

AIMotor driver 220V 380V Operate manual

Safety notes



Danger means that when used incorrectly, it will lead to danger and personal injury.



Note: When used incorrectly, it will cause danger, personal injury and possible damage to equipment.



Prohibition: It means strictly prohibiting the behavior, otherwise it will lead to equipment damage or can not be used.


1.Use occasion



DANGER

- It is forbidden to use the product in flammable and explosive occasions, which can easily cause injury or fire.
- It is forbidden to use the product in places with humidity, direct sunlight, dust, salt and metal powder.

Wring

- Do not connect 220V driver power to 380 power supply, otherwise it will cause equipment damage or fire.
- Please grounding terminal  reliably. Poor grounding may cause electric shock or fire.
- Do not connect the output terminal of driver U-V-W motor to three-phase power supply, otherwise it will cause casualties or fire.
- Driver UVW motor output terminal and motor connection terminal UVW must be connected correspondingly, otherwise the motor may cause equipment damage and casualties due to speeding.

- Wiring please refer to wire wiring, otherwise it may cause fire.

Operation



Note

- Before starting operation, please make sure that you can start the emergency switch and shut down at any time.
- When commissioning, please separate the servo motor from the machine. After the action is confirmed, the motor is installed on the machine.
- After the servo motor stops and restores instantaneously, do not approach the machine. The machine may suddenly start again.
- Do not switch on or off the power frequently, otherwise it will cause overheating inside the driver.

Function



Stop

- When the motor is running, do not contact any rotating parts, otherwise it will cause casualties.
- When the equipment is running, it is forbidden to touch the driver and motor, otherwise it will cause electric shock or scald.
- When the equipment is running, it is forbidden to move the connecting cable, otherwise it will cause personal injury or equipment damage.

Chapter 1 Product introduction

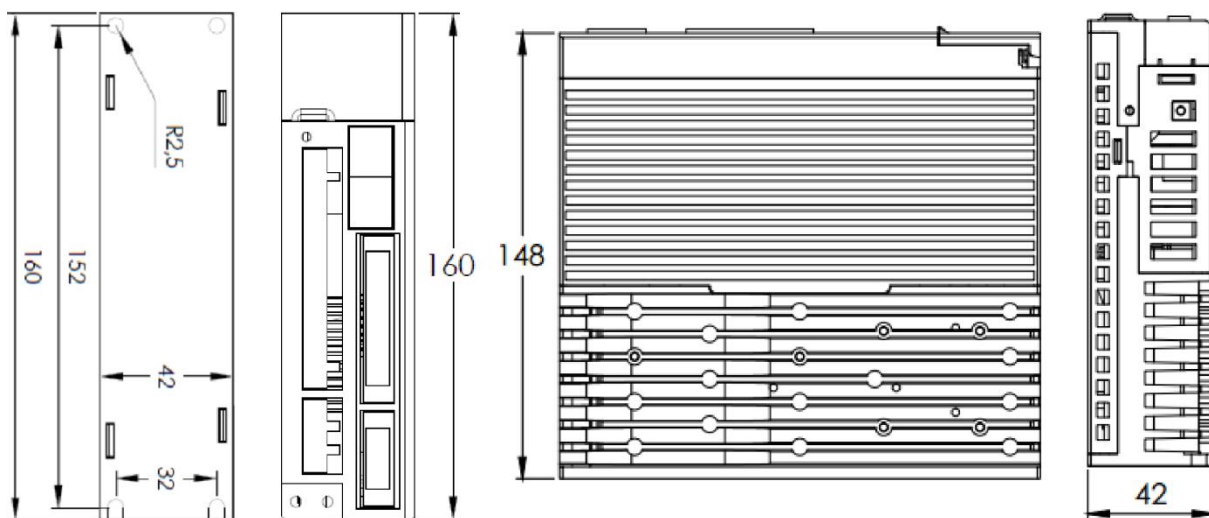
Servo driver technical specifications

Driver Model			D-AIS 22020A	D-AIS 22020B	D-AIS 22020C	D-AIS 22030A	D-AIS 22050A	D-AIS 38035A	D-AIS 38035B	D-AIS 38050A	D-AIS 38075A	D-AIS 380100A
Module Current(A)			20	20	20	30	50	35	35	50	75	100
Overload Multiples	1	Output	12.8	12.8	12.8	19.8	31.8	22.3	22.3	31.8	48	63.6
	2	Current (A)	6.4	6.4	6.4	9.9	15.9	11.1	11.1	15.9	24	31.8
	3		4.3	4.3	4.3	6.6	10.6	7.4	7.4	10.6	16	21.2

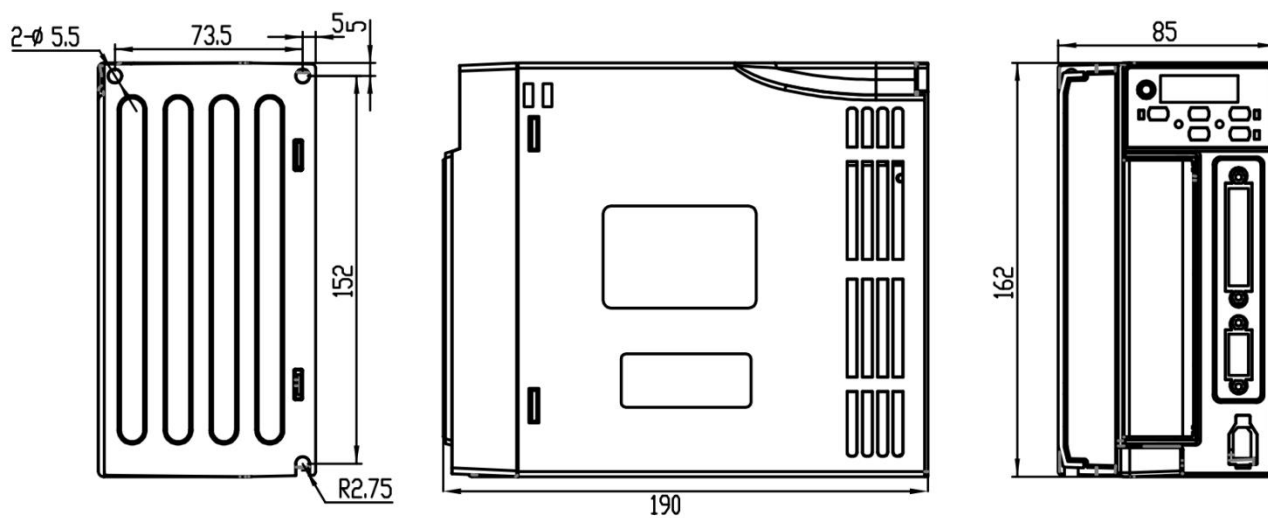
Input power		D-AIS220 series drives single-phase or three-phase 220VAC (voltage fluctuation -15% ~ +10%), 50 Hz /60Hz D-AIS380 series drive three-phase 380VAC (voltage fluctuation -15% ~ +10%), 50 Hz /60Hz
Operating environment	temperature	Working: 0℃ ~ 55℃ Storage: -20℃ ~ +80℃
	humidity	Less than 90% (no condensation)
control method		① position control ② speed control ③ torque control ④ communication control ⑤ Analog control
Regenerative brake		Built-in (When the built-in brake resistance power is not enough, external high-power brake resistance can be connected)
Control characteristic		Speed frequency response: $\geq 200\text{Hz}$
		Velocity fluctuation: $< \pm 0.03$ (load 0 ~ 100%) : $< \pm 0.02 \times (0.9 \sim 1.1)$ supply voltage
		Speed ratio: 1:5000
		Receiving pulse frequency $\leq 300\text{kHz}$
Control input		01, servo enable; 02, alarm clearance; 03, Multistage run instruction switching 1; 04, Multistage run instruction switching 2; 05, Forward overrange switch; 06, Reverse overrange switch; 07, Speed forward ; 08, speed reverse; multi-segment position running command was enabled; 10. External origin switch; 11, origin restoration function is enabled; 12. EMERGENCY STOP; 13. Clear the position deviation counter; 14. Impulse command disable; 15. Set the current position as the origin; 16. analog input
Control output		01, the servo is ready to output; 02. Complete the output of positioning; 03, fault alarm output 04. Confirm the origin back to zero output; 05, electrical confirmation back to zero output; 06, torque to the output; 07, the speed reaches the output; 08. Brake output control
Position control		Input mode: Pulse + direction; AB orthogonal pulse; CW/CCW dual pulse The electronic gear ratio :1 ~ 32767/1 ~ 32767 (The default is 131072:1000, that is, 1000 pulses per circle) Feedback pulse: 131072 Pulse/revolution
speed control		4 internal speeds (switched by combination of SC1 and SC2 input signals)
Acceleration and deceleration function		Setting Acceleration and Deceleration Duration 1 to 10000 ms (0 r/min to 1000 r/min)
Monitor function		Speed, current position, command pulse accumulation, position deviation, motor torque, motor current, bus voltage, Rotor absolute position, command pulse frequency, running state, input and output terminal signals, etc
protect function		Overspeed, overvoltage and undervoltage of the main power supply, overcurrent, overload, abnormal braking, abnormal encoder, abnormal control power supply, abnormal position, etc
Applicable load inertia		Less than 5 times the inertia of the motor rotor
RS485 function		① Communication control position ② communication control speed ③ communication control torque Follow the standard Modbus-RTU protocol

