WECON®

Servo Drive User Manual

LITE Version

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Foreword

This manual is for VD1 series Servo drive.

In order to use this series of Servo driver correctly, please read this manual carefully beforehand, and keep it for future use.

If user has any doubts about the function and performance of this device during use, please contact our technicians to get relevant help.

Wecon products are constantly being improved and upgraded. The contents of this manual are subject to change without notice.

This manual is suitable for beginners and intermediate readers. All interpretation rights of this book belong to Wecon company.

⚠ WARNIN
Serious injury or death may be caused by inproper operatoin.

⚠ CAUTION
Moderate or minor injury and equipment damage may be caused by inproper operatoin.

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Content

1. Safety Instruction

1.1 Precautions for Safety

This section explains important items that users must observe, such as product confirmation, storage, transportation, installation, wiring, operation, inspection, and disposal. Follow the steps required in this manual for trial operation.

⚠ **WARNIN**

- ◆ After the power is turned off for more than 5 minutes and the power indicator is off, use a multimeter to confirm that the voltage across the high-voltage capacitor has dropped to a safe voltage, and then perform the disassembly of the driver, otherwise electric shock may be caused due to residual voltage.
- ◆ Do not touch the inside of the Servo drive, otherwise electric shock may be caused.
- ◆ To avoid an electric shock, insulate the connections of the power supply terminals.
- ◆ To prevent an electric shock, always connect the protective earth (PE) terminal (marked) of the Servo to earth well.
- ◆ Install the Servo drive, Servo motor, and external brake resistor on incombustible material. Installing them directly or close to combustibles will lead to smoke or a fire.
- ◆ Always connect the magnetic contactor and the non-fuse breaker between the power supply and the main circuit power supply of the Servo driver (three-phase is L1, L2, L3); otherwise, when the device fails, the high current may not be cut off. This could cause a fire.
- ◆ Provide adequate protection to prevent screws and other conductive matter, oil and other combustible matter from entering the Servo drive and Servo motor.
- ◆ When the Servo motor and the machine are connected, if an operation error occurs, it will not only cause mechanical damage, but may also lead to personal safety accidents.
- ◆ Do not damage or pull the cable with force, do not subject the cable to excessive force, or place heavy objects under it, otherwise electric shock may occur, causing the product to stop operating or burn out.
- ◆ Do not use the brake function of motor for normal braking, otherwise it may cause a malfunction.
- ◆ Except for the designated operator, please do not set up, disassemble or repair the equipment, otherwise electric shock or injury may be caused.
- ◆ Do not remove the cover, cables, connectors, and optional accessories while the power is on. Otherwise, electric shock may occur.
- ◆ Install a stop device on the machine side to ensure safety.
- ◆ Please take measures to ensure that the personal safety will not be endangered when restarting, otherwise it may cause injury.
- ◆ Do not modify this product, otherwise it may cause personal injury or mechanical damage.

1.2 Precautions for Storage and Handling

⚠ CAUTION
Please keep and install in the following environment: ◆ Locations where the ambient temperature does not exceed the product specifications; ◆ Locations where the relative humidity does not exceed the product specifications; ◆ Locations where condensation does not occur due to rapid temperature changes; ◆ Locations with less dust, salt and metal powder; ◆ Locations without water, oil, medicine plashing etc.; ◆ Locations where vibration or shock will not affect the product (places that exceed product specifications); ◆ Location that will not be exposed to radiation; ◆ No corrosive gas or flammable gas; ◆ No flammable materials nearby;
Storage or installation in environments other than those described above can cause product failure or damage: Please use proper method for transportatoin according to the weight of the product; Do not hold the motor cable or motor shaft for transportation; When operating the Servo unit and Servo motor, pay attention to sharp parts such as the corners of the equipment.

1.3 Precautions for Installation

⚠ CAUTION
◆ Do not install this product in a place where it will be splashed with water or an environment prone to cause corrosion; ◆ Please follow the requirements of the installation direction, otherwise it may cause equipment failure; ◆ When installing, please ensure that the specified distance between the Servo drive and the inner surface of the electrical cabinet and other machines is proper, otherwise it may cause fire or equipment failure; ◆ Do not apply excessive impact, otherwise it may cause equipment failure; ◆ Do not sit on this product or place heavy objects on it, otherwise personal injury may be caused; ◆ Do not use this product near flammable gas or combustible materials, otherwise there may be danger of electric shock or fire; ◆ Do not block the air intake and exhaust ports, and do not allow foreign matter to enter the product, or the equipment may be damaged due to the aging of internal components or cause a fire;

1.4 Precautions for Wiring

> ### ⚠ CAUTION
>
> ◆ Do not connect three-phase power to the output terminals U, V, and W of the Servo drive, otherwise it may cause equipment damage or fire;
>
> ◆ Connect the Servo drive power output (U/V/W) to the Servo motor power input (U/V/W) directly. Do not let a magnetic contactor. Otherwise malfunction may be caused.
>
> ◆ When DO output is connected to the relay, please pay attention to the polarity of the freewheeling diode, otherwise the driver may be damaged and the signal may not be output normally;
>
> ◆ Please securely fix the power terminals and motor terminals, otherwise fire may be caused;
>
> ◆ Do not connect the 220V Servo drive directly to the 380V power supply;
>
> ◆ Do not pass power cables and signal cables through the same pipe or bundle them together. Power cables and signal cables should be separated by more than 30cm;
>
> ◆ Twisted shielded cables are used for signal lines and encoder cables, and the shield layers are grounded at both ends;
>
> ◆ The wiring length of the signal input line is recommended to be within 3M, and the wiring length of the encoder is recommended to be within 15M;
>
> ◆ When using in the following places, please take proper shielding measures:
>
> - When interference occurs due to static electricity;
> - Places with strong electric or magnetic fields;
> - Places where there may be radiation;
>
> ◆ When checking, make sure that the CHARGE indicator is off.

1.5 Precautions for Maintenance and Inspection

> ### ⚠ CAUTION
>
> ◆ During trial operation, in order to prevent accidents, please run the Servo motor with no load (not connected to the drive shaft), otherwise injury may be caused.
>
> ◆ When the Servo motor is running, do not touch rotating parts, otherwise injury may be caused.
>
> ◆ Be sure to set proper inertia ratio, otherwise vibration may be caused.
>
> ◆ When installing drive on a machine a, please set the parameters corresponding to the machine in advance. Otherwise it may cause the machine to run out of control or malfunction.
>
> ◆ When installing drive on a machine, please put the Servo motor in a state that can be stopped immediately at any time, otherwise injury may be caused
>
> ◆ When using a Servo motor on a vertical axis, install a safety device to prevent the workpiece from falling in an alarm or overtravel condition. In addition, please set the Servo lock stop when overtravel occurs, otherwise the workpiece may fall down during overtravel.
>
> ◆ Extreme parameter adjustments and setting changes can cause the Servo system to become

unstable. Therefore, do not do this, otherwise injury may be caused.

◆ When an alarm occurs, reset the alarm after clearing the cause and ensuring safety, and restart the operation, otherwise injury may be caused.

◆ Except for special purposes, do not change the maximum speed value (P1-10). Inadvertent changes could damage the machine or cause injury.

◆ When the power is turned on and for a period of time after the power is turned off, the heat sink of the Servo driver, external regenerative resistor, Servo motor, etc. may become hot. Do not touch it, otherwise injury may be caused.

◆ If the power supply is restored after an instantaneous power failure during operation, the machine may restart suddenly, so please do not approach the machine, and press the non-stop button during power failure, and then operate after the power supply is stable

Servo Drive User Manual

2. Product Information

2.1 Servo Drive Products

2.1.1 Servo Drive Model
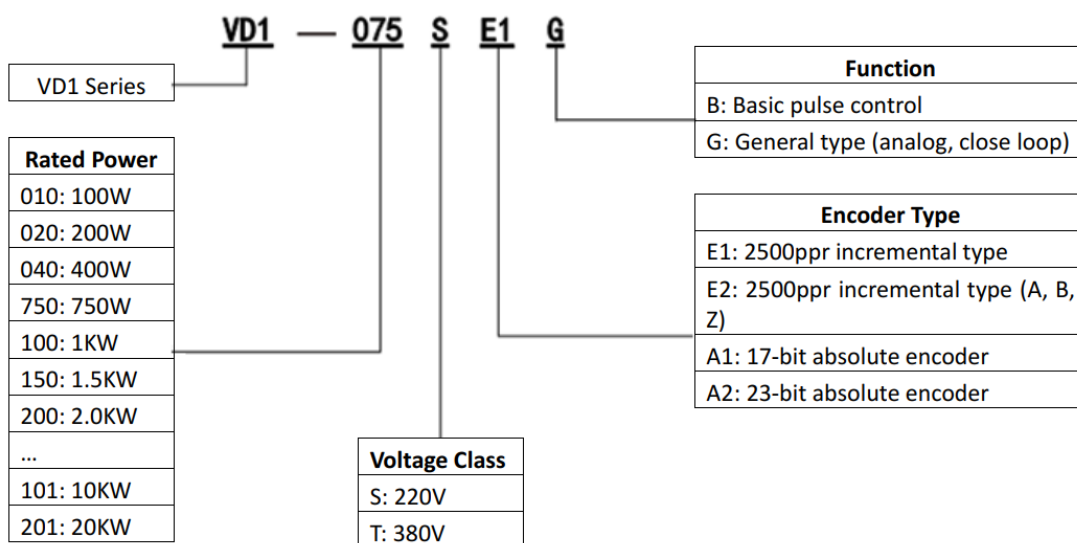
Figure 2-1 Servo Drive Naming Rule
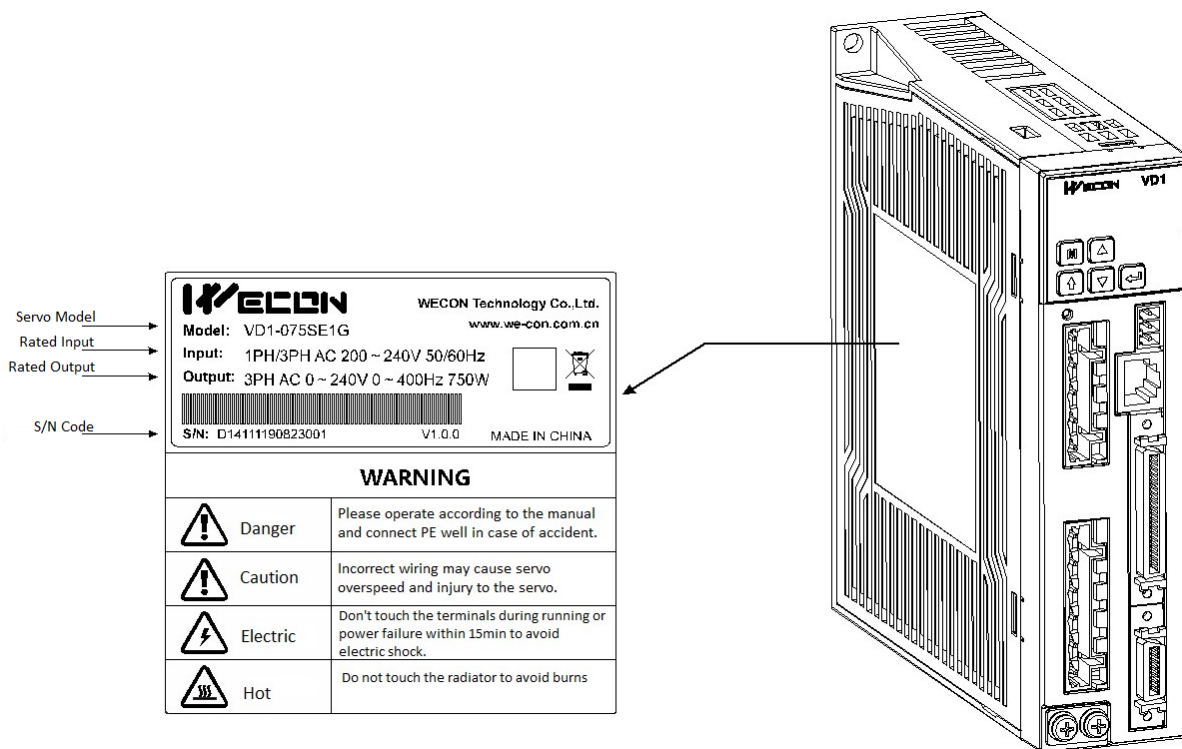
Figure 2-2 Servo Drive Rating Plate

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2.1.2 Servo Drive Parts Identification
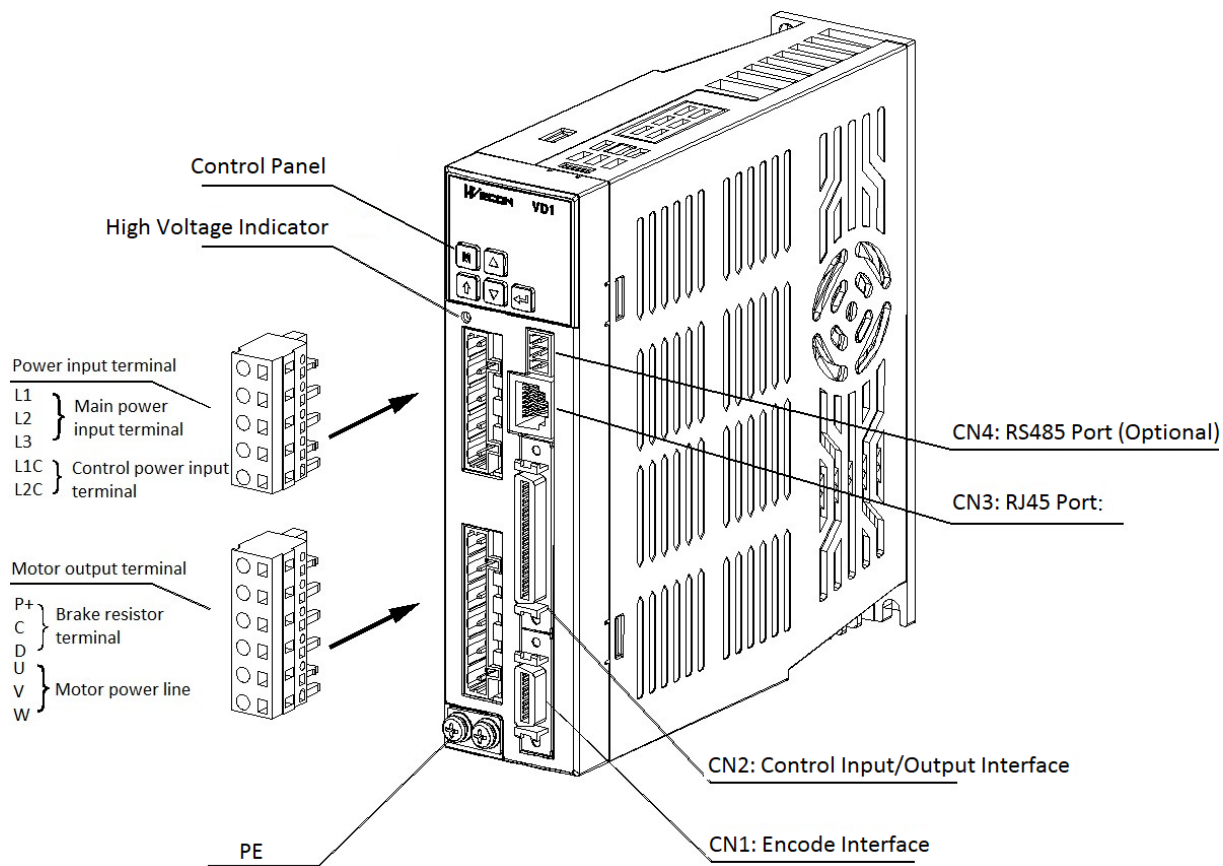
Figure 2-3 Servo Drive Structure

Note:

When using an external regenerative resistor or an internal regenerative resistor, a short-circuit treatment is required, as shown in the figure below:

When using an external regeneration resistor, remove the jumper between C and D, and connect the external resisitor between P+ and C.

Short connect C and D when using the internal resistor.
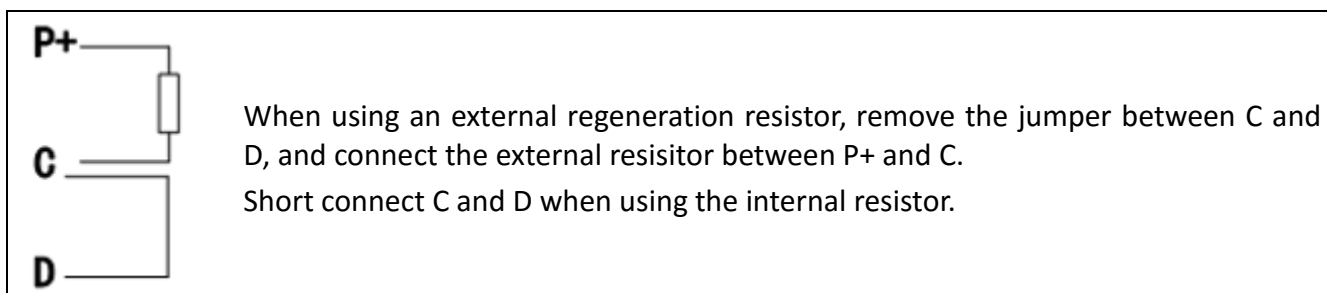
2.1.3 Specifications of the Servo Drive

Servo model	VD1-010Sxx	VD1-020Sxx	VD1-040Sxx	VD1-075Sxx
Output current (A)	1.8	2	2.8	4.1
Maximum output current(A)	5.5	7.5	8.6	12.5

Braking method	Built-in regenerative resistor, or external regenerative resistor
Main circuit power	Single phase, 3 phases 220V -10%-+10% 50/60Hz
Control power	Single phase 220V -10%-+10% 50/60Hz

2.2 Servo Motor

2.2.1 Servo Motor Model Name

WD 80 M -075 30 S -E1 A

Flange Size	Motor Intial	Rated Power	Rated Speed	Voltage Class	Encoder Type	Brake, Oil Sealing
40	L:Low	010: 100W	30: 3000 rpm	S: 220V	E1: 2500ppr Incremental Type	A: None
60	M: Medium	020: 200W	25: 2500 rpm	T: 380V	E2: 2500ppr Incremental Type (A, B, Z Phase)	B: Oil Sealing
80	H: High	040: 400W			A1: 17-bit Absolution Encoder	C: Break
90		075: 750W			A2: 23-bit Absolution Encoder	D: Break + Oil Sealing
100		100: 1KW				
110		150: 1.5KW				
130		200: 2KW				
		101: 10KW				
		201: 20KW				

Figure 2-4 Servo Motor Naming Rule
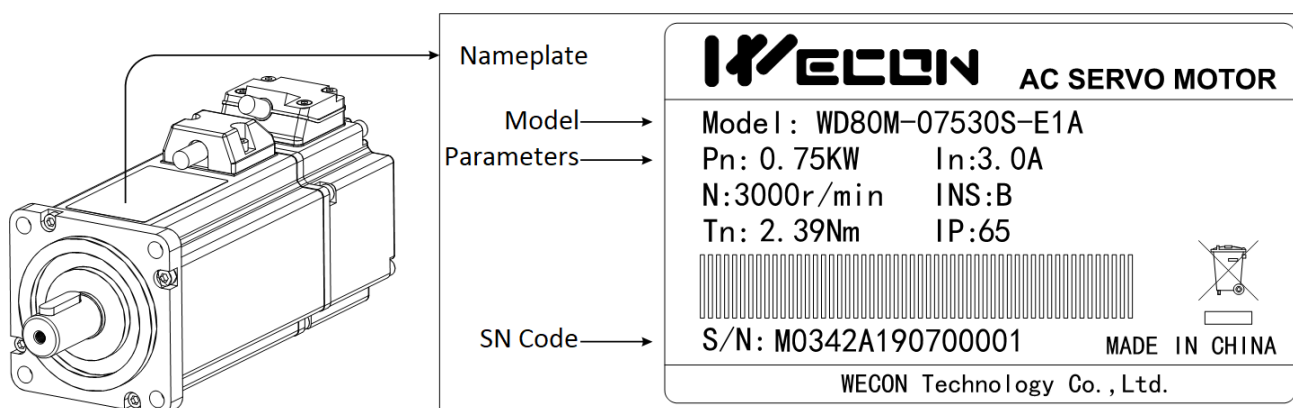
Figure 2-5 Servo Motor Rating Plate

