P1-XX (Set gain and integration)

Position parameter: P2-XX (Basic parameter required when using location mode)

Speed parameter : P3-XX (Basic Parameter required when using speed mode)

Torque parameter : P4-XX (Basic Parameter required when using torque mode)

Signal parameter : P5-XX (Input and output signal distribution and related setting)

Monitor parameter : Un-XX (Real-time speed, position and torque during servo operation)

Alarm parameter : En-XX (Explain the meaning and solution of the alarm output code)

Auxiliary parameter : FX-XX (System information check and recovery of factory setting and other functions)

Symbol Description

“○”can modify when servo OFF, and take effective by servo ON

“●”can be modified at any time, and will take effect by power off and restart.

“√”can modify at any time,will take effect immediately.

7.2 Parameterdatasheet

P0-XX	Function Parameters Modbus address: 0000~00FF				
Parameter code	Function	Unit	Factory default	Setting range	Effective time
P0-00	Main mode	-	0	0~3	○
P0-01	Submode 1	-	6	0~7	○
P0-02	Submode 2	-	0	0~7	○
P0-03	Modbus Stack number	-	1	1~255	●
P0-04	Serial port parameters	-	n.2206	n.0000~n.2209	●
P0-05	Rotation direction	-	0	0、 1	●
P0-06.L	Shutdown method	-	0202	0~2	●
P0-07	T-REF distribution	-	0	0~3	○
P0-08	V-REF distribution	-	0	0、 1	○
P0-09	Initial monitoring		88		
P0-10	Rigid setting		Reserved		
P0-11	Motor code		0	0~9999	●
P0-12	Overload ratio	1%	100	10~150	●
P0-13	Overload time	10ms	600	0~50000	●

P0-14	Busbar alarm limit	V	220V	250	200~260	√
			380V	420	390~450	

P1-XX	Control parameter Modbus address: 0100~01FF				
Parameter code	Function	Unit	Factory default	Setting range	Effective time
P1-00	Speed loop gain	1Hz	100	1~5000	√
P1-01	Speed loop integral	0.1ms	400	1~50000	√
P1-02	Position loop gain	1/s	30	1~2000	√
P1-03	Parameter reserved				
P1-04	Speed loop gain 2	1Hz	150	1~5000	√
P1-05	Speed loop integral 2	0.1ms	100	1~50000	√
P1-06	Position loop gain 2	1/s	80	1~2000	√
P1-07	Parameter reserved				
P1-08	Parameter reserved				
P1-09	Position loop feedforward gain	1%	0	0~100	√
P1-10	Feedforward filtering time	0.01ms	0	0~65535	√

P2-XX	Position Parameter Modbus address: 0200~02FF				
Parameter code	Function	Unit	Factory default	Setting range	Effective time
P2-00	Command pulse form	-	2	1、2、3	●
P2-01	Position command filter	-	0	0、1	●
P2-02	Electronic gear ratio molecule	-	1	1~65535	○
P2-03	Electronic gear ratio denominator	-	1	1~65535	○
P2-04	Position command filter time	1ms	0	0~100	●
P2-05	Parameter reserved				
P2-06	Command pulse frequency at rated speed	100Hz	5000	1~10000	○
P2-07	Speed command pulse	0.1ms	20	0~1000	√

	filter time				
P2-08	Parameter reserved				
P2-09	Parameter reserved				
P2-10	Command pulse input rate	-	0		√
P2-11	Parameter reserved	-	0	0~65535	√
P2-12	Position loop max speed	rpm	100	0~65535	√
P2-13	Pulse positioning mark	-	0	0~50000	√
P2-14	Brake resistor type		1	0~1	
P2-15	Built-in braking resistor discharge cycle				
P2-16	Parameter reserved				
P2-17	Parameter reserved				
P2-18	Parameter reserved				
P2-19	Parameter reserved				
P2-20	OPR mode	-	n.0	00~FF	●
P2-21	Origin return speed 1	rpm	1000	1~2000	○
P2-22	Origin return speed 2	rpm	50	1~150	○
P2-23	Origin return offset laps	rotate	0	-9999~+9999	○
P2-24	Origin return offset pulse number	1 pulse	0	-9999~+9999	○
P2-25	Multi-segment position mode				○
P2-26	First stage pulse number	1	0	-9999~+9999	√
P2-27	First stage pulse number	10000	0		√
P2-28	First stage speed	0.1rpm	0		√
P2-29	First stage waiting time	ms	0		√
P2-30	First stage acceleration and deceleration time	ms	0	-9999~+9999	○
P2-31	Second stage pulse number	1	0		√
P2-32	Second stage pulse number	10000	0		√
P2-33	Second stage speed	0.1rpm	0		√
P2-34	Second stage waiting time	ms	0		√
P2-35	Second stage	ms	0	-9999~+9999	○

	acceleration and deceleration time				
P2-36	Third stage pulse number	1	0	-9999~+9999	√
P2-37	Third stage pulse number	10000	0		√
P2-38	Third stage speed	0.1rpm	0		√
P2-39	Third stage waiting time	ms	0		√
P2-40	Third stage acceleration and deceleration time	ms	0	-9999~+9999	○
P2-41	Forth stage pulse number	1	0	-9999~+9999	√
P2-42	Forth stage pulse number	10000	0		√
P2-43	Forth stage speed	0.1rpm	0		√
P2-44	Forth stage waiting time	ms	0		√
P2-45	Forth stage acceleration and deceleration time	ms	0	-9999~+9999	○
P2-46	Position S type acceleration and deceleration time	ms	0	-9999~+9999	○

P3-XX	Speed parameter Modbus address: 0300~03FF				
Parameter code	Function	Unit	Factory default	Setting range	Effective time
P3-00	Rated speed corresponds to analog	0.01V	1000	150~3000	○
P3-01	Internal speed 1	rpm	100	-5000~+5000	√
P3-02	Internal speed 2	rpm	200	-5000~+5000	√
P3-03	Internal speed 3	rpm	300	-5000~+5000	√
P3-04	JOG speed	rpm	100	0~1000	√
P3-05	Soft start acceleration time	1ms	0	0~65535	○
P3-06	Soft start deceleration time	1ms	0	0~65535	○
P3-07	Speed command filter time parameter	0.01ms	0	0~65535	○