Chapter 2 Installation

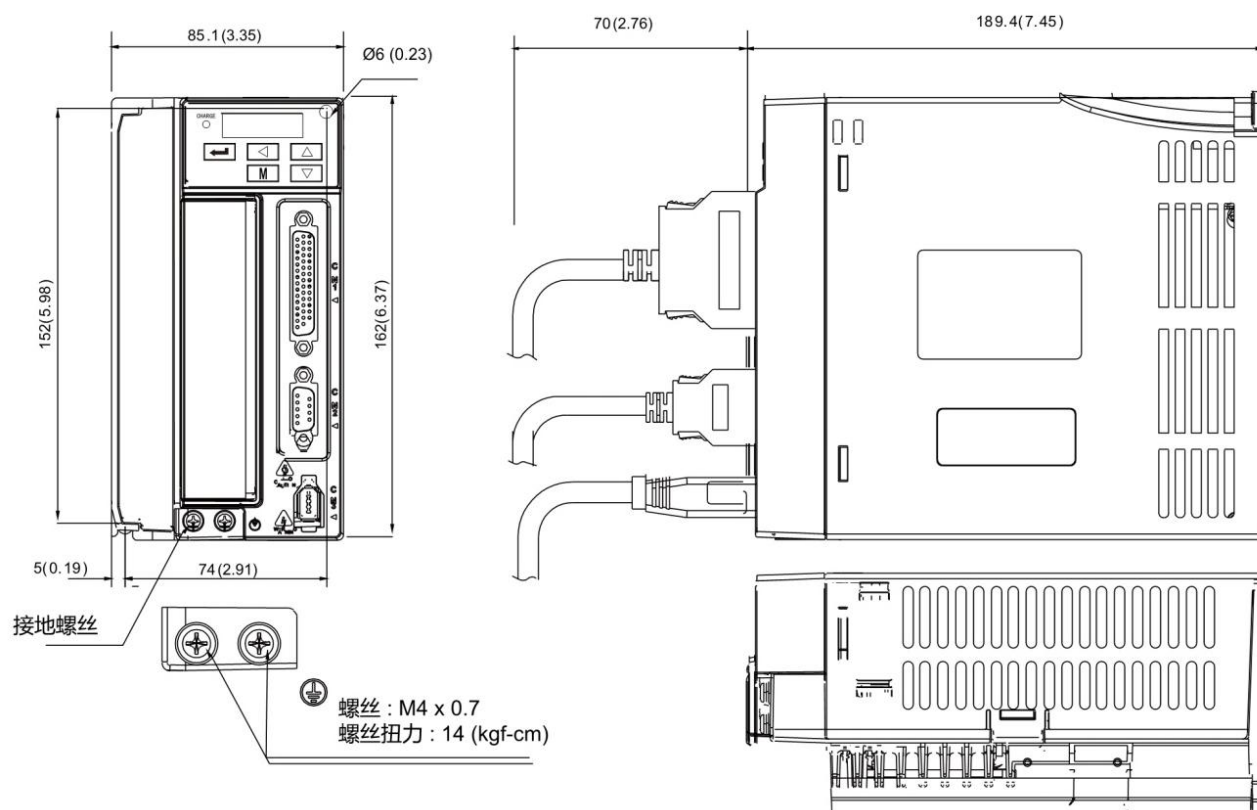
2.1 D-AIS22020A(200W~1KW) servo-drive external dimensions



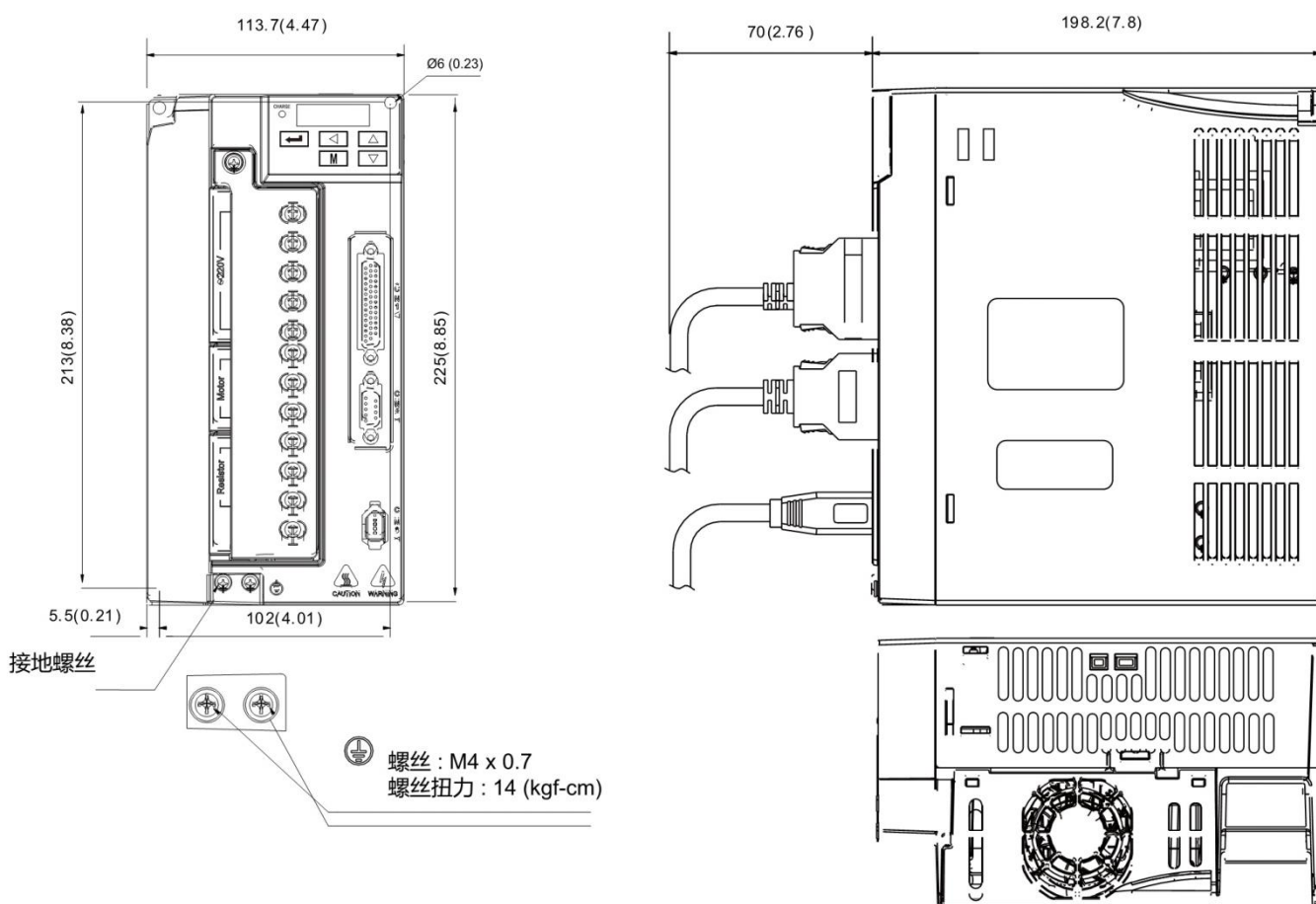
2.2 D-AIS22030A(1.0KW to 2.6KW) servo-drive external dimensions



