

AC servo CZ-A series

Technical Manual

Prologue

Thanks for using our product. This Operation Manual provides the information of CZ-A series servo motor drivers and AM series servo motor, including:

- Servo motor drivers and servo motor installation and inspection
- Servo motor drivers' structure
- servo motor drivers' operational steps
- control function introduction and adjustment
- Parameters instructions
- Communications Protocol instructions
- Inspection and maintenance
- Exception elimination
- application instance

This manual is intended for:

- Servomechanism System designers
- Installation and wiring personnel
- Commissioning and operation personnel
- Maintenance and inspection personnel

Please read this manual carefully before using our product, in order to ensure correct usage. In addition, please place it in an appropriate and safe place to keep it handy for reference. Please follow the instructions before you finish reading this manual:

- It is installed on the security environment of moisture-proof and anti-corrosion and anti-explosive
- Make sure it goes exactly according to wiring instructions
- Do not disassemble the motor drivers
- Do not touch the motor or wiring when current is on
- Do not touch the radiator in case of burning when the current is on

Any other questions when using the product, please contact our company appointed agent or service center.

Products Attention Notice

This section make the introduction the important matters that the user must comply with it,such as the product delivery confirmation, custody and handling, installation, wiring, operation and check, discarding.

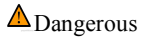
Safety notification



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 may 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 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.



Dangerous

Indicates an error in use, it will lead to dangerous situations, and result in minor or moderates personal injury, do damage to equipment.

✧ **Storage and transportation**

- 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 ℃ 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

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Chapter 1 Unpacking Check and Model Explanation

1.1 Product Inspection

In order to prevent the product in the packaging and transport of omissions, please carefully check these items:

- Is it the product you purchased: You can find the side of drive machine body , please refer to model description.
- Check the appearance of the product is normal or damaged: if a strong external impact marks, or product has damage after fall.
- Motor is normal: you can smoothly rotate the motor shaft by hand showed normal. However, with an electromagnetic brake motor can not be turned by hand.
- Screw is loose: loose or fall off, please make it tighten.

If any of the above, please contact with agents

Complete and workable AC servo system should include:

- Servo drives
- Servo motors.
- UVW power lines
- Encoder line
- Input and output signal lines (optional)

1.2 Model

1.2.1AMS Motor Model Description

AMS-80-M 02430

AMS: Motor Series Name

80: Frame

M: optical encoder

02430: the first three rated torque, the latter two represent the rated speed

Dock No.		
Feedback element code	M	Optical encoder
Performance parameters	Code Model	Parameters
	01330	Rated torque 1.3 N · m, rated speed 3000rpm;
	02430	Rated torque 2.4 N · m, rated speed 3000rpm;
	04030	Rated torque 4.0 N · m, rated speed 3000rpm;
	05030	Rated torque 5.0 N · m, rated speed 3000rpm;
	06025	Rated torque 6.0 N · m, rated speed 2500rpm;
	10015	Rated Torque 10.0N · m, rated speed 1500rpm;

1.2.2 Driver Model Description

CZ-A-07-23-L

CZ: series code, CZ

A: Serial Number: A = A series, B = B series, C = C series, D = D Series

07: Output power: 04 = 0.4KW, 07 = 0.75KW, 10 = 1.0KW, 15 = 1.5KW, 20 = 2.0KW, 23 = 2.3KW,

27 = 2.7KW, 30 = 3.0KW

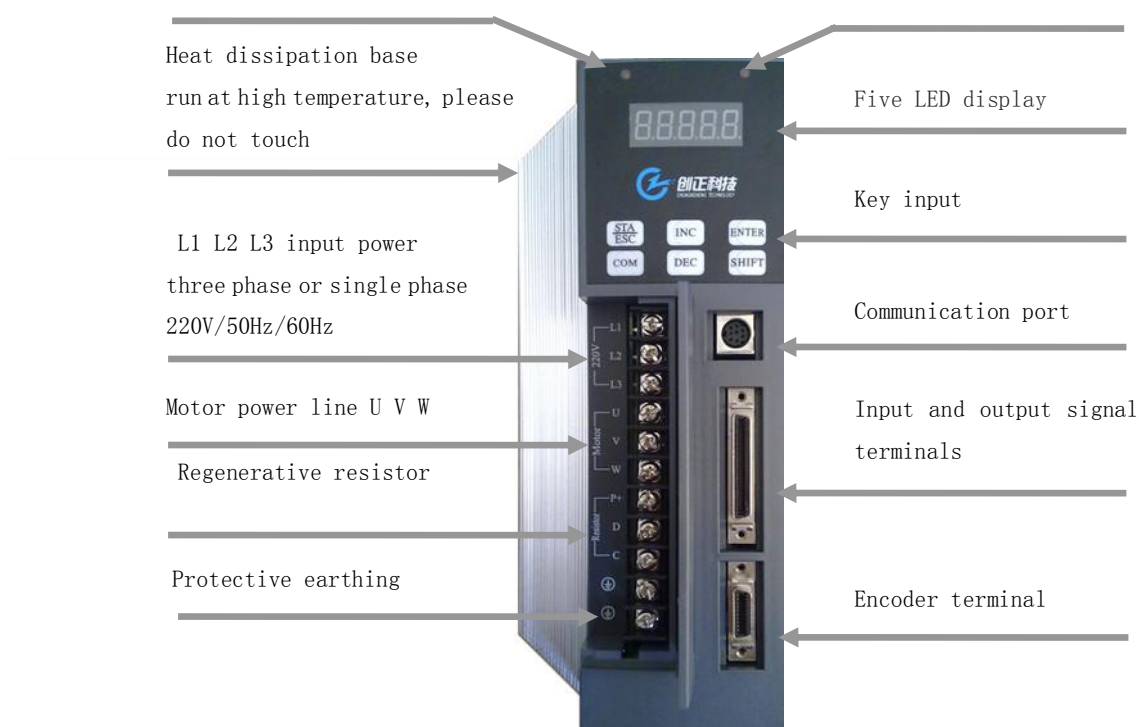
23: Input voltage: 21 = 220V single phase, 23 = 220V three-phase, 33 = 380V three-phase

L: the version number

1.3 driver and motor model reference

Servo drives Model	Drive Specifications (Output voltage/current)	Adaptive servo motor specifications				
		Dock (mm)	No.	Maximum rated power (kW)	Maximum rated torque (Nm)	maximum rated speed (r / min)
CZ-A0423L	220V/2.8A	60		0.4	1.27	3000
CZ-A0723L	220V/3A	80	90	0.75	2.39	3000
CZ-A1023L	220V/4.4A	80	90 130	1.0	4	2500
CZ-A1223L	220V/5A	110		1.2	4	3000
CZ-A1523L	220V/6A	110	130	1.5	5	3000
CZ-B2023L	220V/7.5A	130		2	7.7	2500
CZ-B2323L	220V/9.5A	130		2.3	15	1500
CZ-B2723L	220V/10.5A	180		2.7	17.2	1500
CZ-C2733L	380V/6.5A	180		2.7	17.2	1500
CZ-C3033L	380V/7.5A	180		3.0	19	1500

1.4 Driver Appearance



Chapter 2 Installation

2.1 Precautions

Please pay special attention to the following users:

- 1) Connect the drive to the motor can not be tightened;
- 2) fixed drive, you must make sure to fasten each fixed point;
- 3) with the device axis motor shaft must be a good shot of the heart;
- 4) If the drive and motor connections over 20 meters, in the bold UVW cable and encoder connections must be bold;
- 5) four motor mounting screws must be tightened.

2.2 Storage Conditions

The product must be placed before installation in the shipping carton, if the machine is not in use, in order for the product to comply with the Company's

Warranty and future maintenance, storage is important to note the following:

- 1) must be placed no dust, dry location.
- 2) Store within an ambient temperature must be between -20 °C to +65 °C range.
- 3) Store within a relative humidity of 0% to 90% range, and no condensation.
- 4) Do not store in corrosive gases and liquids in the environment.
- 5) Correctly packaged and placed on a shelf or countertop.

2.3 Installation Conditions

This product drive uses an ambient temperature of 0 °C ~ 55 °C. If the ambient temperature exceeds 45 °C or more, please put a well-ventilated place. Long run suggestions below 45 °C ambient temperature to ensure product reliability. If the product is installed in the power distribution box, distribution box that size and ventilation conditions must allow the use of electronic devices of all internal no risk of overheating. But also pay attention to the machine's vibration will affect the distribution box electronic devices. In addition, the conditions of use are also included:

- 1) place the device without high fever;
- 2) no water droplets, vapors, dust, dirt and oily places;
- 3) non-corrosive, flammable gas, liquid place;
- 4) no floating dust and metal particles place;
- 5) strong vibration-free place;
- 6) no electromagnetic noise of the place.

2.4 Installation and Space

Please strictly follow the prescribed direction and installation in correct way, so as not to cause unnecessary loss!

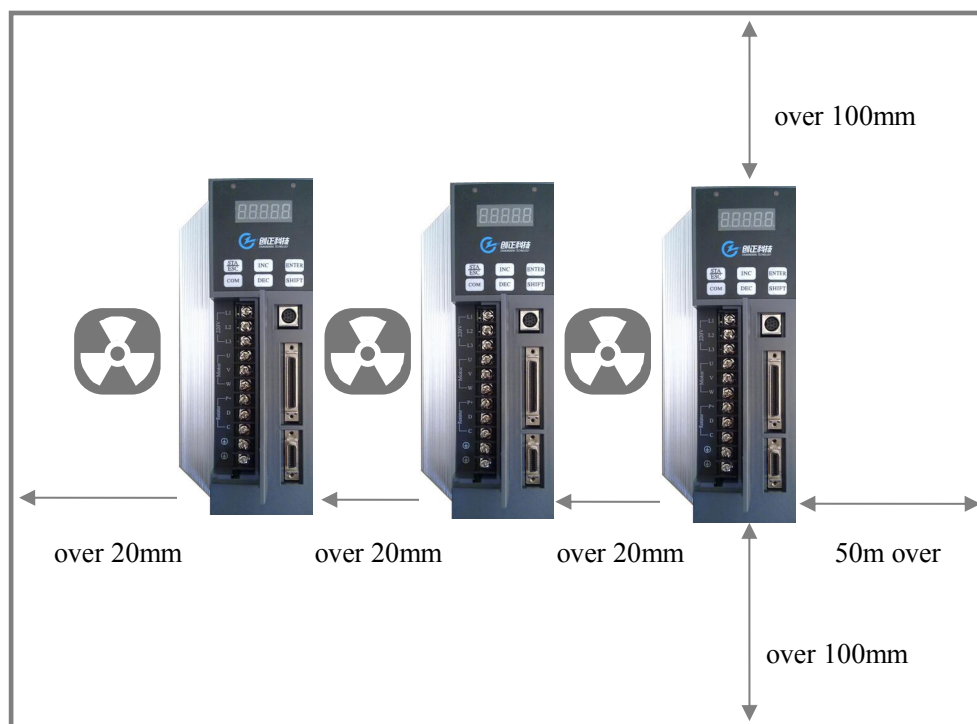


correct installation



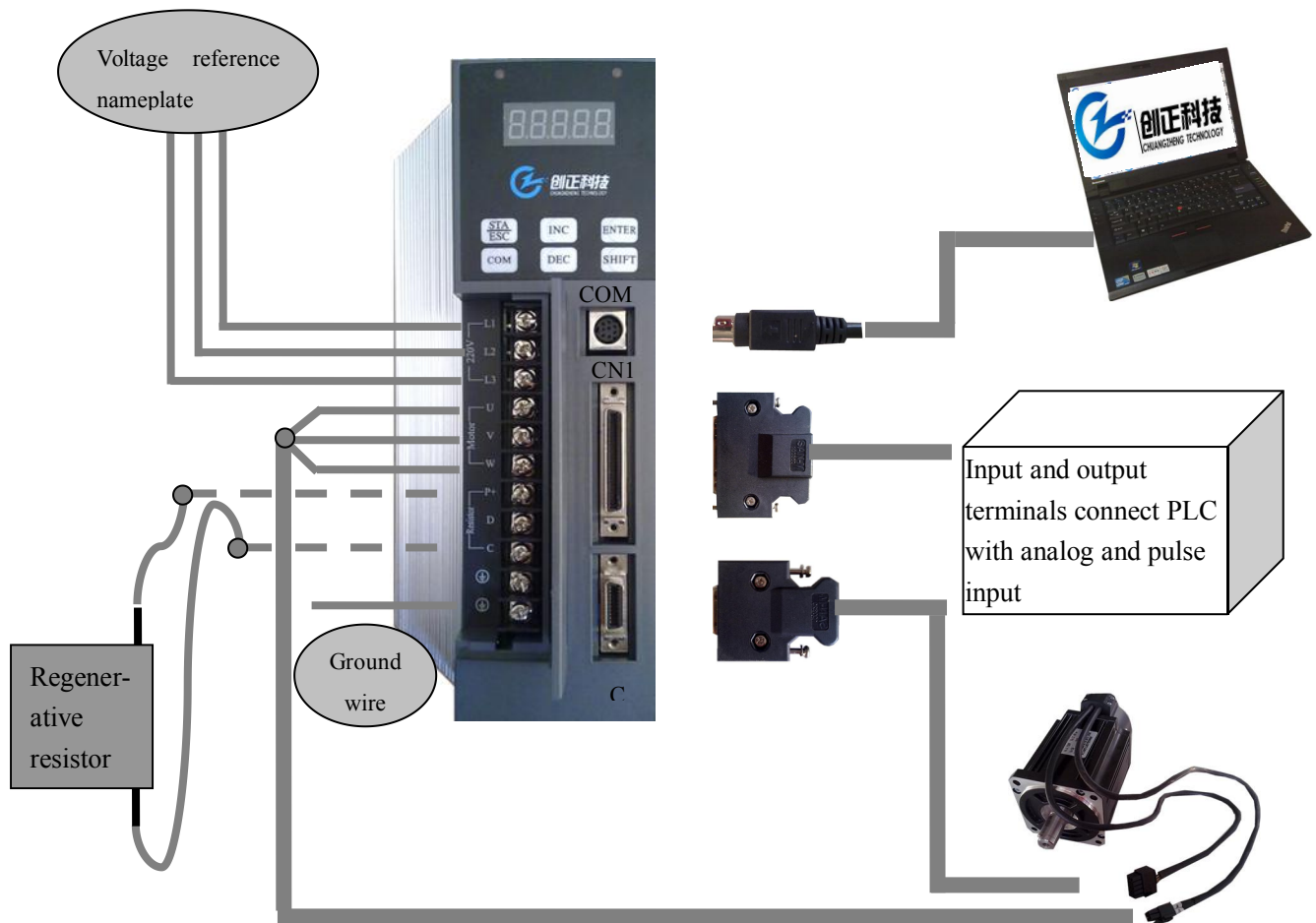
wrong installation

The installation spacing must be strictly in accordance with the relevant provisions, to ensure good ventilation, heat dissipation.