P3-08	Speed feedback filter time parameter	0.01ms	20	0~65535	○
P3-09	Maximum speed limit	rpm	4000	0~5000	○
P3-10	Dead zone voltage	0.01V	0	0~100	○
P3-11	Speed S-type acceleration time	ms	0	0~65535	○
P3-12	Brake delay when enabled	ms	0	0~65535	√

P4-XX	Torque Parameter Modbus address: 0400~04FF				
Parameter code	Function	Unit	Factory default	Setting range	Effective time
P4-00	Rated torque corresponding to analog	0.01V	1000	150~3000	○
P4-01	Torque command filter time parameter	0.01ms	0	0~65535	○
P4-02	Forward torque limit	1%	300	0~300	√
P4-03	Reverse torque limit	1%	300	0~300	√
P4-04	Forward external torque limit	1%	100	0~300	√
P4-05	Reverse external torque limit	1%	100	0~300	√
P4-06	Emergency stop torque	1%	300	0~300	○
P4-07	Internal speed limit during torque control	rpm	2000	0~5000	○
P4-08					
P4-09	Internal torque given	1%	0	-300~300	√
P4-10	Dead zone voltage	0.01V	0	0~100	○

P5-XX	Signal parameter Modbus address: 0500~05FF				
Parameter code	Function	Unit	Factory default	Setting range	Effective time
P5-00	Positioning completion signal width/COIN	1 个脉冲	7	0~250	○
P5-01	Zero clamp speed/ZCLAMP	rpm	10	0~300	○
P5-02	Rotation detection speed/TGON	rpm	20	1~1000	○
P5-03	Synchronous speed detection width/V-CMP	rpm	10	1~250	○
P5-04	Near output signal width/NEAR	1 pulse	50	0~10000	○
P5-05	Deviation pulse limit	256 pulses	1000	0~65535	○

P5-06	Servo OFF command delay (brake command)	1ms	0	0~500	○
P5-07	Brake command output speed	rpm	100	0~5000	○
P5-08	Brake command waiting time	1ms	500	10~1000	○
P5-09	Parameter reserved				
P5-10.L	Input signal distribution mode	-	01	0、1	●
P5-10.H	/SON Servo start signal	-	01	00~FF	●
P5-11.L	P-CON Proportional action instruction	-	02	00~FF	●
P5-11.H	P-OT Prohibit forward drive	-	03	00~FF	●
P5-12.L	N-OT Prohibit reverse drive	-	04	00~FF	●
P5-12.H	/ALM-RST Alarm clear	-	05	00~FF	●
P5-13.L	/P-CL Forward external torque limit	-	06	00~FF	●
P5-13.H	/N-CL Reverse external torque limit	-	07	00~FF	●
P5-14.L	/SPD-D Internal speed direction	-	00	00~FF	●
P5-14.H	/SPD-A Internal speed selection	-	00	00~FF	●
P5-15.L	/SPD-B Internal speed selection	-	00	00~FF	●
P5-15.H	/C-SEL Control method selection	-	00	00~FF	●
P5-16.L	/ZCLAMP Zero clamp	-	00	00~FF	●
P5-16.H	/INHIBIT Command pulse prohibition	-	00	00~FF	●
P5-17.L	/G-SEL Gain switching	-	00	00~FF	●
P5-17.H	/CLR Pulse clear	—	00	00~FF	●
P5-18.L	/ORGP Origin detection signal	-	00	00~FF	●
P5-18.H	/CTRG Pulse trigger	-	00	00~FF	●
P5-19.L	/SHOM Find the origin	-	00	00~FF	●
P5-19.H	Parameter reserved	-			
P5-20.L	Parameter reserved	-			
P5-20.H	Parameter reserved	-			
P5-21.L	/COIN Positioning completed	-	01	00~FF	●

P5-21.H	/VCMP Synchronous speed detection output	-	00	00~FF	●
P5-22.L	/TGON Rotation detection output	-	00	00~FF	●
P5-22.H	/S-RDY Ready	-	03	00~FF	●
P5-23.L	/CLT Torque limit	-	00	00~FF	●
P5-23.H	/VLT Speed limit	-	00	00~FF	●
P5-24.L	/BK Brake interlock	-	00	00~FF	●
P5-24.H	/WARM warning	-	00	00~FF	●
P5-25.L	/NEAR Close	-	00	00~FF	●
P5-25.H	/ALM Alarm	-	02	00~FF	●
P5-26.L	/HOM Finish		04	00~FF	●

Input signal Modbus address: 0800~08FF					
Signal Name	Modbus address	Signal Name	Modbus address	Signal Name	Modbus address
/S-ON	0X0800	/N-CL	0X0806	/INHIBIT	0X080C
/P-CON	0X0801	/SPD-D	0X0807	/G_SEL	0X080D
/P-OT	0X0802	/SPD-A	0X0808	/CLR	0X080E
/N-OT	0X0803	/SPD-B	0X0809	/ORGP	0X080F
/ALM-RST	0X0804	/C-SEL	0X080A	/CTRG	0X0810
/P-CL	0X0805	/ZCLAMP	0X080B	/SHOM	0X0811

Output signal Modbus address: 0800~08FF					
Signal Name	Modbus address	Signal Name	Modbus address	Signal Name	Modbus address
/COIN	0X0812	/CLT	0X0816	/NEAR	0X081A
/V-CMP	0X0813	/VLT	0X0817	/ALM	0X081B
/TGON	0X0814	/BK	0X0818	/HOM	0X081C
/S-RDY	0X0815	/WARN	0X0819		

F0-XX	Motor information Modbus address: 0F00~0FFF		
Parameter code	Function	Unit	Modbus address
F0-00	Motor power model	*	0X0F00
F0-01	Number of motor poles	*	0X0F01
F0-02	Motor rated speed	rpm	0X0F02
F0-03	Motor max speed	rpm	0X0F03
F0-04	Encoder line number	*	0X0F04
F0-05	Rated current	0.1A	0X0F05
F0-06	Encoder direction	*	0X0F06
F0-07	Overload ratio	*	0X0F07
F0-08	Encoder correction angle	*	0X0F08
...