2.3 D-AIS38050A,D-AIS380100A(1.0KW to 3KW) servo-drive external dimensions

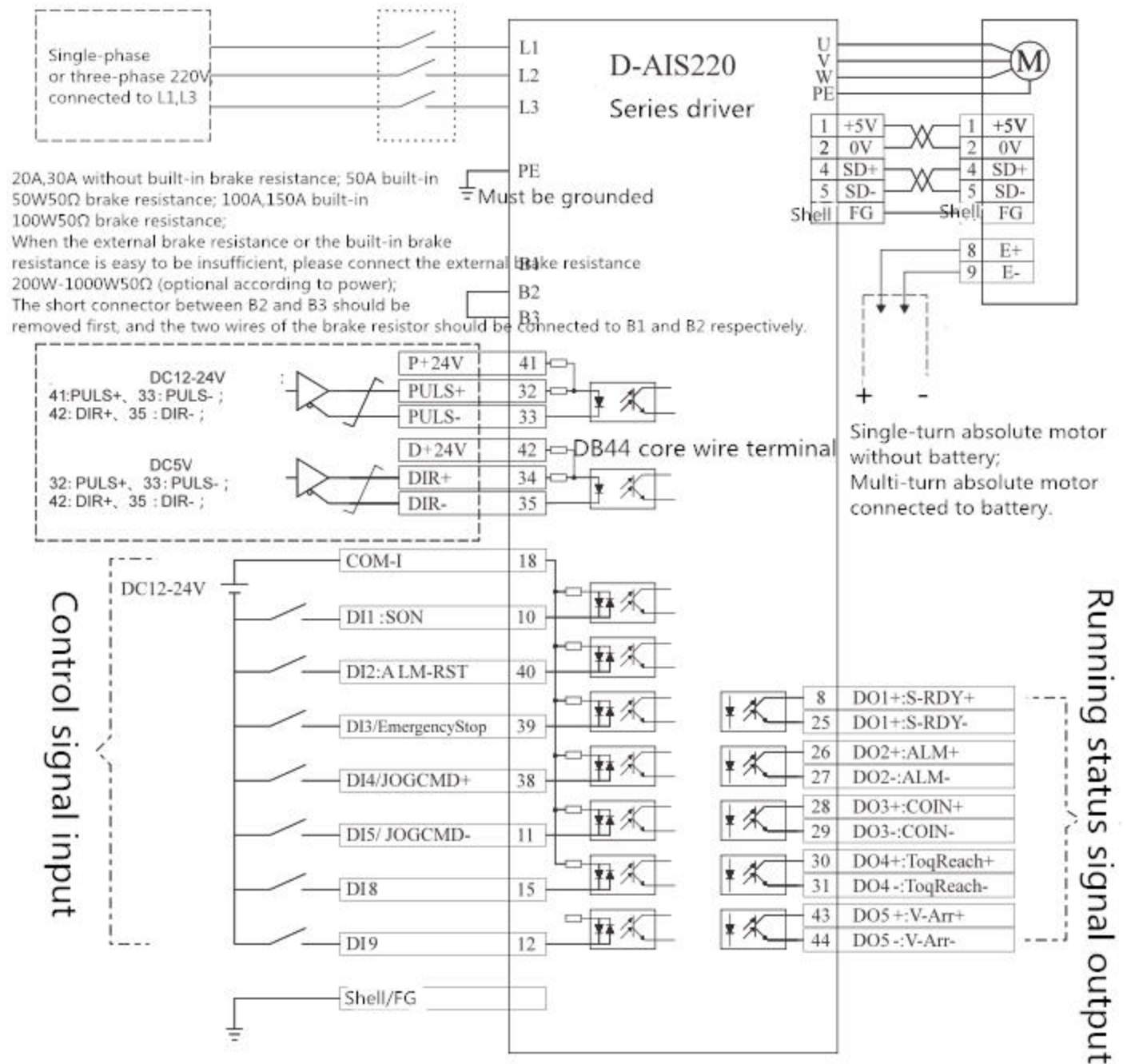


2.4 D-AIS380150A,D-AIS380200A(3.7KW to 11KW) servo-drive external dimensions



2.6 Standard wiring diagram

2.6.1 Position mode wiring diagram

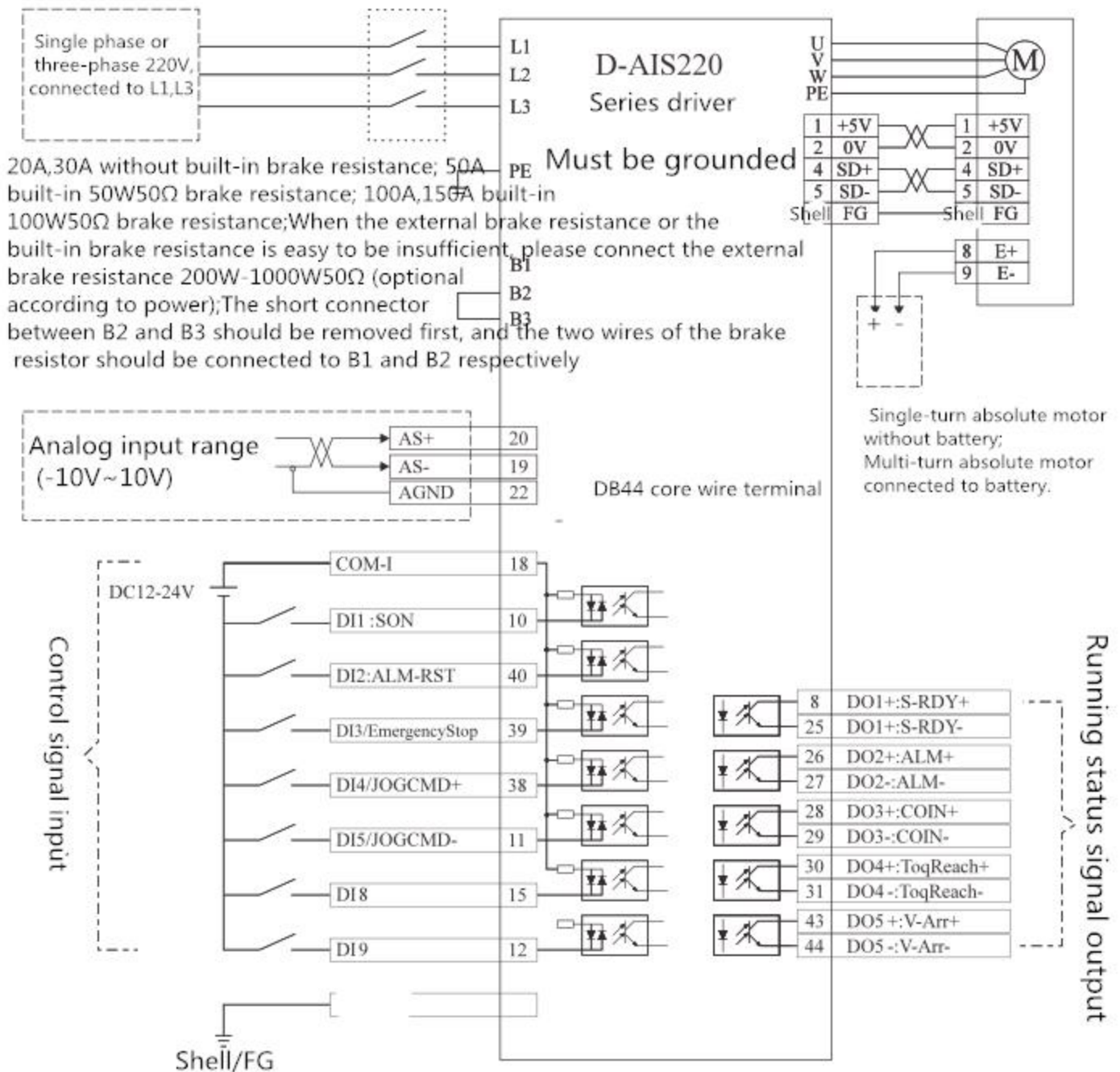


Position mode wiring diagram

PS: Just USE RS485 communication have encoder signal output.

2.6.2 Speed/Torque mode wiring diagram

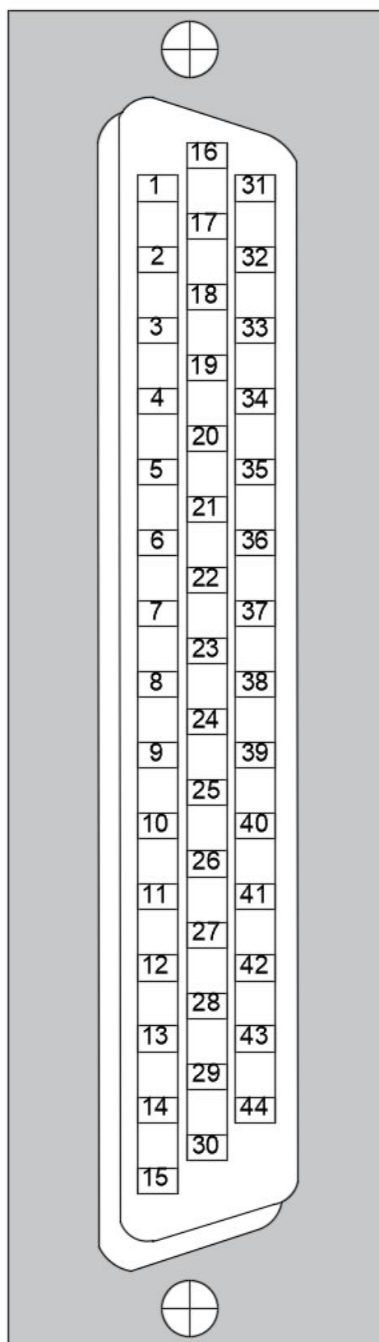
2.6.2 Control signal terminal DB44 interface definition



Speed/torque mode wiring diagram

PS: Just USE RS485 communication have encoder signal output.

2.6.3 Speed/torque mode wiring diagram



Note: Control signal terminal detailed interface function description please see the next page

2.6.4 Control signal input/Output Terminals (44-core terminals)

The applicable control mode is referred to as: P stands for position control mode; S stands for speed control mode; T stands for torque control mode; ALL Indicates all control modes.

Terminal No	Signal Name	Mark	Mode	Function
41	Command pulse 24V positive end	PUL-H	P	① Determine the Angle and speed of the motor. ② Select the corresponding port according to the pulse voltage. ③ When the control voltage is 12-24V, PUL-H and PUL- are the pulse input terminals.
32	Command pulse 5V positive end	PULS+		
33	Instruction pulse input negative end	PULS-		
42	Instruction direction 24V positive end	DIR-H	ALL	1.Determine the rotation direction of the motor. 2.Select the corresponding port based on the directional voltage. 3.When the control voltage is 12-24V, the DIR-H and DIR-bit directions are input terminals.
34	Instruction direction 5V positive end	DIR+		
35	Instruction direction input negative end	DIR-		
18	common end of the digital input terminal	COM	ALL	The common end of the input terminal is used to drive the input optocouple, and is connected to DC 12V ~ 24V (common positive NPN connection) or 0V (common negative PNP connection), the current is $\geq 100\text{mA}$
10	Digital input terminal 1	DI1	ALL	The terminal function depends on the user's I/O input function selection. Factory default I/O input function select 01 (Servo enable control SON)
40	Digital input terminal 2	DI2	ALL	The terminal function depends on the user's I/O input function selection. Factory default I/O input function select 02 (Fault and warning reset ALM-RST)
39	Digital input terminal 3	DI3	ALL	The terminal function depends on the user's I/O input function selection. Factory default I/O input function select 34 (EmergencyStop)
38	Digital input terminal 4	DI4	ALL	The terminal function depends on the user's I/O input function selection. Factory default I/O input function select 18 (click JOGCMD+ forward)
11	Digital input terminal 5	DI5	ALL	The terminal function depends on the user's I/O input function selection. Factory default I/O input function select 19 (click JOGCMD- in reverse)
15	Digital input terminal 8	DI8	ALL	The terminal function depends on the user's I/O input function selection.
12	Digital input terminal 9	DI9	ALL	The terminal function depends on the user's I/O input function selection.
Terminal No	Signal Name	Mark	Mode	Function
8	Digital output terminal 1	DO1+	ALL	The function of the terminal depends on the user's I/O output function. Factory default I/O output function Option 1 (Servo ready S-RDY)
25		DO 1-		
26	Digital output terminal 2	DO 2+	ALL	The function of the terminal depends on the user's I/O output function. Factory default I/O output function select 11 (fault alarm output ALM)
27		DO 2-		
28	Digital output terminal 3	DO 3+	ALL	The function of the terminal depends on the user's I/O output function.
29		DO3-		