Chapter 3 Wiring

3.1 Servo System Diagram

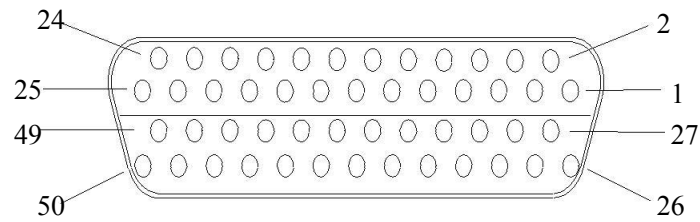


3.2 Drive terminals and wiring instructions

Terminal Symbol	Name	Function
L1 L2 L3	Power terminal	three / single-phase AC 220V ~ 240V 50/60Hz
U V W	Motor power line terminals	connected to the motor
P+ D C	regenerative braking resistor	Regenerative resistor connection terminals, external resistor connected between P + and C
	Ground terminal	Connect the power ground wire and grounding protection
CN1	input and output terminal	Lead from input and output signals DI / DO terminal
CN2	encoder terminals	encoder terminals to the motor encoder
COM1	communication port	to communicate with the host computer 485 , supports RS232 communication

3.3 CN1 input and output signal lines and terminal description

3.3.1 CN1 connector terminal arrangement is as follows (see facing lug):



Interface	Name	Interface	Name	Interface	Name	Interface	Name
		1	SO1			26	SI-COM
2	SO1-COM	3	SO2	27	SI-COM	28	SI1
4	SO2-COM	5	SO3	29	SI2	30	SI3
6	SO3-COM	7	SO4	31	SI4	32	SI5
8	SO4-COM	9	SO4	33	SI6	34	SI7
10	SO4-COM	11		35	AGND	36	AGND
12		13		37	V-REF	38	T-REF
14		15	PULS	39	-10V	40	+10V
16		17	PULS +5V	41	485 communication A	42	485 communication B
18		19	PULS +24V	43		44	
20		21	DIR	45	B+	46	B-
22	ZOC-COM	23	DIR +5V	47	A+	48	A-
24	ZOC	25	DIR +24V	49	Z+	50	Z-

3.3.2 Input and output signal wiring

Servo unit input and output signals as well as its connection with the host device instance as follows.

Analog input circuit

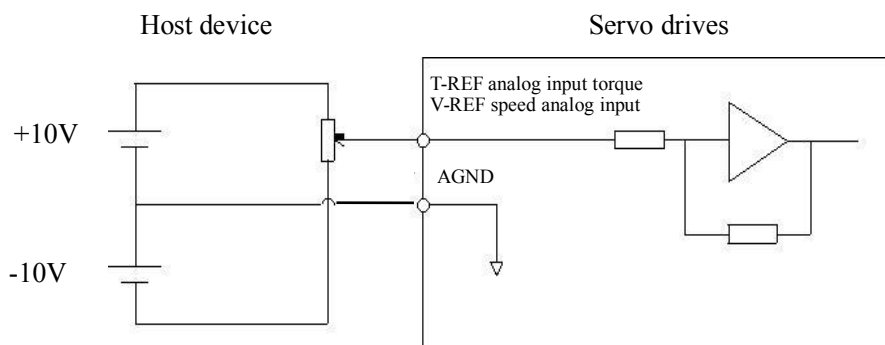
Applicable modes: Speed control (analog voltage) P0-01 Parameter 4

: Torque control (analog voltage) P0-01 Parameters 2

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

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

Analog input circuit

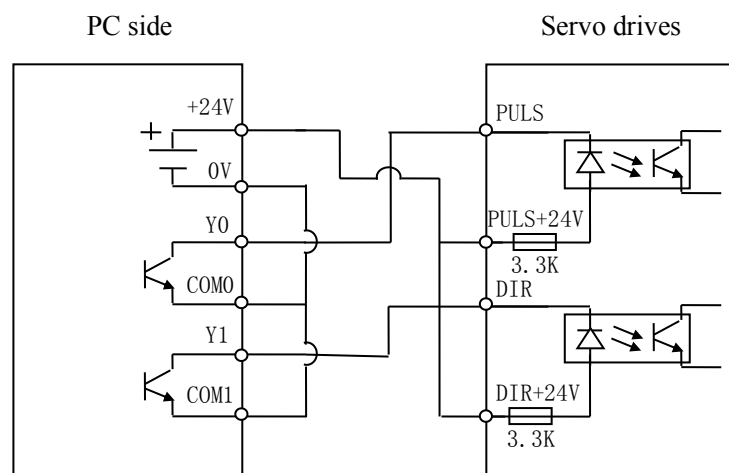


(2)Pulse input circuit

Applicable modes: Position control (external pulse) P0-01 parameter 6

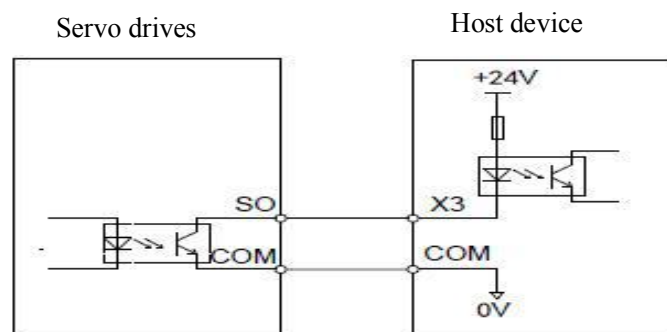
: Speed control (external pulse) P0-01 parameter 7

Pulse command input wiring

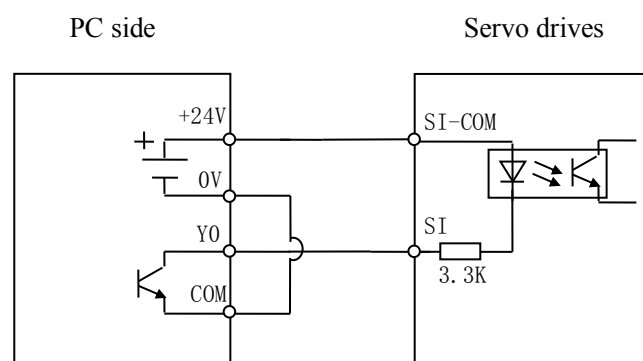


(3) Input and output signal circuits

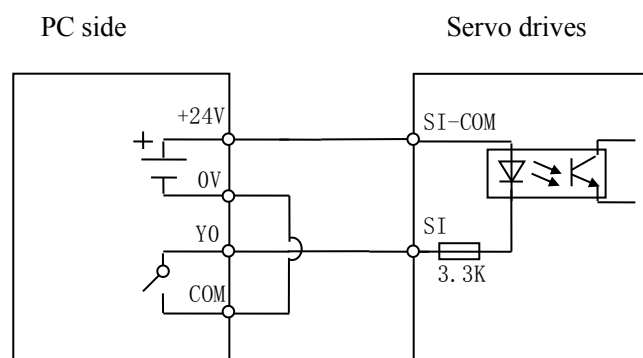
Optocoupler output circuit



Open-drain input

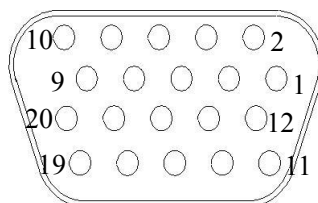


Relay input



3.4CN2 encoder wiring and terminal description

CN2 connector terminal arrangement is as follows (see facing lug):



Drive interface	Name	Drive interface	Name	Drive interface	Name	Drive 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

3.5 Communication port

COM connector terminal arrangement is as follows (see facing lug):

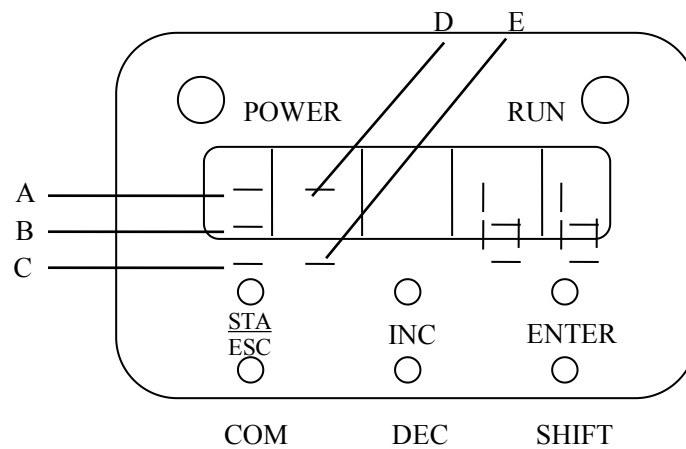


(8 芯 DB 接口) 8-pin DB connector

Pin No.	Name	Introduction
1	A	RS485-A
3	B	RS485-B
4	RXD	RS232 receiver
5	TXD	RS232 transmitter
8	GND	RS232 ground

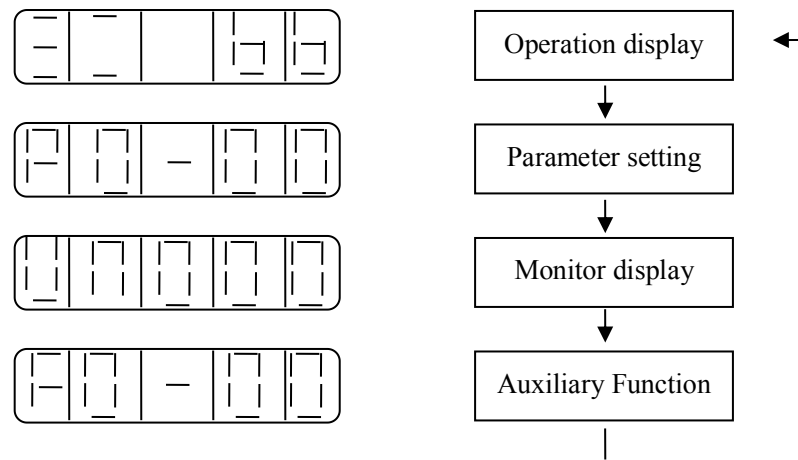
Chapter 4 Display and Operation

4.1 Introduce the panel



Name	Function
STA/ESC	State switching , return
INC	Display data plus , long press increases continuously
DEC	Display data reduction , long press continuously decreases
ENT	Enter key,to enter the set parameters, see Parameters
SHIFT	Shift
COM	Custom Key
POWER LED light	Lights up when power is controlled
Running Indicator RUN	Llluminates when the servo operation (S-ON signal is active)
A	Speed control:with speed detection , position control: the end of the positioning
B	Speed Control: Torque limit , position control : close
C	Speed Control: rotation detection , position control: Rotation Detection
D	Speed control: zero clamping
E	Speed control: Speed Limit

4.2 Basic state switch



Press the STA / ESC key, each state according to the order shown in the figure on the switch .

Parameter settings

Monitoring status

Accessibility Help

a. System Information View F0

b. Torque / speed command offset adjustment F1

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

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 debugging. Press the STA / ESC to return to exit the COE, restore panel monitor .

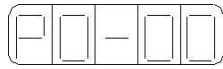
e. Restore factory defaults F4

Select F4-00 to enter the factory default settings , suggesting rEt -, set in a wait state , press Ent settings, wait for the prompt rEt-E, set up , power on again and restore the factory defaults.

4.3 Parameter setting method

In this tell us about the user parameter P2-09 to change the content from the 2000 to 1000 time steps.

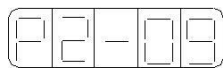
1.Press the STATUS / ESC key to switch to the parameter setting mode, press the ENTER key to enter the state.



2.At this time, the number of the first two left LED flashes, press INC or DEC key to modify the group number , to read three short press ENTER to confirm .