F0-20	Rotor inertia 10 ⁻⁶	10 ⁻⁶ kg/m ²	0X0F14
...
F0-24	Motor model	*	0X0F17
F0-25	Input voltage and motor flange	*	0X0F18
F0-26	Software version	*	0X0F19

FX-XX	FunctionParameter		
Parameter code	Function	Function finish display	Modbus address
F1-00	Correct V-ref zero point	F-F	Inoperable
F1-01	Correct T-ref zero point	F-F	Inoperable
F4-00	Factory Reset	rEt-E	Inoperable
F5-00	JOG	JoG-P/N	Inoperable
F6-00	Manual enable	En	Inoperable

7.3 Parameter description

P0-XX Function Parameter

⊙P0-00	Main mode	Testing mode, please don't change	0X0000
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Initial value: 0

Setting range: 0~2

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: 0: Main mode needs to be set to zero when using submode.

1: JOG mode (Submode set to zero)

2: matched sub-mode 1 can be used to debug the system.

(Main mode: 1; sub mode 1:0) : JOG mode

(Main mode: 2; sub mode 1: 0) : Current deviation correction, /S-ON on 1 and complete the check after five seconds

(Main mode: 2; sub mode 1: 2) : Open loop without encoder.

(Main mode: 2; sub mode 1: 3) : Open loop with encoder.

⊙P0-01	Submode 0	When the /C-SEL signal is active, the servo system will switch to submode 1 operation.	0X0001
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Initial value: 0

Setting range: 0~7

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: 0: **idle**

In this mode, the motor is not powered even if the servo ON signal is valid.

1: **Torque control (internal setting)**

The output torque of the servo motor is controlled by the panel operator or communication of the driver.

2: **Torque control (analog voltage command)**

The output torque of the servo motor is controlled by analog voltage torque command. It is often used in cooperate with the host computer for full-closed-loop torque control, such as tension control. (This mode cannot be used if the servo driver does not have an analog input interface.)

3: Speed control (internal speed setting selection)

The servo driver can have 3 operating speeds. Use the three input signals of /SPD-D, /SPD-A, /SPD-B for speed switching and direction control.

4: Speed control (analog voltage command)

Use the analog voltage to control the motor speed and /SPD-A, /SPD-B to control the direction.

5: Position control (internal position command)

Using internal register setting position command for position control, and parameters such as pulse amount and rotation speed can be set.

6: Position control (external pulse train command)

The position of the servo motor is controlled by the pulse train position command. The position is controlled by the number of input pulses, and the speed is controlled by the frequency of the input pulse.

7: Speed control (pulse train frequency command)

The frequency of the input pulse train is used to control the speed of the motor without controlling the position of the motor.

◎P0-02	Submode 1	Same as submode 0 (When the /C-SEL signal is invalid, the servo system will switch to submode 0 to operation.)	0X0002
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◎P0-03	Modbus Station No		0X0003
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Initial value: 1

Control mode: All

Unit: ~

Setting range: ~

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

◎P0-04	Serial port parameter		0X0004
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Initial value: n.2206

Control mode: All

Unit: ~

Setting range: n. 0 0 0 0

①②③④

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: ① **is Calibrate bit** Initial value: 2

Setting range 0: no calibrate 1: odd calibrate 2: even calibrate

② **is Stop bit** Initial value: 2 Setting range 0: 2 bit 2: 1 bit

③ **is Data bit** Initial value: 0 Setting range 0: 8 bit 1: 7 bit

④ Baud rate	Initial value: 6	Setting range	0 to 9
		0: 300	5: 9600
		1: 600	6: 19200
		2: 1200	7: 38400
		3: 2400	8: 57600
		4: 4800	9: 115200

◎P0-05	Direction of rotation	Note: After switching the direction, the signal received by the SERVO is reversed.	0X0005
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Initial value: 0

Control mode: 1,2,3,4,5,6,7

Unit: ~

Setting range: 0,1

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function 0: Forward direction (Seen from the load side is "counterclockwise rotation")

1: Forward direction (Seen from load side is "clockwise rotation")

◎P0-06	P0-06H: Overtravel shutdown method	0X0006
	P0-06L: Servo OFF and alarm shutdown method	

Initial value: n. 02 02

(**H** **L**)

Control mode: All

Unit: ~

Setting range: 0~3

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: H: 0~1: Inertia operation stops. After stopping, keep inertia.

2. The deceleration operation stops. After stopping, change to zero clamp. Torque set value: PEmergency stop torque of P4-06.

3. The deceleration operation stops. After stopping, change to the inertia running. Torque set value: Emergency stop torque of P4-06.

Note: (1) When the overtravel stop mode is 0 or 1, the servo enable signal is forcibly turned OFF when the overtravel signal arrives; when the overtravel stop mode is 3, the servo enable signal is forcibly turned OFF after the motor stops and the overtravel signal arrives. When the overtravel stop mode is 2, as long as the servo enable signal is always active, it will not be forced OFF.

(2) The stop condition basis on the rotation detection speed P5-02, Unit: rpm.

L: 0~2 The coasting operation stops. After stopping, keep inertia.

(The CZ series servo driver does not have a built-in DB brake, so regardless of the value of P0-06.L, it defaults to coasting stop.)

◎P0-07	T-REF distribution	0X0007
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Initial value: 2

Control mode: Speed mode

Unit: ~

Setting range: 0~3

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function 0: Undefined.

1: Use T-REF as the external torque limit input.

2: Not defined.

3: When P-CL N-CL is ON, T-REF is used as the torque limit input.

◎P0-08	V-REF distribution	0X0008
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Initial value: 2

Control mode: Torque mode

Unit: ~

Setting range: 0~3

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function 0: Undefined

1: Use V-REF as the external speed limit input.