				Factory default I/O output function select 5 (locate complete COIN)
30	Digital output terminal 4	DO4+	ALL	The function of the terminal depends on the user's I/O output function. Factory default I/O output function select 18 (torque to output ToqReach)
31		DO 4-		
43	Digital output terminal 5	DO5+	ALL	The function of the terminal depends on the user's I/O output function. Factory default I/O output function select 19 (Speed to output V-Arr)
44		DO5-		
14	Drive inside 5V	5Vout	ALL	Used only as an analog input, the external power supply can be omitted in analog mode
20	Simulate speed or torque instruction input	AS+	S/T	<ul style="list-style-type: none"> Differential mode, input impedance 10kΩ, input range -10V ~ +10V.
19		AS-		
22	AGND	AGND	S/T	<ul style="list-style-type: none"> Simulates the input ground wire
23/24	GND	GND	ALL	<ul style="list-style-type: none"> Ground wires for digital signals
Shell	FG	FG	ALL	<ul style="list-style-type: none"> Shielded ground terminal

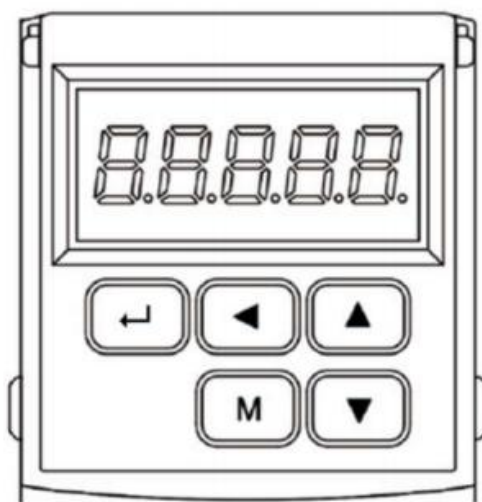
2.6.5 Encoder signal input terminal (9-core terminal)

Terminal No	Signal Name	Mark	Mode
1	5V Power	+5V	Servo motor encoder with +5V power supply and public ground; When the cable is long, multiple lines should be connected in parallel to reduce line voltage drop.
2	Power common	0V	
4	Encoder communication signal positive end	SD+	Connected to absolute encoder SD+ phase
5	Encoder communication signal negative end	SD-	Connected to absolute encoder SD- phase
Shell	Frame Grounded	FG	Shielded ground terminal

Chapter 3 display and panel operation

3.1 Panel shows

- The operating interface of the servo driver is composed of 5 LED digital tubes and 5 keys, which can be used for the state display and parameter setting of the servo driver. The interface layout is as follows:

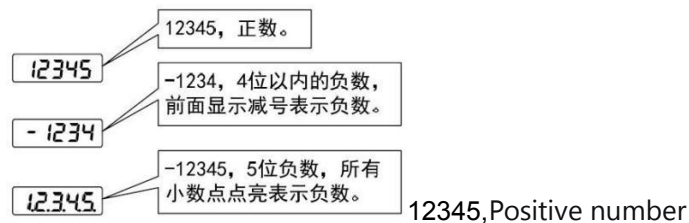


Key function description

Button	Button name	Function
M	MODE	Switch the status monitoring mode/parameter mode/alarm mode and return to the previous menu.
▲	multiply	Add monitor code, parameter number or set value, long press can increase quickly.
▼	Reduce	Reduce the monitoring code, parameter number or set value, long press can quickly reduce.
◀◀	Shift	When setting parameters, press this key to move the selected flicker bit to the left by one.
SET	Confirm	Go to the next menu, or save the Settings.

➤ Numerical indication

The numerical value USES 5 digital tube displays. The minus sign in front of the numerical value indicates a negative number. If it is a 5-digit negative number, all decimal points are lit to indicate a negative number. Some display items are preceded by an affix character, and if the number of digits is too long to occupy the position of the prefix character, the prefix character will not be displayed, only the value.



-1234, If a negative number is less than 4 digits, a minus sign is displayed in front of it
 1.2.3.4.5, -12345, 5 digits negative, all decimal points lit to indicate negative numbers

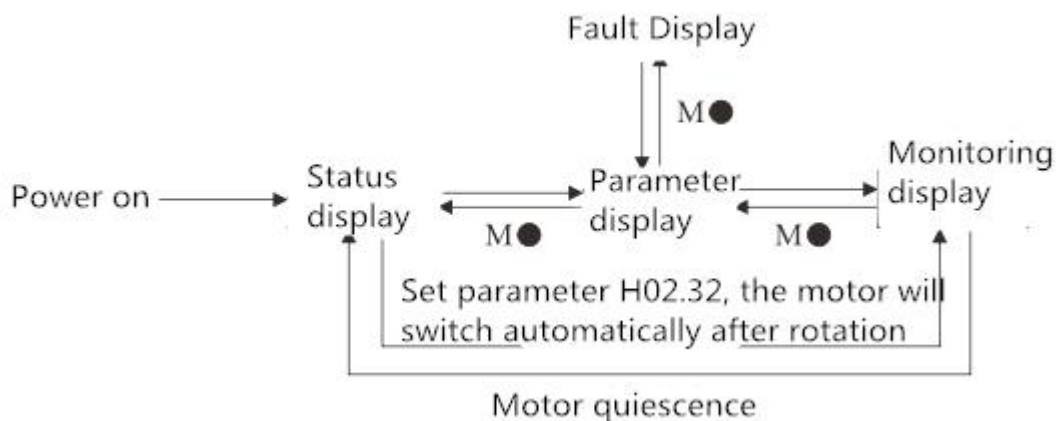
3.2 Panel Display

Panel display

When the servo drive is running, the display can be used for servo status display, parameter display, fault display and monitoring display.

- Status display: Display the current status of the servo, such as the servo is ready, the servo is running, etc.
- Parameter display: display parameters and parameter Settings.
- Fault display: display servo fault and warning.
- Monitoring display: display the current operating parameters of the servo.





The panel displays the switching method



The panel shows a schematic diagram of the switching method

- When the power is on, the panel display immediately enters the status display mode.
- Press "MODE" key to switch between different display modes.
- When the status display, set H02.32 to select the monitoring target parameters, the motor rotates at the same time, the display automatically switches to the monitoring display, the motor is quiet. After the stop, the display automatically restores the status display.
- When parameter display, set H0B group parameters to select pre-monitored target parameters, you can switch to monitoring display.
- In case of failure, immediately switch to the fault display mode, at this time, the 5-bit digital tube flashes synchronously. Press the "SET" key to confirm that the fault stop nixie blinks and then Press MODE to switch to the parameter display mode.

Status display

Display	Name	Display occasion	Description
	Reset Servo initialization	Servo power-on moment	The drive is in the initialization or reset state. Wait for initialization or reset to complete, and automatically switch to other states.
	Nrd Servo not ready	Servo initialization is complete, but the drive is not ready.	Because the main circuit is not powered on, the servo is not running
	Rdy Servo ready	driver is ready.	servo driver is in the running state, waiting for the host computer to give the servo enable signal
	Run Servo is running	servo enabled signal is active. (S-ON is ON)	servo driver is running.


Parameter display

According to the different parameter functions, the servo is divided into 19 groups of parameters, and the parameter position is quickly positioned according to the parameter groups. For the parameter list, see See the "Parametric Functions" section.

• Parameter group display

Display	Display	Content
HXX.YY	parameter group identifier	XX: Parameter group number (in decimal). YY: offset (hexadecimal) in parameter group.

For example, H02.00 The following information is displayed:

Display	Display	Content
	Parameters H02.00	02: indicates the parameter group number 00: indicates a bias within the parameter group

3.3 Parameter Settings

The servo drive parameters can be set as follows

1. Press the [M] key in the menu of the first layer to switch to the parameter setting mode of "H00.";
2. Select different parameter groups H00 ~ H12 with **【▲】** and **【▼】** keys, and press **【 】** key to enter the "Parameter number" selection menu on the second layer;
3. Select different parameter numbers with **【▲】** and **【▼】** keys. Press the **【8】** key to display the parameter value. The lowest parameter value flickers. Use the **【◀】** key to move the flicker, and use the **【▲】**、**【▼】** keys to change the parameter value.
4. Press **【8】** to save the modified value. The modified value will be immediately reflected in the control.
5. Then press **【▲】**, **【▼】** keys can continue to modify the parameters, after the modification is completed, press [M] key to return to the parameter selection menu.
6. If you are not satisfied with the value being modified, do not press **【8】** to confirm, you can press [M] to cancel, the parameter is restored to the original value, and return to the parameter selection menu.

Chapter 3 control flow chart

Control flow graph

This system uses the tree structure setting, step by step to expand the branch, in the application of this product, please refer to the following table design; The system is structured from left to right→

Control mode Selection H02_00	=0 Speed control	Speed command selection H06_02	Instruction source =0 Derived from internal parameters	H06_03 Set speed + Enable Start/stop control	
			Instruction source =1 Derived from analog AI1	External analog voltage input DI Association SON Enables the start and stop control	
			Instruction source =5 Derived from internal multispeed	H12_00 Multi-speed mode selection	=0 Single cycle operation
					=1 cycle operation
					=2 DI Switchover Operation
	JOG Speed control	H06_04 Sets the rotational speed DI is associated with JOGCMD± click			
	=1 Position control	Position command selection H05_00	= 0 Pulse-derived control	H05_15 Pulse command mode selection	=0 Pulse + directional positive logic
					=1 Pulse + direction negative logic
					=2 AB Phase pulse
			= 2 Derived from multi-bit control	H11_00 Multi - segment running mode selection	=0 Single cycle operation
					=1 cycle operation
					=2 DI Switchover Operation
					=3 Run Sequence
			=2 Torque control	Torque instruction selection H07_02(Select) ↓ H07-00 (Main) H07-01 (Auxiliary)	Instruction source =0 Derived from internal parameters
	Instruction source =1 Derived from analog AI1	External analog voltage input DI Association SON Enables the start and stop control			

Chapter 4 Parameters and Functions

Note on parameters:

1. "Applicable mode" in the parameter table P represents position mode, S represents speed mode, and T represents torque mode.
2. Some parameters can be modified only after the motor is disabled, or after the modification, you need to power off and restart. Please pay attention to "Modification Mode" and "Effective Mode" in the parameter table.
3. Communication access or control parameters Please note "Data type" and "Parameter setting range" in the parameter table.