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



4.In this case, display the data in P2-09 , the lowest bit is "0 " flashes , then press the ENTER key allows the blinking digit to the left one . Press INC , DEC or ENTER key , the data is changed to 3000 , press ENTER to confirm the modification.



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

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

4.4 Brief description code display

Simple code display	display
	Standby mode Servo OFF status . (Motor is not energized)
	Operation Servo -like . (Motor power)
	Forward disabled . Moving . States P-OT OFF state. Refer to " overtravel set ."
	Reverse Run Prohibited N-OT OFF state. Refer to " overtravel Settings"

Chapter5 Trial and commissioning steps

5.1 No-load detection

In order to avoid the servo drive or cause injury mechanism, turn the servo motor connected to the load is removed (including servo motor shaft

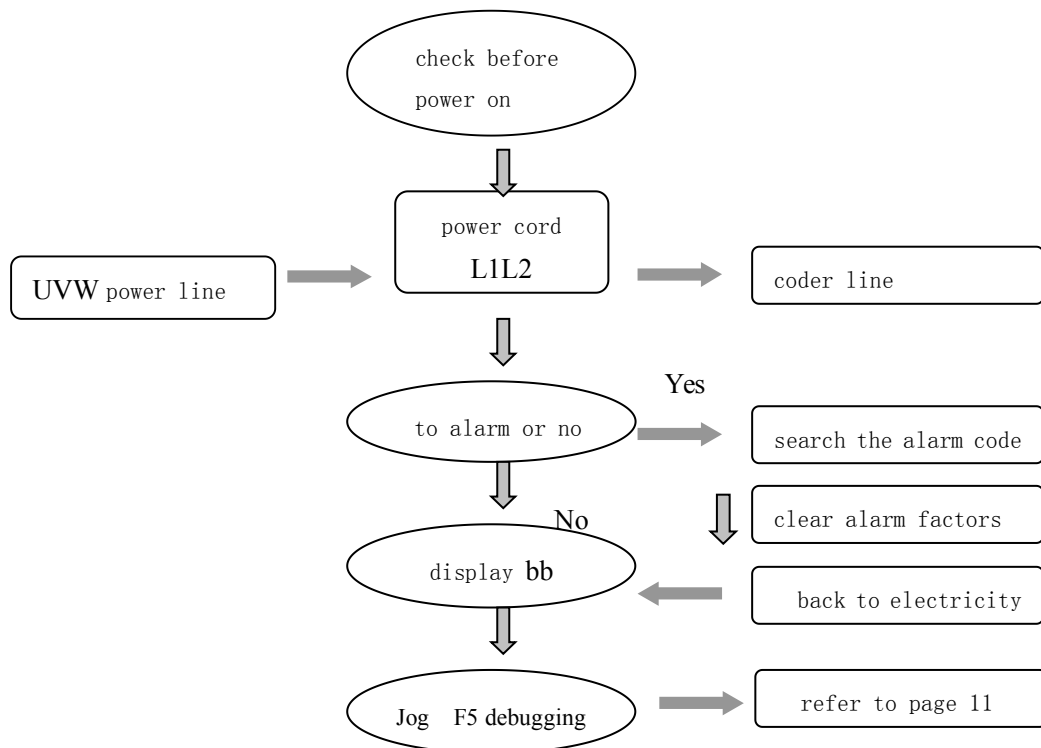
Heart couplings and related accessories, the main purpose is to avoid the servo motor during operation, with the dismantling of the motor shaft is not

Pieces flying off, indirectly causing personal injury or equipment damage). If you remove the servo motors are connected load, based on normal operating procedures, enabling the normal operation of the servo motor up, after which the load can be connected to the servo motor.

Test items:

Before starting the test (Disconnect the power)	● to ensure servo drives and motors without mechanical damage ● To ensure Terminal wiring is reliable, there is no risk of electric shock ● To ensure complete and accurate wiring ● Ensure the external input signal standard ● To ensure that no other errors and dangers
Runtime detection (Energized enabled)	● make sure the wires are not pulled in operation and wear ● Whether the motor has a strong voice jitter or abnormal ● Indicator is normal or Abnormal ● Whether the alarm display, please follow the alarm if the alarm code lookup table alarm parameters, factors excluded alarm to clear the alarm ● Make sure when modifying parameters and parameter modification effective time ● Whether the implementation of the preset modes and parameters

5.2 Servo Power



Chapter 6 Parameters and Functions

6.1 Parameter definition

There are 9 parameters of CZ series Servo driver:

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

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

Position parameter: P2-XX (Basic parameters when position mode is used)

Speed parameter: P3-XX (Basic parameters when speed mode is used)

Torque parameter: P4-XX (Basic parameters when torque mode is used)

Signal parameter: P5-XX (Distribution of Input/output signals and related settings)

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

Warning parameter: En-XX (Explanation of warning code and problem solving)

Auxiliary parameter: FX-XX (Functions of system information and resetting etc.)

Symbol illumination

“○” Revisal when servo OFF, valid when servo ON

“●” Revisal at any time, valid when re-power on

“√” Revisal at any time, valid immediately

6.2 Parameter table

P0-XX	Function parameter		Modbus address: 0000~00FF		
Parameter code	Function	Unit	Initial data	Setting range	Valid time
P0-00	Main mode	-	0	0~3	○
P0-01	Sub-mode 1	-	6	0~7	○
P0-02	Sub-mode 2	-	0	0~7	○
P0-03	ModbusInn No.	-	1	1~255	●
P0-04	Serial interface parameter	-	n.2206	n.0000~n.2209	●
P0-05	Rotation direction	-	0	0、1	●
P0-06.L	MAE stop	-	0202	0~2	●
P0-07	T-REF distribution	-	0	0~3	○
P0-08	V-REF distribution	-	0	0、1	○
P0-09	Initial monitor		reserve		
P0-10	Rigid setting		reserve		
P0-11	Motor code 0		0	0~9999	●
P0-12	Overload times	1%	100	10~150	●
P0-13	Overload time	10ms	4000	0~50000	●

P1-XX	Control parameter		Modbus address: 0100~01FF		
Parameter code	Function	Unit	Initial data	Setting range	Valid time
P1-00	Speed loop gain	1Hz	100	1~5000	√
P1-01	Speed loop integration	0.1ms	400	1~50000	√
P1-02	Position loop gain	1/s	30	1~2000	√
P1-03	Parameter reserve				
P1-04	Speed loop gain 2	1Hz	150	1~5000	√
P1-05	Speedloop integration 2	0.1ms	100	1~50000	√
P1-06	Position loop gain 2	1/s	80	1~2000	√
P1-07	Parameter reserve				
P1-08	Parameter reserve				
P1-09	Position loop feedforward again	1%	0	0~100	√
P1-10	Feedforward filter time	0.01ms	0	0~65535	√

P2-XX	Position parameter Modbus address: 0200~02FF				
Parameter code	Function	Unit	Initial data	Setting range	Valid time
P2-00	Command pulse status	-	2	1、2、3	●
P2-01	Position command filter	-	0	0、1	●
P2-02	Mumerator of electrical gear	-	1	1~65535	○
P2-03	Denominator of electrical gear	-	1	1~65535	○
P2-04	Position commande filter time	1ms	0	0~100	●
P2-05	Parameter reserve				
P2-06	Command pulse frequency at rating speed	100Hz	5000	1~10000	○
P2-07	Filter time at speed command pulse	0.1ms	20	0~1000	√
P2-08	Parameter reserve				
P2-09	Parameter reserve				
P2-10	Command pulse input multiple	-	0		√
P2-11	Parameter reserve	-	0	0~65535	√
P2-12	Max. position loop speed	rpm	100	0~65535	√
P2-13	Pulse orientation signal	-	0	0~50000	√
P2-14	Parameter reserve				
P2-15	Parameter reserve				
P2-16	Parameter reserve				
P2-17	Parameter reserve				
P2-18	Parameter reserve				
P2-19	Parameter reserve				
P2-20	Origin back mode	-	n.0	00~FF	●
P2-21	Origin back speed 1	rpm	1000	1~2000	○
P2-22	Origin back speed 2	rpm	50	1~150	○
P2-23	Orinin back deviation	Circle	0	-9999~+9999	○
P2-24	Origin back deviation pulse	One pulse	0	-9999~+9999	○
P2-25	Multiple phase position mode				○
P2-26	1 st phase pulse number	1	0	-9999~+9999	√
P2-27	1 st phase pulse number	10000	0		√
P2-28	1 st phase speed	0.1rpm	0		√

P2-29	1 st phase waiting time	ms	0		√
P2-30	1 st phase command filter time				
P2-31	2 nd phase pulse number	1	0		√
P2-32	2 nd phase pulse number	10000	0		√
P2-33	2 nd phase speed	0.1rpm	0		√
P2-34	2 nd waiting time	ms	0		√
P2-35	2 nd phase command filter time				
P2-36	3 rd phase pulse number	1	0	-9999~+9999	√
P2-37	3 rd phase pulse number	10000	0		√
P2-38	3 rd phase speed	0.1rpm	0		√
P2-39	3 rd phase waiting time	ms	0		√
P2-40	3 rd phase command filter time				
P2-41	4 th phase pulse number	1	0	-9999~+9999	√
P2-42	4 th phase pulse number	10000	0		√
P2-43	4 th phase speed	0.1rpm	0		√
P2-44	4 th phase waiting time	ms	0		√
P2-45	4 th phase command filter time				

P3-XX	Speed parameter Modbus address: 0300~03FF				
Parameter code	Function	Unit	Initial data	Setting range	Valid time
P3-00	Analog to rating speed	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	Jogging 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	Max. speed	rpm	4000	0~5000	○
P3-10	Voltage of dead zone	0.01V	0	0~100	○

P4-XX	Torque parameter Modbus address: 0400~04FF				
Parameter code	Function	Unit	Initial data	Setting range	Valid time
P4-00	Analog to rating torque	0.01V	1000	150~3000	○
P4-01	Torque command filter time parameter	0.01ms	0	0~65535	○
P4-02	Limit of clockwise torque	1%	300	0~300	√
P4-03	Limit of anti-clockwise torque	1%	300	0~300	√
P4-04	Limit of external clockwise torque	1%	100	0~300	√
P4-05	Limit of external anti-clockwise torque	1%	100	0~300	√
P4-06	Emergency stop torque	1%	300	0~300	○
P4-07	Internal speed limit when torque control	rpm	2000	0~5000	○
P4-08					
P4-09	Setting of internal torque	1%	0	-300~300	√
P4-09	Voltage of dead zone	0.01V	0	0~100	○

P5-XX	Signal parameter Modbus address: 0500~05FF				
Parameter code	Function	Unit	Initial data	Setting range	Valid time
P5-00	Positioning completion signal width/COIN	One pulse	7	0~250	○
P5-01	Zero clamping speed/ZCLAMP	rpm	10	0~300	○
P5-02	Rotation detection speed/TGON	rpm	20	1~1000	○
P5-03	Same speed Detection with/V-CMP	rpm	10	1~250	○
P5-04	Proximity Output signal width/NEAR	One pulse	50	0~10000	○
P5-05	Limit of deviation pulse	256 pulses	1000	0~65535	○

P5-06	Delay of servo OFF command (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 reserve				
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 proportion action command	-	02	00~FF	●
P5-11.H	P-OT positive rotation driver forbidden	-	03	00~FF	●
P5-12.L	N-OT negative rotation driver forbidden	-	04	00~FF	●
P5-12.H	/ALM-RST alarm clear	-	05	00~FF	●
P5-13.L	/P-CL external positive torque limitation	-	06	00~FF	●
P5-13.H	/N-CL external negative torque limitation	-	07	00~FF	●
P5-14.L	/SPD-D internal speed direction	-	00	00~FF	●
P5-14.H	/SPD-A internal speed choice	-	00	00~FF	●
P5-15.L	/SPD-B internal speed choice	-	00	00~FF	●
P5-15.H	/C-SEL control mode choice	-	00	00~FF	●
P5-16.L	/ZLAMP zero clamping	-	00	00~FF	●
P5-16.H	/INHIBIT command pulse forbidden	-	00	00~FF	●
P5-17.L	/G-SEL gain change	-	00	00~FF	●
P5-17.H	/CLR clear pulse	—	00	00~FF	●

P5-18.L	/ORGP origin detect signal	-	00	00~FF	●
P5-18.H	/CRTG pulse trigger	-	00	00~FF	●
P5-19.L	/SHOM search for origin	-	00	00~FF	●
P5-19.H	Parameter reserve	-			
P5-20.L	Parameter reserve	-			
P5-20.H	Parameter reserve	-			
P5-21.L	/COIN positioning finish	-	01	00~FF	●
P5-21.H	/VCMP same 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 grake interlocking	-	00	00~FF	●
P5-24.H	/WARM warning	-	00	00~FF	●
P5-25.L	/NEAR near	-	00	00~FF	●
P5-25.H	/ALM alarm	-	02	00~FF	●
P5-26.L	/HOM complete	-	04	00~FF	●

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

Input 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		

6.3 Parameter instruction

P0-XX function parameter

©P0-00	Main mode	Test mode, don't change	0X0000
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Initial: 0

Setting range: 0~2

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: 0: When sub-mode used, set 0 to main mode

1: Jogging mode (Sub-mode set 0)

2: Cooperation with sub-mode 1, then debugging system

(main mode: 1; 1sub-mode 1: 0) : Jogging mode

(main mode: 2; 1sub-mode 1: 0) : Electricity deviation correction, set /S-ON to 1, correction finish in 5s.