◎P0-09	Initial monitoring status	0X0009
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Initial value: 88

Control mode: All

Unit: ~

Setting range: 00~FF

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function : xx: Un-xx Eg: set 00, power on indicate Un-00

Other: Power on indicate 88: Operating status

23: Power on indicate P0-00

P1-XX Control Parameter

◎P1-00	Speed loop gain	0X0100
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Initial value: 100

Control mode: 3,4,5,6,7

Unit: 1Hz

Setting range: 1~5000

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Big value of the speed loop gain, will have high responsiveness of speed control.

◎P1-01	Speed loop integration time	0X0101
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Initial value: 400

Control mode: 3,4,5,6,7

Unit: 0.1ms

Setting range: 1~5000

Modify effective time: “√” can modify at any time, will take effect immediately.

Parameter function: The smaller the value of the speed loop integral time constant, the more high responsive of the speed control.

◎P1-02	Position loop gain	0X0102
---------------	---------------------------	---------------

Initial value: 100

Control mode: 5,6

Unit: 1Hz

Setting range: 1~2000

Modify effective time: “√” can modify at any time, will take effect immediately.

Parameter function: Big value of the position loop gain, will have high responsiveness and small offset of the position control, but subject to mechanical characteristics

◎P1-03	Parameter reserved	0X0103
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◎P1-04	Second speed loop gain	The same as P1-00. Through P5-17L /G-SEL signal can switch between first gain and second gain.	0X0104
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◎P1-05	Second speed loop integration time	The same as P1-01. Through P5-17L /G-SEL signal can switch between first gain and second gain.	0X0105
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◎P1-06	Second position loop gain	The same as P1-02. Through P5-17L/G-SEL signal can switch between first gain and second gain.	0X0106
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◎P1-07	Parameter reserved	0X0107
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◎P1-08	Parameter reserved	0X0108
---------------	---------------------------	---------------

◎P1-09	Position loop front feedforward gain	0X0109
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Initial value: 0

Control mode: 5,6

Unit: 1%

Setting range: 1~100

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Setting unit here means 1% of the deviation pulse. In the case where a fast response of the position loop is required, the feedforward gain of the position loop can be appropriately increased, but if set too big,will cause overshoot of the speed loop.

◎P1-10	Feedforward filter time parameter	0X010a
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Initial value: 0

Control mode: 5,6

Unit: 0.01ms

Setting range: 1~65535

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: The filtering time of the position feedback signal before the position loop.

P2-XX Position parameter

◎P2-00	Command pulse form	0X0200
---------------	---------------------------	---------------

Initial value: 2

Control mode: 6,7

Unit: ~

Setting range: 0,2

Modify effective time: Can modify when servo OFF, Will Take effect by power off and restart

Parameter function: 1: A, B pulse mode;

2: Pulse + direction; DIR=1 Forward, DIR=0 Reverse;

3: CW,CCW mode;

◎P2-01	Position command filter selection	0X0201
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Initial value: 2

Control mode: 6,7

Unit: ~

Setting range: 0,1 (Can modify when servo OFF, will take effect by power off and restart)

Parameter function: 0: First stage inertial filtering

1: Smoothing filter

◎P2-02	Electronic gear ratio (molecular)	Actual number of received pulses	0X0202
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Initial value: 1

Control mode: Position control (internal position command)

Unit: ~

Setting range: 1~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: If the electronic gear ratio numerator is 1 and the denominator is 2, in the position internal command mode, the command pulse is set to 5000 (10000 pulses are required for the motor to make one revolution). After trigger pulse, the motor received real pulse is $1/2 \times 5000 = 2500$, so the motor should be rotated 1/4 circle.

◎P2-03	Electronic gear ratio (denominator)	Parameter command pulse number	0X0203
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Initial value: 1

Control mode: Position control (internal position command)

Unit: ~

Setting range:

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: If the electronic gear ratio numerator is 2 and the denominator is 1, in the position internal command mode, the command pulse is set to 5000 (10000 pulses are required for the motor to make one revolution). After trigger pulse, the motor received real pulse is $2 \times 5000 = 10000$, so the motor should be rotated 1 circle.

◎P2-04	Position command acceleration/deceleration time	0X0204
	Parameter (ms)	

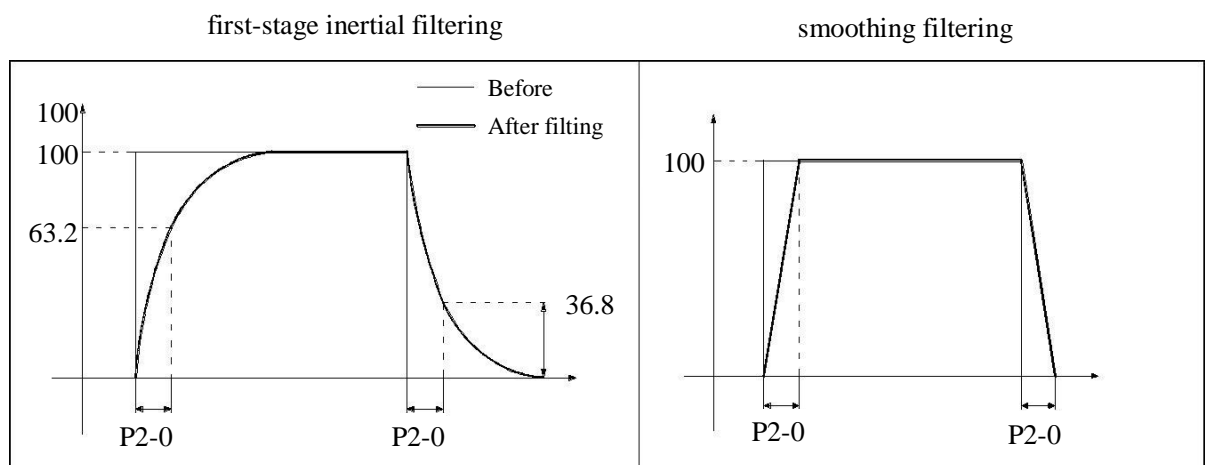
Initial value: 0

Control mode: 6

Setting range: 0~100

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The difference between P2-04 in the first-stage inertial filtering and smoothing filtering modes is as follows:



◎P2-05	Maximum number of rotations	Parameter reserved	0X0205
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◎P2-06	Command pulse frequency at rated speed	0X0206
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Initial value: 5000
Control mode: 7
Unit: 100Hz
Setting range: 1~10000
Modify effective time: “√”can modify at any time,will take effect immediately.
Parameter function: When P2-06 setting to 1000,the command pulse frequency corresponding to the rated speed is 100KHz.
When P2-06 setting to 300,the command pulse frequency corresponding to the rated speed is 30KHz.