4.1 Parameter Functions

4.1-1 Driver parameters(H00-H01)

H00_00	Description	Motor code		Alter mode	Enable off	factory default	Manufacturer registration	Unit	-
	Parameter range	0	1073741824	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint32
Manufacturer parameters, different motor manufacturer number is different, need manufacturer permission can be modified, users do not modify;									

H00_08	Description	Zero state of motor encoder		Alter mode	Display	factory default	Manufacturer registration	Unit	-
	Parameter range	0	1	Effective way	-	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer's parameters, assembly motor encoder set to zero, display parameters can not be changed;									

H00_02	Description	Brake selection		Alter mode	Enable off	factory default	Manufacturer registration	Unit	-
	Parameter range	0	2	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint32
Manufacturer parameters, different motor manufacturer number is different, need manufacturer permission can be modified, users do not modify;									

H00_09	Description	Rated voltage of motor		Alter mode	Display	factory default	Manufacturer registration	Unit	-
	Parameter range	0	380	Effective way	-	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer's parameters, assembly motor encoder set to zero, display parameters can not be changed;									

H00_11	Description	Motor rated current		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01A
	Parameter range	0	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different motor rated current is different, need manufacturer permission to modify, users do not modify;									

H00_12	Description	Rated torque of the motor		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01N
	Parameter range	0	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different motor rated voltage is different, need manufacturer permission to modify, users do not modify;									

H00_14	Description	Motor rated speed		Alter mode	Enable off	factory default	Manufacturer registration	Unit	rpm
	Parameter range	0	6000	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different motor rated speed is different, need manufacturer permission to modify, users do not modify;									

H00_15	Description	Motor max speed		Alter mode	Enable off	factory default	Manufacturer registration	Unit	rpm
	Parameter range	0	6000	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16

Manufacturer's parameters, the maximum speed of different motors is different, which can only be modified by the manufacturer's permission, but not by the user; This parameter serves as the maximum speed limit of the motor and has the highest priority.

H00_16	Description	Motor moment of inertia Jm		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01kg cm ²
	Parameter range	0	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16

Manufacturer parameters, different motor moment of inertia is different, need the manufacturer's permission to modify, the user do not modify;

H00_17	Description	Number of motor poles		Alter mode	Enable off	factory default	Manufacturer registration	Unit	Pole
	Parameter range	2	360	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16

The number of poles of different motors is different, and the manufacturer's permission can be modified, and the user should not modify it.

H00_18	Description	stator resistor		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.001Ω
	Parameter range	1	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16

Manufacturer parameters, different motor moment of inertia is different, need the manufacturer's permission to modify, the user do not modify;

H00_19	Description	Stator inductance Lq		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01m H
	Parameter range	1	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16

Manufacturer parameters, stator inductance Lq of different motors are different, need manufacturer permission to modify, users do not modify;

H00_20	Description	Stator inductance Lq		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01mH
	Parameter range	1	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, stator inductance Lq of different motors are different, need manufacturer permission to modify, users do not modify;									

H00_21	Description	Coefficient of line back potential		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01V/1Krpm
	Parameter range	1	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different motor line back potential coefficient is different, need the manufacturer permission to modify, the user do not modify;									

H00_28	Description	Motor encoder offset		Alter mode	Display	factory default	Manufacturer registration	Unit	P/r
	Parameter range	-131072	131072	Effective way	-	Adaptation pattern	P/S/T	Data type	Uint32
Factory parameters, assembly motor encoder set to zero use, users can not change;									

H00_43	Description	Motor max current		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01A
	Parameter range	0	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
<p>The maximum current that different motors can accept is different. Setting an illegal value will lead to heat or damage of the motor. Only the permission of the manufacturer can be modified.</p> <p>Limit current output = limit torque output; This parameter, together with H07_09/H07_10 and manufacturer's parameter H01_03, is used as the actual maximum current output limit of the motor, and its low effective value is taken.</p>									

H01_00	Description	MCU software edition number		Alter mode	Display	factory default	Manufacturer registration	Unit	-
	Parameter range	0	65535	Effective way	-	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, software version number; Display parameters cannot be changed.									

H01_02	Description	Driver Code		Alter mode	Enable off	factory default	Manufacturer registration	Unit	-
	Parameter range	0	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different driver manufacturer number is different, need manufacturer permission can be modified, users do not modify;									

H01_03	Description	Driver max current		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01A
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
<p>Manufacturer parameters, different drivers can output the maximum current is different, setting an illegal value will lead to motor heating or damage, need manufacturer permission to modify, users do not modify;</p> <p>Limit current output = limit torque output; This parameter, together with H07_09/H07_10 and manufacturer's parameter H00_43, is used as the actual maximum current output limit of the motor, and its low effective value is taken.</p>									

H01_04	Description	Current sampling lag time		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.01ms
	Parameter range	1	10000	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different driver current sampling lag time is different, need the manufacturer permission to modify, do not modify the user;									

H01_05	Description	Driver current sampling resistance		Alter mode	Enable off	factory default	Manufacturer registration	Unit	mΩ
	Parameter range	5	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different drive current sampling resistance is different, need manufacturer permission to modify, users do not modify;									

H01_06	Description	Driver current amplifier input resistance		Alter mode	Enable off	factory default	Manufacturer registration	Unit	Ω
	Parameter range	500	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different drivers of the current amplifier input resistance is different, need manufacturer permission can be modified, users do not modify;									

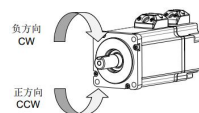
H01_07	Description	Driver current amplifier feedback resistance		Alter mode	Enable off	factory default	Manufacturer registration	Unit	Ω
	Parameter range	500	65535	Effective way	power off and restart	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters, different drivers of the current amplifier feedback resistance is different, need manufacturer permission can be modified, users do not modify;									

H01_08	Description	Driver temperature alarm threshold		Alter mode	Enable off	factory default	Manufacturer registration	Unit	℃
	Parameter range	40	100	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameter, as the driver overheat protection threshold, can only be modified by the manufacturer permission, users do not modify. If the set value is exceeded, the motor overheating fault alarm ER.650 will occur;									

H01_09	Description	Driver bus voltage attenuation coefficient		Alter mode	Enable off	factory default	Manufacturer registration	Unit	-
	Parameter range	10	65535	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters can be modified only after the permission of the manufacturer. Users do not modify them.									

4.2-Basic control parameters(H02)

H02_00	Description	Control mode selection		Alter mode	Enable off	factory default	1	Unit	-
	Parameter range	0	6	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: speed mode (refer to Section 4.5 / Speed Control parameters); Set 1: position mode (refer to Section 4.4 / Position Control parameters); Set 2: torque mode (refer to Subsection 4.6 / torque Control parameters);									
H02_02	Description	Rotation direction selection		Alter mode	Enable off	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: CCW is positive direction and CW is negative direction; Set 1: CW is the positive direction and CCW is the negative direction;									



H02_05	Description	Enable OFF Select the shutdown mode		Alter mode	Enable off	factory default	0	Unit	-
	Parameter range	0	2	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: free stop, keep free state after stopping; Set 1: zero speed stop, keep free after stopping; Set 2: zero speed stop, keep DB state after stopping (damping state after enabling OFF, recommended for vertical load);									

H02_09	Description	Delay from gate output ON to command reception		Alter mode	Enable off	factory default	250	Unit	ms
	Parameter range	0	500	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set the delay time when the servo drive starts to receive the input command after the servo drive is powered ON									

H02_19	Description	Brake starting voltage value		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.1V
	Parameter range	400	4500	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
When the real-time input bus voltage is higher than this value, start the brake									

H02_20	Description	Brake stop voltage value		Alter mode	Enable off	factory default	Manufacturer registration	Unit	0.1V
	Parameter range	400	4500	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
After the brake is turned on, the real-time input bus voltage is lower than this value, and the brake is turned off									

H02_21	Description	minimum power consumption resistance allowed by the driver		Alter mode	Only show	factory default	Manufacturer registration	Unit	Ω
	Parameter range	0	65535	Effective way	---	Adaptation pattern	P/S/T	Data type	Uint16
View the minimum power consumption resistance allowed for a drive model. The value cannot be changed and depends only on the drive model									

H02_22	Description	Built-in brake resistance power		Alter mode	Only show	factory default	Manufacturer registration	Unit	W
	Parameter range	0	65535	Effective way	---	Adaptation pattern	P/S/T	Data type	Uint16

View the built-in brake resistance power of a certain driver model, which cannot be changed and is only related to the driver model.