2.2.2 Servo Motor Parts Identification
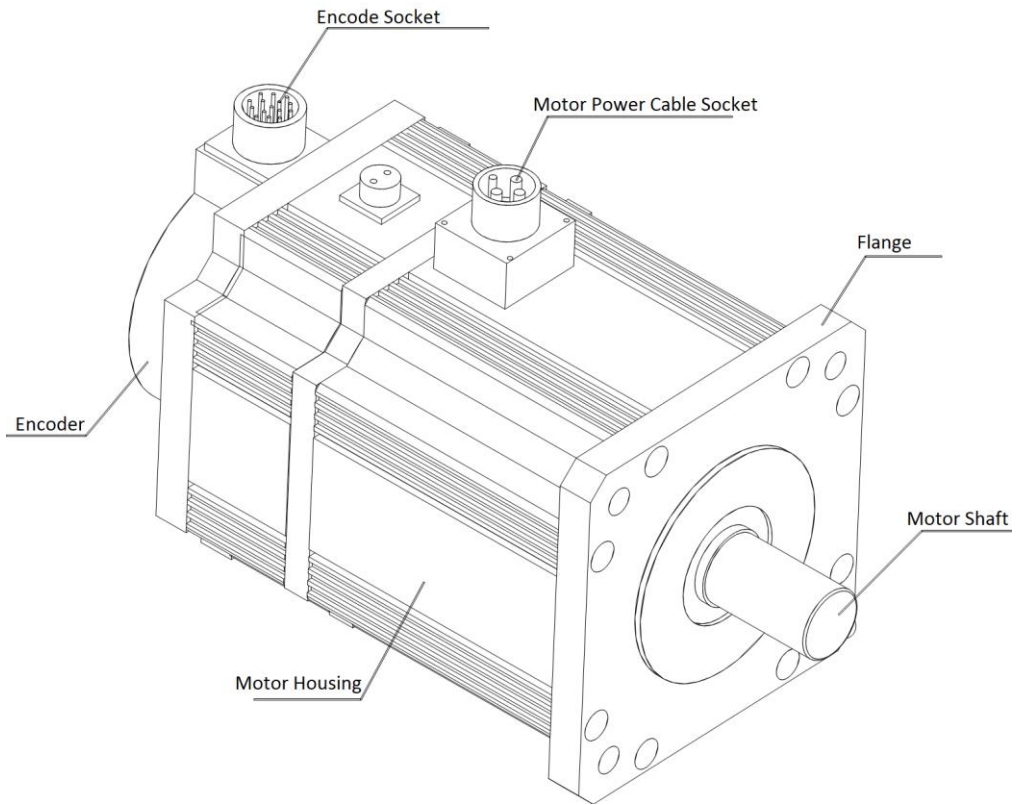
Figure 2-6 Servo Motor Structure (1.0KW-2.3KW)
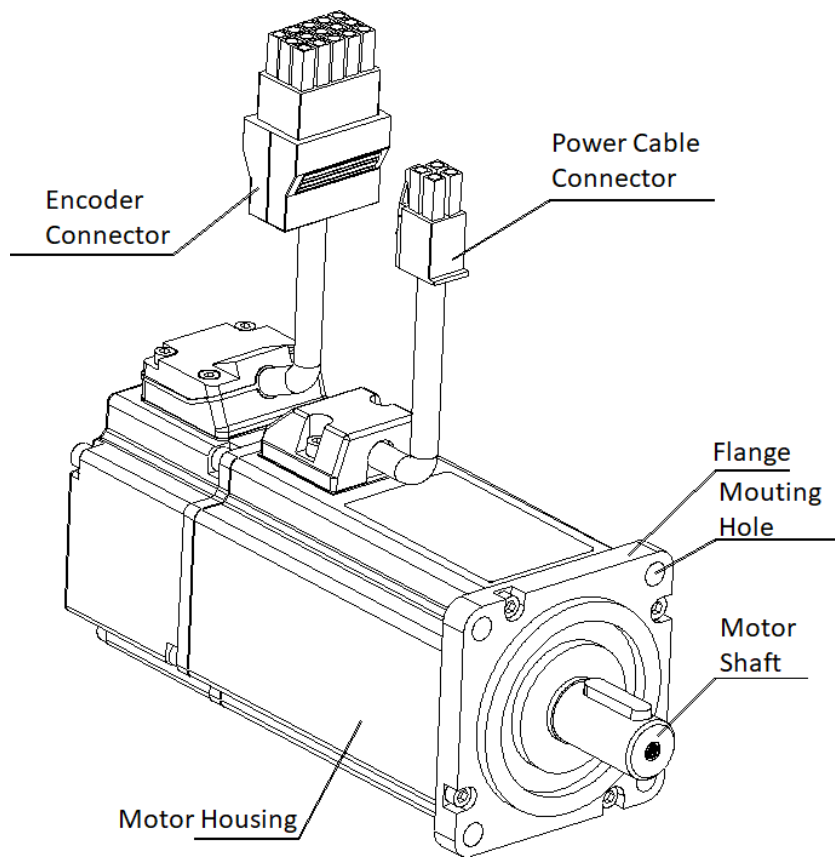
Figure 2-7 Servo Motor Structure (400W-750W)

2.2.3 Specifications of the Servo Motor

Model	Flange (mm)	Rated Power (KW)	Rated Current (A)	Rated Torque (N.m)	Voltage (V)	Rated Speed (rmp)	Encoder Type	Motor Structure
WD60M-02030S-E1B	60	0.20	1.8	0.64	220	3000	2500ppr incremental	No break
WD60M-04030S-E1B	60	0.40	2.6	1.27	220	3000	2500ppr incremental	No break
WD80M-04030S-E1B	80	0.40	2	1.27	220	3000	2500ppr incremental	No break
WD80M-07530S-E1B	80	0.75	3	2.39	220	3000	2500ppr incremental	No break
WD80M-10025S-E1B	80	1.00	4.4	4	220	2500	2500ppr incremental	No break
WD130M-10025S-E1B	130	1.00	4	4	220	2500	2500ppr incremental	No break
WD130M-15015S-E1B	130	1.50	6	6	220	1500	2500ppr incremental	No break
WD130M-15025S-E1B	130	1.50	6	6	220	2500	2500ppr incremental	No break
WD130M-20025S-E1B	130	2.00	7.5	7.7	220	2500	2500ppr incremental	No break
WD130M-23015S-E1B	130	2.30	9.5	15	220	1500	2500ppr incremental	No break

3. Servo Drive and Servo Motor Installation

3.1 Servo Drive Installation

3.1.1 Dimension (unit: mm)
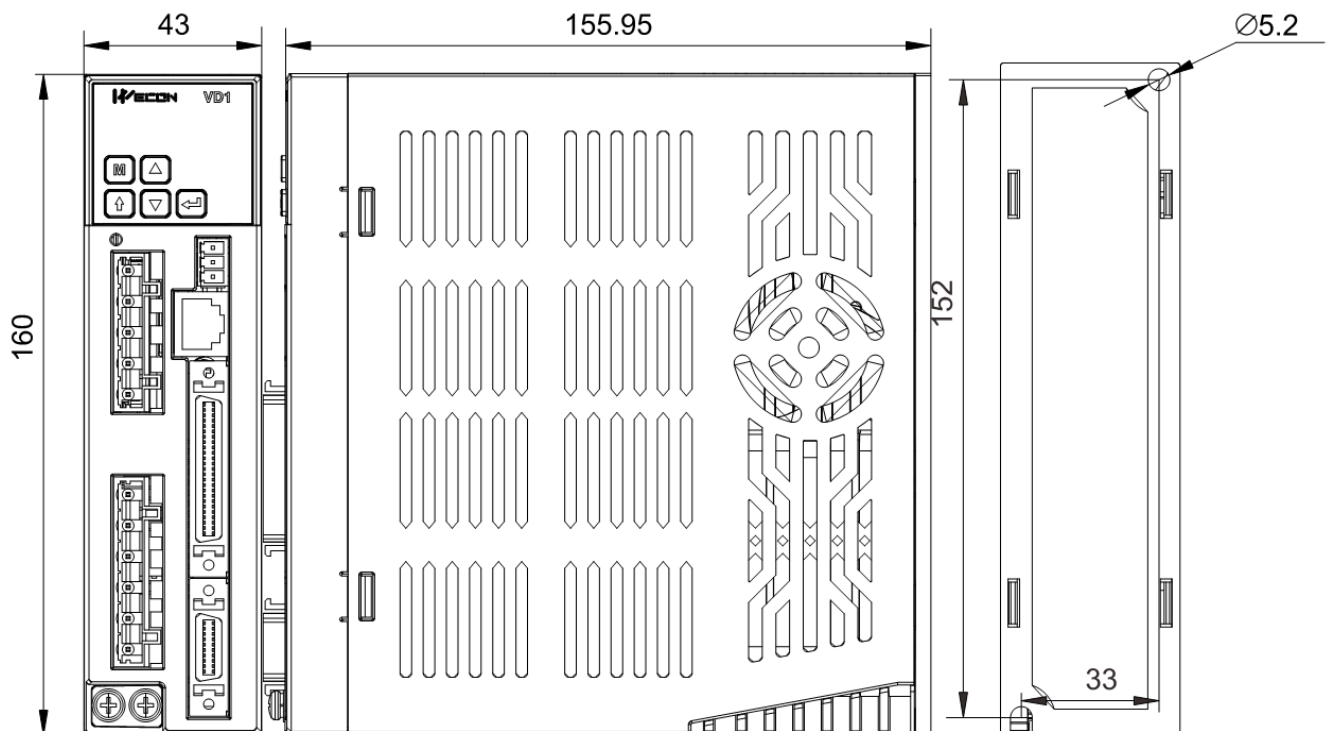
Figure 3-1 Servo Drive Dimension

3.1.2 Installation Site

1) Please install in the cabinet to keep out of sun and rain;
2) Location without vibration;
3) Please do not install in the environment of high temperature, humidity, dust, metal dust;
4) Do not use this product near the environment with corrosive and flammable gases such as hydrogen sulfide, chlorine, ammonia, sulfur, chlorinated gases, acids, alkalis, salts, flammable materials, etc.;

3.1.3 Installation Environment

The environment in which the Servo drive is installed has a direct impact on the normal function of the drive and its service life. Therefore, the environment in which the Servo drive is installed must meet the following conditions:

Item	Description
Operating temperature	-10℃-40℃ (Non-freezing)
Operating enhumidity	-20%-90%RH (Non-Condensing)
Storage temperature	-20℃-60℃
Storage humidity	-20%-90%RH (Non-Condensing)
Protection class	IP65
Vibration	< 0.5G (4.9m/s2),10-60Hz (Discontinuous operation)
Power system	TN system*

*: The neutral point of the power system is directly connected to the ground, and the exposed metal components are connected to the ground through a protective ground conductor.

3.1.4 Installation Precaution

1) **Specification**

   In order to make the cooling cycle work well, when installing the Servo drive, ensure that there is sufficient ventilation space around it. Be sure to follow the installation standards in the control cabinet as shown in the figure below, otherwise the driver may fail.
   Typical installation dimensions: see Figure 3-2 (a).

2) **Install side by side**

   When multiple units are installed in parallel, a minimum distance of 20mm between each other and a minimum distance of 100mm in the longitudinal direction are required (as shown in Figure 3-2 (b)). To prevent the high temperature, a cooling fan can be placed on the upper part. For smaller installation pitch, please consult our company.

3) **Installation direction**

   When installing the Servo drive, make the front side of the Servo drive (panel control interface) face the operator so that the Servo drive is perpendicular to the wall.

(a)   (b)
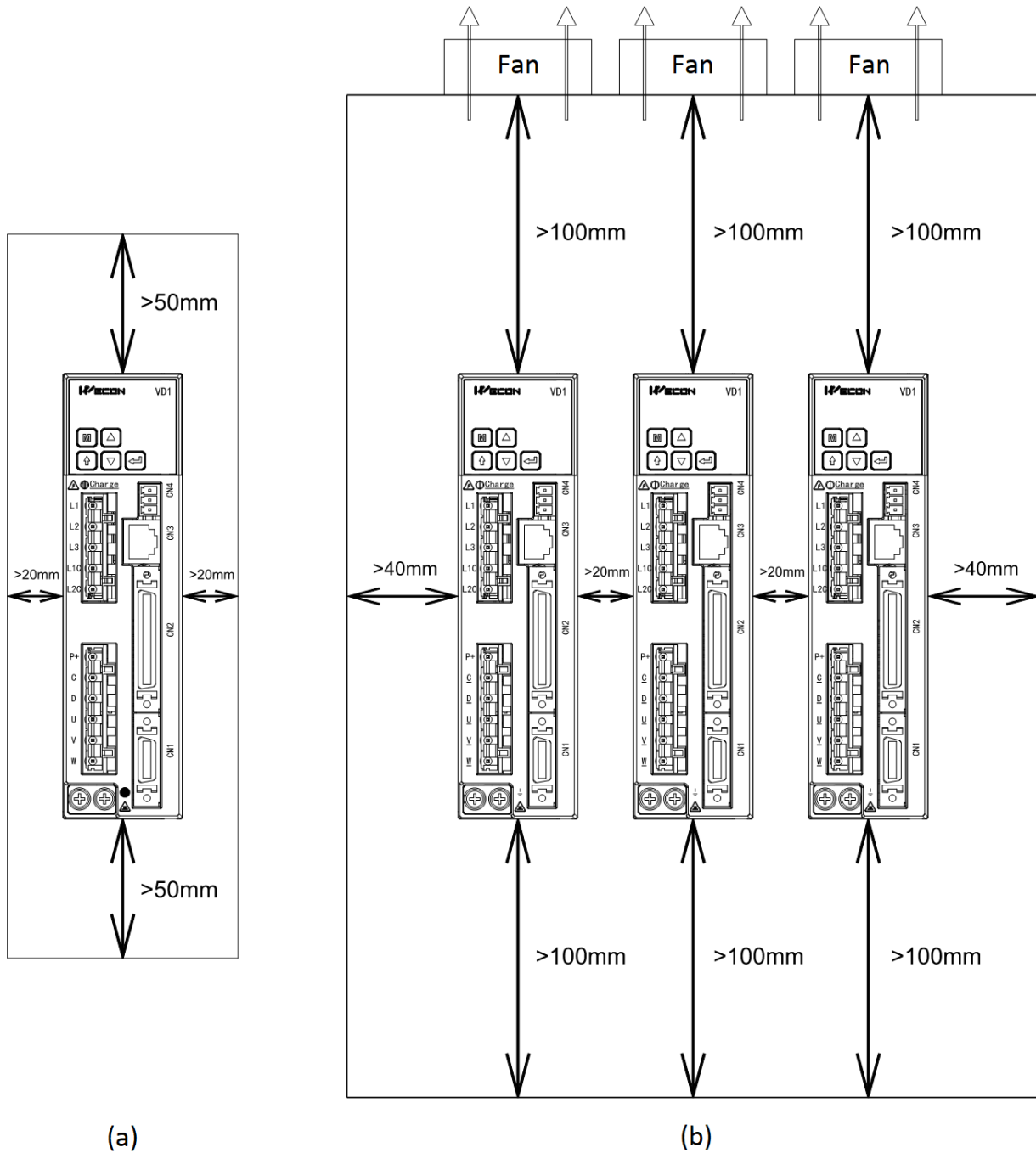
Figure 3-2

3.2 Servo Motor Installation

3.2.1 Dimension (unit: mm)

1) 60 Flange Series Motor

Specification	60 Flange Series Motor

Rated torque(N.m)	0.64	1.27	1.91
LA without brake holding(mm)	109	135	156
LA with brake holding(mm)	157	183	204
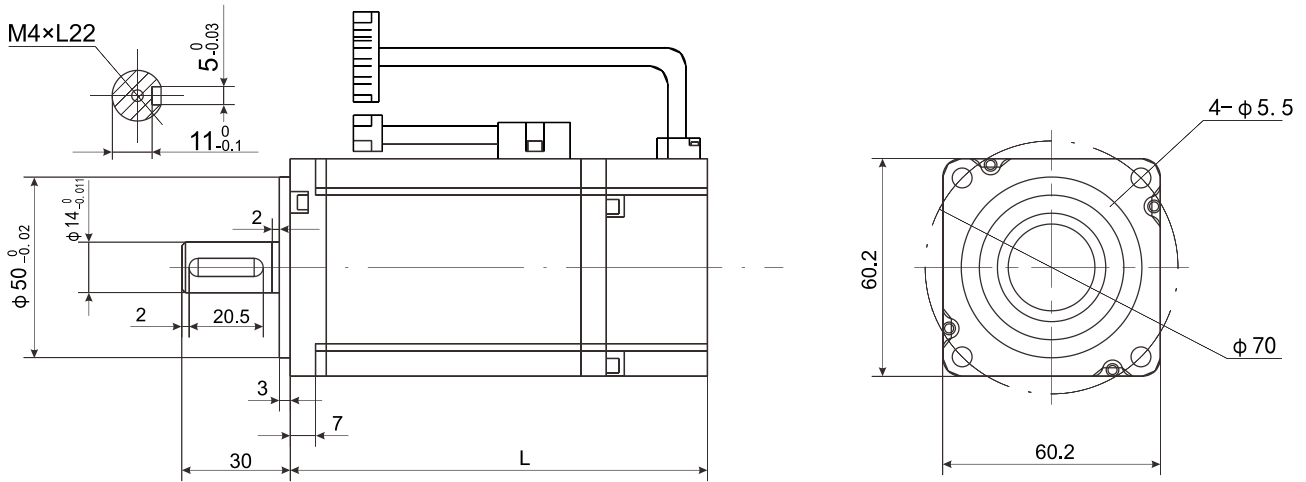
Figure 3-3 60 Flange Series Motor

2) 80 Flange Series Motor

Specification	80 Flange Series Motor			
Rated torque(N.m)	1.3	2.4	3.5	4
LA without brake holding(mm)	124	151	179	191
LA with brake holding(mm)	166	193	221	233
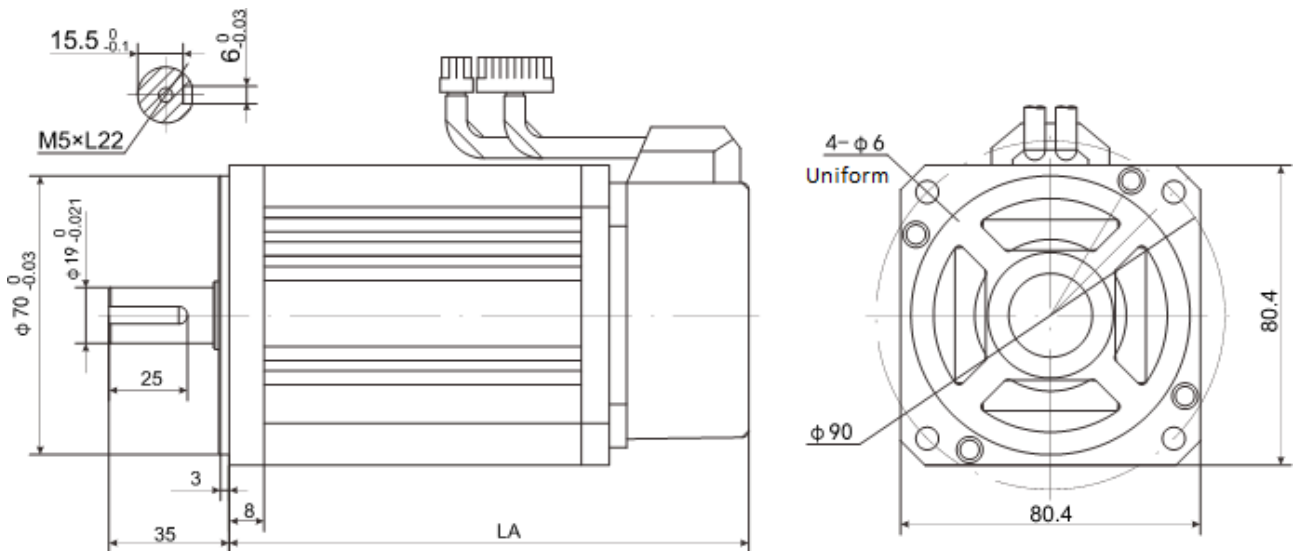
Figure 3-4 80 Flange Series Motor