◎P2-07	Speed command pulse filter time	0X0207
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Initial value: 20
Control mode: 7
Unit: 0.1ms
Setting range: 0~1000
Modify effective time: “√”can modify at any time,will take effect immediately.
Parameter function: When the command pulse frequency is relatively low, setting this parameter appropriately can reduce the fluctuation of the speed.

◎P2-08	PG number of divisions	Parameter reserved	0X0208
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◎P2-09	PG number of divisions	Parameter reserved	0X0209
---------------	-------------------------------	--------------------	---------------

◎P2-10	Command pulse input rate	0X020a
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Initial value:
Control mode:
Unit: ~
Setting range:
Modify effective time: “√”can modify at any time,will take effect immediately.
Parameter function: 0

◎P2-11	Parameter reserved	0X020b
---------------	---------------------------	---------------

◎P2-12	Position loop maximum value of given speed	0X020c
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Initial value: 0
Control mode: 5,6
Unit: rpm
Setting range: 0~65535

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Maximum speed limit for position control.

◎P2-13	Pulse positioning mark	0X020d
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Initial value: 0

Control mode:

Unit: ~

Setting range:

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function:

◎P2-14	Parameter reserved	0X020e
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◎P2-15	Parameter reserved	0X020f
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◎P2-20	OPR mode	0X0215
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Initial value: n.0000

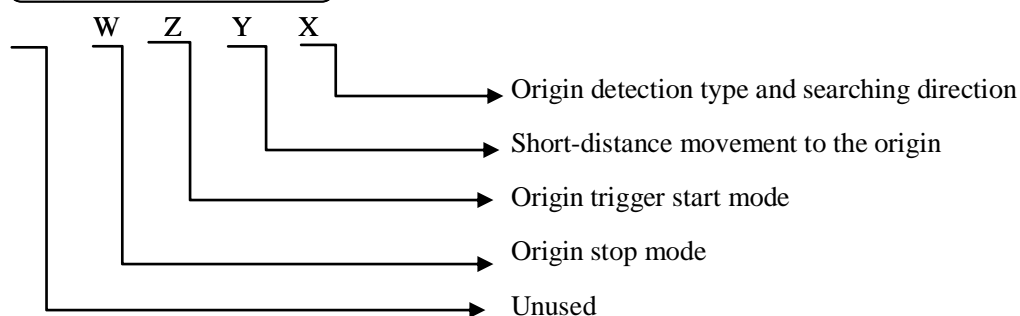
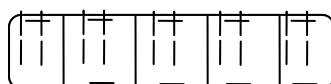
Control mode: ALL

Unit: ~

Setting range:

Modify effective time: “●”Can modify when servo OFF,will take effect when power off and restart

Parameter function:



X origin detection type and searching direction:
0:Forward direction origin back, /POT as back origin
1:Reverse direction origin back, /NOT as back origin
2:Forward direction origin back, /ORGP as back origin
3:Reverse direction origin back, / ORGP as back origin

The short distance movement of Y to the origin:
0: Return to find Z pulse when returning to origin
1: Not return when returning to origin, looking for Z pulse forward
2: Positioned at the detector origin or Z pulse during OPR
(When the setting value is 2, it can only be used with the origin detector type and the search direction setting value is 2, 3, 4 or 5)

Z origin trigger start mode:

0: Turn off the origin return function

1: When the power is turned on, the OPR Function is automatically executed.

2: Trigger origin return function by SHOM input

W origin stop mode setting:

0: After the origin detection is completed, the motor decelerates and pulls back to the origin.

1: After the origin detection is completed, the motor decelerates to stop in the forward direction.

◎P2-21	Origin return speed 1	0X0216
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Initial value: 1000

Control mode: OPR mode

Unit: rpm

Setting range: 1~2000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function:

◎P2-22	Origin return speed 2	0X0217
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Initial value: 0

Control mode: OPR mode

Unit: rpm

Setting range: 1~150

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function:

◎P2-23	OPR offset lap	0X0218
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Initial value: 0

Control mode: OPR mode

Unit: circle

Setting range: -9999~+9999

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function:

◎P2-24	OPR offset pulse number	0X0216
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Initial value: 0

Control mode: OPR mode

Unit: Puls

Setting range: -9999~+9999

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function:

P3-XX Speed parameter

◎P3-00	Rated speed corresponds to analog	0X0300
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Initial value: 1000

Control mode: 4

Unit: 0.01V

Setting range: 150~3000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Set the speed command voltage (V-REF) required to operate the servo motor at the rated speed

Eg: P3-00=500 means the motor is running at rated speed when the analog input voltage is 5.00V.

P3-00=800, means when the analog input voltage is 8.00V, the motor runs at the rated speed.

◎P3-01	Internal speed setting 1	0X0301
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Initial value: 0

Control mode: Speed control (internal speed setting selection)

Unit: r/m(rpm)

Setting range: -3000~3000

Modify effective time: “√”can modify at any time, will take effect immediately.

Parameter function: set value of speed 1

◎P3-02	Internal speed setting 2	0X0302
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Initial value: 0

Control mode: Speed control (internal speed setting selection)

Unit: r/m(rpm)

Setting range: -3000~3000

Modify effective time: “√”can modify at any time, will take effect immediately.

Parameter function: set value of speed 2

◎P3-03	Internal speed setting 3	0X0303
---------------	---------------------------------	---------------

Initial value: 0

Control mode: Speed control (internal speed setting selection)

Unit: r/m(rpm)

Setting range: -3000~3000

Modify effective time: “√”can modify at any time, will take effect immediately.