H02_23	Description	Built-in brake resistance value		Alter mode	Only show	factory default	Manufacturer registration	Unit	Ω
	Parameter range	0	65535	Effective way	---	Adaptation pattern	P/S/T	Data type	Uint16

View the built-in brake resistance value of a certain drive model, which cannot be changed and is only related to the drive model

H02_24	Description	Heat dissipation coefficient of resistance		Alter mode	Enable off	factory default	Manufacturer registration	Unit	W
	Parameter range	0	65536	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

setting the heat dissipation coefficient of the resistor is effective for both the internal and external brake resistors

H02_25	Description	Brake resistance setting		Alter mode	Enable off	factory default	3	Unit	W
	Parameter range	0	3	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Set 0: Use built-in brake resistance; Setup 1: Use an external brake resistor; Setup 2: Use internal + external brake resistors in parallel; Setup 3: No brake resistance is used

H02_26	Description	External built-in brake resistance power		Alter mode	Enable off	factory default	1	Unit	W
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Sets the power of the external brake resistance of a certain type of driver

H02_27	Description	External built-in brake resistance value		Alter mode	Enable off	factory default	65535	Unit	Ω
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set the resistance value of the external brake resistance of a certain type of driver									

02_30	Description	Manufacturer's reservation		Alter mode	Enable off	factory default	0	Unit	-
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters can be modified only after the permission of the manufacturer. Users do not modify them.									

H02_31	Description	System parameters are initialized		Alter mode	Enable off	factory default	0	Unit	-
	Parameter range	0	5	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: no effect; Set 1: Restore user related factory parameters. Set 2: Clear the H0B_33 fault record. Setup 3: Restore the factory registration parameters of the motor and drive (require the manufacturer's permission); Set 5: Restore all system parameters. After this operation, you need to re-match the motor drive parameters, and you need to re-enter the password to reset 3 options (with the manufacturer's permission); Note: Normal use option 1 to restore the parameters set by the user; System parameter initialization function option 3/5, non-manufacturer technical personnel do not use;									

02_32	Description	The panel displays the function by default		Alter mode	Enable off	factory default	50	Unit	-
	Parameter range	0	99	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Manufacturer parameters can be modified only after the permission of the manufacturer. Users do not modify them.									

Depending on the Settings, the panel can automatically switch to the monitoring parameter display mode (H0B group parameters), and H02_32 is used to set the in-group bias of H0B group parameters.

Set Value	H0BGroup Parameters	Remark
0	H0B_00	Motor speed is not zero, panel display H0B_00(actual motor speed)
3	H0B_03	Motor speed is not zero, panel display H0B_03(input signal DI monitoring)

4.DI/DO parameters(H03-H04)

Input terminal DI function options		
InFun Set vable	Symbol	Function
1	SON	servo motor is enabled
2	ALM_RST	Fault alarm reset
6	CMD1	Multi-segment running instruction switch 1
7	CMD2	Multi-segment running instruction switch 2
14	P_OT	Forward overrange switch
15	N_OT	Reverse overrange switch
18	JOG_CMD+	velocity is moving in a positive direction
19	JOG_CMD-	velocity points in the opposite direction
21	FWD-EN	Speed forward running
22	REV-EN	Speed reverse operation
26	SPDDirSel	Speed mode direction switch
28	PosInSen	Multi - segment position running command enable
31	Home_Switch	External origin switch
32	Homeing_Start	Origin return was enabled. Procedure
34	EmergencyStop	emergency shut down
35	ClrPosErr	Error Counter
37	PulseInhibit	Pulse In hibit
41	Home_Record	Set current position to origin (zero bit)

Note: InFun option (a DI function option can only be associated with one DI terminal and cannot be assigned repeatedly; otherwise, a DI duplication assignment fault alarm ER.130 will occur)

H03_02	Description	DI1 Terminal Function Selection		Alter mode	Advanced configuration	factory default	1	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Factory default association: InFun1 servo enable;
If you need to change the associated function, see Input Terminal DI Function Option Table.

H03_03	Description	DI1 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 0: indicates that signal conduction is effective, disconnection is invalid (positive logic input); Set 1: indicates that the signal disconnection is valid and the conduction is invalid (inverse logic input);									

H03_04	Description	DI2 Terminal Function Selection		Alter mode	Advanced configuration	factory default	2	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Factory default association: InFun2 alarm reset; If you need to change the associated function, see Input Terminal DI Function Option Table.									

H03_05	Description	DI2 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 0: indicates that signal conduction is effective, disconnection is invalid (positive logic input); Set 1: indicates that the signal disconnection is valid and the conduction is invalid (inverse logic input);									

H03_06	Description	DI3 Terminal Function Selection		Alter mode	Advanced configuration	factory default	34	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Factory default association: InFun34 emergency shutdown; If you need to change the associated function, see Input Terminal DI Function Option Table.									

H03_07	Description	DI3 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 0: indicates that signal conduction is effective, disconnection is invalid (positive logic input); Set 1: indicates that the signal disconnection is valid and the conduction is invalid (inverse logic input);									

H03_08	Description	DI4 Terminal Function Selection		Alter mode	Advanced configuration	factory default	18	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Factory default association: InFun18 speed forward dot;

If you need to change the associated function, see Input Terminal DI Function Option Table.

H03_09	Description	DI4 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Set 0: indicates that signal conduction is effective, disconnection is invalid (positive logic input);

Set 1: indicates that the signal disconnection is valid and the conduction is invalid (inverse logic input);

H03_10	Description	DI5 Terminal Function Selection		Alter mode	Advanced configuration	factory default	19	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Factory default association: InFun19 speed negative dot;

If you need to change the associated function, see Input Terminal DI Function Option Table.

H03_11	Description	DI5 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

Set 0: indicates that signal conduction is effective, disconnection is invalid (positive logic input);

Set 1: indicates that the signal disconnection is valid and the conduction is invalid (inverse logic input);

H03_16	Description	DI8 terminal function Select		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16

To change the association function, see Input Terminal DI Function Option Table.

H03_17	Description	DI8 Terminal logical selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: indicates that the signal is valid for conduction and invalid for disconnection (positive logic input); Set 1: indicates that the signal is disconnected and valid, and the conduction is invalid (inverse logic input);									

H03_18	Description	DI9 terminal function Select		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
If you need to change the association function, refer to the Input Terminal DI Function Options Table.									

H03_19	Description	DI9 Terminal logical selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: indicates that the signal is valid for conduction and invalid for disconnection (positive logic input); Set 1: indicates that the signal is disconnected and valid, and the conduction is invalid (inverse logic input);									

H03_50	Description	AI1 is offset or duty cycle is offset		Alter mode	Advanced configuration	factory default	0	Unit	mv/pwm%
	Parameter range	-5000	5000	Effective way	with immediate effect	Adaptation pattern	S/T	Data type	Uint16
When the instruction comes from AI, the amount of zero bias compensation for the analog input. When the external analog voltage input device cannot be adjusted to absolute 0V, this parameter can be used for input voltage bias. When the instruction is derived from PWM, the PWM duty cycle is offset.									

H03_51	Description	AI1/PWM input filtering time constant		Alter mode	Advanced configuration	factory default	2000	Unit	0.01ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S/T	Data type	Uint16

Low-pass filter for analog input and PWM input signal;

The larger the setting value, the faster the input response speed and the greater the influence of signal noise; The smaller the setting value, the slower the response and the smaller the impact of signal noise.

H03_53	Description	AI1 Dead zone		Alter mode	Advanced configuration	factory default	2000	Unit	0.1mV
	Parameter range	0	10000	Effective way	with immediate effect	Adaptation pattern	S/T	Data type	Uint16

The analog command is invalid when the analog input voltage is in the uncontrolled range.

In the application scenario with serious interference, the dead zone range can be enlarged to reduce interference and avoid flapping.

H03_54	Description	AI1 Zero drift		Alter mode	Advanced configuration	factory default	0	Unit	0.1mV
	Parameter range	-5000	5000	Effective way	with immediate effect	Adaptation pattern	S/T	Data type	Uint16

The amount of zero bias compensation for the analog input.

H03_80	Description	Analog value 10V/PWM% corresponds to the speed value		Alter mode	Advanced configuration	factory default	3000	Unit	rpm
	Parameter range	0	6000	Effective way	with immediate effect	Adaptation pattern	S/T	Data type	Uint16

When the instruction comes from the analog quantity, set the proportional relationship between the analog speed input voltage 10V and the motor speed; If 3000 is set, the speed of the 10V motor is 3000r/min.

When the instruction comes from PWM, set the PWM duty cycle to 100% and the proportional relationship between the motor speed; If the duty cycle is set to 3000, the motor speed is 3000r/min when the duty cycle is 100%.

H03_81	Description	The analog quantity 10V corresponds to the torque value		Alter mode	Advanced configuration	factory default	100	Unit	0.01 times
	Parameter range	0	6000	Effective way	with immediate effect	Adaptation pattern	S/T	Data type	Uint16

Set the proportional relationship between analog torque input voltage and motor torque; Setting 100 indicates that the torque of the 10V voltage motor is 100% of the rated torque.

Output terminal DO function option table

OutFun Set Value	Symbol	Function
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1	S_RDY	S_RDY
5	COIN	Positioning complete output
9	BRK	Brake output control
11	ALM	Error alarm OUT
16	Home_Attaion	origin returns to zero to complete the output
17	ElecHomeAttain	Electrical return to zero completes output
18	ToqReach	Torque to the output
19	V-Arr	Speed to the output
24	BldePulsout	Pulse Output

H04_00	Description	DO1 Terminal Function Selection		Alter mode	Advanced configuration	factory default	1	Unit	-
	Parameter range	0	24	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Factory default association: OnFun1 servo is ready; If you need to change the associated function, see the Output Terminal DO Function Option Table.									

H04_01	Description	DO1 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: when the signal is valid, the optocoupler is on (positive logic output); Set 1: when the signal is effective, the optocoupler is turned off (inverse logic output);									

H04_02	Description	DO2 Terminal Function Selection		Alter mode	Advanced configuration	factory default	11	Unit	-
	Parameter range	0	24	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Factory default association: OnFun11 fault alarm output; If you need to change the associated function, see the Output Terminal DO Function Option Table.									