(main mode: 2; 1sub-mode 1: 2) : Openloop without encoder

(main mode: 2; 1sub-mode 1: 3) : Openloop with encoder

©P0-01	Sub-mode 0	When /C-SEL signal is valid, servo system will change to sub-mode 1	0X0001
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Initial: 0

Setting range: 0~7

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: 0: **free**

With this mode, no power on motor even servo ON signal is valid

1: torque control (internal set)

Control output torque of servo motor by control panel or communication of driver

2: Torque control (analog voltage command)

Control output torque of servo motor by analog voltage torque command. Mainly use for case that together with host computer for close loop torque control, ex. tension control. (If no analog interface on servo driver, this mode can't be used)

3: Speed control (internal speed selection)

3 running speed can be set on servo driver. Use 3 input signals /SPD-D, SPD-A, /SPD-B to control speed and direction change

4: Speed control (analog voltage command)

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

5: Position control (internal position command)

Use position command in internal register to control position, pulse quantity, rotation speed etc. parameters can be set.

6: Position control (external pulse trin command)

Use pulse train position to control servo motor position. Position is controlled by input pulse quantity, frequency of input pulse controls speed.

7: Speed control (pulse train frequency command)

Use frequency of pulse train to control motor speed, not motor position.

©P0-02	Sub-mode 1	Same as sub-mode 0 (when /C-SEL signal invalid, servo system will change to sub-mode 0)	0X0002
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©P0-03	Modbus number		0X0003
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Initial: 1

Control mode: All

Unit: ~

Setting range: ~

Valid when: “●” Revisal at any time, valid when re-power on

©P0-04	Serial port parameters		0X0004
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Initial: 1

Control mode: All

Unit: ~

Setting range: n. 0 0 0 0

① ② ③ ④

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: ① is check bit initial value: 2 setting range 0: $\overline{1}$ without check bit 1:

Odd parity 2: Even parity

② is stop bit initial value: 2 setting range 0: two bits 2: one bit

③ is data bit initial value: 0 setting range 0~8

④ is baud rate initial value: 6 setting range 0~9

0: 300 5: 9600

1: 600 6: 19200

2: 1200 7: 38400

3: 2400 8: 57600

4: 4800 9: 115200

©P0-05	Rotation direction selection	Attention: When direction is changed, only reverse the signal which servo unit received, no influence on direction of P-OT and N-OT.	0X0005
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Initial: 0

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

Unit: ~

Setting range: 0, 1

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: 0: Positive direction (from load side view “anti-clockwise rotation”)

1: Positive direction (from load side view “clockwise rotation”)

◎P0-06	P0-06H: MAE stop when exceeding range P0-06L: MAE stop when servo OFF and warning	0X0006
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Initial: n. 02 02

(H L)

Control mode: All

Unit: ~

Setting range: 0~3

Valid when: “●”Revisal at any time, valid when re-power on

Parameter function: 1: 0~1: Inertial running stop, then keep inertia

2: Deceleration stop. Then change to zero clamping status. Torque setting value: P4-06 emergency stop torque.

3: Deceleration stop. Then change inertial running status. Torque setting value: P4-06 emergency stop torque.

Attention: (1) When exceeding stop mode is 0 or 1, signal can be mandatory set OFF at the moment of signal of range exceeding arrival. When exceeding stop mode is 3, signal will be mandatory set OFF after motor stop when range exceeding signal arrival. When exceeding stop mode is 2, it will not be set OFF mandatory as if servo signal input is valid.

(2) The stop condition judgement is rotating detection speed P5-02, unit rpm.

L: 0~2 inerial running stop. After stopping, keep ineria. (CZ series servo driver doesn't have built-in DB brake, so no matter which value P0-06.L is, it is default that inertial running stop.

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

Control mode: speed mode

Unit: ~

Setting range: 0~3

Valid when: “○”Revise when servo OFF, valide when servo ON

Parameter function

0: No definition

1: T-REF as external torque limit input

2: No definition

3: When P-CL, N-CL are ON, T-REF will be considered as torque limit input

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

Control mode: torque mode

Unit: ~

Setting range: 0~3

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function 0: No definition

1:V-REF as external speed limit input

P1-XX control parameter

◎P1-00	Speed loop gain		0X0100
Initial: 100 Control mode: 3,4,5,6,7 Unit: 1Hz Setting range: 1~5000 Valid : “√” Revisal at any time, valid immediately Parameter function : With higher speed loop gain, response better to higher speed control			
◎P1-01	Speed loop integral time		0X0101
Initial: 400 Control mode: 3,4,5,6,7 Unit: 0.1ms Setting range: 1~5000 Valid when : “√” Revisal at any time, valid immediately Parameter function: With smaller speed loop intergral time constant, response better to higher speed control			
◎P1-02	Position loop gain		0X0102
Initial: 100 Control mode: 5 , 6 Unit: 1Hz Setting range: 1~2000 Valid when : “√” Revisal at any time, valid immediately Parameter function: The larger the value of the position loop gain is, the more position control can be performed with high responsiveness and less offset, but it is restricted by the mechanical characteristics.			
◎P1-03	Parameter reserve		0X0103
◎P1-04	2 nd speed loop gain	Same as P1-00. Though P5-17L/G-SEL, signal can be changed between 1 st gain and 2 nd gain	0X0104
◎P1-05	2 nd speed loop integral time	Same as P1-01. Though P5-17L/G-SEL, signal can be changed between 1 st gain and 2 nd gain	0X0105
◎P1-06	2 nd position loop gain	Same as P1-02. Though P5-17L/G-SEL, signal can be changed between 1 st gain and 2 nd gain	0X0106

◎P1-07	Parameter reserve		0X0107
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◎P1-08	Parameter reserve		0X0108
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◎P1-09	Position feedforwar gain		0X0109
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Initial: 0

Control mode: 5,6

Unit: 1%

Setting range: 1~100

Valid when : “√” Revisal at any time, valid immediately

Parameter function:

The unit here is 1% of pulse deviation. Under the condition of fast position loop response necessary, position feedforward could be increased, but too high setting will cause overshoot of speed loop

◎P1-10	feedforward filter time parameter		0X010a
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Initial: 0

Control mode: 5,6

Unit: 0.01ms

Setting range: 1~65535

Valid when : “√” Revisal at any time, valid immediately

Parameter function: Before position loop, filter time for position feedback signal

P2-XX position parameter

◎P2-00	Command pulse status		0X0200
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Initial: 2

Control mode: 6,7

Unit: ~

Setting range: 0,2

Valid when: Revise when servo OFF, valid when re-power on

Parameter function: 1: A,B pulse mode

2: Pulse+direction; DIR=1 positive rotation, DIR=0 negative rotation

3: CW , CCWmode

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

Control mode: 6,7

Unit: ~

Setting range: 0,1 Revise when servo OFF, valid when re-power on

Parameter function: 0: one order inertial filter

1: Smooth filter

◎P2-02	Electronic gear ratio (numerator)	Real pulse number recieved	0X0202
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Initial: 1

Control mode: Position control (internal position command)

Unit: ~

Setting range: 1~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function : If set Electronic gear ratio numerator 1, denominator 2, under internal position command mode, set command 5000(motor needs 10000 pulses per circle), after pulse triggered, real puls reviewed by motor is $\frac{1}{2} \times 5000 = 2500$, so motor should run $\frac{1}{4}$ circle

◎P2-03	Electronic gear ratio (denominator)	Pulse number command parameter	0X0203
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Initial: 1

Control mode: Position control (internal position command)

Unit: ~

Setting range:

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function : If set Electronic gear ratio numerator 1, denominator 2, under internal position command mode, set command 5000(motor needs 10000 pulses per circle), after pulse triggered, real puls reviewed by motor is $2 \times 5000 = 10000$, so motor should run 1 circle

©P2-04	Acceleration and deceleration time parameter position command (ms)		0X0204
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Initial: 0

Control mode: 6

Unit: 1ms

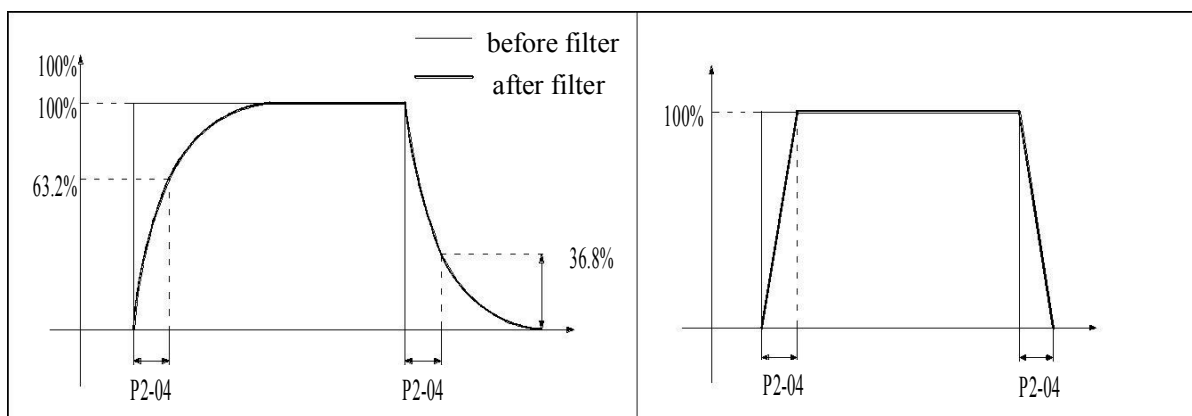
Setting range: 0~100

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: the difference of P2-04 under modes one order filter and smooth filter as below

one order filter

smooth filter



©P2-05	Rotaion circle upper limit	Parameter reserve	0X0205
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©P2-06	Command pulse frequency at rating speed		0X0206
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Initial: 5000

Control mode: 7

Unit: 100Hz

Setting range: 1~10000

Valid when : Revisal at any time, valid immediately

Parameter function: When P2-06 is set to 1000, command pulse frequency is 100KHz at rating rotation speed ;

When P2-06 is set to 300, command pulse frequency is 30KHz at rating rotation speed.

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

Control mode: 7

Unit: 0.1ms

Setting range: 0~1000

Valid when : “√” Revisal at any time, valid immediately

Parameter function: With low pulse frequency, speed vibration can be reduced by setting this parameter

◎P2-08	PG frequency number	Parameter reserve	0X0208
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◎P2-09	PG frequency number	Parameter reserve	0X0209
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◎P2-10	Command pulse input multiple		0X020a
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Initial:

Control mode:

Unit: ~

Setting range:

Valid when : “√” Revisal at any time, valid immediately

Parameter function: 0

◎P2-11	Parameter reserve		0X020b
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◎P2-12	Max. Position loop speed		0X020c
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Initial: 0

Control mode: 5,6

Unit: rpm

Setting range: 0~65535

Valid when : “√” Revisal at any time, valid immediately

Parameter function: When position control, limit maximum speed.

◎P2-13	Pulse positioning sign		0X020d
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Initial:

Control mode:

Unit: ~

Setting range:

Valid when : Revisal at any time, valid immediately

Parameter function:

◎P2-14	Parameter reserve		0X020e
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◎P2-15	Parameter reserve		0X020f
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◎P2-20	Origin back mode		0X0215
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Initial: n.0000

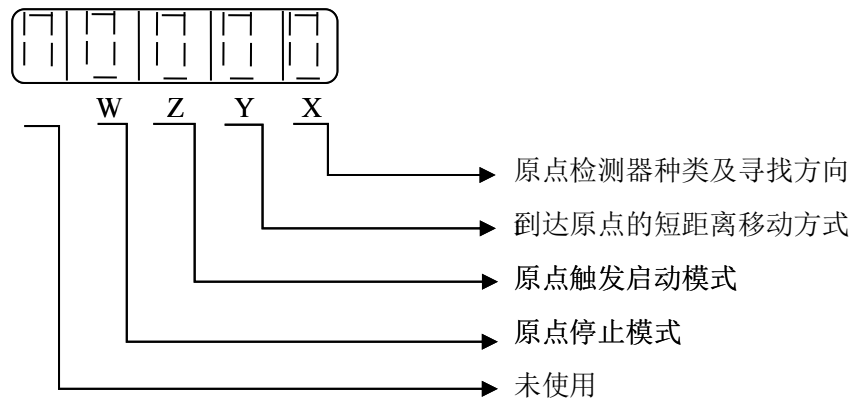
Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function:



X origin detection type and searching direction:

- 0:Positive direction origin back, /POT as back origin
- 1:Negative direction origin back, /NOT as back origin
- 2:Positive direction origin back, /ORGP as back origin
- 3:Negative direction origin back, / ORGP as back origin
- 4:Directly search Z pulse as back origin
- 5: Negative rotation directly search Z pulse as back origin

Y Short way of Y move to origin

- 0:Return to find Z pulse when oritin back
- 1:No reture when origin back, look for Z pulse forward
- 2:When origin back, position to detection origin or Z pulse (when set to 2, only work s together with origin detector type and direction set as 2,3,4 or 5)

Z origin trigger start mode

- 0: Turn off origin back function
- 1 : When power on, execute origin back automatically
- 2: Trigger origin back function by SHOM input connection

W origin stop mode setting:

- 0: When origin detection finished, motor deceleration and back to origin
- 1: When origin detection finished, motor move forward and deceleration

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

Control mode: origin back mode

Unit: rpm

Setting range: 1~2000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function:

◎P2-22	Origin back speed 2		0X0217
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Initial: 0

Control mode: origin back mode

Unit: rpm

Setting range: 1~150

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function:

◎P2-23	Origin back deviation circles		0X0218
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Initial: 0

Control mode: origin back mode

Unit: rpm

Initial: 0

Control mode: origin back mode

Setting range: -9999~+9999

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function:

◎P2-24	Origin back deviation pulse number		0X0216
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Initial: 0

Control mode: origin back mode

Unit: Puls

Setting range: -9999~+9999

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function:

P3-XX speed parameter

©P3-00	Rating speed corresponding to analog		0X0300
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Initial: 1000

Control mode: 4

Unit: 0.01V

Setting range: 150~3000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Set when motor running under rating rotation speed needed speed
comman voltage

For example: P3-00=500, motor runs at rating speed when analog input voltage is 5.00V,

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

©P3-01	Internal setting speed 1		0X0301
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Initial: 0

Control mode: speed control (internal setting speed selection)

Unit: r/m

Setting range: -3000~3000

Valid when : “√” Revisal at any time, valid immediately

Parameter function: Set internal setting speed 1

©P3-02	Internal setting speed 2		0X0302
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Initial: 0

Control mode: speed control (internal setting speed selection)

Unit: r/mSetting range: -3000~3000

Valid when : “√” Revisal at any time, valid immediately

Parameter function: Set internal setting speed 2

©P3-03	Internal setting speed 3		0X0303
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Initial: 0

Control mode: speed control (internal setting speed selection)

Unit: r/m

Setting range: -3000~3000

Valid when : “√” Revisal at any time, valid immediately

Parameter function: Set internal setting speed 3

◎P3-04	Jogging speed		0X0304
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Initial: 100

Control mode: JOG main mode: 2

Unit: r/m

Setting range: 0~10000

Valid when : “√” Revisal at any time, valid immediately

Parameter function: When there's no load, test servo motor.