Parameter function: set value of speed 3

◎P3-04	JOG speed	0X0304
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Initial value: 100

Control mode: JOG main mode: 2

Unit: r/m(rpm)

Setting range: 0~10000

Modify effective time: “√”can modify at any time, will take effect immediately.

Parameter function: Use when testing and no load is connected.

◎P3-05	Soft start acceleration time	0X0305
---------------	-------------------------------------	---------------

Initial value: 0

Control mode: 3,4,7

Unit: 1ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Setting the appropriate acceleration time can prevent motor shake caused by excessive acceleration, but note that setting value too large will affect the system response time.

◎P3-06	Soft start deceleration time	0X0306
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Initial value: 0

Control mode: 3, 4,7

Unit: 1ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Setting the appropriate deceleration time can prevent motor shake caused by excessive deceleration, but note that setting value too large will affect the system response time.

◎P3-07	Speed command filter time parameter	0X0307
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Initial value: 0

Control mode: 3,4,5,6,7

Unit: 0.01ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: The speed command input is through the primary delay filter to smooth the speed command. If the setting value is too large, will reduce responsiveness.

◎P3-08	Speed feedback filter time parameter	0X0308
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Initial value: 20

Control mode: 3,4,5,6,7

Unit: 0.01ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Smoothing the feedback of the speed. If the setting value is too large, the speed feedback will be distorted, which will affect the control effect.

◎P3-09	Maximum operating speed	0X0309
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Initial value: 4000

Control mode: ALL

Unit: rpm

Setting range: 0~5000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: No matter what mode the motor is running, the running speed will not exceed this parameter setting value

P4-XX Torque Parameter

◎P4-00	The rated torque corresponds to the analog	0X0400
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Initial value: 1000

Control mode: 2

Unit: 0.01V

Setting range: 150~3000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Set the speed command voltage (T-REF) required to operate the servo motor at the rated speed

Eg: P4-00=500, means the motor is running at rated torque when the analog input voltage is 5.00V.

P4-00=800, means the motor is running at rated torque when the analog input voltage is 8.00V.

◎P4-01	Torque command filter time parameter	0X0401
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Initial value: 0

Control mode: 1,3,5,6,7

Unit: 0.01ms

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: The torque command input is through the primary delay filter to smooth the torque command. If the setting value is too large, will reduce responsiveness.

◎P4-02	Internal positive torque limit	0X0402
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Initial value: 300

Control mode: Non-torque mode

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time, will take effect immediately.

Parameter function: This parameter is always valid. If the value is smaller than the external torque limit value, the final limit value is based on this value; This value's Unit is % relative to the rated motor torque. The 300% rated torque is set as default, and the actual output maximum torque will vary depending on the model.

◎P4-03	Internal counter torque limit	0X0403
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Initial value: 300

Control mode: Non-torque mode

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time, will take effect immediately.

Parameter function: This parameter is always valid. If the value is smaller than the external torque limit value, the final limit value is based on this value; This value's Unit is % relative to the rated

motor torque. The 300% rated torque is set as default, and the actual output maximum torque will vary depending on the model.

◎P4-04	External positive torque limit	0X0404
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Initial value: 100

Control mode: Non-torque mode

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: The external torque limit is used when mechanical operation or torque limit is required at a certain timing. For example, it is used for applications such as pressing stop motion or robot workpiece holding.

◎P4-05	External counter torque limit	0X0405
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Initial value: 100

Control mode: Non-torque mode

Unit: 1%

Setting range: 0~300

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: the same as external positive torque limit

◎P4-06	Emergency stop torque	0X0406
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Initial value: 300

Control mode: ALL

Unit: 1%

Setting range: 0~300

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: If this Parameter setting is too small, it will cause the motor stop slowly.

◎P4-07	Speed limit during torque control	0X0407
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Initial value: 2000

Control mode: 1,2

Unit: rpm

Setting range: 0~5000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Even if the setting value of this parameter is greater than the rated speed, the actual speed limit which take effect is still the rated speed.

◎P4-08	Torque type Function switch	Parameter reserved	0X0408
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◎P4-09	Internal torque given	0X0409
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Initial value: 0

Control mode: 1

Unit: 1%

Setting range: -300~ 300

Modify effective time: “√”can modify at any time,will take effect immediately.

Parameter function: Torque during torque control (internal setting).

P5-XX Input and output signal settings

◎P5-00	Positioning completion width	0X0500
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Initial value: 7

Control mode: 5,6

Unit: 1 pulse command

Setting range: 0~250

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: When the pulse deviation value is lower than this parameter, output the positioning completion signal (/COIN). The pulse deviation value can be monitored by ParameterU-08.

◎P5-01	Zero clamp speed/ZCLAMP	0X0501
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Initial value: 10

Control mode: 3,4,7

Unit: rpm

Setting range: 0~300

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function:The superior device, using the "speed command" input, will us this function in the case of a system without a "position loop".This means even input voltage of the speed command "V-REF" is not "0V",still need to use it when the motor is stoped and the servo is locked. When the "zero clamp" Function is set to "ON", the position loop is temporarily placed inside, so the motor clamps within ± 1 pulse at this position. Even if it is rotated by an external force, it will return to the zero clamp position.

◎P5-02	Rotation detection speed/TGON	0X0502
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Initial value: 20

Control mode: ALL

Unit: rpm

Setting range: 1~1000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: Set the condition range of the rotation detection output.When the servo motor rotation speed reaches the P5-02 setting value or more, it is judged that "the servo motor is rotating" and output the rotation detection output (/TGON).

◎P5-03	Synchronous speed signal detection width	0X0503
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Initial value: 10

Control mode: 3,4,7

Unit: rpm

Setting range: 1~250

Modify effective time: “○”can modify when servo OFF, and take effective by servo restart

Parameter function: The absolute value of the difference between the motor speed and the command speed. If the actual detected value is lower than the set value of P5-03, the /V-CMP synchronous speed signal is output.