H04_03	Description	DO2 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: when the signal is valid, the optocoupler is on (positive logic output); Set 1: when the signal is effective, the optocoupler is turned off (inverse logic output);									

H04_04	Description	DO3 Terminal Function Selection		Alter mode	Advanced configuration	factory default	5	Unit	-
	Parameter range	0	24	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Factory default association: OnFun5 positioning completed output; If you need to change the associated function, see the Output Terminal DO Function Option Table.									

H04_05	Description	DO3 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: when the signal is valid, the optocoupler is on (positive logic output); Set 1: when the signal is effective, the optocoupler is turned off (inverse logic output);									

H04_06	Description	DO4 Terminal Function Selection		Alter mode	Advanced configuration	factory default	18	Unit	-
	Parameter range	0	24	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Factory default association: OnFun18 torque reaches output; If you need to change the associated function, see the Output Terminal DO Function Option Table.									

H04_07	Description	DO4 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: when the signal is valid, the optocoupler is on (positive logic output); Set 1: when the signal is effective, the optocoupler is turned off (inverse logic output);									

H04_08	Description	DO5 Terminal Function Selection		Alter mode	Advanced configuration	factory default	19	Unit	-
	Parameter range	0	24	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Factory default association: OnFun19 speed to output; If you need to change the associated function, see the Output Terminal DO Function Option Table.									

H04_09	Description	DO5 Terminal logic selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Set 0: when the signal is valid, the optocoupler is on (positive logic output); Set 1: when the signal is effective, the optocoupler is turned off (inverse logic output);									

4.1.4-Position control parameter(H05)

H05_00	Description	Source of position command		Alter mode	Enable off	factory default	0	Unit	-
	Parameter range	0	2	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16
When H02_00=1(position control mode); Set 0: pulse command (the external controller outputs high-speed pulse train, and the motor positioning and rotation are controlled by pulse input to the motor drive, and the input pulse form is set by H05-15) Set 1: multi-segment position instruction (set by internal multi-segment position parameter to control motor rotation, refer to Section 3.8 / Group H11 internal multi-segment position for details)									

H05_04	Description	Position command low-pass filtering time constant		Alter mode	Enable off	factory default	0	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16
Set the first-order low-pass filter time constant of the position command; Setting this parameter will increase the delay of positioning response but has no effect on the displacement (total number of position instructions). When the external controller does not set the function of pulse acceleration and deceleration, and the motor impact is relatively large, the value of this parameter can be appropriately increased to indirectly achieve the passive hysteresis effect;									

H05_07	Description	Electronic gear ratio 1 (numerator)		Alter mode	Advanced configuration	factory default	131072	Unit	-
	Parameter range	0	1073741824	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint32

Set the position command electronic gear ratio molecule, AIMotor motor encoder resolution is 131072; L When the electronic gear ratio molecule is fixed as the motor resolution, the electronic gear ratio (H05-09) parameter value is the number of pulse commands required for the motor to rotate 1 turn; L When the electronic gear ratio molecule is not fixed as the motor resolution, the calculation method of the motor gear ratio is as follows:

Example 1: It is known that the motor drives the lead screw through the coupling to move in a straight line. The screw pitch is 10mm, and it is required that 1 pulse unit corresponds to 0.01mm.

Calculate :

Eg2 : It is known that the motor drives the pulley through the coupling to move in a straight line. The circumference of the pulley is 60mm, and 5 pulse units are required to correspond to 0.02mm.

$$\frac{B}{A} = \frac{131072}{5} \times \frac{0.02}{60} \quad \frac{B}{A} = \frac{131072}{15000} \quad \text{Electronic gear molecule}=131072 \quad \text{Denominator}=15000$$

$$\frac{B}{A} = \frac{131072}{1} \times \frac{0.01}{10} \quad \frac{B}{A} = \frac{131072}{1000} \quad \text{Electronic gear molecule}=131072 \quad \text{Denominator}=1000$$

H05_09	Description	Electronic gear ratio 1 (numerator)		Alter mode	Advanced configuration	factory default	1000	Unit	-
	Parameter range	0	1073741824	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint32

Set the position command electronic gear score, the factory default is 1000, indicating that the motor needs 1000 pulse command input for 1 turn; L When the electronic gear ratio molecule (H05-07) is fixed as the motor resolution, the value of the electronic gear ratio parent parameter is the number of pulse commands required for the motor to rotate 1 turn;

H05_15	Description	Pulse command pattern		Alter mode	Enable off	factory default	0	Unit	-
	Parameter range	0	3	Effective way	power off and restart	Adaptation pattern	P	Data type	Uint16

Set 0: pulse + direction positive logic (high-speed pulse train controls motor rotation, direction signal OFF is CW direction, direction signal ON is CCW direction);

Set 1: pulse + direction negative logic (high-speed pulse train controls motor rotation, direction signal OFF is CCW direction, direction signal ON is CW direction);

Set 2: A/B phase orthogonal pulse 4 times frequency (A phase before B phase 90° motor positive turn, B phase before A phase 90° motor reverse);

Set 3: CW/CCW double pulses (CCW pulse receives CW pulse to disconnect the motor forward, CW pulse receives CCW pulse to disconnect the motor reverse);

H05_19	Description	Electronic gear ratio 1 (numerator)		Alter mode	Advanced configuration	factory default	1	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt32

Set the position command electronic gear score, the factory default is 1000, indicating that the motor needs 1000 pulse command input for 1 turn; L When the electronic gear ratio molecule (H05-07) is fixed as the motor resolution, the value of the electronic gear ratio parent parameter is the number of pulse commands required for the motor to rotate 1 turn;

H05_21	Description	The locating completion threshold		Alter mode	Advanced configuration	factory default	92	Unit	Encoder unit
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Set the positioning completion threshold, motor position deviation value < positioning completion threshold, OutFun5 (COIN) positioning completion signal COIN is effective;
The positioning completion signal COIN is only valid in position mode and motor enabled state;

H05_30	Description	Origin return enable control		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	8	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Set the origin return mode and trigger signal source;

Set Value	Trigger signal	Zero return mode	Remark
0	Close the origin and return	-	-
1	Enable homing through DI (Homeing_Start)	Origin research	When the motor is enabled, the signal is effective
2	Enable electrical home through DI (Homeing_Start)	Electric back to zero	When the motor is enabled, the signal is effective
3	After the function is enabled, the system automatically returns to the origin	Origin research	After the device is powered on again, the first enable signal is effective
4	Communication control (H05_30 write 4) enables origin return	Origin research	After the motor is enabled, the command takes effect
5	Communication control (H05_30 write 5) Enables electrical return to zero	Electric back to zero	After the motor is enabled, the command takes effect
6	Communication control (H05_30 write 6) triggers the current position to be the origin	Set position H0B-07 to 0	After the trigger succeeds, H05_30=0
8	Trigger the current position as the origin through DI (HomeRecord)	Set position H0B-07 to 0	After the trigger succeeds, H05_30=0

Note 1: For communication control (H05_30 writes 4/H05_30 writes 5/H05_30 writes 6), H05_30 automatically sets to 0 after the command

is executed. Do not circulate communication control commands;

H05_31	Description	Zero return mode		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	16	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Set the motor initial direction, deceleration point, and origin during origin search

Set value	Search direction	deceleration point	Original point	Process steps
0	Forwarder	Origin Switch	Origin Switch	Motor first searches for the origin switch at a high speed in the set direction. When it encounters the rising edge of the origin switch signal, it starts to run and detangle at a low speed. When it detaches from the falling edge of the origin switch signal, the motor reverses and continues to search for the rising edge of the origin switch signal at a low speed.
1	Reverse	Origin Switch	Origin Switch	
2	Forwarder	Origin Switch	Motor Z signal	Motor first searches phase Z at a high speed in the set direction. When encountering the rising edge of the motor Z trust signal, it starts to reverse to run at a low speed. When encountering the rising edge of the other side of phase Z, the signal stops immediately and returns to zero successfully.
3	Reverse	Origin Switch	Motor Z signal	
4	Forwarder	Origin Switch	Motor Z signal	Motor first searches for the origin switch at a high speed in the set direction. When it encounters the rising edge of the origin switch signal, it starts to reverse and detangle at a low speed. When it detaches from the falling edge of the origin switch signal, it reverses again and searches for the rising edge of the origin switch signal at a low speed.
5	Reverse	Origin Switch	Motor Z signal	
6	Forwarder	Positive distance	Positive distance	Motor first searches for the origin switch at a high speed in the set direction. When it encounters the rising edge of the forward overrange switch signal, it starts to reverse and detangle at a low speed. When it detaches from the falling edge of the forward overrange switch signal, the motor reverses again at a low speed and searches for the rising edge of the forward overrange switch signal.
7	Reverse	Inverse distance	Inverse distance	

8	Forwarder	Positive distance	Motor Z signal	Motor first searches for the forward overrange switch at a high speed in the set direction. When it meets the rising edge of the forward overrange switch signal, it starts to decelerate and reverse to run away from it. When it detaches from the falling edge of the forward overrange switch signal, it continues to run until the motor Z trust signal stops immediately and returns to zero successfully.
9	Reverse	Inverse distance	Motor Z signal	
10	Forwarder	Mechanical limiting position	Mechanical limiting position	Motor first searches for the mechanical limit position at low speed with the set direction and torque (torque set by H05_56). When the mechanical limit position reaches the blocked rotation and the torque reaches the upper limit of the torque limit of touch stop and return to zero, the motor stops immediately and returns to zero successfully while keeping the default time.
11	Reverse	Mechanical limiting position	Mechanical limiting position	
12	Forwarder	Mechanical limiting position	Motor Z signal	Motor first searches for the mechanical limit position with the set direction and torque (torque set by H05_56) at a low speed. When the mechanical limit position reaches the blocked rotation and the torque reaches the upper limit of the zero torque limit and keeps the default time, the motor runs in reverse until the
13	Reverse	Mechanical	Motor Z	

		limiting position	signal	motor Z trust signal stops immediately and returns to zero successfully.
14	Forwarder	Electrical return to zero operation.		Motor returns to the zero position in a single turn predetermined by the user in the set direction at a high speed, ignoring the data of the number of turns. Clears the current position upon arrival.
15	Reverse			
16	Auto			Motor returns to the zero position in a single turn predetermined by the user at a high speed in the optimal direction.