3) 130 Flange Series Motor

Specification	130 Flange Series Motor

Rated torque(N.m)	4	5	6	7.7	10			15	
					1000 rpm	1500 rpm	2500 rpm	1500 rpm	2500 rpm
LA without brake holding(mm)	166	171	179	192	213		209	241	231
LA with brake holding(mm)	223	234	242	255	280		276	308	298
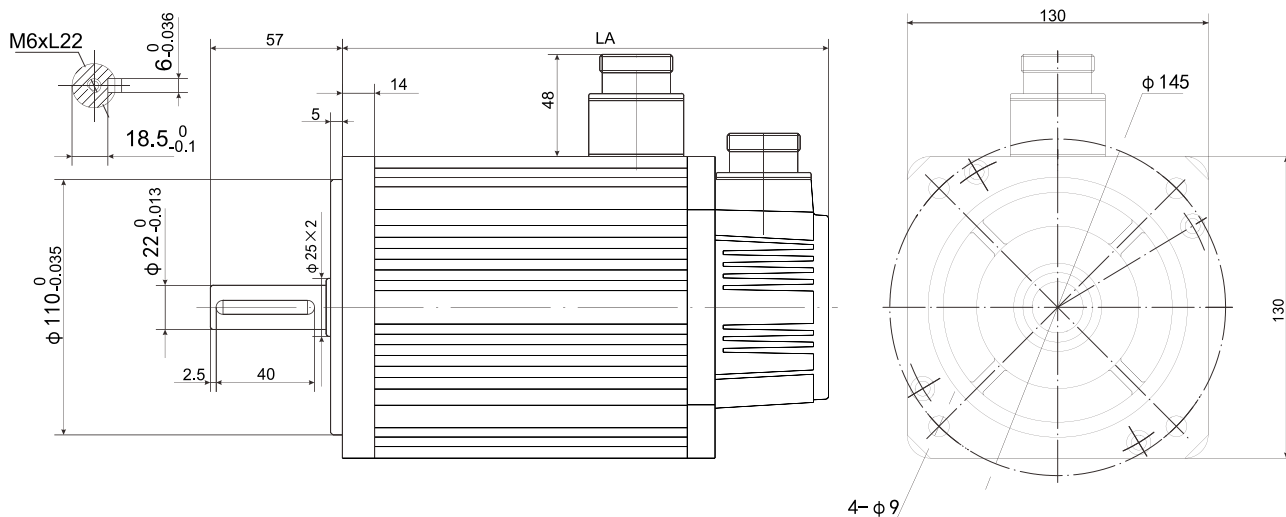
Figure 3-5 130 Flange Series Motor

3.2.2 Installation Location

1) Do not use the motor near the environment where there is corrosion of hydrogen sulfide, chlorine, ammonia, sulfur, chlorinated gases, acids, alkalis, salts, flammable gases, combustible materials, etc.
2) Do not remove the oil seal in places with grinding fluid, oil mist, iron powder, etc.;
3) Do not use the motor in a closed environment. Closed environment will lead to high temperature of the motor and shorten the service life;
4) A place away from heat sources such as stoves.

3.2.3 Installation Environment

The installation environment of the Servo motor has a direct impact on the normal function of the motor and its service life. Therefore, the installation environment of the Servo motor must meet the following conditions:

Item	Description
Operating temperature	-10℃-40℃ (Non-freezing)
Operating enhumidity	-20%-90%RH (Non-Condensing)
Storage temperature	-20℃-60℃

Storage humidity	-20%-90%RH (Non-Condensing)
Protection class	IP65
Vibration	< 0.5G (4.9m/s2),10-60Hz (Discontinuous operation)

3.2.4 Installation Precautions

Item	Description
Rust Inhibitor	Before installation, please wipe off the [rust inhibitor] of the Servo motor shaft, then do the relevant antirust treatment.
Encoder	● When installing a pulley on a Servo motor shaft with a keyway, use a screw hole on the shaft end. In order to install the pulley, first insert a stud into the screw hole of the shaft, use a washer on the surface of the coupling end, and gradually lock the pulley with a nut; ● For a Servo motor shaft with a keyway, use the screw holes on the shaft end for installation; ● For shafts without keyways, use friction coupling or similar methods; ● When removing the pulley, the pulley remover should be used to prevent the strongly impact from the load; ● To ensure safety, install a protective cover or similar device in the rotating area;
Alignment	When connecting with the machine, use a coupling and keep the axis of the Servo motor and the axis of the machine in a straight line
Direction	Servo motor can be installed in horizontal or vertical direction
Oil and water countermeasures	When using in a place with water drops, please confirm the protection level of the Servo motor before use. When using in a place with oil drops, do not remove the oil seal of the Servo motor. Conditions for using Servo motor with oil seal: ● Please ensure that the oil level is lower than the lips of the oil seal when using; ● The oil seal can be used in a state where there is splash of oil; ● When the Servo motor is installed in vertical direction, be careful not to allow oil to accumulate on the lips of the oil seal;
Stress condition of the cable	Do not [bend] or apply [tension] to the wires, especially the signal wires (diameter is 0.2mm or 0.3mm). During the wiring process, do not stretch cable too tightly.
Connect interface	For the connector, please note the following: ● When connecting the connector, make sure there are no foreign objects such as garbage or metal pieces in the connector; ● When connecting the connector to the Servo motor, be sure to connect it from the side of the main circuit cable of the Servo motor first, and the ground of the main cable must be connected reliably with earth. If encoder side cable is connected first, the encoder may malfunction due to the potential difference with PE;

	- When connecting, please make sure the pins are arranged correctly; - The connector is made of resin. Do not apply impact to avoid damaging the connector; - Do not apply stress to the connector when carrying the Servo drive with the cables connected. If you apply stress to the connector part, the connector may be damaged.

4.4. Wiring

4.1 Main Circuit Wiring

4.1.1 Terminals of the Servo Drive
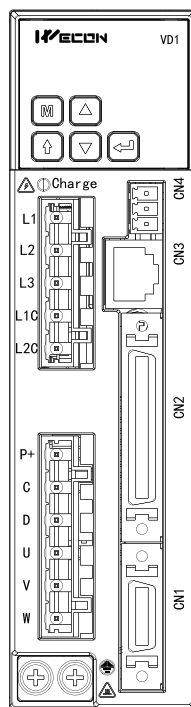
Figure 4-1 Terminal

Terminal	Description	Function
L1	Main power input terminals	Connect with three-phase 220V power supply; Single-phase 220V input only need to connect L1 and L3;
L2		
L3		
L1C	Control power input terminal	Connect to any two-phase or single-phase power of three-phase power;
L2C		
P+	For external regenerative resistor	Internal regenerative resistor: shortconnect C-D (default); External regenerative resistor: Disconnect the short wire between C-D, and then connect the external regenerative resistor between P + and C;
C		
D		
U	Motor power line terminal	It is connected to the U, V, and W of the motor to supply power to the motor;
V		
W		

PE	PE	Grounding terminal of the Servo drive.

4.1.2 Diagram of Power Wiring
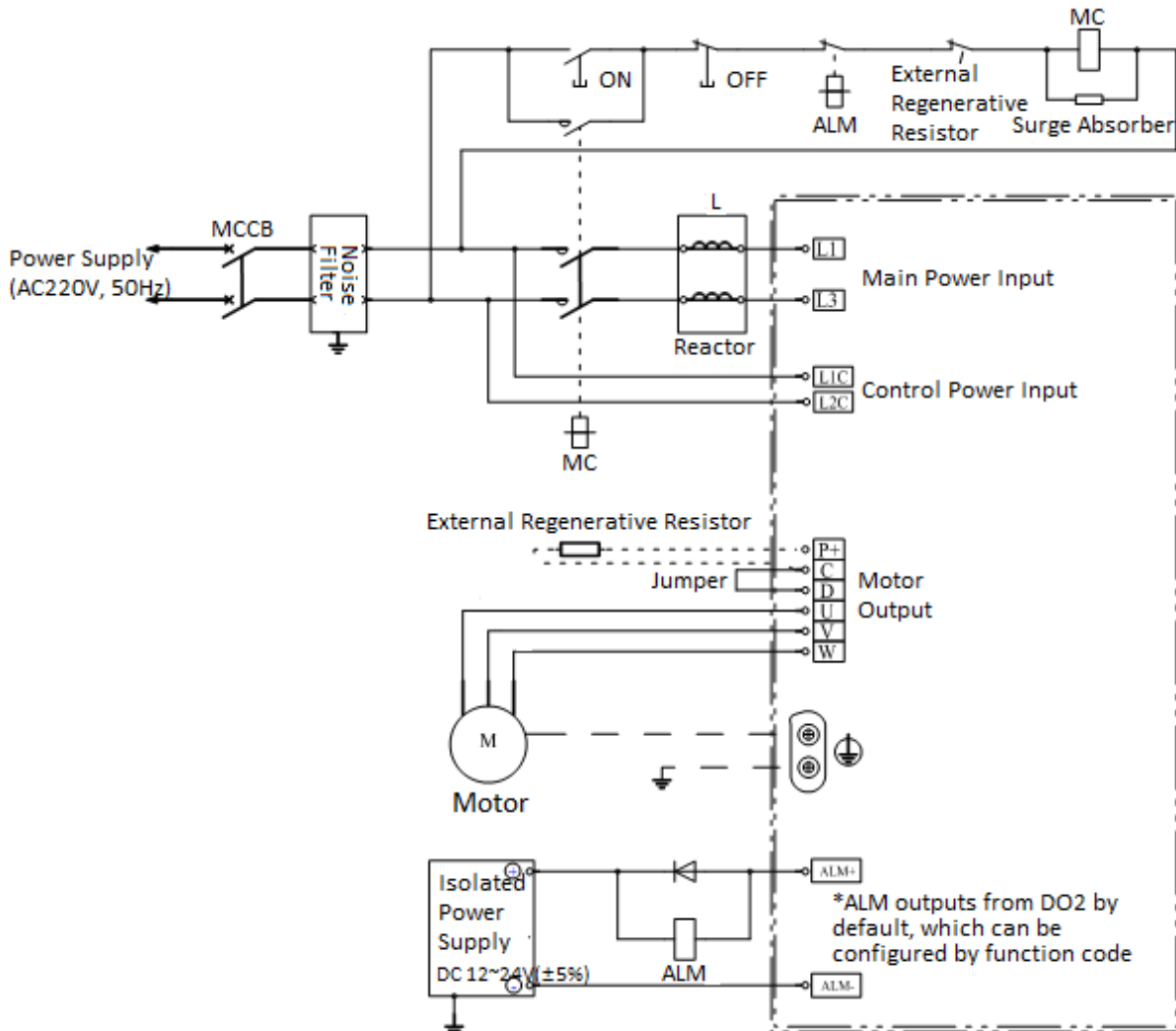
Figure 4-2 1-phase 220V Power Supply
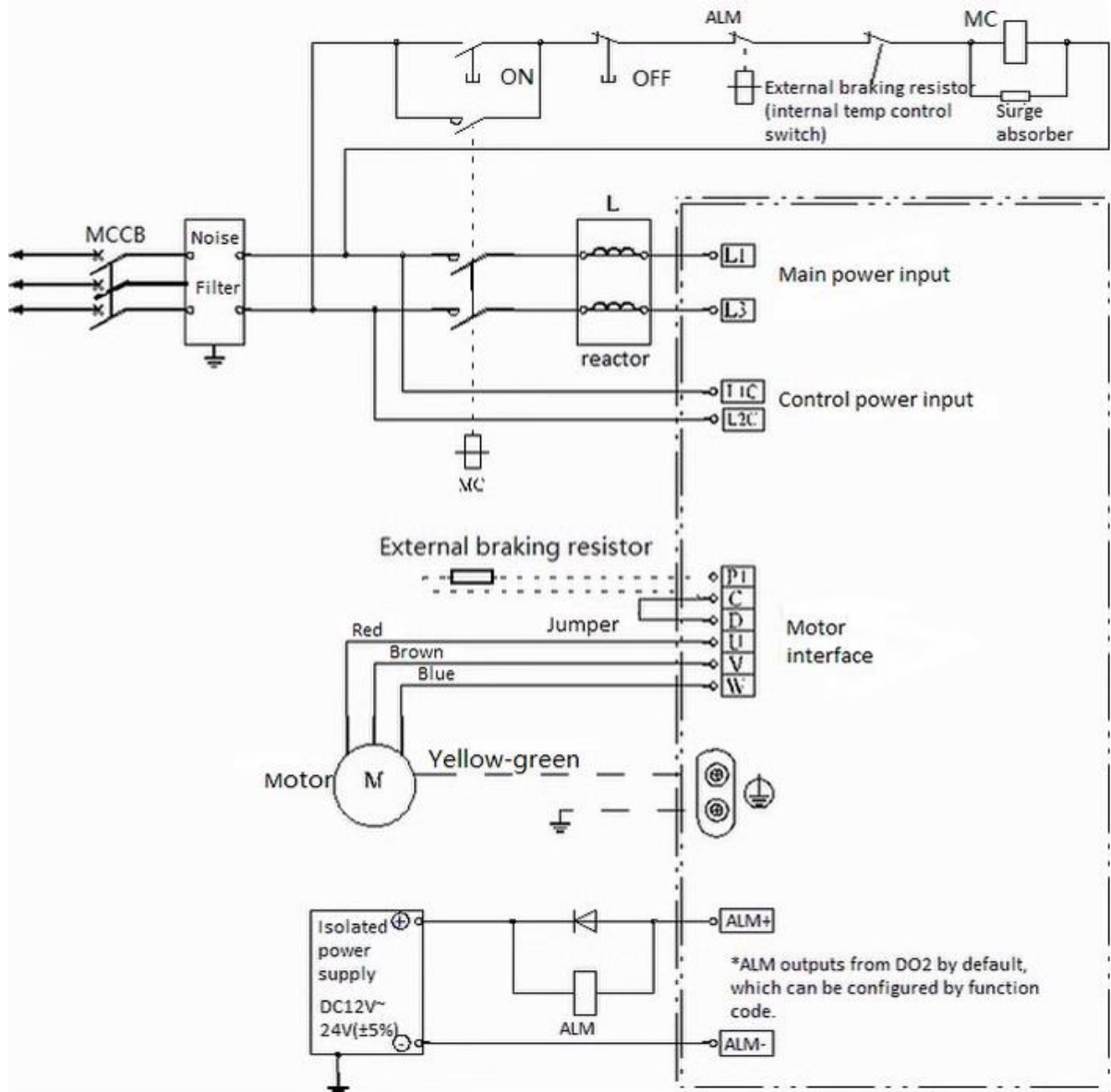
Figure 4-3 3-phase 220V power supply

4.1.3 Wiring of Motor Cables between Servo Drive and Servo Motor
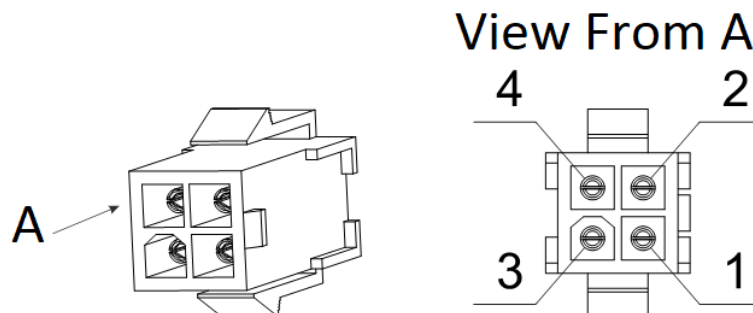
Figure 4-4 Power cable

Pin	Defination	Color
1	U	Red
2	V	Brown
3	W	Yellow
4	GND	Bule/green

4.2 Wiring of encoder terminal
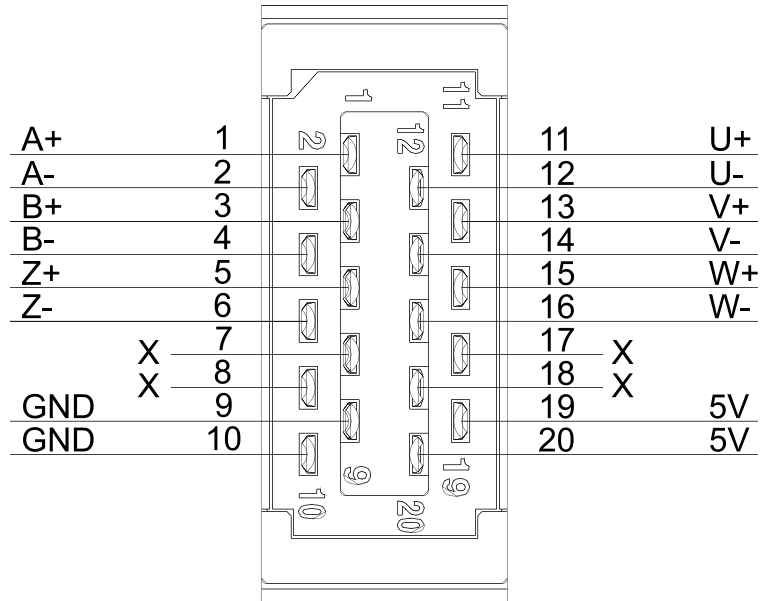
Figure 4-5 CN1 Terminal
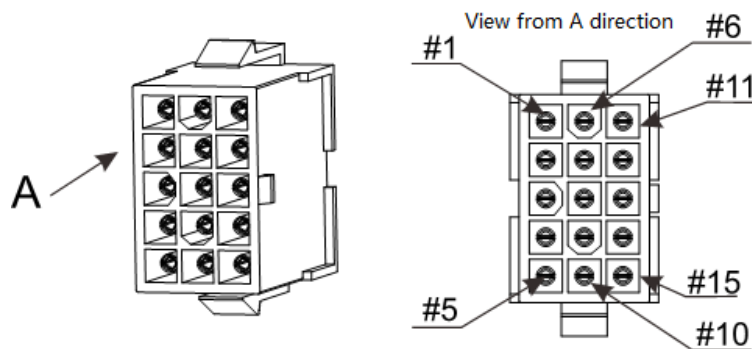
Figure 4-6 CN1 Outlet Terminal

CN1 Pin	Default Function	Color	Outlet Pin
1	A+	Brown	4
2	A-	Brown/White	14
3	B+	Red	9
4	B-	Red/White	13
5	Z+	Orange	7

6	Z-	Orange/White	5
9, 10	GND	Purple	3
11	U+	Yellow	6
12	U-	Yellow/Black	8
13	V+	Green	10
14	V-	Green/White	12
15	W+	Blue	11
16	W-	Blue/White	15
19, 20	5V	Purple/White	2