◎P5-04	Proximity output signal width/NEAR	0X0504
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Initial value: 50

Control mode: 5,6

Unit: 1 instruction

Setting range: 0~10000

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: When the servo driver's pulse deviation value is lower than this parameter, the positioning proximity signal (/NEAR) is output. Please set this parameter value larger than the positioning completion width. The pulse deviation value can be monitored via the Parameter U-08.

◎P5-05	Deviation pulse limit	0X0505
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Initial value: 1000

Control mode: 5,6

Unit: 256 instruction pulses

Setting range: 0~65535

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: During position control, an alarm will occur when the offset pulse exceeds a certain limit. This threshold is the deviation pulse limit. When the deviation pulse limit is 0, the offset pulse will not be detected.

◎P5-06	Servo OFF delay time (brake command)	0X0506
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Initial value: 0

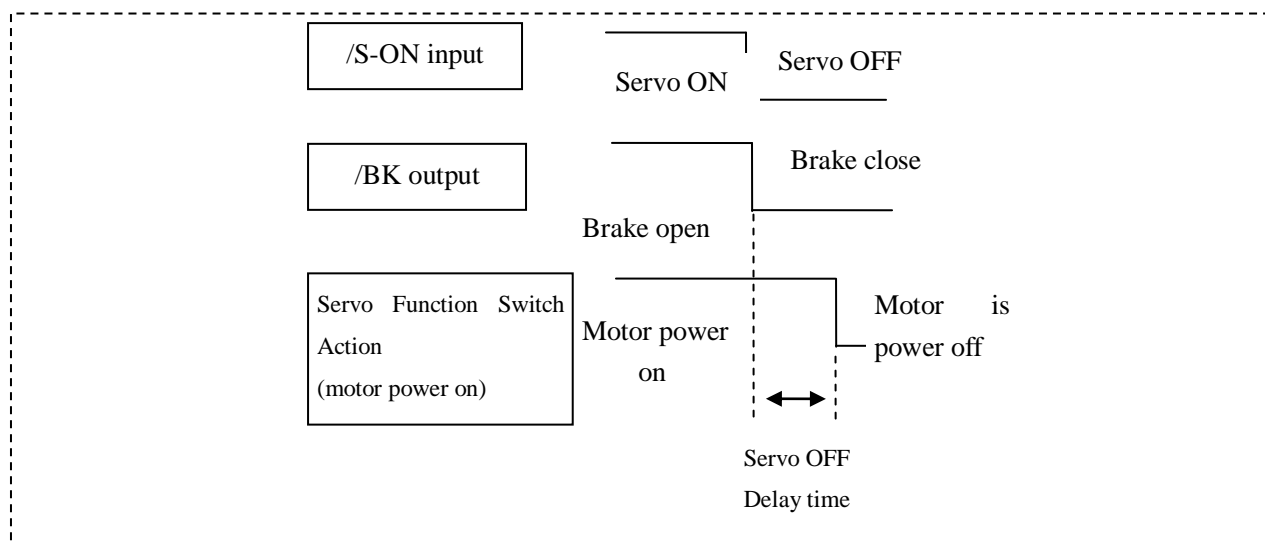
Control mode: ALL

Unit: ms

Setting range: 0~500

Modify effective time: “○”can modify when servo OFF, and take effective by servo ON

Parameter function: When using a servo motor with a brake, control the brake output signal "/BK" and the servo OFF action (motor output stop) time.



The standard setting is that the servo turned OFF when /BK output (brake action) and when the servo OFF, the motor immediately enters no power state(no torque output). According to the mechanical configuration and the characteristics of the brake,there is a slight time difference between the output of the /BK signal and the brake action. During this time, the motor does not output torque and the brake does not braking, so the workpiece will have tiny movement by gravity. At this time, by setting parameter of delay the servo OFF action, to ensure that the motor has entered the power off state after the brake has been braked, thereby eliminating the movement. Note: The setting made here is the time when the rotation detection TGON is invalid and in the motor stopped state.

◎P5-07	Brake command output speed	0X0507
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Initial value: 100

Control mode: All

Unit: rpm

Setting range: 0~5000

Modify effective time: “○”can modify when servo OFF , and take effective by servo ON

Parameter function: Reduce the servo motor speed to the set value during rotation.

◎P5-08	Brake command waiting time	0X0508
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Initial value: 500

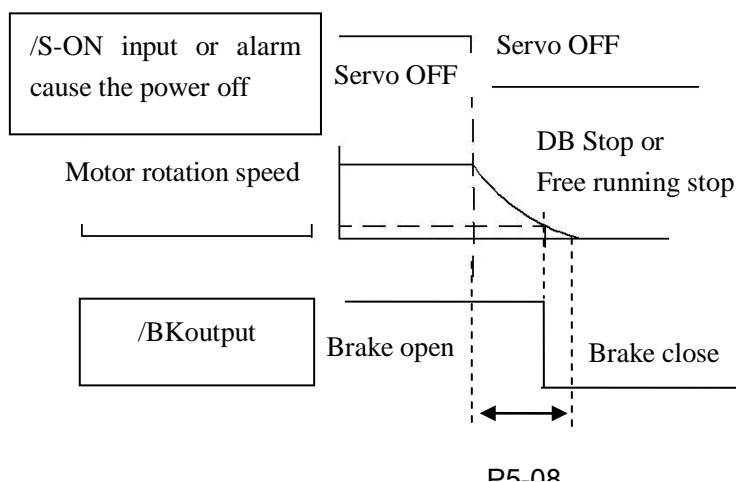
Control mode: All

Unit: 1ms

Setting range: 0~500

Modify effective time: “○”can modify when servo OFF , and take effective by servo ON

Parameter function: In using a servo motor with a brake, setting the brake time when the servo OFF due to the input of the signal "/S-ON" during the motor rotation or the alarm occurred



Since the brake of the servo motor is designed for position maintenance, it must be activated at the appropriate time when the motor is stopped. Adjust the parameters while watching the motion of the machine.

The condition that the /BK signal in the motor rotation is turned from ON to OFF is as follows (Take effect by any condition below):

- 1) When the servo is turned off, the motor speed is below the set value of P5-07;

2) When the servo is turned OFF, the set time is exceeded of P5-08 value.