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

Control mode: 3,4,7

Unit: 1ms

Setting range: 0~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Set reasonable acceleration time to avoid vibration of motor caused by too fast acceleration. Attention, if it is set too high, system response time will be influenced

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

Control mode: 3, 4,7

Unit: 1ms

Setting range: 0~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function:

Set reasonable acceleration time to avoid vibration of motor caused by too fast deceleration.

Attention, if it is set too high, system response time will be influenced

◎P3-07	Speed command filter time parameter		0X0307
--------	--	--	--------

Initial: 0

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

Unit: 0.01ms

Setting range: 0~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function:

©P3-08	Speed feedback filter time parameter		0X0308
--------	---	--	--------

Initial: 20

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

Unit: 0.01ms

Setting range: 0~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function : Smooth filter to feedback of speed, too hig setting will cause distortion of speed feedback, thereof control effect is influenced

©P3-09	Max. running speed		0X0309
--------	---------------------------	--	--------

Initial: 4000

Control mode: ALL

Unit: rpm

Setting range: 0~5000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function : No matter under which mode the motor runs, the speed will not exceed this setting value

P4-XX torque parameter

©P4-00	Rating torque corresponding analog		0X0400
--------	------------------------------------	--	--------

Initial: 1000

Control mode: 2

Unit: 0.01V

Setting range: 150~3000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function : Set when servo motor running under rating rotation speed needed speed comman voltage (T-REF)

For example: P4-00=500, motor runs at rating torque when analog input voltage is 5.00V,

P3-00=800, motor runs at rating torque when analog input voltage is 8.00V,

©P4-01	Torque command filter time parameter		0X0401
--------	---	--	--------

Initial: 0

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

Unit: 0.01ms

Setting range: 0~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: The torque command is input through 1 time delay filter to smooth the torque command. Responding will be influenced by too high setting

©P4-02	Internal positive torque limit		0X0402
---------------	---------------------------------------	--	---------------

Initial: 300

Control mode: ALL

Unit: 1%

Setting range: 0~300

Valid when : “√” Revisal at any time, valid immediately

Parameter function: The setting of this parameter always valid. If the value is smaller than external torque limit, use this parameter setting. Set unit is % relative to rating torque of the motor. Factory setting is 300% of rating torque, real max. torque is different due to different type.

©P4-03	Internal anti torque limit		0X0403
---------------	-----------------------------------	--	---------------

Initial: 300

Control mode: ALL

Unit: 1%

Setting range: 0~300

Valid when : “√” Revisal at any time, valid immediately

Parameter function: The setting of this parameter always valid. If the value is smaller than external torque limit, use this parameter setting. Set unit is % relative to rating torque of the motor. Factory setting is 300% of rating torque, real max. torque is different due to different type.

©P4-04	External positive torque limit		0X0404
---------------	---------------------------------------	--	---------------

Initial: 100

Control mode: ALL

Unit: 1%

Setting range: 0~300

Valid when : “√” Revisal at any time, valid immediately

Parameter function: The parameter is used when there's torque limit need for mechanical movement or certain situation. For example, application for press to stop the action or robot work piece maintain

©P4-05	External anti torque limit		0X0405
---------------	-----------------------------------	--	---------------

Initial: 100

Control mode: ALL

Unit: 1%

Setting range: 0~300

Valid when : “√” Revisal at any time, valid immediately

Parameter function: Same as External positive torque limit

©P4-06	Emergency stop torque		0X0406
---------------	------------------------------	--	---------------

Initial: 300

Control mode: ALL

Unit: 1%

Setting range: 0~300

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: If too small setting, motor will stop gradually.

◎P4-07	Speed limit of torque control		0X0407
--------	--------------------------------------	--	--------

Initial: 2000

Control mode: 1,2

Unit: rpm

Setting range: 0~5000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Even speed set is larger than rating speed, real speed limit is still rating speed.

◎P4-08	Torque function switch	Parameter reserve	0X0408
--------	-------------------------------	-------------------	--------

◎P4-09	Internal torque setting		0X0409
--------	--------------------------------	--	--------

Initial: 0

Control mode: 1

Unit: 1%

Setting range: -300~ 300

Valid when : “√” Revisal at any time, valid immediately

Parameter function: Torque for torque control (internal setting)

P5-XX signal setting

◎P5-00	Position complete width		0X0500
--------	--------------------------------	--	--------

Initial: 7

Control mode: 5,6

Unit: 1 command pulse

Setting range: 0~250

Valid when : “○” Revise when servo OFF, valide when servo ON

Parameter function: When deviation of servo driver pulse is smaller than this parameter, output position complete signal (/COIN). Deviation of pulse can be monitored by U-08.

◎P5-01	Zero clamping speed/ZCLAMP		0X0501
--------	-----------------------------------	--	--------

Initial: 10

Control mode: 3,4,7

Unit: rpm

Setting range: 0~300

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: The function is used when superior device inputs “speed command” and no configure of “position loop”. That means although input voltage of speed command

“V-REF” is not “0V”, motor will stop, servo is lock status. Make “Zero clamping” at “ON”, temporarily internal configuration of position loop, motor will clamp±1 pulse at this position. Even rotation with external force, it will go back to zero clamping position.

©P5-02	Rotation detection speed/TGON		0X0502
---------------	--------------------------------------	--	---------------

Initial: 20

Control mode: ALL

Unit: rpm

Setting range: 1~1000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Set the condition of rotation detection output, if speed of servo motor reaches higher than P5-02 setting value, servo motor will considered as “rotation” and output rotation detection output (/TGON).

©P5-03	Same speed signal detecting width		0X0503
---------------	--	--	---------------

Initial: 10

Control mode: 3,4,7

Unit: rpm

Setting range: 1~250

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Absolute difference between motor speed and command speed, if detected value is lower than P5-03 setting, output /V-CMP same speed signal

©P5-04	Proximity output signal width/NEAR		0X0504
---------------	---	--	---------------

Initial: 50

Control mode: 5,6

Unit: 1 command pulse

Setting range: 0~10000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: If pulse deviation of servo driver is lower than this parameter, output proximity signal /NEAR. Please set the value larger than positioning complete width. The deviation can be monitored by U-08

©P5-05	Deviation pulse limit		0X0505
---------------	------------------------------	--	---------------

Initial: 1000

Control mode: 5,6

Unit: 256 Pulse command

Setting range: 0~65535

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: For position control, if deviation pulse exceeds certain limit and alarm, this threshold value is deviation pulse limit value. If deviation pulse is 0, no detection for deviation pulse.

©P5-06	Servo OFF delay time (brake command)		0X0506
--------	---	--	--------

Initial: 0

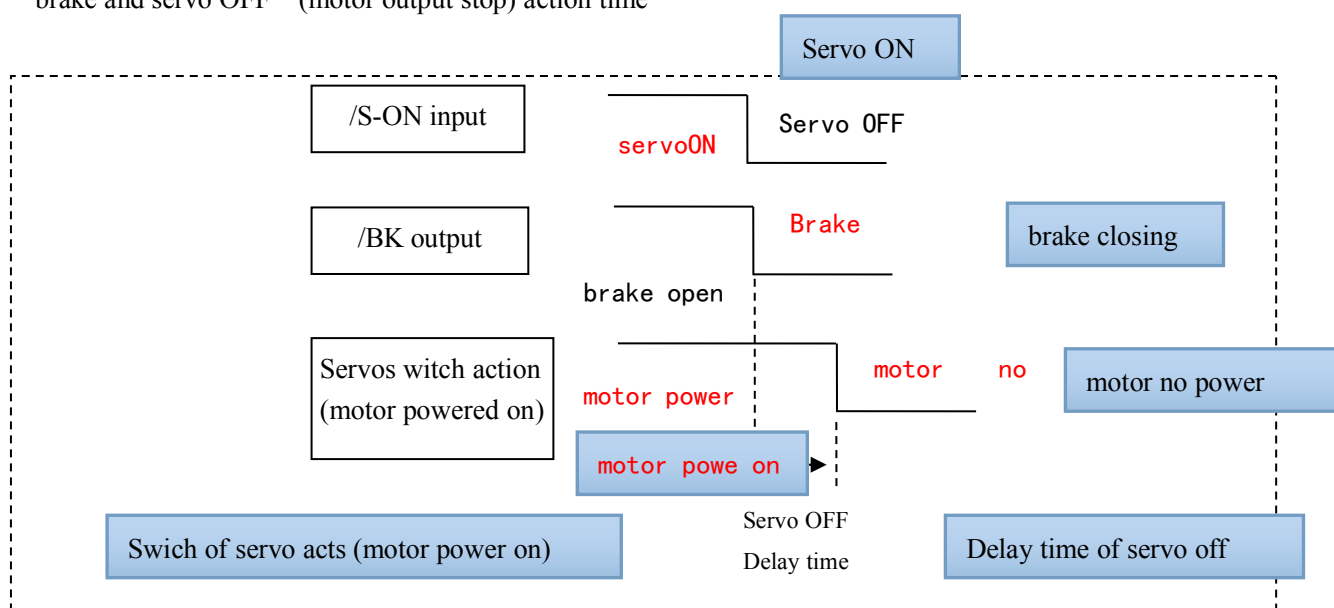
Control mode: ALL

Unit: ms

Setting range: 0~500

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Setting for servo motor time with brake, output signal “/BK” of control brake and servo OFF (motor output stop) action time



Standard setting is /BK output (brake acts), servo OFF at the same time. With servo OFF, motor becomes no power (no torque output) immediately. According to mechanical components and brake performance, there's minor time difference between /BK signal output and brake acts, in this time, no torque output form motor and no brake, mechanics will have minor movement because of gravity. In this case, by user parameter delay servo OFF, make sure motor comes into no power status again after brake works, to avoid movement.

Attention: the setting is going on when motor stops, rotation detection TGON invalid time

©P5-07	Brake command output speed		0X0507
--------	-----------------------------------	--	--------

Initial: 100

Control mode:

Unit: rpm

Setting range: 0~5000

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: Reduce rotating servo motor speed to setting value.