4.3   Wiring of Input/Output Control Terminal CN2

4.3.1 CN2 Pinout
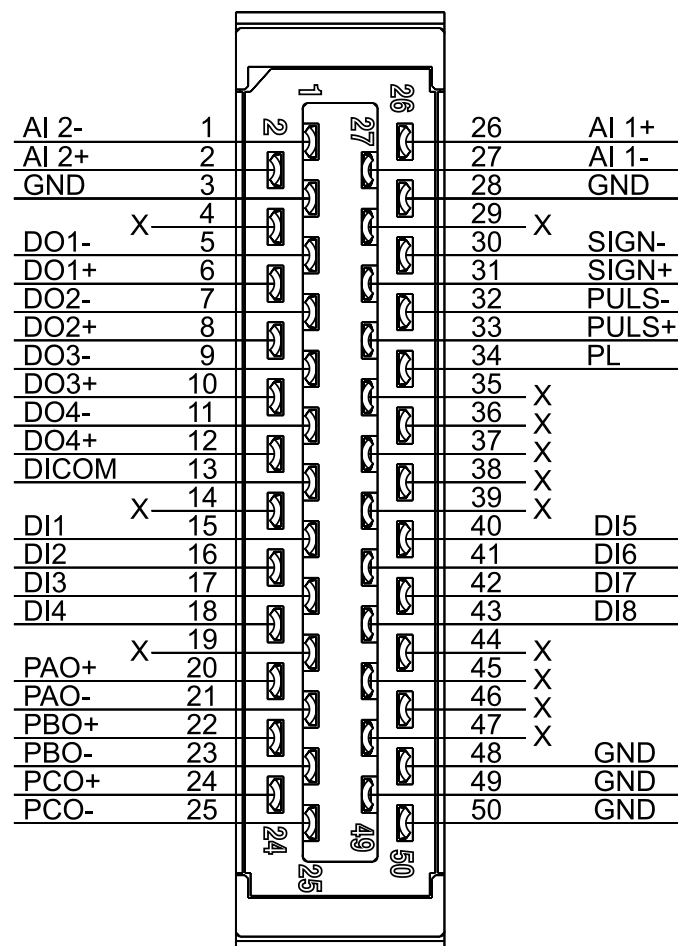
Figure 4-7 Servo Drive Input/Output CN2 Pinout

PIN	Function	PIN	Function	PIN	Function
1	AI_2-	16	DI2	31	SIGN+

2	AI_2+	17	DI3	32	PULS-
3	GND	18	DI4	33	PULS+
5	DO1-	20	PAO+	34	PL
6	DO1+	21	PAO-	40	DI5
7	DO2-	22	PBO+	41	DI6
8	DO2+	23	PBO-	42	DI7
9	DO3-	24	PCO+	43	DI8
10	DO3+	25	PCO-	48	GND
11	DO4-	26	AI_1+	49	GND
12	DO4+	27	AI_1-	50	GND
13	DICOM	28	GND		
15	DI1	30	SIGN-		

4.3.2 Wiring Diagram for Each Mode
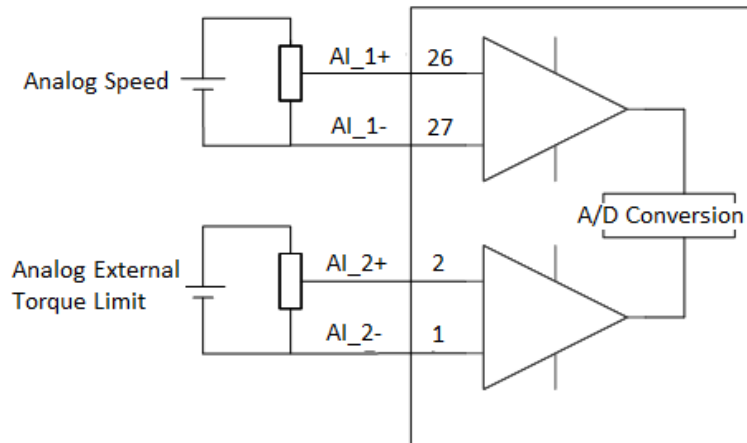
Figure 4-8 Analog Speed Mode
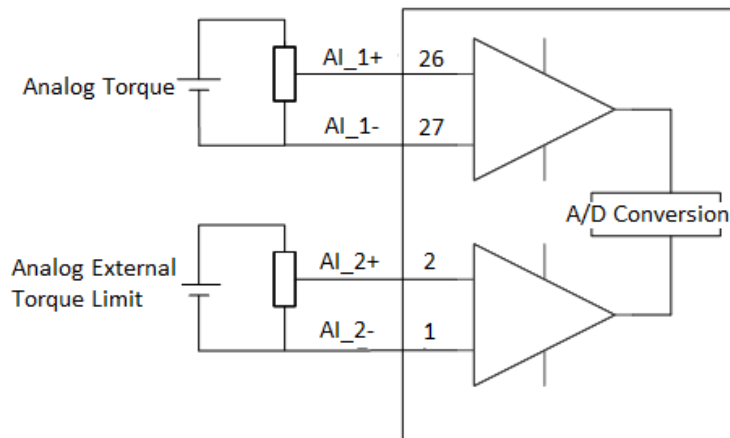
Figure 4-9 Analog Torque Mode
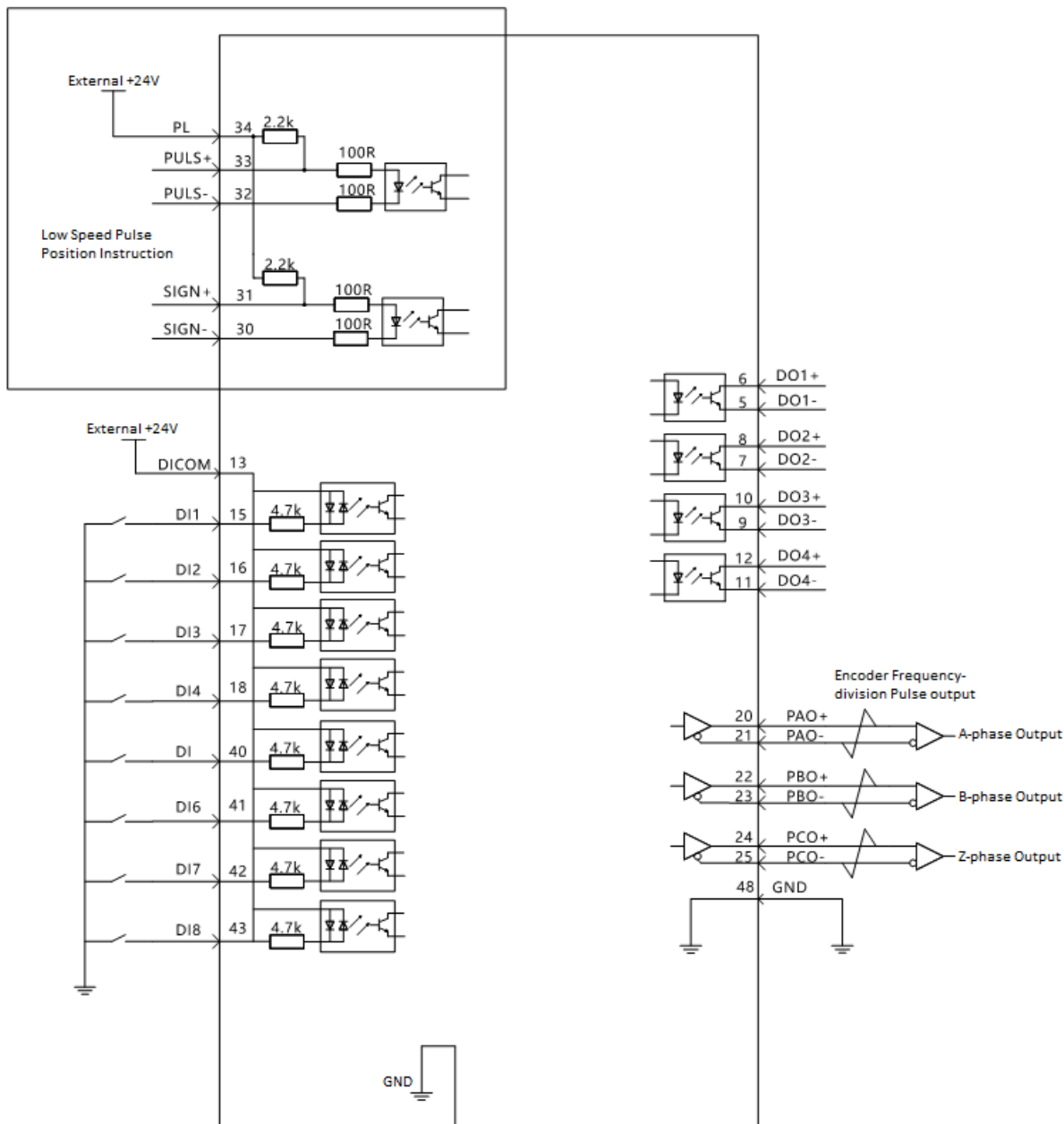
Figure 4-10 Position mode

4.3.3 Position Command Input Signal

PIN	Function	Description
33	PULS+	Low-speed pulse input mode: differential input and open collector. The input pulse contains three modes:
32	PULS-	
31	SIGN+	1) Direction+pulse (positive logic);
30	SIGN-	2) CW/CCW pulse;
		3) A, B phase quadrature pulse (4 times frequency);
34	PL	External power input terminal of reference pulse

The reference pulse and symbol signal output circuit on the host controller side can be either differential drive output or OC output. The following table lists the maximum input frequency and minimum pulse width of these output modes.

Pulse Mode	Differential	Open Collector
Maximum Frequency	500K	200K

Low-speed Pulse Input

1) Differential drive mode
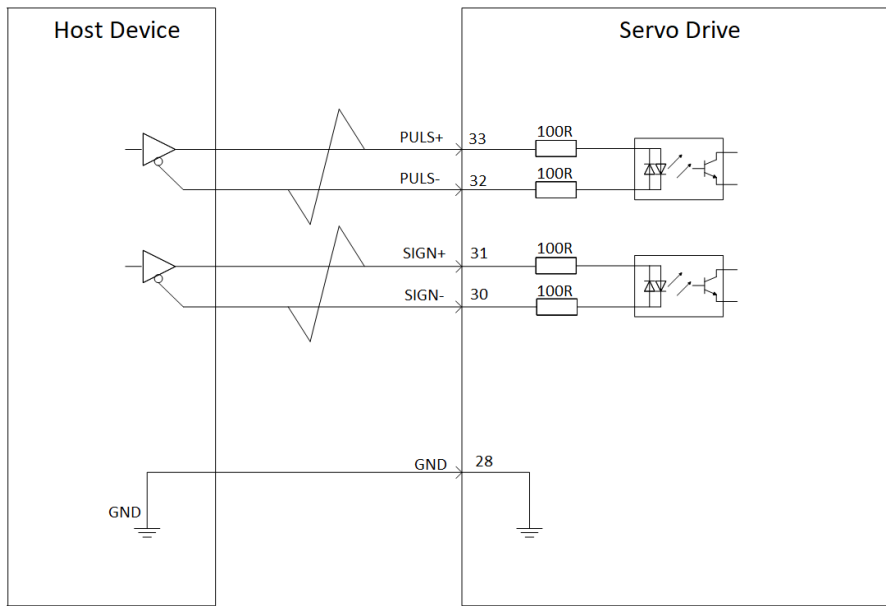
Figure 4-11

2) OC mode
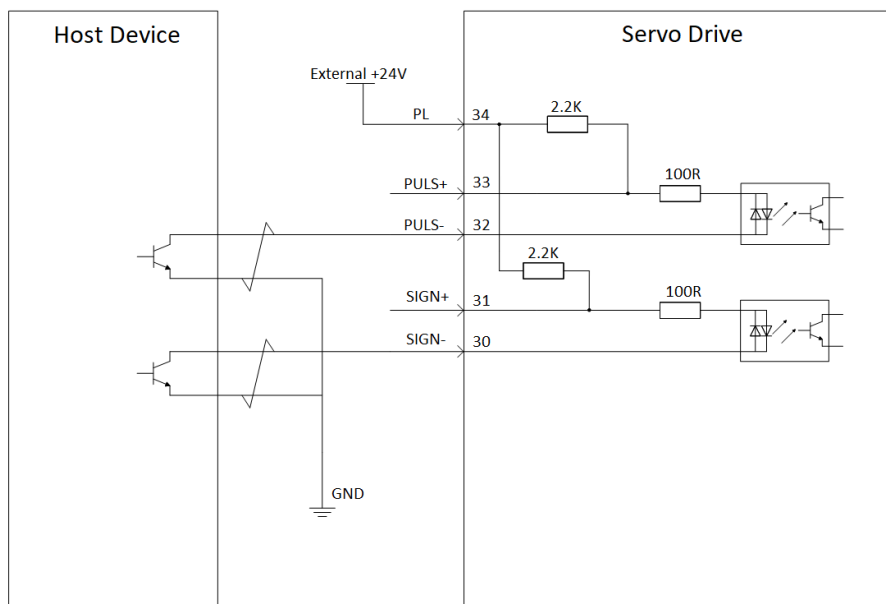
Figure 4-12

4.3.4 Analog Input Signals

PIN	Function	Description
26	AI_1+	AI_1 analog input signal with 12-bit resolution and input voltage range: -10V- + 10V.
27	AI_1-	
2	AI_2+	AI_2 analog input signal with 12-bit resolution and input voltage range: -10V- + 10V.
1	AI_2-	
3	GND	Analog input signal ground
28	GND	
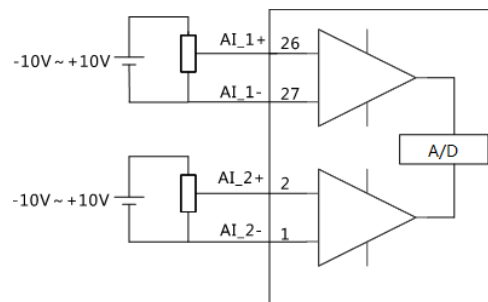
Figure 4-13

4.3.5 Digital Input and Output Signals

PIN	Function	Description
15	DI1	Servo enable
16	DI2	Clear alarm
17	DI3	Forward drive disable
18	DI4	Backward drive disable
40	DI5	Reverse direction
41	DI6	Pulse input inhibited
42	DI7	Reserved
43	DI8	Reserved
13	DICOM	Power supply(12-24V)
5	DO1-	Rotation detection
6	DO1+	
7	DO2-	Alarm signal
8	DO2+	
9	DO3-	Servo ready
10	DO3+	
11	DO4-	Position completed

12	DO4+	

Digital input signal

1) The host controller provides relay output.
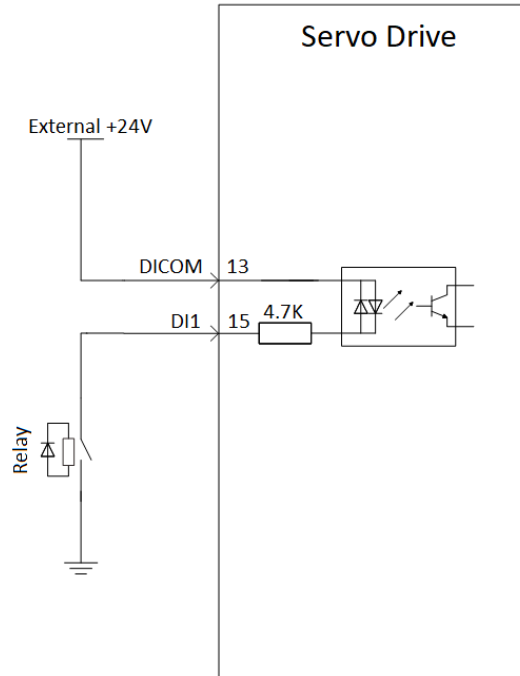
Figure 4-14

2) The host controller provides OC output.
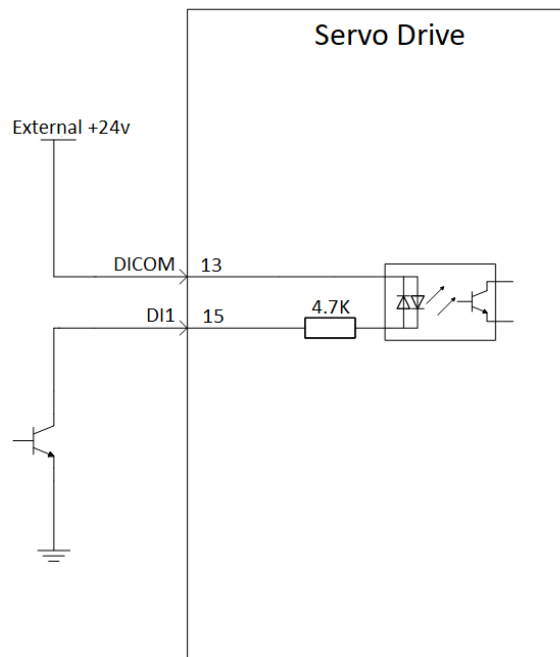
Figure 4-15

Digital output signal

1) The host controller uses relay input.
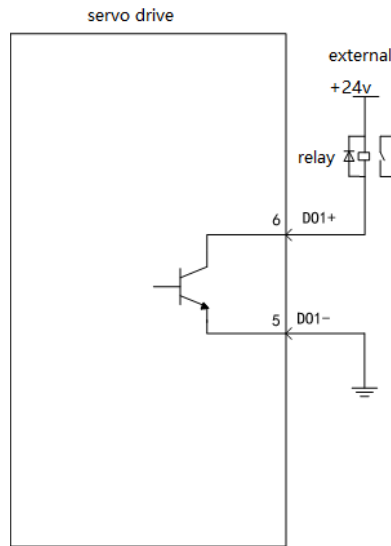
Figure 4-16

2) The host controller uses optocoupler input.
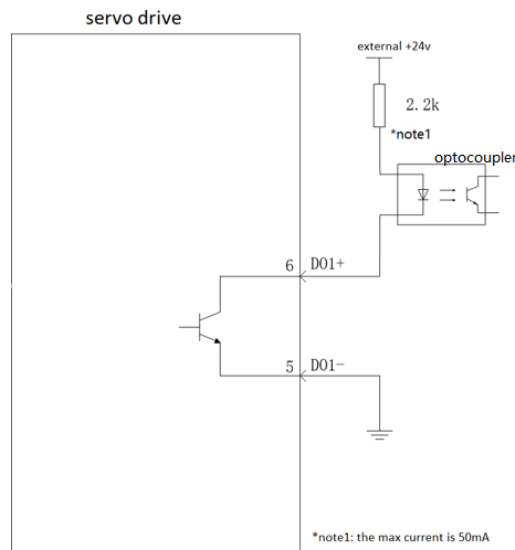
Figure 4-17

4.4 Wiring to Communication Signal Terminal Connectors CN3/CN4

4.4.1 Wiring Diagram of Communication Signal Terminals

1) CN3 pinout
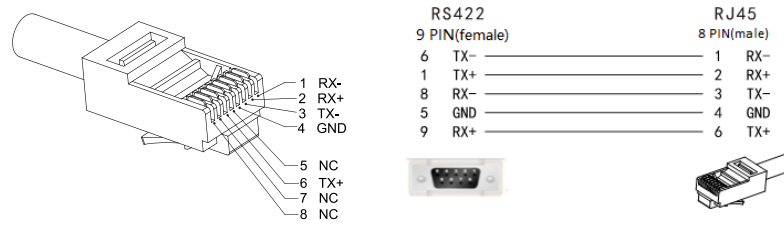
Figure 4-18

PIN	Function	Description
1	RX-	Negative send end of pc(negative receive end of Servo)
2	RX+	positive send end of pc(positive receive end of Servo)
3	TX-	Negative receive end of pc(negative transmit end of Servo)
4	GND	Ground
5	NC	Not connected
6	TX+	Positive receive end of pc(positive transmit end of Servo)
7	NC	Not connected
8	NC	Not connected

2) **CN4 pinout**
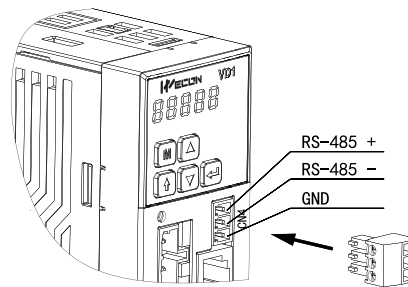
Figure 4-19

4.4.2 RS422 Communication Connection with PC

The PC communicates with the driver through the CN4 (RJ45 port) interface via RS-422.
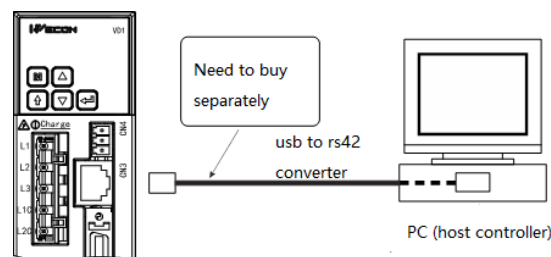
Figure 4-20

5. Operation Panel

5.1 Operatoin Panel Composition
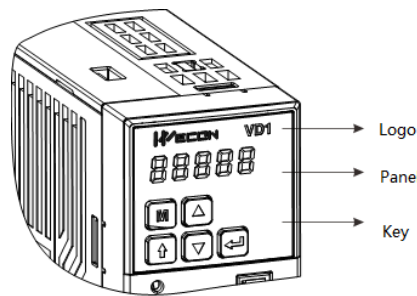
Figure 5-1 Panel Schematic

Icon	Function	Description
M	Mode	Switch between modes. Back to previous menu
△	Up(increase)	Increase the value of the flashing LED
▽	Down(decrease)	decrease the value of the flashing LED
⇧	Shift	Change the flashing position of the LED
⏎	Return(enter)	Enter the next level menu. Execute commands such as storing parameter settings

When the Servo drive is running, the panel for displaying Servo status, parameter, error and monitoring.