In the "P5-07", even if the speed is set above the MAX speed, the actual speed value is only the MAX speed (P3-09).

◎P5-09	Parameter reserved	0X0509
◎P5-10	H: /S-ON L: Input signal distribution mode	0X050a

Initial value: n. 01 01

(H L)

Control mode: All

Unit: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function:

H: 00: Set the signal to always be invalid 01: Input positive signal from SI1 terminal
 02: Input positive signal from SI2 terminal 03: Input positive signal from SI3 terminal
 04: Input positive signal from SI4 terminal 05: Input positive signal from SI5 terminal
 06: Input positive signal from SI6 terminal 07: Input positive signal from SI7 terminal
 08: Input positive signal from SI8 terminal
 80: Set the signal to always be active 81: Input reverse signal from SI1 terminal
 82: Input reverse signal from SI2 83: Input reverse signal from SI3
 84: Input reverse signal from SI4 85: Input reverse signal from SI5
 86: Input reverse signal from SI6 87: Input reverse signal from SI7

L: 00: External input is completely based on factory settings, the setting of **P5-10.H~P5-19.H** is invalid

01: External input signal can be set freely, the setting of **P5-10.H~P5-19.H** is valid.

◎P5-11	L:/P-CON Proportional action instruction H:/P-OT Prohibit forward drive	0X050b
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Initial value: n. 03 02

(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

L: P-CON Proportional action instruction

The signal is valid: it is operated in P (proportional) control mode (the jog caused by the drift of the speed input command can be reduced, but at the same time the rigidity of the servo motor will decrease, and the output torque will be small when stopped)

Invalid signal: run in PI (proportional integral) control mode

H: /P-OT Prohibit forward drive

◎P5-12	L:/N-OT Prohibit reverse drive is H:/ALM-RST Alarm clear	0X050c
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Initial value: n. 05 04
(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

◎P5-13	L:/P-CL Forward side external torque limit H:/N-CL Reverse side external torque limit	0X050d
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Initial value: n. 07 06
(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

◎P5-14	L:/SPD-D Internal setting speed rotation direction selection H:/SPD-A Internal set speed selection	0X050e
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Initial value: n. 00 00
(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

◎P5-15	L:/SPD-B Internal set speed selection H:/C-SEL Control mode selection	0X050f
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Initial value: n. 00 00
(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

◎P5-16	L:/ZCLAMP Zero clamp	0X0510
	H:/INHIBIT Command pulse prohibition	

Initial value: n. 00 00

(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

◎P5-17	L:/G-SEL Gain switching	0X0511
	H:/CLR Pulse deviation clear	

Initial value: n. 00 00

(H L)

Control mode: All

Unit: ~

Setting range:

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.H

◎P5-18	L:/ORGP Origin detection signal	0X0512
	H:/CTRG Pulse trigger	

Initial value: n. 00 00

(H L)

Control mode: Origin mode

Unit: ~

Setting range: ~

Modify effective time: “●” can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.L

◎P5-19	L:/SHOM Find the origin	0X0513
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	H:Parameter reserved	
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Initial value: n. 00 00

(H L)

Control mode: Origin mode

Unit: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-10.L

◎P5-21	L:/COIN Positioning finish	0X0514
	H:/V-CMP Synchronous speed detection	

Initial value: n. 00 01

(H L)

Control mode: ~

Unit: ~

Setting range:

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function:

L:00: No output to terminal

01: Output positive signal from SO1 terminal

02: Output positive signal from SO2 terminal

03: Output positive signal from SO3 terminal

03: Output positive signal from SO3 terminal

04: Output positive signal from SO4 terminal

81: Output reverse signal from SO1 terminal

82: Output reverse signal from SO2 terminal

83: Output reverse signal from SO3 terminal

84: Output reverse signal from SO4 terminal

H: The same as P5-21.L

◎P5-22	L:/TGON Rotation detection	H:/S-RDY Ready	0X0515
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Initial value: n. 00 00

(H L)

Control mode: ~

Unit: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

◎P5-23	L:/CLT Torque	H:/VLT Speed limit detection	0X0516
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Initial value: n. 00 00
(H L)

Control mode: ~

Unit: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

◎P5-24	L:/BK Brake	H:/WARM Warning	0X0517
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Initial value: n. 00 00
(H L)

Control mode: ~

Unit: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

◎P5-25	L:/NEAR Approaching	H:/ALM Alarm	0X0518
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Initial value: n. 02 00
(H L)

Control mode: ~

Unit: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

◎P5-26	L:/HOM Complete	0X0519
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Initial value: n. 00 04
(H L)

Control mode: ~

Setting range: ~

Modify effective time: “●”can be modified at any time, and will take effect by power off and restart.

Parameter function: The same as P5-21.L

7.4 Un-XX Monitor parameters

Monitoring code	Content	Unit	Modbus address
Un-00	Actual motor speed	rpm	0X700
Un-01	Input speed command	rpm	0X701
Un-02	Internal torque command	1%	0X702

Un-03	Rotation angle (physical angle)	0.1°	0X703
Un-04	Rotation angle (electrical angle)	0.1°	0X704
Un-05	bus voltage	V	0X705
Un-06	Module temperature	0.1°C	0X706
Un-07	Input command pulse speed	rpm	0X707
Un-08	Offset command pulse value	*1	0X708
Un-09	Offset command pulse value	*10000	0X709
Un-10	Rotation angle (encoder value)	*1	0X70A
Un-11	Rotation angle (encoder value)	*10000	0X70B
Un-12	Pulse number of input command	*1	0X70C
Un-13	Pulse number of input command	*10000	0X70D
Un-14	Pulse number of feedback command	*1	0X70E
Un-15	Pulse number of feedback command	*10000	0X70F
Un-16	Current position(Cumulative value)	*1	0X710
Un-17	Current position(Cumulative value)	*10000	0X711
Un-18	Current current, 1 decimal place	0.1A	0X712
Un-19	Analog input V-REF value	0.01V	0X713
Un-20	Analog input T-REF value	0.01V	0X714
/	Current alarm code	/	0X716