©P5-08	Brake command waiting time		0X0508
--------	-----------------------------------	--	--------

Initial: 500

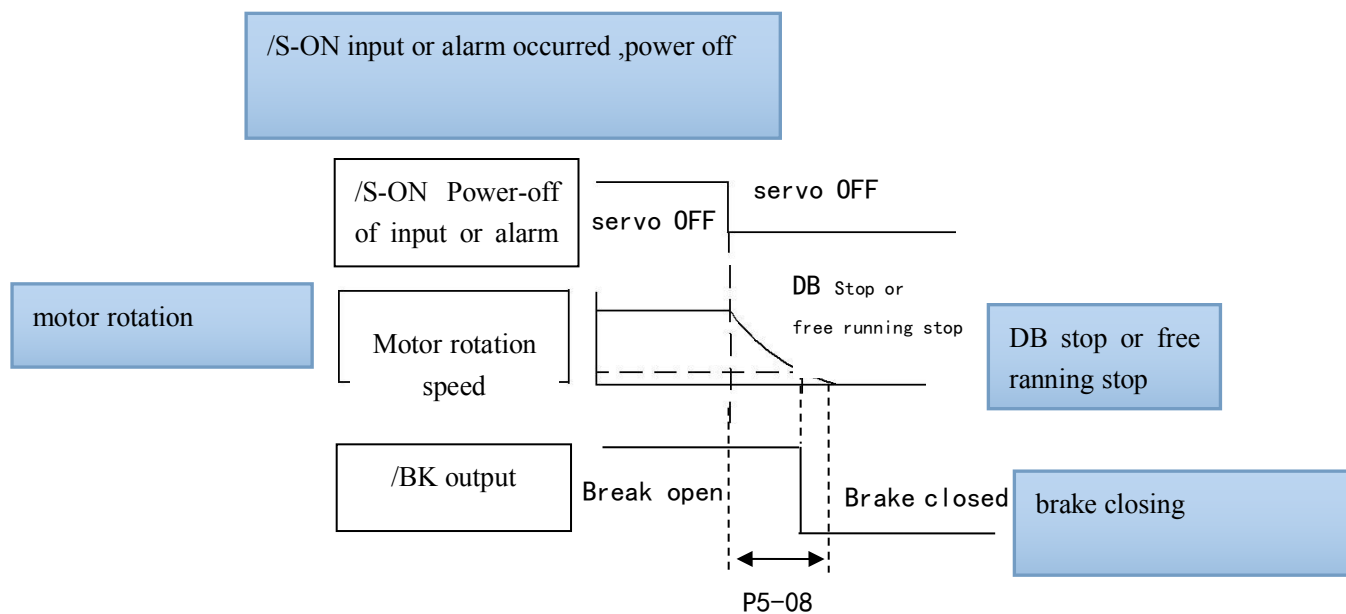
Control mode: ALL

Unit: 1ms

Setting range: 0~500

Valid when: “○” Revise when servo OFF, valide when servo ON

Parameter function: When servo motor with brake is used, because of signal input”S-ON” to motor rotation or alarm happens, caused servo OFF, set brake time.



Because brake of servo motor is designed for position maintain, when motor stops, it must be enabled at right time. Observe the mechanic movement, meanwhile adjust this parameter.

Condition of /BK signal in motor rotation change from ON to OFF as below (one of the 2 valid)

- 1) After servo OFF, motor speed is slower than P5-07 setting value
- 2) After servo OFF, exceed P5-08 setting time

In “P5-07”, even the speed is set at max., real setting value is only Max. speed (P3-09)

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

Initial: n. 01 01

(H L)

Control mode: ALL

Unit: ~

Setting range: ~

Valid when: “●”Revisal at any time, valid when re-power on

Parameter function:

H: 00: set signal always invalid

01: input positive signal from SII port

02: input positive signal from SI2 port 03: input positive signal from SI3 port
 04: input positive signal from SI4 port 05: input positive signal from SI5 port
 06: input positive signal from SI6port 07: input positive signal from SI7 port
 08: input positive signal from SI8 port
 80: set signal always valid 81: input negative signal from SI1 port
 82: input negative signal from SI2 port 83: input negative signal from SI3 port
 84: input negative signal from SI4 port 85: input negative signal from SI5 port
 86: input negative signal from SI6 port 87: input negative signal from SI7 port
 L : 00 : External input completely according to factory setting, Change of

P5-10.H~P5-19.H invalid

01: External input can be freely set, Change of P5-10.H~P5-19.H valid

◎P5-11	L:/P-CONpropotional movement command H: /P-OT positive driver forbidden	0X050b
--------	--	--------

Initial: n. 03 02

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

L:/P-CONpropotional movement command

Signal valid: by P (proportional) control running (reduce minor vibration due to speed input command floats, butservo motor rigidity wand output torque when stop will be decreased

Signal invalid: by PI (propotional and integral

H: /P-OT positive driver forbidden

◎P5-12	L:/N-OT Negative rotation forbidden H:/ALM-RST alarm clearance	0X050c
--------	---	--------

Initial: n. 05 04

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

◎P5-13	Positive external torque limit Negative external torque limit	0X050d
--------	--	--------

Initial: n. 07 06

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

◎P5-14	Internal setting speed rotation direction selection H:/SPD-A Internal setting speed selection	0X050e
--------	--	--------

Initial: n. 00 00

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

◎P5-15	L:/SPD-B internal speed setting selection H:/C-SEL Control mode selection	0X050f
--------	--	--------

Initial: n. 00 00

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

◎P5-16	L:/ZCLAMP Zero clamping H:/INHIBIT pulse command forbidden	0X0510
--------	---	--------

Initial: n. 00 00

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

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

Initial: n. 00 00

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.H

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

Initial: n. 00 00

(H L)

Control mode: ALL

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: P5-10.L same as P5-10.L

◎P5-19	L:/SHOM Search origin H:Parameter reserve	0X0513
--------	--	--------

Initial: n. 00 00

(H L)

Control mode: Orinin mode

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: same as P5-10.L

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

Initial: n. 00 01

(H L)

Control mode: ~

Unit: ~

Setting range:

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function: L: 00: no output 01: output positive signal from SO1

02: output positive signal from SO2	03: output positive signal from SO3
03: output positive signal from SO3	04: output positive signal from SO4
81: output opposite signal from SO1	82: output opposite signal from SO2
83: output opposite signal from SO3	84: output opposite signal from SO4
H: Same as P5-21.L。	

◎P5-22	L:/TGON Rotation detection	0X0515
	H:/S-RDY Ready	

Initial: n. 00 00

(H L)

Control mode ~

Unit ~

Setting range: ~

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function :same as P5-21.L

◎P5-23	L:/CLT Torgue H:/VLT speed limit detection	0X0516
--------	--	--------

Initial: n. 00 00

(H L)

Control mode ~

Unit ~

Setting range: ~

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function :same as P5-21.L

◎P5-24	L:/BK Brake H:/WARM Warning	0X0517
--------	---------------------------------------	--------

Initial: n. 00 00

(H L)

Control mode ~

Unit ~

Setting range: ~

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function :same as P5-21.L

◎P5-25	L:/NEAR Proximit H:/ALM Alarm	0X0518
--------	---	--------

Initial: n. 02 00

(H L)

Control mode ~

Unit ~

Setting range: ~

Valid when: “●” Revisal at any time, valid when re-power on

Parameter function :same as P5-21.L

◎P5-26	L:/HOM Finish	0X0519
--------	----------------------	--------

Initial: n. 00 04

(H L)

Control mode ~

Unit ~

Setting range: ~

Valid when: “●”Revisal at any time, valid when re-power on

Parameter function :same as P5-21.L

6.4Un-XX Monitoring parameter

Monitor code	Content	Unit	Modbus address
Un-00	Real 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 volt	0X705
Un-06	Module temperature	0.1℃	0X706
Un-07	Input command pulse speed	rpm	0X707
Un-08	Deviation command pulse value	*1	0X708
Un-09	Deviation command pulse value	*10000	0X709
Un-10	Rotation angle (encode value)	*1	0X70A
Un-11	Rotation angle (encode value)	*10000	0X70B
Un-12	Input command pulse quantity	*1	0X70C
Un-13	Input command pulse quantity	*10000	0X70D
Un-14	Feedback command pulse quantity	*1	0X70E
Un-15	Feedback command pulse quantity	*10000	0X70F
Un-16	Current position (accumulated value)	*1	0X710
Un-17	Current position (accumulated value)	*10000	0X711
Un-18	Current electricity , one decimal	0.1A	0X712
Un-19	Analog Input V-REF value	0.01V	0X713
Un-20	Analog Input T-REF value	0.01V	0X714

Chapter7 Elemination abnormals and alarms

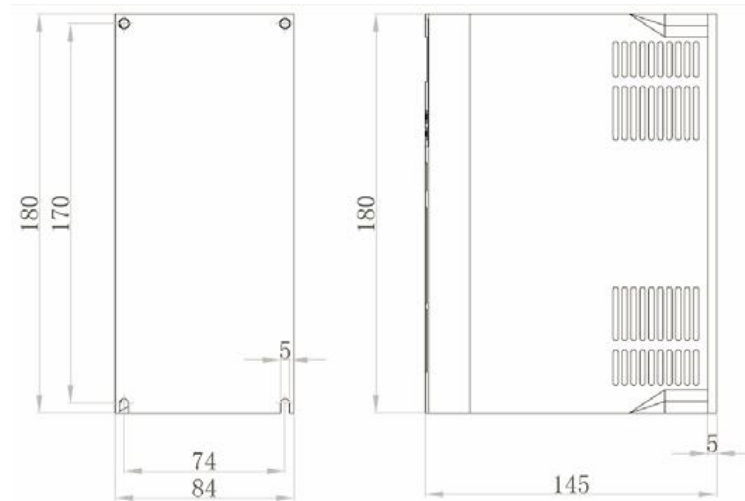
En-XX	Alarm parameter		
Alarm code	Descript		Soluing
En-01	program	No pass of program self checking	Reload program,contact agencyor or supplier
En-02	Parameter damage	No pass of parameter checking	Recover parameter to default setting by re-poweron. If problem repeatable contact agency or supplier
En-03	Bus line over voltage	Grid voltage too high or connection of regenerative resistor ,or rgenerative resistor Damaged, or too high resistor	Check grid volatage vibration, connection and check the regenerative resistor
En-04	Bus line under voltage	Grid voltage too low	Check grid volatage vibration,
En-05	Abnorma of regenerative resistor	No function of regenerative resistor	Check regenerative resistor connection
En-06	Module temperature too high too high	temperature of power module because of long time running with high load too high environment temperature	reduce load,improve ventilation, check servo、check fan;reduce environment temperature
En-07	Over current	Output drive UVW short circuit or motor failure	Change damaged motor, check motor UVW connection
En-08	Speeding	motor speed is too fast, the motor UVW	check if any external force which causes too high motor speed check UVW connection of motor
En-09	Analog input abnormal	Wrong voltage when zero calibration by two analog input	Input correct voltage by analog zero calibration
En-10	Position deviation too big	Voltage is incorrect Input correct voltage by analog zero calibration Position deviation is too large When position control, difference between setting position and real position exceeds limit	Check if motor runs smoothly,reduce setting speed to position Increase deviation pulse value P5-05
En-11	Motor UVW short circuit	external circuit short circuit found by self checking	Check motor UVW connection, replace the damaged motor

		during first running when power is on	
En-12	Motor UVW current abnormal	Circuit of current collection acquisition malfunction	Check motor wiring, replace the servo unit
En-13	UVW of encoder wire broken	No connection of encoder wrong connection of encoder Encoder damage	Check encoder connection re-connect encoder after switching off replace encoder
En-14	ABE of encoder wire broken	same as above	same as above
En-15	Excessive speed change(feedback of encoder abnormal)	wrong connection of encoder or strong disturb from outside)	Check encoder connection Add shield for encoder
En-16	over load	Over load running time too long	reduce load running time or change a motor with bigger rating
En-17	no electricity during running	too low bus line voltage during running	Re-power on,waiting until bus line voltage immediately
En-18	Wrong clearance Parameter	Parameters can not be cleared during initialization due to too low voltage	Check power,re-power on

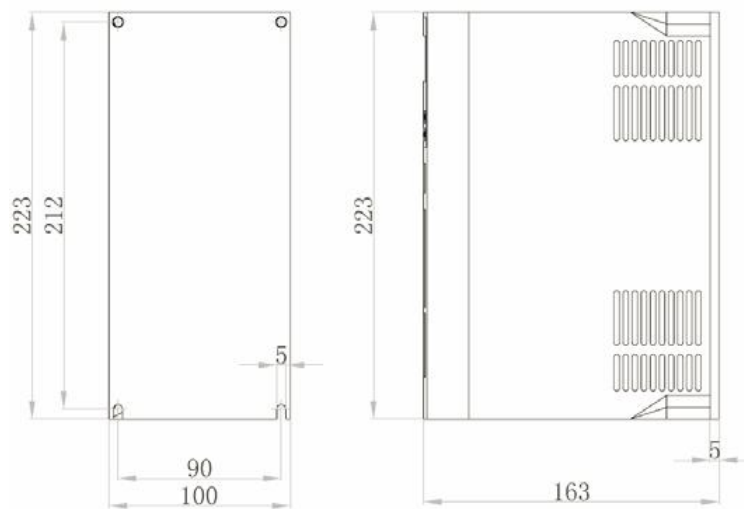
Chapter 8 specification

8.1 Dimension servo drive

Instaution size of CZA series



Instaution size of CZC series



Chapter 9 Applications

Speed control (internal command) setin

(Run the required minimum set)

Step 1

Wiring Page 77

UVW power line

Power line

Coder line

Step 2

Parameter setting

Control mode selection

Address: **P0-01** Parameters: **3** Function: setting sub-mode as speed internal control mode

Control parameters setting

Address: **P3-01** Parameters: **100** Function: set speed 1 as **100** rpm

Address: **P3-02** Parameters: **200** Function: set speed 2 as **200** rpm

Address: **P3-03** Parameters: **300** Function: set speed 3 as **300** rpm

Try to change speed during running

Select speed 1

Address: **P5-14** Parameters: **0000** Function: **Positive rotation**

Address: **P5-15** Parameters: **0080** Function: **Speed 1**

Start signal setting

Address: **P5-10** Parameters: **8001** Function: Set servo start signal

(When changing to other modes or setting parameters , which needs servo "OFF" , this parameter must be reset to facting setting **0101** first)

Starting when re-power on

Monitoring running parameters

Address: **Un0-00** Content: **Real motor speed**

Address: **Un0-01** Content: **Input speed command**

Change to speed2

Address: **P5-14** Parameters: **8080** Function: **negative rotation**

Address: **P5-15** Parameters: **0080** Function: **speed 2**

Change to speed3

Address: **P5-14** Parameters: **8000** Function: **Negative rotation**

Address: **P5-15** Parameters: **0000** Function: **Speed 2**

Torque control (internal command) Setting flow chart

(Run the required minimum set)