Status display: Displays the current running status of the Servo drive.

Parameter display: Display the function code and the setting value of the function code corresponding to different functions.

Error display: displays the error code of the Servo drive.

Monitor display: display the operating parameter value of the Servo drive to be observed.

5.2 Panel Display

5.2.1 Display Shift
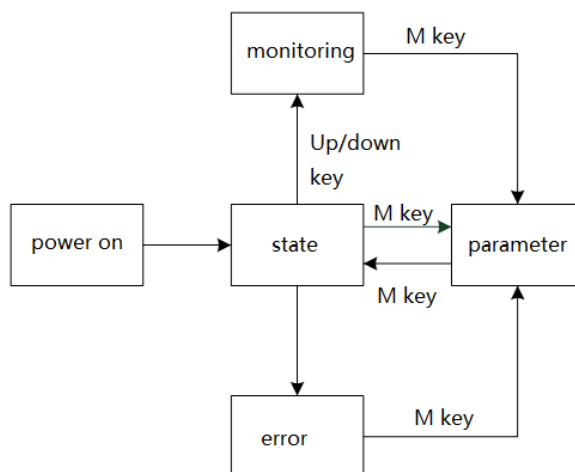
Figure 5-2

Description:

While the power on, the panel of the Servo will enter the status display mode.

If there is an error, the panel switches from the parameter display mode to the error display mode.

The status display mode can be switched to the monitoring mode by pressing the up / down button. Press the mode button in the monitoring mode to enter the parameter display.

The status display and parameter display can be switched by mode button.

5.2.2 State Display
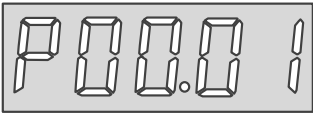
Display	Condition	Description
8.8.8.8.8.	Moment at Servo power on(within one second)	The Servo drive is in initialization state.
in it	Very short time after displaying [88888]	Initialization completed
rdy	Servo is ready	The Servo drive is ready for running, and waits for the S-ON signal from the host controller.
run	The Servo ON (S-ON) signal is active.	The Servo drive is in running state
Jog	The Servo drive is in jog running state.	The Servo drive is in jog running state.

5.2.3 Parameter Display
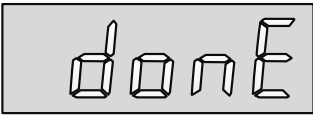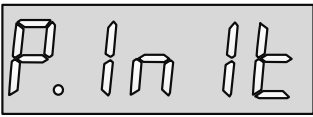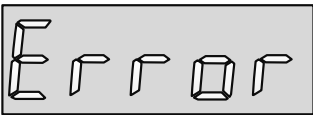
1) Function Code Group

Parameter display is for different function codes. The format of the function code is PXX.YY, where PXX represents the group number of the function code, and YY represents the group number of the function code.

Display	Function	Description
PXX.YY	Function code group	XX: Function code group YY: Function code number

Display	Function	Description
P00.01	Control mode, function code is P00.01	00: function code group 01: function code number

2) Parameter display

Display	Function	Description
donE	Completed parameter setttings	Completed and saved parameters in Servo Drive. Then, Servo Drive can execute other operations.
P.InIt	Parameter initialization	The Servo drive executes parameter initialization.
Error	When entering the JOG mode, an error occurs or the parameter setting exceeds the limit (or the setting is not allowed)	There is an error when entering JOG mode, return to the previous menu
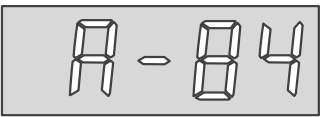
5.2.4 Fault Display

The keypad displays the current or history faults and warnings. For analysis and rectification of faults and warnings, refer to Chapter 7 Troubleshooting.
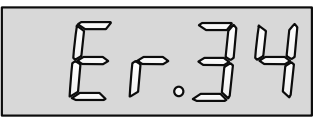
When a single fault or warning occurs, the keypad displays the fault or warning code. When multiple faults or warnings occur, the keypad displays the fault code of the highest level.

When a fault occurs, the corresponding fault or warning code will be displayed when switching from the auxiliary function to the parameter display function. User can view the current fault and warning codes and the past five fault and warning codes through the monitoring display of the panel.

5.2.5 Warning Display
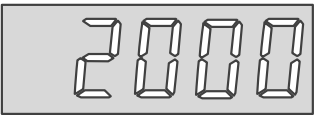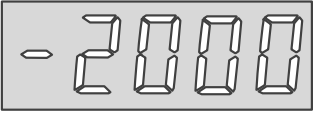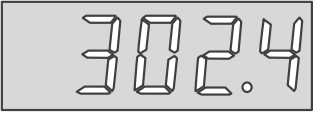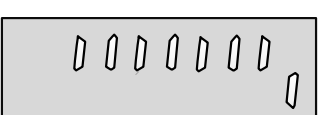
Display	Function	Description
A - 84	Restart Servo Drive	Need to restart Servo drive to make modified parameters take effect

5.2.6 Error Display

Display	Function	Description
Er.34	Motor is overloaded	Motor is overloaded

5.2.7 Monitoring display

After the Servo drive is powered on or after the Servo enable is ON, user can use the [Up / Down] key to enter the monitor display mode.

Display	Code	Function	Units	Description
2000 / *-2000*	U0-02	motor speed	rpm	The actual running speed of the Servo motor(decimal)
302.4	U0-31	Bus voltage	V	The voltage value between driver P + and-, DC bus voltage
0000000 0	U0-17	input signal state	-	Represents the level status corresponding to the 8 DI terminals. The upper part of the digital tube indicates a high level, and the lower half indicates a low level.
0 0 0	U0-19	Output signal state	-	Represents the level status corresponding to the 6 DO terminals. The upper part of the digital tube indicates a high level, and the lower half indicates a low level.

5.3 Panel Operation

5.3.1 Parameter Setting

Parameter display, take P0-1 as an example to set the parameters, and change the Servo drive from the position control mode to the speed control mode.
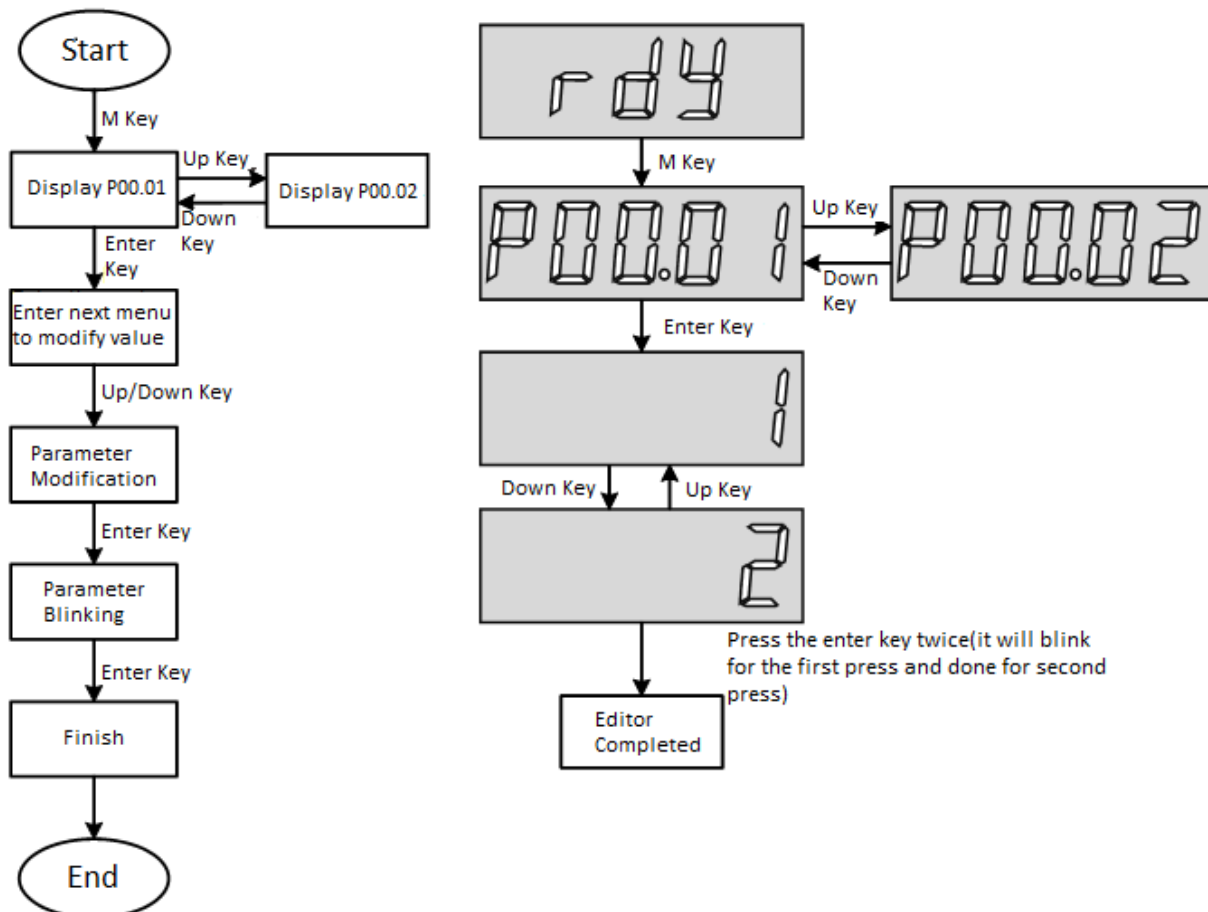
Figure 5-3

5.3.2 Jog Operation

During the trial operation of the Servo motor and Servo drive, the function of jog operation can be used. The operating steps are as follows:
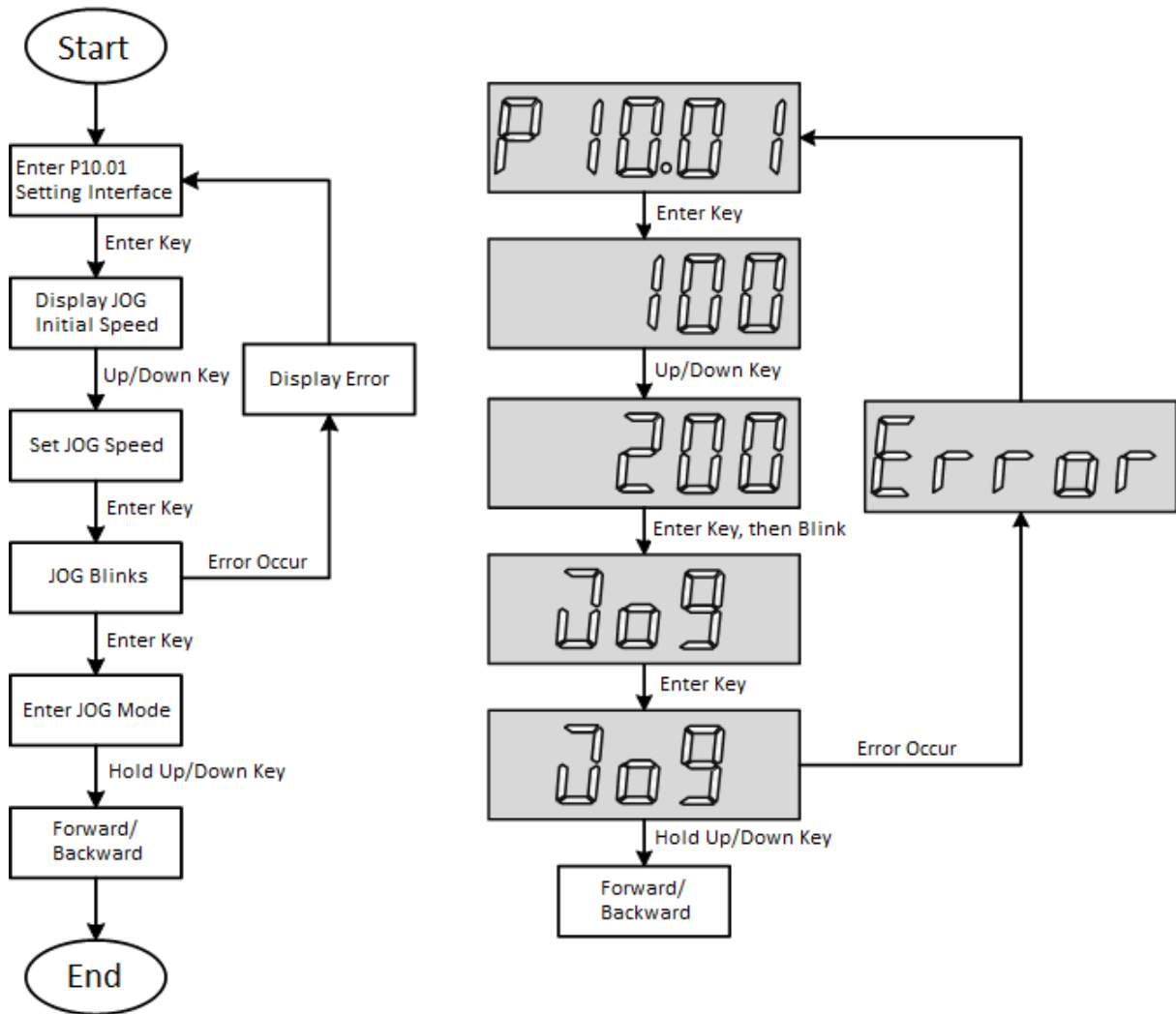
Figure 5-4

Operating procedures:

1) After power on, adjust the function code to P10.01.

2) Press the enter key to enter the next menu and set the JOG speed.

3) After the JOG speed is completed, press the enter key, the JOG is blinking, press the enter key again to enter the JOG mode.

4) Press and hold the [Up] and]Down] keys to achieve forward and reverse rotation of the motor.

Cause of error: The encoder of the Servo drive is not connected to the motor.

5.3.3 Restor to Default Setting
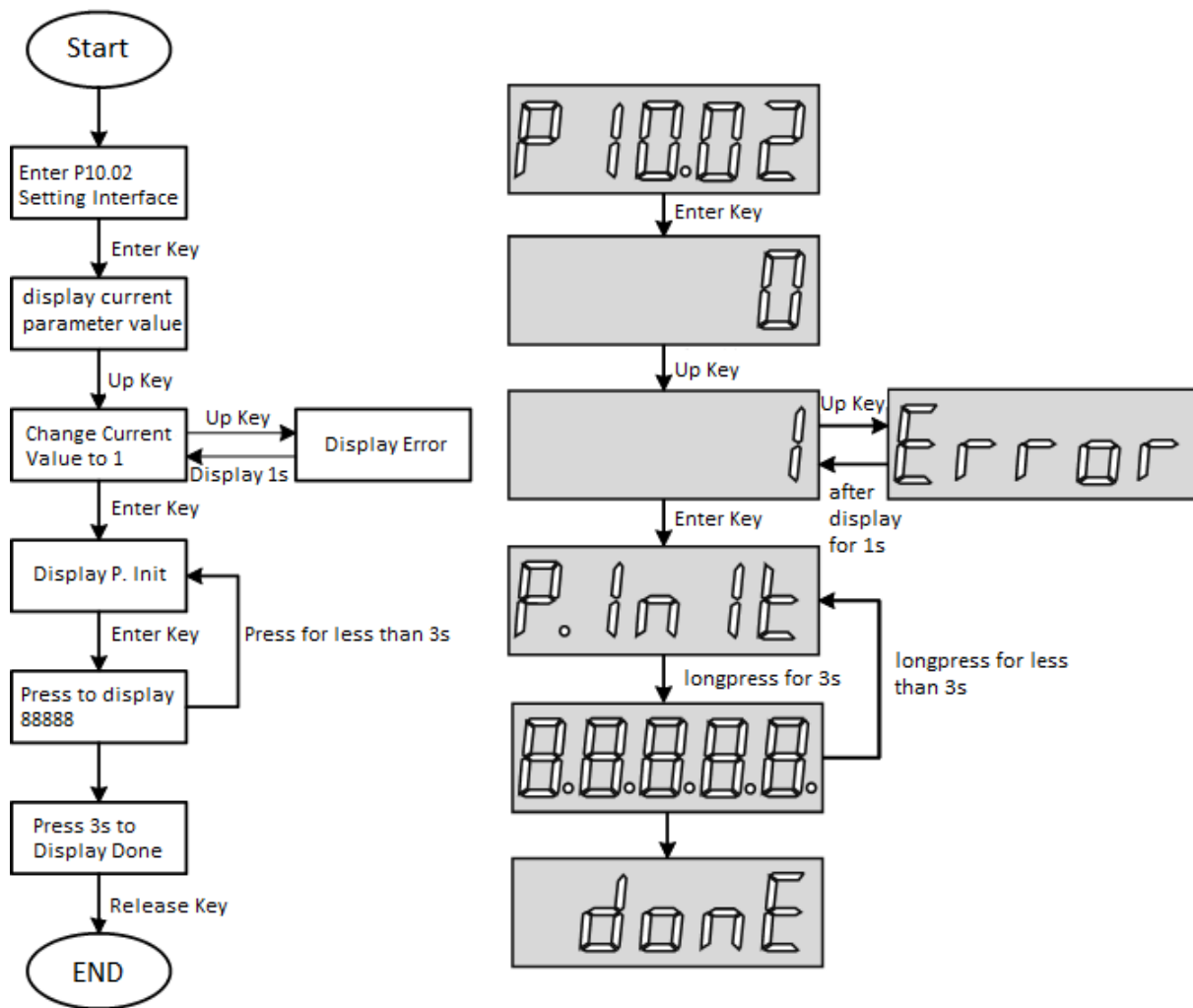
Figure 5-5

Operating procedures:

1) After power on, adjust the function code to P10.01.
2) Press the enter key to enter the next menu and set the parameters.
3) After the parameter setting is completed, press the enter key then panel will display P.init.
4) Press and hold the enter key for 3s, the panel digital tube will light up from left to right until 88888 is displayed.
5) After done is displayed at the end, release the enter key to indicate that the factory reset is complete.

Cause of Error: value of P10.02 exceeds the set range (0 - 1).

6. Parameter

Wecon VD1 series Servo drive provides rich monitoring and setting function for the users. The specific display and setting areas are shown in the following table:

ID	Function	Block	Section
1	Basic setting	P0	P0-1- P0-25
2	Control parameter	P1	P1-1- P1-25
3	Gain adjustment	P2	P2-1- P2-25
4	Self-tuning parameters	P3	P3-1- P3-25
5	Vibration inhibition	P4	P4-1- P4-25
6	IO signal	P5	P5-1- P5-25
7	DI/DO configuration	P6	P6-1- P6-25
8	auxiliary function	P10	P10-1- P10-25
9	communication parameter	P12	P12-1- P12-25
10	Virtual input terminal	P13	P13-1- P13-25
11	Monitoring display	U0	U0-1-U0-53
12	Alarm display	U1	U1-1-U1-27
13	Device information	U2	U2-1-U2-16

Notes:

1) Explanation of parameter names

When the parameter name is [Reserved], it indicates that it is occupied internally. Do not configure this parameter.

2) Parameter units

When the unit of the parameter is [-], it means that the parameter has no unit.

3) Explanation of control mode

P: Position control mode

S: Speed control mode

T: Torque control mode

A(ALL): Fits for position control mode, speed control mode and torque control mode

4) Effective time of parameter modification

[○]: needs to stop Servo drive to set parameter and takes effect after restart;

[△]: sets when Servo drive is running and takes effect after restart;

[●]: needs to stop Servo drive to set parameter and takes effect right away

[▲]: sets when Servo drive is running and takes effect right away;

6.1   Basic Setting

Code	Function	Effective time	Defulat	Range	Description	Unit	Control mode
P0-1	Control mode	○	1	1-3	1: Position control mode	—	—
P0-4	Rotation direction	○	0	0-1	2: Speed control mode	—	—
P0-5	Servo stop method	●	0	0-1	3: Torque control mode	—	—
P0-9	Regenerative resistor setting	●	0	0-3	Forward rotation: facing the motor shaft	—	—
P0-10	External regenerative resistor resistance	●	50	0-65535	0: Standard setting (CW is forward rotation)	Ω	—
P0-11	Power of external regenerative resistor	●	100	0-65535	1: Reverse mode (CCW is forward rotation)	W	—
P0-12	pulse type selection	○	0	0-2	0: Free stop, motor shaft remains free;	—	P
P0-13	Pulse frequency	○	300	1-500	1: Zero speed stop, motor shaft remains free.	kHz	P
P0-14	pulse anti-interference level	○	2	1-3	0-Use built-in regenerative resistor;	—	P
P0-16	pulse number per revolution	○	10000	0-10000	1- Use external regenerative resistor and cool naturally;	Pul	P
P0-17	Electronic gear 1 numerator	▲	1	1-32767	2- Use external regenerative resistor and forced air cooling; (Not settable)	—	P
P0-18	Electronic gear 1 denominator	▲	1	1-32767	3- No regenerative resistor is used, it's all absorbed by the capacitor. (Not settable)	—	P
P0-19	Electronic gear 2 numerator	▲	1	1-32767	Used to set the external regenerative resistor resistance of a certain type of driver.	—	P
P0-20	Electronic gear 2 denominator	▲	1	1-32767	Used to set the power of the external regenerative resistor of a certain type of driver.	—	P
P0-21	frequency-dividing output direction	○	0	0-1	0: direction+pulse(Positive logic)	—	P
P0-22	Encoder ppr	○	2500	10-10000	1: CW/CCW	Pul	P
P0-23	Z pulse output OZ polarity	○	0	0-1	2: A, B phase quadrature pulse (4 times frequency)	—	P
P0-25	Position deviation limitation	○	60000	0-65535	Set the maximum pulse frequency KHz	Pul	P

6.2 Control Parameter

Code	Function	Effective time	Defulat	Range	Description	Unit	Control mode
P1-1	Speed command source	●	0	0-1	0: Internal speed command (set in P1-3);	-	S
P1-2	Internal speed command	▲	100	-3000-3000	1: AI_1 analog input;	rpm	S
P1-3	Acc. time	▲	50	0-65535	Internal speed command	ms	S
P1-4	Dec. time	▲	50	0-65535	Acceleration time from 0 to 1000rpm in speed command mode	ms	S
P1-7	Torque command source	●	0	0-1	Deceleration time from 1000 to 0 rpm in speed command mode	-	T
P1-8	Torque command keyboard set value	▲	0	-3000-3000	0: Internal torque command;	0.1%	T
P1-9	Source of speed Limit in torque mode	●	0	0-1	1: AI_1 analog input;	-	T
P1-10	Max speed threshold	▲	3600	0-5000	-300.0%-300.0%	rpm	A
P1-11	Warning speed threshold	▲	3300	0-4500	0: Internal forward and reverse limit	rpm	A
P1-12	Forward speed threshold	▲	3000	0-3000	1: AI_2 analog input	rpm	A
P1-13	Reverse speed threshold	▲	3000	0-3000	Set the maximum speed limit value. If it exceeds this value, an overspeed fault is reported.	rpm	A
P1-14	Torque limit source	●	0	0-1	Set the alarm speed threshold. If this value is exceeded, an overspeed warning will be reported.	-	A
P1-15	Forward rotation torque limit	▲	3000	0-3000	Set forward speed limit	0.1%	A
P1-16	Reverse torque limit	▲	3000	0-3000	Set reverse speed limit	0.1%	A
P1-19	Torque saturation timeout	▲	1000	0-65535	0: Internal value	ms	A
P1-21	Zero speed clamp function selection	▲	0	0-3	1: AI_2 analog input	rpm	S
P1-22	Speed threshold for zero	▲	20	0-1000	When [P1-14] selects internal torque limit, this function code value is used as the forward torque limit value	rpm	S

6.3 Gain Parameter

Code	Function	Effective time	Default	Range	Description	Unit
P2-1	1st position loop gain	▲	400	0-6200	Set the position loop gain to determine the responsiveness of the position control system.	0.1Hz
P2-2	1st speed loop gain	▲	65	0-35000	Set the speed loop gain to determine the response of the speed loop.	0.1Hz
P2-3	1st speed loop integration time constant	▲	1000	100-65535	Set the speed loop integral constant. The smaller the set value, the stronger the integral effect.	0.1ms
P2-4	2nd position loop gain	▲	35	0-6200	Set the position loop gain to determine the responsiveness of the position control system.	0.1Hz
P2-5	2nd speed loop gain	▲	65	0-35000	Set the speed loop gain to determine the response of the speed loop.	0.1Hz
P2-6	2nd speed loop integration time constant	▲	1000	0-65535	Set the speed loop integral constant. The smaller the set value, the stronger the integral effect.	0.1ms
P2-7	Second gain switching mode	▲	0	0-3	0: DI terminal; 1: Speed command change rate is too large; 2: Position deviation is large; 3: Reserved	-
P2-9	Speed feedforward gain	▲	0	0-1000	0.0%-100.0%	0.1%
P2-10	Speed feedforward filter	▲	50	0-10000	Set the time constant of the primary delay filter related to the speed feedforward input	0.01ms
P2-11	Torque feedforward gain	▲	0	0-2000	0.0%-200.0%	0.1%
P2-12	Torque feedforward filter	▲	50	0-10000	Set the time constant of the primary delay filter associated with the torque feedforward input.	0.01ms

6.4 Auto-tuning Parameter

Code	Function	Effective time	Defulat	Range	Description	Unit
P3-1	Load inertia ratio	▲	500	0-10000	Set load inertia ratio, 0.00 - 100.00 times	0.01
P3-2	rigidity selection for load level	▲	12	0-31	Selection of rigidity	-
P3-3	Auto-tuning mode selection	▲	0	0-2	0: Rigidity level auto-tuning mode; according to the rigidity level setting, position loop gain, speed loop gain, speed loop integration time constant, and torque filter parameter settings are automatically adjusted;	-

Code	Function	Effective time	Defulat	Range	Description	Unit	Control mode
P3-4	Online inertia identification sensitivity	▲	0	0-2	1: Manual setting; users need to manually set the position loop gain, speed loop gain, speed loop integration time constant, and torque filter parameter settings;	-	
P3-5	Number of inertia identification cycles	●	2	1-2	2: Online automatic parameter auto-tuning mode (not implemented yet).	revolution	
P3-6	Maximum speed of inertia identification	●	1000	300-2000	0-slow change (not implemented yet)	rpm	
P3-7	rotation direction parameter	●	0	0-2	1: General changes (not implemented yet)	-	
P3-8	Parameter identification waiting time	●	1000	300-10000	2: Fast change (not implemented yet)	ms	

6.5 Vibration Inhibition

Code	Function	Effective time	Defulat	Range	Description	Unit	Control mode
P4-1	Pulse command filtering mode	●	0	0-1	0: first-order low-pass filtering	-	P
P4-2	Position command first-order low-pass filter	●	20	0-1000	1: average filter	ms	P
P4-3	Position command average filtering time constant	●	20	0-128	For pulse command input filtering	ms	P
P4-4	Torque filter time constant	▲	50	10-2500	For pulse command input filtering	0.01	
P4-5	First notch frequency	▲	300	250-5000	When [Auto-tuning mode] is set as 1, or 2, this parameter is set automatically	Hz	
P4-6	First notch depth level	▲	100	0-100	Set the center frequency of the 1st notch filter.	-	
P4-7	First notch width level	▲	4	0-12	When the setting value is 5000, the function of the notch filter is disabled.	-	
P4-8	Second notch frequency	▲	500	250-5000	0: all blocked	Hz	
P4-9	Second notch depth level	▲	100	0-100	100: all passed	-	P
P4-10	Second notch width level	▲	4	0-12	0: 0.5 x bandwidth	ms	P

6.6 Signal Input/Output Parameter

Code	Function	Effective time	Defualt	Range	Description	Unit	Control mode
P5-1	AI_1 input bias	▲	0	-5000-5000	Set AI_1 channel analog offset value	mV	
P5-2	AI_1 Input filter constant	▲	200	0-60000	AI_1 channel input first-order low-pass filtering time constant	0.01	
P5-3	AI_1 dead zone	▲	20	0-1000	ms		
P5-4	AI_1 zero drift	▲	0	-500-500	Set AI_1 channel analog dead zone value	mV	
P5-5	AI_2 input bias	▲	0	-5000-5000	Automatic calibration zero drift inside the driver;	mV	
P5-6	AI_2 Input filter constant	▲	200	0-60000	Set AI_2 channel analog offset value	mV	
P5-7	AI_2 dead zone	▲	20	0-500	AI_2 channel input first-order low-pass filtering time constant	0.01	
P5-8	AI_2 zero drift	▲	0	-500-500	ms		
P5-9	Analog 10V for speed value	●	3000	1000-4500	Set AI_1 channel analog dead zone value	mV	
P5-10	Analog 10V for torque value	●	1000	0-3000	Automatic calibration zero drift value inside the driver	mV	
P5-11	Positioning completed, positioning near setting	▲	0	0-3	Set the speed value corresponding to analog 10V	rpm	
P5-12	Positioning completed threshold	▲	800	1-65535	Set the torque value corresponding to analog 10V	0.1%	
P5-13	Positioning approach threshold	▲	5000	1-65535	Output signal judging conditions for positioning completed and positioning near		
P5-14	Positioning detection time window	▲	10	0-20000	0: The output is valid when the absolute value of the position deviation is less than the positioning completion threshold / location near threshold;		
P5-15	Positioning signal hold time	▲	100	0-20000	1: The absolute value of the position deviation is less than the positioning completion threshold / positioning near threshold, and the input position command is 0 then the output is valid		
P5-16	Rotation detection speed	▲	20	0-1000	2: The absolute value of the position deviation is smaller than the positioning completion threshold / positioning approach threshold, and the input position		

					command filter value is 0 then the output is valid		
P5-17	Speed consistent	▲	10	0-100	3: The absolute value of the position deviation is less than the positioning completion threshold / positioning approach threshold, the input position command filter value is 0, and the positioning detection time window is continued then the output is valid	-	P
P5-18	Threshhold	▲	100	10-6000	Positioning completion threshold	Pul	P
P5-19	Speed near	▲	10	0-6000	Positioning near threshold	Pul	P
P5-20	Zero speed output signal threshold	▲	100	0-300	Set the positioning completion detection time window	ms	P
P5-21	Torque reached	▲	10	10-20	Set the hold time of positioning completion output	ms	P

6.7 DI/DO Configuration

Code	Function	Effective time	Default	Range	Description	Unit
P6-01	High-speed DI port filtering time	○	50	0-10000	Filter time for high-speed ports DI7 and DI8	1us
P6-02	DI_1 function selection	△	1	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command selection 1 14: INSPD2, Internal speed command selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	-
P6-03	DI_1 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off	-

					(switch closed); 1: Normal closed input. Active when on (switch open);	
P6-04	DI_1 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-05	DI_2 function selection	△	2	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command selection 1 14: INSPD2, Internal speed command selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	-
P6-06	DI_2 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on (switch open);	-
P6-07	DI_2 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-08	DI_3 function selection	△	3	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command	-

					selection 1 14: INSPD2, Internal speed command selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	
P6-09	DI_3 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on (switch open);	-
P6-10	DI_3 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-11	DI_4 function selection	△	4	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command selection 1 14: INSPD2, Internal speed command selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	-
P6-12	DI_4 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on (switch open);	-
P6-13	DI_4 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-14	DI_5 function selection	△	7	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp	-

					6: CL, Clear the position deviation	
					7: C-SIGN, Instruction negation	
					8: E-STOP, Emergency stop	
					9: GEAR-SEL, Electronic gear switching 1	
					10: GAIN-SEL, Gain switch	
					11: INH, Position reference inhibited	
					12: VSSEL, Damer control switch	
					13: INSPD1, Internal speed command selection 1	
					14: INSPD2, Internal speed command selection 2	
					15: INSPD3, Internal speed command selection 3	
					16: J-SEL, Inertia ratio switch	
P6-15	DI_5 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on (switch open);	-
P6-16	DI_5 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-17	DI_6 function selection	△	11	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command selection 1 14: INSPD2, Internal speed command selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	-
P6-18	DI_6 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on	-

					(switch open);	
P6-19	DI_6 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-20	DI_7 function selection	△	-	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command selection 1 14: INSPD2, Internal speed command selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	-
P6-21	DI_7 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on (switch open);	-
P6-22	DI_7 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-23	DI_8 function selection	△	-	0-16	1: SON, Servo ON 2: A-CLR, Fault and warning clear 3: POT, Forward limit switch 4: NOT, Reverse limit switch 5: ZCLAMP, Zero speed clamp 6: CL, Clear the position deviation 7: C-SIGN, Instruction negation 8: E-STOP, Emergency stop 9: GEAR-SEL, Electronic gear switching 1 10: GAIN-SEL, Gain switch 11: INH, Position reference inhibited 12: VSSEL, Damer control switch 13: INSPD1, Internal speed command selection 1 14: INSPD2, Internal speed command	-

					selection 2 15: INSPD3, Internal speed command selection 3 16: J-SEL, Inertia ratio switch	
P6-24	DI_8 logic selection	△	0	0-1	DI port input logic validity function selection. 0: Normal open input. Active when off (switch closed); 1: Normal closed input. Active when on (switch open);	-
P6-25	DI_8 input source selection	▲	0	0-1	0: Hardware DI1 1: VDI1	-
P6-26	DO_1 function selection				129-RDY Servo Ready 130-ALM Alarm 131-WARN Warning 132-TGON Motor rotation output 133-ZSP Zero speed signal 134-P-COIN Positioning completed 135-P-NEAR Positioning near 136-V-COIN Speed consistent 137-V-NEAR Speed near 138-T-COIN Torque reached 139-T-LIMIT Torque limit 140-V-LIMIT Speed limit 141-BRK-OFF Solenoid brake 142-SRV-ST Enable Servo status output	-
P6-27	DO_1 logic selection				Output logic function selection. ★ 1. Set to 0: When the signal is valid, the output transistor is on; When the signal is invalid, the output transistor is off; 2. Set to 1: When the signal is valid, the output transistor is off; When the signal is invalid, the output transistor is on.	-
P6-28	DO_2 function selection				129-RDY Servo Ready 130-ALM Alarm 131-WARN Warning 132-TGON Motor rotation output 133-ZSP Zero speed signal 134-P-COIN Positioning completed 135-P-NEAR Positioning near 136-V-COIN Speed consistent 137-V-NEAR Speed near	-

					138-T-COIN Torque reached 139-T-LIMIT Torque limit 140-V-LIMIT Speed limit 141-BRK-OFF Solenoid brake 142-SRV-ST Enable Servo status output	
P6-29	DO_2 logic selection				Output logic function selection. ★ 1. Set to 0: When the signal is valid, the output transistor is on; When the signal is invalid, the output transistor is off; 2. Set to 1: When the signal is valid, the output transistor is off; When the signal is invalid, the output transistor is on.	-
P6-30	DO_3 function selection				129-RDY Servo Ready 130-ALM Alarm 131-WARN Warning 132-TGON Motor rotation output 133-ZSP Zero speed signal 134-P-COIN Positioning completed 135-P-NEAR Positioning near 136-V-COIN Speed consistent 137-V-NEAR Speed near 138-T-COIN Torque reached 139-T-LIMIT Torque limit 140-V-LIMIT Speed limit 141-BRK-OFF Solenoid brake 142-SRV-ST Enable Servo status output	-
P6-31	DO_3 logic selection				Output logic function selection. ★ 1. Set to 0: When the signal is valid, the output transistor is on; When the signal is invalid, the output transistor is off; 2. Set to 1: When the signal is valid, the output transistor is off; When the signal is invalid, the output transistor is on.	-
P6-32	DO_4 function selection				129-RDY Servo Ready 130-ALM Alarm 131-WARN Warning 132-TGON Motor rotation output 133-ZSP Zero speed signal	-

					134-P-COIN Positioning completed	
					135-P-NEAR Positioning near	
					136-V-COIN Speed consistent	
					137-V-NEAR Speed near	
					138-T-COIN Torque reached	
					139-T-LIMIT Torque limit	
					140-V-LIMIT Speed limit	
					141-BRK-OFF Solenoid brake	
					142-SRV-ST Enable Servo status output	
P6-33	DO_4 logic selection				Output logic function selection. ★ 1. Set to 0: When the signal is valid, the output transistor is on; When the signal is invalid, the output transistor is off; 2. Set to 1: When the signal is valid, the output transistor is off; When the signal is invalid, the output transistor is on.	-

★: Explanation of output logic selection (take P6-27 as an example)

1) When P6-27 is set to 0,
   - If the function of P6-26 is selected as [fault signal], it means when DO-1 appears a fault signal, the output transistor is turned on; when DO-1 does not appear a fault signal, the output transistor is turned off.
   - If the function selection of P6-26 is [Positioning completed], it means that: when the positioning of DO-1 is completed, the output transistor is turned on; when the positioning of DO-1 is not completed, the output transistor is turned off.

Similarly:
2) When P6-27 is set to 1,
   - If the function of P6-26 is selected as [fault signal], it means when DO-1 appears a fault signal, the output transistor is turned off; when DO-1 does not appear a fault signal, the output transistor is turned on.
   - If the function selection of P6-26 is [Positioning completed], it means that: when the positioning of DO-1 is completed, the output transistor is turned off; when the positioning of DO-1 is not completed, the output transistor is turned on.

6.8   Auxiliary Function Parameter

Code	Function	Effective time	Default	Range	Description	Unit
P10-1	JOG speed	▲	100	0-3000	JOG speed	rpm

| P10-2 | Restore factory setting | ● | 0 | 0-1 | Write 1 to restore setting | - |
| P10-4 | Motor overload protection time coefficient | ▲ | 100 | 50-300 | According to the heating condition of the motor, modifying this value can make the overload protection time float up and down from the reference value, 50 corresponds to 50%, that is, the time is reduced by half; 300 corresponds to 300%, that is, the time is extended to 3 times. | % |

6.9 Communication Parameter

Code	Function	Effective time	Default	Range	Description
P12-1	RS485 station NO.	▲	1	1-247	Servo RS485 communication station number and address
P12-2	Baud rate	▲	0	0-5	0: 2400bps;　　1: 4800bps; 2: 9600bps;　　3: 19200bps; 4: 38400bps;　　5: 57600bps
P12-3	Serial port data format	▲	0	0-3	0: 1 STOP bit, No check 1: 1 stop bit, odd check 2: 1 stop bit, even check 3: 2 stop bit, no check
P12-4	Write modbus communication data to EEPROM	▲	0	0-1	0: Not write to EEPROM, volatile; 1: write to EEPROM, non-volatile;

6.10 VDI Parameter

Code	Function	Effective time	Default	Range	Description
P13-1	Virtual VDI_1 input value	▲	0	0-1	VDI1 input level: 0: low level; 1: high level.
P13-2	Virtual VDI_2 input value	▲	0	0-1	VDI2 input level: 0: low level; 1: high level.
P13-3	Virtual VDI_3 input value	▲	0	0-1	VDI3 input level: 0: low level; 1: high level.
P13-4	Virtual VDI_4 input value	▲	0	0-1	VDI4 input level: 0: low level; 1: high level.
P13-5	Virtual VDI_5 input value	▲	0	0-1	VDI5 input level: 0: low level; 1: high level.
P13-6	Virtual VDI_6 input value	▲	0	0-1	VDI6 input level: 0: low level; 1: high level.