Step 1

Wiring Page 77

UVW power line

Power line

Coder line

Step 2

Parameter setting

Control mode selection

Address: **P0-01** Parameters: 1 Function: Setting sub-mode as speed internal control mode

Control parameters setting

Address: **P4-07** Parameters: 2000 Function: Set internal speed limit 2000 rpm

Start signal setting

Address: **P5-10** Parameters: 8001 Function: Set servo start signal
(When changing to other modes or setting parameters , which needs servo “OFF” , this parameter must be reset to facting setting **0101** first)

Starting when re-power on



Set internal torque

Address: **P4-09** Parameters: 15 Function: Set internal torque as 15*1% of rating

Monitoring running parameters

Address: **Un0-00**

Content: **Current speed**

Address: **Un0-02**

Content: **Set internal torque**

Position control (internal command) setting flow chart

(Run the required minimum set)

Step 1

Wiring Page 77

UVW power line

Power line

Coder line

Step 2

Parameter setting

Control mode selection

Address: **P0-01** Parameters: **5** Function: Setting sub-mode **1** as position internal control mode

Address: **P2-25** Parameters: **0020** Function: set triggerd by rising edge of signal to execute for position orderly

Control parameters setting

Address: **P2-26** Parameters: **5000** Function: set first phase pulse **5000**

Address: **P2-27** Parameters: **10** Function: set first circle **10**

Address: **P2-28** Parameters: **1000** Function: set first pulse command speed **100 rpm**

Try to change pulse the trigger dying

Start signal setting

Address: **P5-10** Parameters: **8001** Function: Set servo start signal
(When changing to other modes or setting parameters , which needs servo “OFF” , this parameter must be reset to facting setting **0101** first)

Address: **P5-18.H** Parameters: **0200** Function: Input trigger signal from SI2 to send pulse

Address: **P5-11.H** Parameters: **0300** Function: Switch off SI2 port signal which default distributed

Starting when re-power on

Internal pulse trigger

Sending pulse triggered by SI2 input signal

Position control (external pulse) setting flow chart

(Run the required minimum set)

Step 1



Step 2

Parameter setting

Control mode selection

Address: **P0-01** Parameters: 6 Function: Setting sub-mode 1 as position internal control mode

Control parameters setting

Address: **P2-02** Parameters: 1 Function: Set numerator of electrical gear as 1

Address: **P2-03** Parameters: 1 Function: Set denominator of electrical gear as 1
 real sended pulse number = setting pulse number X (number of electrical gear/ denominator or electrical gear)

Address: **P5-10** Parameters: **8001** Function: Set servo start signal

(When changing to other modes or setting parameters , which needs servo “OFF” , this parameter must be reset to facting setting **0101** first)

Starting when re-power on

External pulse sending

For example : send **15000** external pulse with **50KHz** frequency

(the speed of external pulse position mode is depending on ratio between pulse frequency and electrical gear 500k corresponding to rating speed 3000 rpm)

Monitoring running parameters

Address : **Un0-00** Parameters : 300 Content : current
(50K/500K*3000rpm)

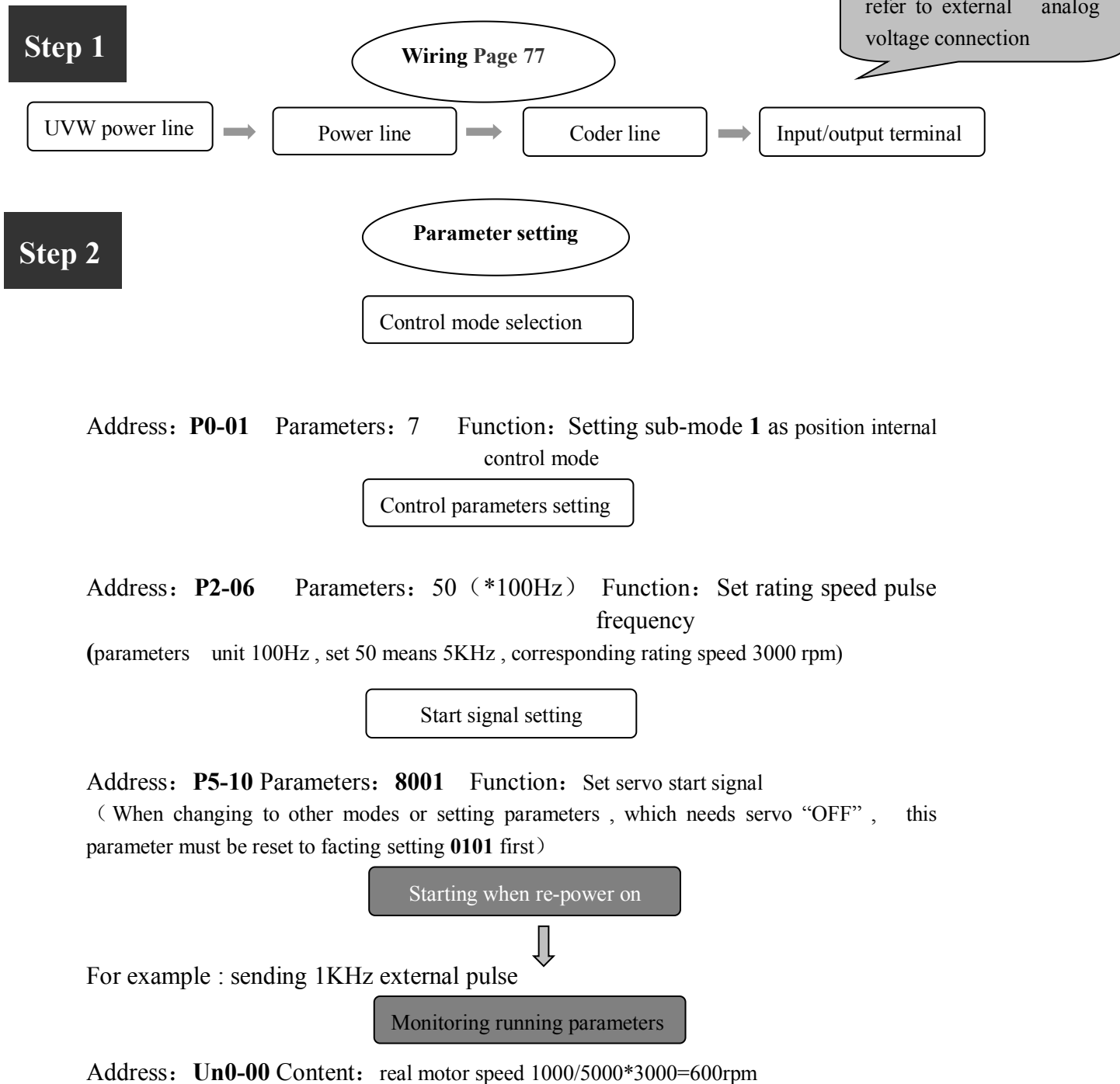
Address: **Un0-16** Parameters: 5000 Content: current position (accumulated circles)

Address: **Un0-17** Parameters: 1 Content: current position (accumulated pulse less than 1 circle)

(The actual motor received pulse number is Un0-16+Un0-17 , The parameters of the Un0-17 1 represents the 10000 pulse, is a circle)

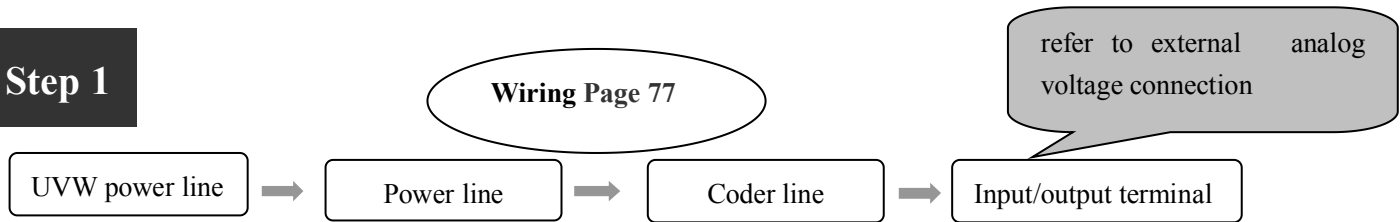
Speed Control (external pulse) setting flow chart

(Run the required minimum set)

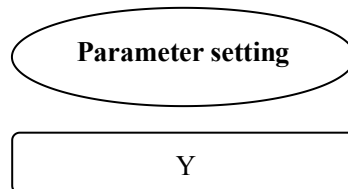


Speed control (analog voltage) setting flow chart

Step 1



Step 2



Address: **P0-01** Parameters: 4 Function: Setting sub-mode 1 as external speed analog voltage control

Control parameters setting

Address: **P3-00** Parameters: **1000** Function: Set rating speed voltage **1000*0.01V**

Origin detector type

Address: **P5-10** Parameters: **8001** Function: Set servo start signal
(When changing to other modes or setting parameters , which needs servo “OFF” , this parameter must be reset to facting setting **0101** first)

Address: **P5-14.H** Parameters: **0600** Function: distribute /SPD-A signal to SI6 to control positive rotation

Address: **P5-15.L** Parameters: **0007** Function: distribute /SPD-B signal to SI7 to control negative rotation

Address: **P5-13** Parameters: **0000** Function: turn off default distributed port signal to SI6 and SI7



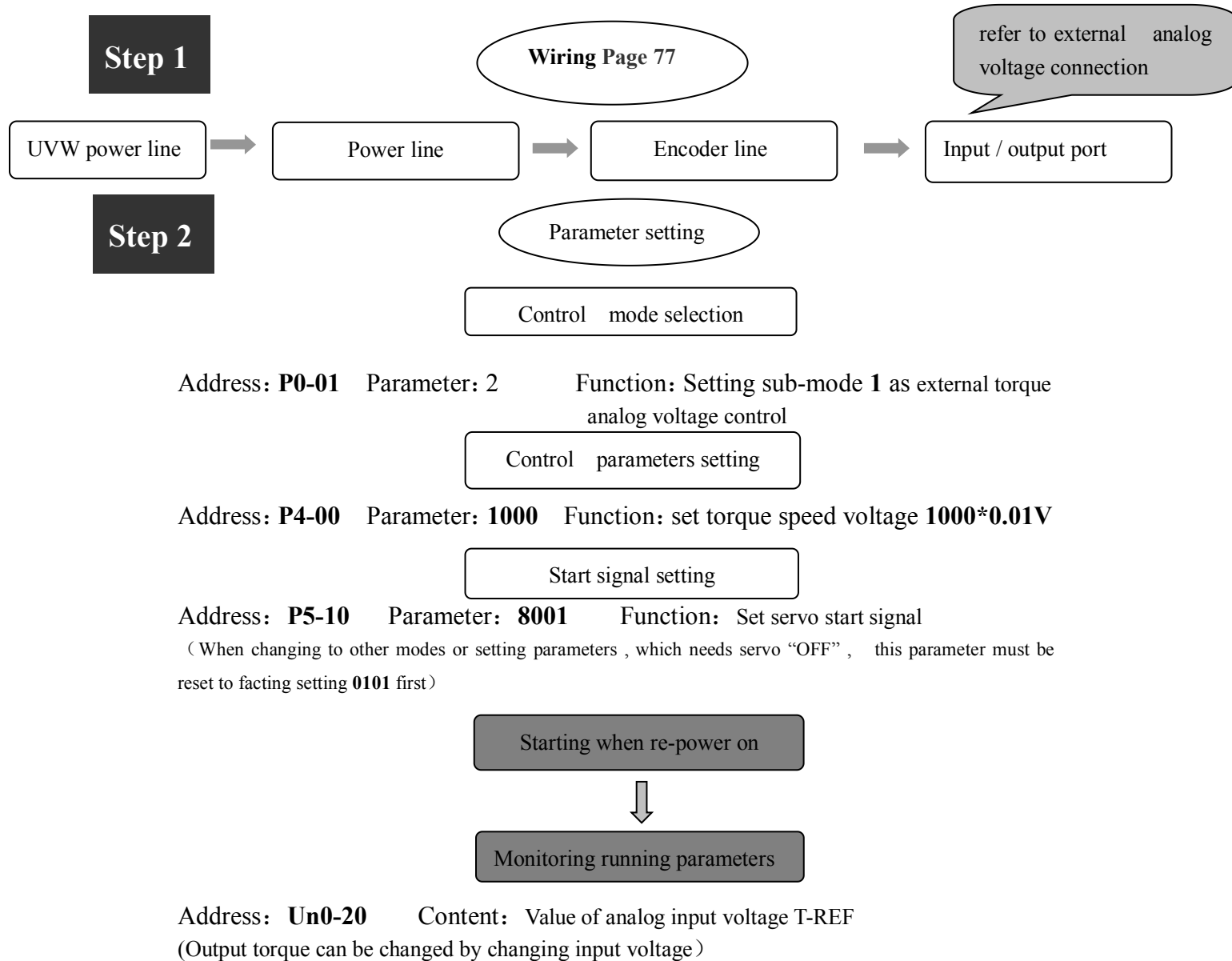
Starting when re-power on



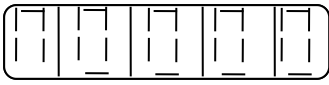
Monitoring running parameters

Address: **Un0-00** Content : real motor speed =input voltage/10*rating speed
Positive and negative rotation control by input signal form SI6 and SI7
(Change speed by adjusting input voltage ,Inverted voltage caused motor reversed rotation)

Torque control (analog voltage) setting flow chart



The origin regression function

Parameter	Parameter illumination
P2-20	origin back mode 
P2-21	Origin back speed 1
P2-22	Origin back speed 2
P2-23	Origin back deviation circles
P2-24	Origin back deviation pulse numbers

Origin back mode illumination

● Origin trigger start mode

There are two functions this mode : Auto origin back function and touch point origin back function

Z=0: origin back function switch off

When Z is sets 0,origin back function will not start no matter what are the other settings

Z=1: Auto execution of origin back when power on

This function is one time valid when power and servo start which means only working under the condition that no repeatable execution origin back during servo running

Z=2: origin back function triggered by SHOM input point

Origin back function triggered by SHOM mudt allotted to input port when setting this function .SHOM point can be triggered at any time during servo running and execute origin back function

B. Setting of origin detector typ and searching direction

Left or right limit switch can be used as origin reference by origin detector, additional detector can be used (such as proximity or light shutter switch) . Olnty when servo motor runs in , Z pulse can be also set as reference origin

X=0 : Searching origin in positive direction , CCW limit input point as rough reference origin .When origin positioning finished, CCWL transferred to limit input function . Re-trigger after that will cause limit alarm , when using limit input point as rough origin reference , it is suggested to set return searching Z pulse (Y=0) as accurate mechanical origin.

X=1: Search origin from reverse direction, limit input of CWL as rough reference origin. After origin positioning is finished, CWL will transfer to limit input function. If it is triggered again, limit alarm will occur. It is suggested to set return searching for Z pulse (Y=0) as accurate mechanical origin.

X=2: Search origin from positive direction, ORGP (external detector input point) as origin reference point, accurate mechanical origin can be set as return searching (Y=0) or non-return searching (Y=1) Z pulse. When Z pulse is not used as mechanical origin, ORGP positive edge can be set as mechanical origin (Y=2).

X=3: Search origin from reverse direction, ORGP (external detector input) as reference origin. Accurate mechanical origin can be set as return searching (Y=0) or non-return searching (Y=1) Z pulse, when Z pulse mechanical origin (Y=2).

X=4: Search Z pulse origin directly from negative direction, this function only used for motion control, when motor works in one circle range, no additional external detection switch needed.

X=5: Search Z pulse origin directly from positive direction, this function only used for motion control, when motor works in one circle range, no additional external detection switch needed.

C. Short distance movement way to reach the origin

Y=0: After reference origin found, motor return with second speed to search for Z pulse nearby as mechanical origin.

Y=1: After reference origin found, motor with second speed searching for Z pulse nearby.

Y=2: search for rising edge of ORGP detector as mechanical origin, and decelerate and stop. It is used for X=2 or X=3. Or when Z pulse is found, decelerate and stop. It is used for X=4 or X=5. When Z pulse origin detection, X=4.

D. Origin stop mode setting

W=0: When origin detection is finished, motor decelerates and goes back to origin. After receiving origin detection signal during second speed running, motor decelerates and stops. The motor move to mechanical origin with second speed.

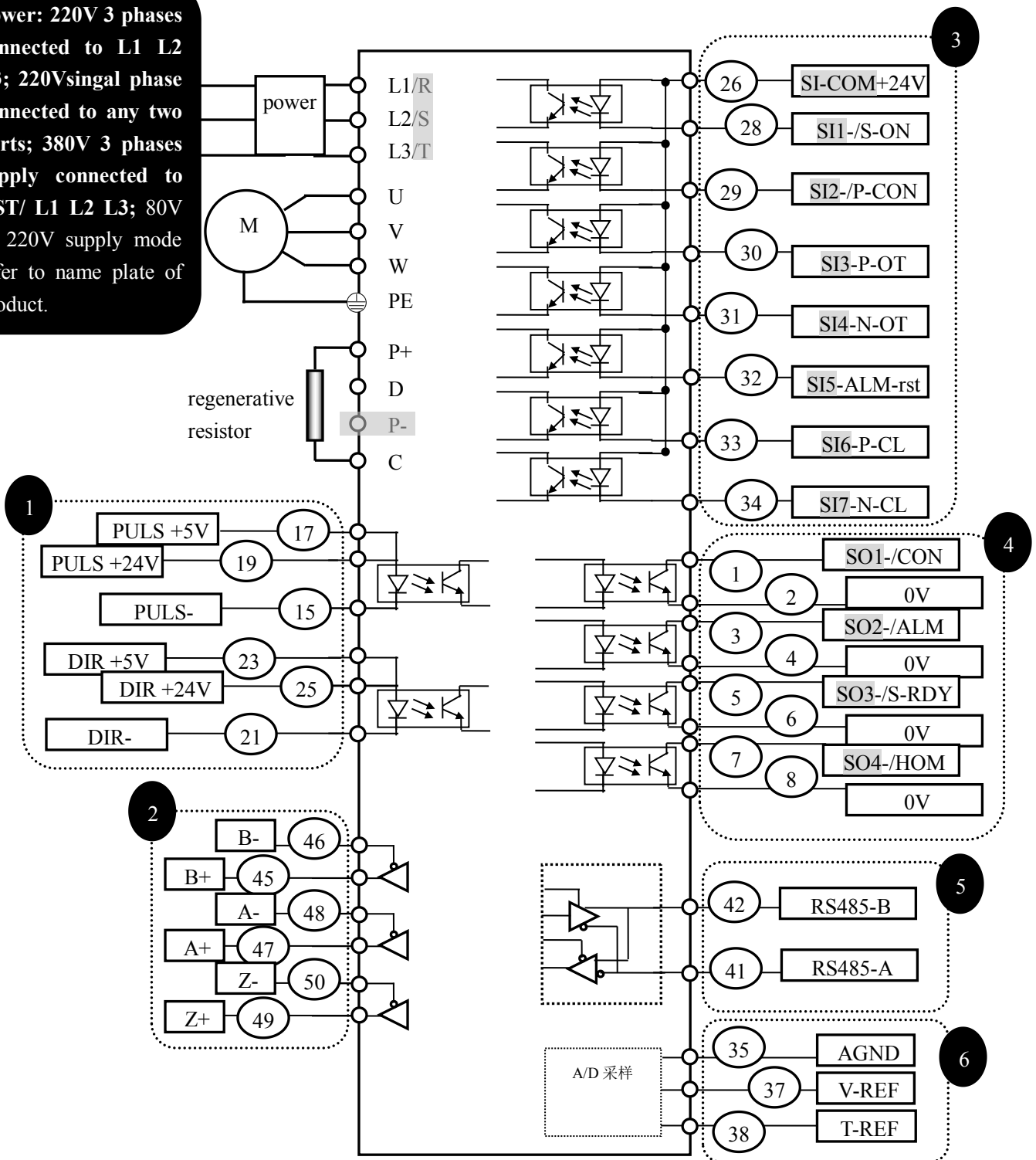
W=1: When origin detection is finished, motor moves forward with deceleration. After receiving origin detection signal during second speed running, motor decelerates and stops. Exceeding of position will not be revised, mechanical origin will not change due to different exceeding of position.

Suggested origin back control mode

According to the different operation requirements, for different W and Z values, X, Y setting value are suggested as follows:

X \ Y	0	1	2	3	4	5
0	√	√	√	√	×	×
1	×	×	√	√	×	×
2	×	×	√	√	√	√

Power: 220V 3 phases connected to L1 L2 L3; 220V single phase connected to any two ports; 380V 3 phases supply connected to RST/ L1 L2 L3; 80V or 220V supply mode refer to name plate of product.



Remark: ① Pulse direction signal (default); PLC connects to 24V and CNC connects to 5V; if using AB pulse and CW / CCW mode, please set pulse command form to P2-00;
 ② A / B / Z pulse feedback differential output; support Z pulse collector open drain output (CNC) please connect CN1 terminal (22 feet ZOC-; 24 feet ZOC +);
 ③ Input signal SI1 ~ SI7 can be assigned total seven physical input ports (the signal in the box is the default assigned signal), the input signal parameters address P5-10 ~ P5-19; the distribution method parameter description please reference P5-10;

④ Output signal SO1-SO4 total 4 physical output ports can be freely assigned signal (the signal in the box is the default assigned signal), the output signal parameters P5-21 ~ P5-26; the distribution method parameter description please reference P5-10;

⑤ RS485 bus communication;

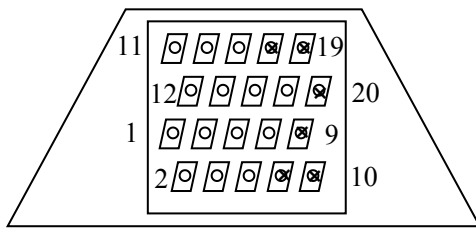
⑥ analog voltage input, the common negative terminal 35 and 36 feet short connect, the external torque T-REF, speed V-REF analog control;

Please according to use mode(refer to control mode) determine the I / O signal wiring connection and and assign them to the port (turn off the assigned signal of default) according to the mode used (refer to Control Mode);

Appendix 2 The **instructions** of JX series

1. The definition of encoder and power supply wiring

Side of driver



				×
			18 grey	×
1 purple	3 White	5 Black	7 brown	×
2 blue				×

Side of motor 60~130 series

E-	E+	SD-	0	SD+	+5V	PE
2	3	4	5	6	7	1
black	white	blue	brey	purple	brown	

Power line

U	V	W	PE
2	3	4	1
blue	Brown	Black	Yellow and green

2. Input and output

Input and output add three /CLRM /BATERR /CLRABSERR

Here's the assigned addresses and definition:

Name	Definition	Assigned address	Monitor address
/CLRM	Clear encoder multi-turn data	P5-19H	0x0812
/CLRABSE RR	Clear the encoder error	P5-16H	0x080C
/BATERR	Encoder battery alarm output	P5-26H	0x081E

3. Monitoring instructions

Add the encoder position monitoring, multi-turn information monitoring, encoder alarm code monitoring

Namw	Definition	Unit	Monitor address
Un-10	Rotation angle (encoder)	*1	0x70A
Un-11	Rotation angle (encoder)	*10000	0x70B
Un-21	Multi-turn of encoder	*1	0x715

4. New Function

1、Add motor encoder calibration

Operation method: The driver is in standby mode (bb) mode, set the parameters as follows:

P0-00	2
P0-01	1
P4-09	30

After setting, press to F6-00, use the auxiliary enable function, enable the motor, wait for about 5 seconds to complete the calibration. The calibration will take effect after the power is restart.

2、 Add function of directly back to the origin

After specifying the absolute position, return directly to the origin.

Parameter settings:

Name	Definition	Unit	Defaults
P2-25	Low posotion of zero pulse number	*1	0
P2-26	High posotion of zero pulse number	*10000	0
P2-17	circle number of zero position	*0x1FFFF	0

Using this function,X position of P2-20 set to 7 (reference to page 75, Homing instructions)

3、 Add the function of clear multi-turn of encoder data

In drive standby mode, the /CLRMR signal is changed from low to high for approximately 5S, multi-turn data will be clear, and the encoder multi-turn data will clear at the same time.

4、 Add the the alarm clear encoder function

In drive standby mode, the encoder alarm is cleared when the / CLRABSERR signal is changed from low to high for approximately 5 seconds. Multi-cycle data will not be cleared.

5、 Battery alarm

When the battery voltage of the encoder is lower than 3.1V (normal 3.5V), the / BATERR alarm signal will output high level.

Appendix 3 Warranty agreement

- ❖ Warranty period: 12 months
- ❖ Warranty range: during normal use, the servo system is abnormal
 - How to confirm the servo system is normal?
 - a. Remove other control systems and loads other than the servo system
 - b. Unplug the 50-pin control signal input and output plugs
 - c. Remove the motor shaft load (such as sleeve, reducer, etc.), make the shaft without any load
 - d. Turn off the enable signal (P5-10 is set to 0101) and reset the factory settings in the panel display to standby mode (refer to 4.2 Page 11 e.), power off and restart, and use JOG mode (Refer to 4.2) Motor jogging and continuous running test, if the JOG does not work please follow the instructions below to determine the specific faulty servo system components.
 - How to judge the specific faulty part
 - Servo system consists of three main components: ① driver ② motor ③ wiring
 - Method: A. Replacement method, replace the spare parts one by one until the system is normal; B. Removal method, applies to the case of system over-current trip protection can be judged as a result of motor or drive damage caused.; C. Replacement test, put any part of the fault servo system to another set of normal operation servo system for testing.
 - If still not know the specific failure of the servo system components after the above method, please send the entire servo system to us for maintainance.
- ❖ The following situation is beyond our warranty terms:
 - Caused by abnormal use
 - Power supply beyond the voltage allowable range
 - Wiring errors lead to parts burned and irreparable damage
 - Obvious signs of physical impact caused by external impact or physical damage
 - Parts have water or other metal in it (long-term work in the presence of metal dust and water environment, please be sure to do preventive measures, so as to prevent unnecessary losses)
 - Damage caused by human error
 - Over Warranty: Exceed warranty time
 - Dismantle: Fragile tamper tag has been torn, disassembled or other hardware changes
- ❖ Please connect our technicians and sales for servo system fault.