P13-7	Virtual VDI_7 input value	▲	0	0-1	VDI7 input level: 0: low level; 1: high level.
P13-8	Virtual VDI_8 input value	▲	0	0-1	VDI8 input level: 0: low level; 1: high level.

6.11 Monitoring Parameter

Code	Type	Function	Unit	Data format
U0-01	General	Servo state	-	int16_t
U0-02	General	Servo motor speed	rpm	int16_t
U0-03	General	Enter speed command	rpm	int16_t
U0-04	General	Speed corresponding to input position reference	rpm	int16_t
U0-05	General	Pulse deviation	Pul	int32_t
U0-07	General	Pulse deviation *10000	Pul	int32_t
U0-09	General	input pulse number	Pul	int32_t
U0-11	General	input pulse number *10000	Pul	int32_t
U0-13	General	Encoder accumulative position	Pul	int32_t
U0-15	General	Encoder accumulative position *10000	Pul	int32_t
U0-17	General	DI input signal state	-	uint32_t
U0-19	General	DO output signal state	-	uint32_t
U0-21	General	AI1 input voltage value	V	int16_t
U0-22	General	AI2 input voltage value	V	int16_t
U0-23	General	Vibration frequency	Hz	uint16_t
U0-24	General	Vibration amplitude	rpm	uint16_t
U0-25	General	Forward torque limitation	%	int16_t
U0-26	General	Backward torque limitation	%	int16_t
U0-27	General	Forward speed limitation	rpm	int16_t
U0-28	General	Backward speed limitation	rpm	int16_t
U0-29	General	Mechanical angle	°	int16_t
U0-30	General	Electric angle	°	int16_t
U0-31	General	Bus voltage	V	uint16_t
U0-32	General	Module temperature	℃	int16_t
U0-33	General	Instantaneous output power	W	int32_t
U0-35	General	Total power-on time: hour	h	uint32_t
U0-37	General	Total power-on time:min	min	uint16_t
U0-38	General	Total power-on time:sec	s	uint16_t
U0-39	General	Output load percentage	%	uint16_t
U0-40	General	Power-on time: hour	h	uint32_t
U0-42	General	Power-on time: min	min	uint16_t
U0-43	General	Power-on time: sec	s	uint16_t

U0-44	General	Instantaneous braking resistance power	W	uint32_t
U0-46	General	Average braking resistance power	W	uint32_t
U0-48	Device	Power-on times	times	uint32_t
U0-50	Device	Motor cumulative turns (x1)	Revolution	uint16_t
U0-51	Device	Motor cumulative turns (x10e4)	Revolution	uint16_t
U0-52	Device	Motor cumulative turns (x10e8)	Revolution	uint16_t
U0-53	Device	Motor model code	-	uint16_t
U1-01	Alarm	Current fault code	-	uint16_t
U1-02	Alarm	Current alarm code	-	uint16_t
U1-03	Alarm	phase U current upon displayed fault	A	int16_t
U1-04	Alarm	phase V current upon displayed fault	A	int16_t
U1-05	Alarm	Bus voltage upon displayed fault	V	uint16_t
U1-06	Alarm	IGBT temperature upon displayed fault	℃	int16_t
U1-07	Alarm	Torque component when fault occured	%	int16_t
U1-08	Alarm	Excitation component when fault occurred	%	int16_t
U1-09	Alarm	Position deviation when fault occurred	Pul	int32_t
U1-11	Alarm	Speed value when fault occurred	rpm	int16_t
U1-12	Alarm	the time when fault occurred	s	uint32_t
U1-14	Alarm	Number of faults	-	uint16_t
U1-15	Alarm	Number of warnings	-	uint16_t
U1-16	Alarm	Total number of historical faults	-	uint16_t
U1-17	Alarm	Total number of historical alarm	-	uint16_t
U1-18	Alarm	Last 2nd fault code	-	uint16_t
U1-19	Alarm	Last 3rd fault code	-	uint16_t
U1-20	Alarm	Last 4th fault code	-	uint16_t
U1-21	Alarm	Last 5th fault code	-	uint16_t
U1-22	Alarm	Last 6th fault code	-	uint16_t
U1-23	Alarm	Last 2nd alarm code	-	uint16_t
U1-24	Alarm	Last 3rd alarm code	-	uint16_t
U1-25	Alarm	Last 4th alarm code	-	uint16_t
U1-26	Alarm	Last 5th alarm code	-	uint16_t
U1-27	Alarm	Last 6th alarm code	-	uint16_t
U2-01	Device	Product series	-	uint16_t
U2-02	Device	model	-	uint16_t
U2-03	Device	Model	-	uint16_t
U2-04	Device	Firmware version	-	uint16_t
U2-05	Device	Hardware version	-	uint16_t
U2-06	Device	date of manufacture:year	Year	uint16_t
U2-07	Device	date of manufacture:month	month	uint16_t
U2-08	Device	date of manufacture:day	Day	uint16_t
U2-09	Device	Device serial number 1	-	uint16_t
U2-10	Device	Device serial number 2	-	uint16_t

U2-11	Device	Device serial number 3	-	uint16_t
U2-12	Device	Device serial number 4	-	uint16_t
U2-13	Device	Device serial number 5	-	uint16_t
U2-14	Device	Device serial number 6	-	uint16_t
U2-15	Device	Device serial number 7	-	uint16_t
U2-16	Device	Device serial number 8	-	uint16_t

7. Troubleshooting

7.1 Alarm and Fault during Startup

7.1.1 Position Control Mode

During startup	Fault	Reason	Solution
Connect control power L1C/L2C and main power L1/ L2 and R/ S/T.	The LED display or green indicator is off (bus voltage indicator)	L1C and L2C are not well connected	Re-wiring: connect L1C / L2C cable with the socket.
		The control power voltage is abnormal.	Measure AC voltage between L1C and L2C
		The Servo drive is faulty	Contact an agent or Wecon customer service.
	LED display Er.xx		Refer to 7.2 Faults and Alarms information, find the cause and troubleshoot.
Set the S-ON signal to ON.	Shaft of Servo Motor is in free running status.	The S-ON signal is invalid.	Check whether the Servo enable signal is set and the terminal logic is valid.
		Selection of control mode is incorrect.	Check P0-1 value
	LED display Er.xx		Refer to 7.2 Faults and Alarms information, find the cause and troubleshoot.
Input position reference	Servo Motor does not rotate.	Input reference pulse counter (U0-09) is 0.	Position reference is not entered: Whether DI_3 is set as forward drive prohibition or DI_4 is set as reverse drive prohibition; Check if the DI command pulse inhibit function set by accident.
Servo motor jitters at low speed	Motor speed is not steady.	The gain is set improperly.	Adjust the gain
	Motor shaft vibrates left and right.	The load inertia ratio is too large.	Perform inertia auto-tuning and then perform automatic gain tuning.

			The pulse received(U0-09) is not consistent with the actual position machine;
Servo system runs normally.	Positioning inaccurate	Unsatisfactory position deviation generated.	Whether the equipment is vibrating, adjust by gain; Check the coupling at the motor shaft locked well.

7.1.2 Speed Control Mode

During Startup	Fault	Cause	Solution
Connect control power L1C/L2C and main power L1/ L2 and R/ S/T.	The LED display or green indicator is off (bus voltage indicator)	L1C and L2C are not well connected	Re-wiring: connect L1C / L2C cable with the socket.
		The control power voltage is abnormal.	Measure AC voltage between L1C and L2C
		The Servo drive is faulty	Contact an agent or Wecon customer service.
	LED display Er.xx	Refer to 7.2 Faults and Alarms information, find the cause and troubleshoot.	
Set the S-ON signal to ON.	Shaft of Servo Motor is in free running status.	The S-ON signal is invalid.	Check whether the Servo enable signal is set and the terminal logic is valid.
		Selection of control mode is incorrect.	Check P0-1 value
	LED display Er.xx	Refer to 7.2 Faults and Alarms information, find the cause and troubleshoot.	
Input speed reference	Servo motor does not rotate or the speed is not as expected	Speed reference (U0-03) is 0.	The analog interface wiring is incorrect. Refer to Chapter 4 for correct wiring; No speed reference: 1) Whether DI_3 is set as forward drive prohibition or DI_4 is set as reverse drive prohibition; 2) Whether the reference pulse inhibit input function of DI is used; 3) Check if the P1-1 speed reference source setting is correct; 4) When using the internal speed reference, check if P1-2 internal speed

			command is 0.
Servo motor jitters at low speed	Motor speed is not steady.	The load inertia ratio is too large.	Adjust the gain
	Motor shaft vibrates left and right.	The load inertia ratio is too large.	perform inertia auto-tuning and then perform automatic gain tuning

7.1.3 Torque Control Mode

During Startup	Fault	Cause	Solution
Connect control power L1C/L2C and main power L1/ L2 and R/ S/T.	The LED display or green indicator is off (bus voltage indicator)	L1C and L2C are not well connected	Re-wiring: connect L1C / L2C cable with the socket.
		The control power voltage is abnormal.	Measure AC voltage between L1C and L2C
		The Servo drive is faulty	Contact an agent or Wecon customer service.
	LED display Er.xx	Refer to 7.2 Faults and Alarms information, find the cause and troubleshoot.	
Set the S-ON signal to ON.	Shaft of Servo Motor is in free running status.	The S-ON signal is invalid.	Check whether the Servo enable signal is set and the terminal logic is valid.
		Selection of control mode is incorrect.	Check P0-1 value
	LED display Er.xx	Refer to 7.2 Faults and Alarms information, find the cause and troubleshoot.	
Input torque reference	Servo motor does not rotate or the speed is not as expected	Internal torque reference (U0-03) is 0.	The analog interface wiring is incorrect. Refer to Chapter 4 for correct wiring; No speed reference: 1) Whether DI_3 is set as forward drive prohibition or DI_4 is set as reverse drive prohibition; 2) Whether the reference pulse inhibit input function of DI is used; 3) Check if the P1-1 speed reference source setting is correct; 4) When using the internal speed reference, check

			if P1-2 internal speed command is 0.
Servo motor jitters at low speed	Motor speed is not steady.	The load inertia ratio is too large.	Adjust the gain
	Motor shaft vibrates left and right.	The load inertia ratio is too large.	Perform inertia auto-tuning and then perform automatic gain tuning

7.2　Fault and Warning Code during Running

Type	Name	Description	Code	Troubleshooting
Type 1	Parameter is damaged	EEPROM cannot read and write	Er.01	The hardware interface cannot read and write parameters. Please contact the manufacturer to check whether the hardware is damaged.
Type 1	Parameter storage error	Internal parameters stored version, total number, range, etc. The possible reasons are: 1. The driver has been software upgraded; 2. A momentary power failure occurred during parameter storage; 3. Frequent writing of parameters;	Er.02	1. If the parameter storage is abnormal due to the program update, please update the parameters by restoring the factory default parameters and power on again. 2. Power on again and reset the parameters after restoring the factory settings; 3. Check whether the host computer frequently writes parameters and modify the corresponding parameter writing method.
Type 1	ADC reference source failure	The internal analog reference source of the driver is not accurate	Er.03	Please power on again to determine whether the fault is eliminated; if the error still occurs, please contact the manufacturer.
Type 1	AD current sampling conversion error	Current sampling zero drift or current sensor error	Er.04	Please power on again to determine whether the fault is eliminated; if the error still occurs, please contact the manufacturer.
Type 1	FPGA communication abnormal	FPGA communication failure	Er.05	Please power on again to determine whether the fault is eliminated; if the error still occurs, please contact the manufacturer.
Type 1	FPGA program version is incorrect	FPGA program version is incorrect	Er.06	Please power on again to determine whether the fault is eliminated; if the error still occurs, please contact the manufacturer.
Type 1	Clock abnormal	The internal clock of the drive is disturbed or abnormal	Er.07	Please power on again to determine whether the fault is eliminated; if the error still occurs, please contact the manufacturer.

Type 2	Overcurrent	The driver has detected an overcurrent. The possible reasons are: 1. Motor power lines U, V, W are shorted to ground; 2. Short circuit among motor power line U, V, W phase; 3. The motor power cables U, V, W have poor contact; 4. Internal damage of the motor; 5. The encoder wire is aging and loose; 6. Excessive fluctuations in control power.	Er.20	1. Please check whether the motor power line wiring is correct; 2. Whether the motor power line wiring is loose or short-circuited; 3. Replace the motor power line; 4. Replace the motor; 5. Replace the encoder cable; 6. If the above methods still can not eliminate the fault, please contact the manufacturer;
Type 2	Main power is undervoltage	Driver bus voltage is below the limit: (1) 220V driver: normal bus voltage is 310V, undervoltage threshold is 200V; (2) 380V driver: normal bus voltage is 540V, undervoltage threshold is 400V; Possible reasons for undervoltage of the main power supply are: (1) The main power source is not connected; (2) The input voltage is low, or the voltage drops; (3) The internal main power relay is damaged;	Er.21	1. Check if the input voltage of the driver is too low. If it is too low, please increase the voltage or wait for the power supply to be normal, then power on again and see if the fault is cleared. 2. Check the input power voltage of the driver to see if the voltage drops due to the power load change;
Type 2	Main power is overvoltage	The driver detects that the bus voltage is too high. The possible reasons are: 1. Check whether the input voltage is normal: (1) 220V driver power supply voltage range: -10% - + 10% (198V - 242V) (2) 380V driver power supply voltage range: -10% - + 10% (342V -	Er.22	1. Check whether the mains input voltage is too high; 2. Check whether the regenerative resistor resistance is reasonable; 3. Extend the acceleration / deceleration time and choose a regenerative resistor with a lower resistance value;

		418V) 2. The regenerative resistor resistance is too large, resulting in the braking energy not being absorbed in time; 3. The load inertia is large and the motor accelerates and decelerates too quickly, and the maximum braking energy exceeds the absorbable value; 4. Excessive deviation of bus voltage detection		
Type 2	Regenerative resistor is not connected	1. When using the internal regenerative resistor, the jumper between C and D should be disconnected; 2. When using an external regenerative resistor, the resistor is not connected; 3. The regenerative resistor status detection circuit is abnormal;	Er.23	1. If using internal regenerative resistor, please confirm whether the short-circuit jumper between C / D is normal; 2. If using an external regenerative resistor, make sure that the external regenerative resistor is connected securely. 3. If an external regenerative resistor is used, please confirm whether the resistance of the regenerative resistor is reasonable; 4. If above methods still can not eliminate the fault, please contact the manufacturer;
Type 2	Regenerative resistor turned on abnormally	The brake resistor vent is turned on, but no feedback signal is detected. The possible reasons are: 1. Failed to open the regenerative resistor; 2. Brake resistor feedback detection failure;	Er.24	The brake relief circuit may be damaged, please contact the manufacturer
Type 2	Regenerative resistor resistance is too large	The regenerative resistor is turned on, but the actual bus voltage is still increasing. It may be that the regenerative resistor resistance is too large;	Er.25	Please confirm whether the resistance of the regenerative resistor is reasonable;
Type 2	Motor model error	Motor model error	Er.26	Check if the motor model function code is set correctly
Type 2	Incremental encoder is disconnected	Encoder cable is disconnected	Er.27	1. Check whether the wiring of the motor encoder cable is loose. If it is loose, tighten it; 2. Replace the encoder cable and power on again.

Type 2	Encoder Z phase pulse is lost	No Z-pulse signal appears when the motor rotates more than 1 turn. The possible reasons are: 1. Motor model is wrong; 2. The motor encoder is disturbed or damaged;	Er.28	1. Check whether the motor model matches the model of the driver; 2. Replace the motor and power on again;
Type 2	Incremental encoder AB count value is not equal to the number of ppr * 4	The incremental encoder AB count value is not equal to the ppr * 4. The possible reasons are: 1. Motor model is wrong; 2. Motor encoder is disturbed or damage;	Er.29	1. Check whether the motor model matches the model of the driver; replace the motor model that matches the driver;
Type 2	Encoder UVW signal error	Motor encoder UVW signal error	Er.30	Check if the motor model matches the driver model; replace with the motor model that matches the driver
Type 2	Power line disconnected	Motor power line is loose or disconnected	Er.31	1. Check if the motor power line wiring is loose, and tighten it if it is loose; 2. Change the power cable of the motor, and then power on again.
Type2	Exceed the maximum speed of the motor	Exceeds the maximum speed threshold of function code P1-10. Possible reasons are: 1. U / V / W phase sequence of motor power line is wrong; 2. Motor model is wrong; 3. Motor power line error; 4. Motor encoder line error;	Er.32	1. Please check whether the motor power line is correctly connected; 2. Confirm whether the motor model is correct; 3. Use the correct power cable and encoder cable to connect the wiring;
Type 2	power module is overheated	The power module temperature exceeds the normal value. The possible reasons are: 1. The cooling fan fails; 2. The ambient temperature is too high; 3. The installation of the driver is not reasonable, and the interval is too small then cause abnormal heat dissipation.	Er.33	1. Check if the cooling fan is running normally. If not, replace the drive; 2. Improve the ambient temperature; 3. Install the Servo driver according to the standard;

Type 2	Motor overload protection	The drive has detected that the motor is overloaded. The possible reasons are: 1. The load is too large, and the motor works for a long time in a state exceeding the rated torque; 2. Large load inertia and frequent acceleration and deceleration; 3. The speed and position loop gain parameters are not set properly; 4. Locked rotor occurs in the motor. 5. Servo drive failure;	Er.34	1. Check whether the load of the motor is too large. If the load is too large, please replace the motor and driver with higher power. 2. Increase the acceleration / deceleration time; 3. Use the host computer software to observe the actual torque and observe whether there is obvious speed overshoot. Adjust appropriate loop gain parameters; 4. Check the mechanical connection and troubleshoot; 5. Replace the Servo driver;
Type 2	Electronic gear ratio exceeded	In the electronic gear ratio setting, the numerator / denominator ratio is less than 0.01, or greater than 100;	Er.35	Check whether the setting value of the electronic gear numerator and denominator of the function codes P0-16 - P0-19 meets the following conditions: the numerator / denominator is within the range of [0.01 - 100], and then power on again after modification.
Type 2	Excessive position deviation	The deviation of the current position pulse exceeds the setting value of [P0-26](Position deviation limit). The possible reasons for this failure are: 1. The U / V / W line of the motor is not connected or disconnected; 2. The phase sequence of U / V / W wire of the motor is wrong; 3. The motor is overloaded or stalled; 4. The driver gain setting is unreasonable; 5. The position reference speed changes too fast;	Er.36	1. Check whether the wiring of the motor power line U / V / W is normal; 2. Check the load of the motor. If the load is too large, please replace the driver and motor with higher power; if the stall occurs, please check the machinery; 3. Adjust the gain parameters according to the method in the chapter 6.3 in the user manual; 4. When the change of the position reference speed is too large, the ramp time can be appropriately increased to reduce the speed change rate;

Type 2	Torque saturation abnormal	The torque reached the maximum torque limit value and exceeds the setting time of the [P1-19] function code. The possible reasons are: 1. If the load is too large, the driver will output at the maximum torque and still cannot reach the target speed within the predetermined time; 2. Whether the maximum forward torque limit and maximum reverse torque limit are set too small; 3. The motor stalls; 4. [P1-19] The set torque limit time is too short;	Er.37	1. Check whether the load is too large; 2. Modify the forward torque limit and maximum reverse torque limit to appropriate values according to the actual application; 3. Check whether the machine stalls; 4. Confirm whether the setting of function code [P1-19] is reasonable;
Type 2	reserved		Er.38	
Type 2	Emergency stop	The drive received an emergency stop command	Er.39	1. Check whether it is artificial emergency shutdown protection. If it is, then power on again after other system faults are cleared; 2. If it is a false trigger, please check whether the wiring and function configuration of the DI terminal is normal.
Type 3	ADC conversion is not completed	ADC conversion is not completed	Er.60	Please power on again to determine whether the fault is eliminated; if the abnormality still occurs, please contact the manufacturer.
Type 3	Internal software failure	Torque loop error	Er.61	Please power on again to determine whether the fault is eliminated; if the abnormality still occurs, please contact the manufacturer.
Type 3	Internal software failure	Speed loop error	Er.62	Please power on again to determine whether the fault is eliminated; if the abnormality still occurs, please contact the manufacturer.
Type 3	Internal software failure	Illegal instruction	Er.63	Please power on again to determine whether the fault is eliminated; if the abnormality still occurs, please contact the manufacturer.
Type 3	Internal software failure	Internal RAM parameters are corrupted	Er.64	Please power on again to determine whether the fault is eliminated; if the abnormality still occurs, please contact the manufacturer.
Type 3	Internal software failure	Internal function code parameters are corrupted	Er.65	Please power on again to determine whether the fault is eliminated; if the abnormality still occurs, please contact the manufacturer.
Type 4	Overspeed alarm	Speed exceeds alarm limit	A-81	Check whether the setting value of function code P1-14 is too small, and then check whether the speed reference is too high.
Type 4	overload	Motor overload alarm	A-82	Check whether the load of the motor is too large. If the load is too large, please replace

				the motor and driver with higher power.
Type 4	Brake resistor overheated or overload	1. When the regenerative resistor is selected as the internal regenerative resistor, it means overheat; 2. When the regenerative resistor is externally connected, it represents overload.	A-83	1.Please confirm whether the load inertia is too large; 2.Please confirm whether it is frequently started and stopped and whether the speed is too high; 3.Please check whether the actual resistance value is larger than the set value.
Type 4	Parameters that required restart	Modify the parameters that need to be powered on to take effect again	A-84	Power on again or clear the alarm to make the alarm disappear.
Type 4	Receive position pulse when Servo is OFF	Receive pulse command in Servo non-SON state or non-position mode	A-85	Please check the timing sequence of the control signal from the host device. The pulse is still being sent when the Servo stops or is in non-position mode.
Type 4	Input pulse frequency is too high	The speed of the input reference is too high	A-86	Check whether the input frequency of the pulse and the number of pulses per round (P0-15) or the electronic gear ratio (P0-16 - P0-19) of the motor are set properly.
Type 4	reserved	reserved	A-87	reserved
Type 4	Instantaneous power failure of main circuit	The input voltage of the main circuit is momentarily low	A-88	Check whether there is voltage on the mains input, and then restart or clear the alarm; if the mains circuit voltage is normal, this alarm still exists, please contact the manufacturer.
Type 4	DI port configuration is duplicated	Different DI ports are set to the same function	A-89	Check the function code [DIDO Configuration], check the DI channel function selection: DI_1 channel function selection (P6-02) - DI_8 channel function selection (P6-23), and check whether there is any duplication of the 8 DI channel function selections. If you set the unwanted channels to off, power off and then power on again.
Type 4	DO port configuration is duplicated	Different DO ports are set to the same function	A-90	Check the function code [DIDO Configuration], check the DO channel function selection: DO_1 channel function selection (P6-26) - DO_4 channel function selection (P6-32), and check whether there is any duplication of the four DO channel function selections. If you set the unwanted channels to off, power off and then power on again.
Type 4	Parameters are modified too frequently	The frequency of communication to modify function code parameters is too frequent	A-91	Check whether the host computer frequently writes parameters and modify the corresponding parameter writing method

Type 4	reserved		A-92	
Type 4	reserved		A-93	

8. Modbus Register Address

8.1 Basic Setting

Code	Modbus Address Hex	Modbus Address Decimal	Function	Unit	Bits
P0-1	0x0001	1	Contral mode	-	16
P0-4	0x0004	4	Rotation direction	-	16
P0-5	0x0005	5	Servo stop mode at S-ON off	-	16
P0-9	0x0009	9	Regenerative resistor setting	-	16
P0-10	0x000A	10	External regenerative resistor resistance	Ω	16
P0-11	0x000B	11	External regenerative resistor power	W	16
P0-12	0x000C	12	Position pulse type selection	-	16
P0-13	0x000D	13	Position pulse frequency	kHz	16
P0-14	0x000E	14	Position pulse anti-interference level	-	16
P0-16	0x0010	16	Number of pulses per revolution of the motor	Pul	16
P0-17	0x0011	17	Electronic gear 1 numerator	-	16
P0-18	0x0012	18	Electronic gear 1 denominator	-	16
P0-19	0x0013	19	Electronic gear 2 numerator	-	16
P0-20	0x0014	20	Electronic gear 2 denominator	-	16
P0-21	0x0015	21	Pulse frequency division output direction	-	16
P0-22	0x0016	22	Number of output pulses per revolution of the motor	Pul	16
P0-23	0x0017	23	OZ polarity of Z pulse output	-	16
P0-25	0x0019	25	Position deviation limit	Pul	16

8.2 Control Parameter

Code	Modbus Address Hex	Modbus Address Decimal	Function	Unit	Bits
P1-1	0x0101	257	Speed reference source	-	16
P1-2	0x0102	258	Internal speed command	rpm	16
P1-3	0x0103	259	Acc. time	ms	16
P1-4	0x0104	260	Dec. time	ms	16
P1-7	0x0107	263	Torque reference source	-	16
P1-8	0x0108	264	Keypad setting value of torque reference	0.1%	16

P1-9	0x0109	265	Source of Speed Limit in Torque Mode	-	16
P1-10	0x010A	266	Maximum speed threshold	rpm	16
P1-11	0x010B	267	Warning speed threshold	rpm	16
P1-12	0x010C	268	Forward speed threshold	rpm	16
P1-13	0x010D	269	Backward speed threshold	rpm	16
P1-14	0x010E	270	Torque limit source	-	16
P1-15	0x010F	271	Forward rotation torque limit	0.1%	16
P1-16	0x0110	272	Backward rotation torque limit	0.1%	16
P1-19	0x0113	275	Torque saturation timeout	ms	16
P1-21	0x0115	277	Zero speed clamp function selection	rpm	16
P1-22	0x0116	278	Zero speed clamp speed threshold	rpm	16

8.3   Gain Adjustment

Code	Modbus Address		Function	Unit	Bits
	Hex	Decimal			
P2-1	0x0201	513	1st position loop gain	0.1Hz	16
P2-2	0x0202	514	1st speed loop gain	0.1Hz	16
P2-3	0x0203	515	1st speed loop integration time constant	0.1ms	16
P2-4	0x0204	516	2nd position loop gain	0.1Hz	16
P2-5	0x0205	517	2nd speed loop gain	0.1Hz	16
P2-6	0x0206	518	2nd speed loop integration time constant	0.1ms	16
P2-7	0x0207	519	Second gain switching mode	-	16
P2-9	0x0209	521	Speed feedforward gain	0.1%	16
P2-10	0x020A	522	Speed feedforward filter	0.01ms	16
P2-11	0x020B	523	Torque feedforward gain	0.1%	16
P2-12	0x020C	524	Torque feedforward filter	0.01ms	16

8.4   Auto-tuning Parameter

Code	Modbus Address		Function	Unit	Bits
	Hex	Decimal			
P3-1	0x0301	769	Load inertia ratio	0.01	16
P3-2	0x0302	770	Load level rigidity selection	-	16
P3-3	0x0303	771	Auto-tuning mode selection	-	16
P3-4	0x0304	772	Online inertia identification sensitivity	-	16
P3-5	0x0305	773	Number of inertia identification cycles	Revolution	16
P3-6	0x0306	774	Maximum speed of inertia identification	rpm	16

| P3-7 | 0x0307 | 775 | Parameter identification rotation direction | - | 16 |
| P3-8 | 0x0308 | 776 | Parameter identification waiting time | ms | 16 |

8.5   Vibration Inhabitation

| Code | Modbus Address | | Function | Unit | Bits |
	Hex	Decimal			
P4-1	0x0401	1025	Pulse reference filtering method	-	16
P4-2	0x0402	1026	Position reference first-order low-pass filter	ms	16
P4-3	0x0403	1027	Position reference average filter time constant	ms	16
P4-4	0x0404	1028	Torque filter time constant	0.01	16
P4-5	0x0405	1029	1st notch frequency	Hz	16
P4-6	0x0406	1030	1st notch depth	-	16
P4-7	0x0407	1031	1st notch width	-	16
P4-8	0x0408	1032	2nd notch frequency	Hz	16
P4-9	0x0409	1033	2nd notch depth	-	16
P4-10	0x040A	1034	2nd notch width	-	16

8.6   Signal Input/Output

| Code | Modbus Address | | Function | Unit | Bits |
	Hex	Decimal			
P5-1	0x0501	1281	AI_1 input bias	mV	16
P5-2	0x0502	1282	AI_1 input filter constant	0.01ms	16
P5-3	0x0503	1283	AI_1 dead zone	mV	16
P5-4	0x0504	1284	AI_1 zero shift	mV	16
P5-5	0x0505	1285	AI_2 input bias	mV	16
P5-6	0x0506	1286	AI_2 input filter constant	0.01ms	16
P5-7	0x0507	1287	AI_2 dead zone	mV	16
P5-8	0x0508	1288	AI_2 zero shift	mV	16
P5-9	0x0509	1289	the speed value corresponding to analog 10V	rpm	16
P5-10	0x050A	1290	the torque value corresponding to analog 10V	0.1%	16
P5-11	0x050B	1291	Positioning complete, positioning approach condition setting	-	16
P5-12	0x050C	1292	Positioning completion threshold	Pul	16
P5-13	0x050D	1293	Positioning approach threshold	Pul	16
P5-14	0x050E	1294	Set the positioning completion detection time window	ms	16

P5-15	0x050F	1295	Set the hold time of positioning completion output	ms	16
P5-16	0x0510	1296	Rotation speed detection threshold	rpm	16
P5-17	0x0511	1297	Speed consistent signal threshold	rpm	16
P5-18	0x0512	1298	Speed approaching signal threshold	rpm	16
P5-19	0x0513	1299	Zero speed output signal threshold	rpm	16
P5-20	0x0514	1300	Torque reached threshold	%	16
P5-21	0x0515	1301	Torque reached hysteresis	%	16

8.7 DI/DO Configuration

Code	Modbus Address		Function	Unit	Bits
	Hex	Decimal			
P6-01	0x0601	1537	High-speed DI port filtering time	1us	16
P6-02	0x0602	1538	DI_1 Channel function selection	-	16
P6-03	0x0603	1539	DI_1 Channel logic selection	-	16
P6-04	0x0604	1540	DI_1 Input source selection	-	16
P6-05	0x0605	1541	DI_2 Channel function selection	-	16
P6-06	0x0606	1542	DI_2 Channel logic selection	-	16
P6-07	0x0607	1543	DI_2 Input source selection	-	16
P6-08	0x0608	1544	DI_3 Channel function selection	-	16
P6-09	0x0609	1545	DI_3 Channel logic selection	-	16
P6-10	0x060A	1546	DI_3 Input source selection	-	16
P6-11	0x060B	1547	DI_4 Channel function selection	-	16
P6-12	0x060C	1548	DI_4 Channel logic selection	-	16
P6-13	0x060D	1549	DI_4 Input source selection	-	16
P6-14	0x060E	1550	DI_5 Channel function selection	-	16
P6-15	0x060F	1551	DI_5 Channel logic selection	-	16
P6-16	0x0610	1552	DI_5 Input source selection	-	16
P6-17	0x0611	1553	DI_6 Channel function selection	-	16
P6-18	0x0612	1554	DI_6 Channel logic selection	-	16
P6-19	0x0613	1555	DI_6 Input source selection	-	16
P6-20	0x0614	1556	DI_7 Channel function selection	-	16
P6-21	0x0615	1557	DI_7 Channel logic selection	-	16
P6-22	0x0616	1558	DI_7 Input source selection	-	16
P6-23	0x0617	1559	DI_8 Channel function selection	-	16
P6-24	0x0618	1560	DI_8 Channel logic selection	-	16
P6-25	0x0619	1561	DI_8 Input source selection	-	16
P6-26	0x061A	1562	DO_1 Channel function selection	-	16

P6-27	0x061B	1563	DO_1 Channel logic selection	-	16
P6-28	0x061C	1564	DO_2 Channel function selection	-	16
P6-29	0x061D	1565	DO_2 Channel logic selection	-	16
P6-30	0x061E	1566	DO_3 Channel function selection	-	16
P6-31	0x061F	1567	DO_3 Channel logic selection	-	16
P6-32	0x0620	1568	DO_4 Channel function selection	-	16
P6-33	0x0621	1569	DO_4 Channel logic selection	-	16

8.8   Auxiliary Function

| Code | Modbus Address | | Function | Unit | Bits |
	Hex	Decimal			
P10-1	0x0A01	2561	JOG sped	rpm	16
P10-2	0x0A02	2562	Restore factory setting	-	16
P10-4	0x0A04	2564	Motor overload protection time coefficient	%	16

8.9   Communication Parameter

| Code | Modbus Address | | Function | Unit | Bits |
	Hex	Decimal			
P12-1	0x0C01	3073	Servo station number	-	16
P12-2	0x0C02	3074	baudrate	-	16
P12-3	0x0C03	3075	Serial data format	-	16
P12-4	0x0C04	3076	Write modbus communication data to EEPROM	-	16

8.10 VDI

| Code | Modbus Address | | Function | Unit | Bits |
	Hex	Decimal			
P13-1	0x0D01	3329	VDI_1 input value	-	16
P13-2	0x0D02	3330	VDI_2 input value	-	16
P13-3	0x0D03	3331	VDI_3 input value	-	16
P13-4	0x0D04	3332	VDI_4 input value	-	16
P13-5	0x0D05	3333	VDI_5 input value	-	16
P13-6	0x0D06	3334	VDI_6 input value	-	16
P13-7	0x0D07	3335	VDI_7 input value	-	16

| P13-8 | 0x0D08 | 3336 | VDI_8 input value | - | 16 |

8.11 Monitoring Parameter

| Code | Modbus Address | | Function | Unit | Bits |
	Hex	Decimal			
U0-01	0x1E01	7681	Servo state	-	16
U0-02	0x1E02	7682	Servo motor speed	rpm	16
U0-03	0x1E03	7683	Enter speed command	rpm	16
U0-04	0x1E04	7684	Speed corresponding to input position reference	rpm	16
U0-05	0x1E05	7685	Pulse deviation	Pul	32
U0-07	0x1E07	7687	Pulse deviation *10000	Pul	32
U0-09	0x1E09	7689	input pulse number	Pul	32
U0-11	0x1E0B	7691	input pulse number *10000	Pul	32
U0-13	0x1E0D	7693	Encoder accumulative position	Pul	32
U0-15	0x1E0F	7695	Encoder accumulative position *10000	Pul	32
U0-17	0x1E11	7697	DI input signal state	-	32
U0-19	0x1E13	7699	DO output signal state	-	32
U0-21	0x1E15	7701	AI1 input voltage value	V	16
U0-22	0x1E16	7702	AI2 input voltage value	V	16
U0-23	0x1E17	7703	vibration frequency	Hz	16
U0-24	0x1E18	7704	Vibration amplitude	rpm	16
U0-25	0x1E19	7705	forward torque limitation	%	16
U0-26	0x1E1A	7706	backward torque limitation	%	16
U0-27	0x1E1B	7707	forward speed limitation	rpm	16
U0-28	0x1E1C	7708	backward speed limitation	rpm	16
U0-29	0x1E1D	7709	Mechanical angle	°	16
U0-30	0x1E1E	7710	Electric angle	°	16
U0-31	0x1E1F	7711	Bus voltage	V	16
U0-32	0x1E20	7712	Module temperature	℃	16
U0-33	0x1E21	7713	Instantaneous output power	W	32
U0-35	0x1E23	7715	total power-on time: hour	h	32
U0-37	0x1E25	7717	total power-on time:min	min	16
U0-38	0x1E26	7718	total power-on time:sec	s	16
U0-39	0x1E27	7719	Output load percentage	%	16
U0-40	0x1E28	7720	Power-on time: hour	h	32
U0-42	0x1E2A	7722	Power-on time: min	min	16
U0-43	0x1E2B	7723	Power-on time: sec	s	16

U0-44	0x1E2C	7724	Instantaneous braking resistance power	W	32
U0-46	0x1E2E	7726	Average braking resistance power	W	32
U0-48	0x1E30	7728	Power-on times	Times	32
U0-50	0x1E32	7730	Motor cumulative turns (x1)	Revolution	16
U0-51	0x1E33	7731	Motor cumulative turns (x10e4)	Revolution	16
U0-52	0x1E34	7732	Motor cumulative turns (x10e8)	Revolution	16
U0-53	0x1E35	7733	Motor model code	-	16
U1-01	0x1F01	7937	Current fault code	-	16
U1-02	0x1F02	7938	Current alarm code	-	16
U1-03	0x1F03	7939	phase U current upon displayed fault	A	16
U1-04	0x1F04	7940	phase V current upon displayed fault	A	16
U1-05	0x1F05	7941	Bus voltage upon displayed fault	V	16
U1-06	0x1F06	7942	IGBT temperature upon displayed fault	℃	16
U1-07	0x1F07	7943	Torque component when fault occured	%	16
U1-08	0x1F08	7944	Excitation component when fault occurred	%	16
U1-09	0x1F09	7945	Position deviation when fault occurred	Pul	32
U1-11	0x1F0B	7947	Speed value when fault occurred	rpm	16
U1-12	0x1F0C	7948	the time when fault occurred	s	32
U1-14	0x1F0E	7950	Number of faults	-	16
U1-15	0x1F0F	7951	Number of warnings	-	16
U1-16	0x1F10	7952	Total number of historical faults	-	16
U1-17	0x1F11	7953	Total number of historical alarm	-	16
U1-18	0x1F12	7954	Last 2nd fault code	-	16
U1-19	0x1F13	7955	Last 3rd fault code	-	16
U1-20	0x1F14	7956	Last 4th fault code	-	16
U1-21	0x1F15	7957	Last 5th fault code	-	16
U1-22	0x1F16	7958	Last 6th fault code	-	16
U1-23	0x1F17	7959	Last 2nd alarm code	-	16
U1-24	0x1F18	7960	Last 3rd alarm code	-	16
U1-25	0x1F19	7961	Last 4th alarm code	-	16
U1-26	0x1F1A	7962	Last 5th alarm code	-	16
U1-27	0x1F1B	7963	Last 6th alarm code	-	16
U2-01	0x2001	8193	Product series	-	16
U2-02	0x2002	8194	model	-	16
U2-03	0x2003	8195	Model	-	16
U2-04	0x2004	8196	Firmware version	-	16
U2-05	0x2005	8197	Hardware version	-	16
U2-06	0x2006	8198	date of manufacture:year	year	16
U2-07	0x2007	8199	date of manufacture:month	Month	16

U2-08	0x2008	8200	date of manufacture:day	day	16
U2-09	0x2009	8201	Device serial number 1	-	16
U2-10	0x200A	8202	Device serial number 2	-	16
U2-11	0x200B	8203	Device serial number 3	-	16
U2-12	0x200C	8204	Device serial number 4	-	16
U2-13	0x200D	8205	Device serial number 5	-	16
U2-14	0x200E	8206	Device serial number 6	-	16
U2-15	0x200F	8207	Device serial number 7	-	16
U2-16	0x2010	8208	Device serial number 8	-	16

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