Note 1: Please associate the DI function options corresponding to the deceleration point, origin switch and positive and negative overrange switch that are useful in the selected mode, otherwise an alarm will occur, ER.601 return to zero failure;

Note 2: In the selected mode, if the deceleration point is the origin switch and the positive and negative overrange switch DI is associated, the motor encounters the overrange switch in the search path and the motor automatically reverses to continue the search;

Note 3: In the process steps, the high-speed search speed is set by the H05_32 parameter, and the low-speed search speed is set by the H05_33 parameter.

Note 4: If the origin is not found within the H05_35 parameter time, the alarm ER.601 return to zero timeout will occur;

Note 5: After the origin resetting is successful, the DO function (OutFun16-HomeAttain) takes effect when the output of the origin resetting to zero is completed, while the output of the origin resetting to zero is invalid when OFF is enabled.

Note 6: Return to origin function is effective in position mode; When currently running in position mode internal multi-bit control, you need to disable the multi-bit enable signal first.

H05_32	Description	High speed search origin switch signal speed		Alter mode	Advanced configuration	factory default	100	Unit	rpm
	Parameter range	0	3000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16
1: Set the setting of high-speed search speed in the origin return process; 2: Speed setting for starting electrical return to zero;									

H05_33	Description	Low speed search origin switch signal speed		Alter mode	Advanced configuration	factory default	100	Unit	rpm
	Parameter range	0	100	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16
Set the low search speed setting in the origin return process; The lower the setting value is, the higher the origin search accuracy is. If the selected reduction point of the origin return mode is the machine limit position (block turn back to zero), the motor will always run at low speed until the origin return is successful;									

H05_34	Description	The acceleration and deceleration times when searching the origin		Alter mode	Enable OFF	factory default	200	Unit	ms
	Parameter range	0	200	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16
When setting the origin resetting mode, the speed change time of the motor from 0-1000rpm can be appropriately increased when the impact of the origin resetting motor is large.									

H05_35	Description	Origin search timeout		Alter mode	Enable OFF	factory default	60000	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

When setting the origin resetting mode, the speed change time of the motor from 0-1000rpm can be appropriately increased when the impact of the origin resetting motor is large.

H05_36	Description	Mechanical origin offset		Alter mode	Enable OFF	factory default	0	Unit	command unit
	Parameter range	-99999999	99999999	Effective way	with immediate effect	Adaptation pattern	P	Data type	Int32

Set the offset position after the origin is restored, and continue to perform the offset position action after the origin is restored successfully. If the offset of the origin of H05_36 is 0, the electrical zero position is consistent with the origin position, and the absolute position of the current motor H0B_07 will automatically clear to 0 after the origin is successfully returned to zero. Return to electrical zero position You go back to your original position;

If the origin offset of H05_36 $\neq 0$, the electrical zero is equal to the origin offset position. After the origin returns to zero successfully, continue to go to the offset position and then stop, the absolute position of the current motor H0B_07 is the offset position of the origin, and returning to zero is returning to the offset position of the origin;

If the origin resetting mode H05_31=14/15/16, when the single-turn electrical zero, the motor returns to the position in the single turn, and the mechanical origin offset is invalid.

If the origin resetting mode H05-31=6/7/10/11, H05-36 sets the mechanical origin offset (positive = positive direction; Negative = negative direction), when the offset value returns to the origin square

ER.668 will be alerted when it is consistent, the motor does not perform action.

H05_58	Description	Touch stop return to zero torque limit		Alter mode	Advanced configuration	factory default	1000	Unit	0.10%
	Parameter range	0	3000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Set the origin return mode (H05_31=10/11/12/13) the maximum positive and negative torque limit in the process of stopping and returning to zero; Must ensure that the set torque can drive the load movement;

4.1.5 Speed Control Parameters (H06)

H06_00	Description	Main speed instruction A source		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	2	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16

Set 0: from the given value of H06_03; Let 1: The voltage from external AI1 analog is given; Set 2: PWM duty cycle is set

H06_01	Description	Secondary speed instruction B source		Alter mode	Enable OFF	factory default	5	Unit	-
	Parameter range	0	5	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
Set 0: from the given value of H06_03; Let 1: The voltage from external AI1 analog is given; Set 5: From the internal multi-speed given									

H06_02	Description	Speed command selection		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	4	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
When H02_00=0 speed control mode; Set 0: Select the main speed instruction A source to run; Set 1: Select the auxiliary speed instruction B source to run;									

H06_03	Description	Speed command communication setting value		Alter mode	Advanced configuration	factory default	200	Unit	rpm
	Parameter range	-6000	6000	Effective way	with immediate effect	Adaptation pattern	S	Data type	Int16
When H06_02=0, the motor running speed is set by this parameter;									

H06_04	Description	JOG jog speed setting value		Alter mode	Advanced configuration	factory default	100	Unit	rpm
	Parameter range	0	6000	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
When the DI function of H03 group is InFun18 (JOG_CMD+) and InFun19 (JOG_CMD-), this parameter is used to set the JOG running speed of the motor.									

H06_05	Description	Speed command acceleration ramp time constant		Alter mode	Advanced configuration	factory default	0	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
In the setting speed mode, the acceleration time of the motor is determined by 0-1000rpm (the acceleration and deceleration time of the									

internal multi-speed is determined by the H12 group parameters, which has nothing to do with it);

H06_06	Description	Speed command deceleration ramp time constant		Alter mode	Advanced configuration	factory default	0	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
Deceleration time of motor from 1000-0rpm in setting speed mode; The acceleration and deceleration time of multiple velocities in the speed mode is determined by H12 group parameters, and has nothing to do with this parameter.									

H06_18	Description	Speed reaches signal threshold		Alter mode	Advanced configuration	factory default	1000	Unit	rpm
	Parameter range	10	6000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set the speed condition for the speed to arrive; When the actual motor speed after filtering is \geq the set value, the speed is judged to arrive, and the OutFun19 (V-ARR) speed arrival signal is effective. Otherwise, the speed arrival signal is invalid;									

4.1.6 Torque control parameters (H07)

H07_00	Description	Main torque instruction A source		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	T	Data type	Int16
Set 0: the main torque instruction is derived from the H07_03 digital given; Set 1: The main torque instruction comes from the external AI1 analog voltage given;									
H07_01	Description	Auxiliary torque instruction B source		Alter mode	Advanced configuration	factory default	1	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	T	Data type	Int16
Set 0: the main torque instruction is derived from the H07_03 digital given; Set 1: The main torque instruction comes from the external AI1 analog voltage given;									
H07_02	Description	Torque instruction selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate	Adaptation pattern	T	Data type	Int16

					effect				
When H02_00=2(torque control mode); Set 0: Select the main torque instruction A source to run; Set 1: Select the auxiliary torque instruction B source to run;									

H07_03	Description	Torque command communication setting value		Alter mode	Advanced configuration	factory default	0	Unit	0.10%
	Parameter range	-3000	3000	Effective way	with immediate effect	Adaptation pattern	T	Data type	Int16
<p>When H02_00=2(torque control mode); Set the torque limit of the positive and negative direction output when the motor is running, and limit the torque output is equal to limit the current output;</p> <p>100.0%= 1 times of motor torque (1 times of motor torque = motor rated torque and motor rated current);</p> <p>This parameter, together with H07_09/H07_10 and manufacturer's parameter H00_43/H01_03, is used as the actual maximum current output limit of the motor, and its low effective value is taken.</p>									

H07_05	Description	Torque command filter time constant		Alter mode	Advanced configuration	factory default	79	Unit	0.01ms
	Parameter range	0	3000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
By setting the low-pass filtering time of the torque command, the operation of the torque command can be smoother and the vibration can be reduced. If the setting value is too large, the motor responsiveness will decrease.									

H07_09	Description	Positive internal torque limit		Alter mode	Advanced configuration	factory default	3000	Unit	0.10%
	Parameter range	0	4000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
<p>Set the torque limit of the output in the positive direction when the motor is running, any mode is valid;</p> <p>100.0%= 1 times motor torque (1 times motor torque = rated motor torque and rated motor current);</p> <p>Limited torque output = limited current output, this parameter and the manufacturer's parameter H00_43/H01_03 are used as the actual maximum current output limit of the motor, the lower effective;</p>									

H07_10	Description	Negative internal torque limit		Alter mode	Advanced configuration	factory default	3000	Unit	0.10%
	Parameter range	0	4000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Set the torque limit of the negative direction output when the motor is running, independent of the mode; Limiting torque output is equal to limiting current output;

100.0%= 1 times of motor torque (1 times of motor torque = motor rated torque and motor rated current);

Limit torque output = limit current output. This parameter and the manufacturer's parameter H00_43/H01_03 are both used as the actual maximum current output limit of the motor, and the low effective value is taken.

H07_19	Description	Torque control forward speed limit value		Alter mode	Advanced configuration	factory default	3000	Unit	rpm
	Parameter range	0	6000	Effective way	with immediate effect	Adaptation pattern	T	Data type	UInt16

When setting the torque mode, the maximum forward speed limit of the motor should be limited. When setting the torque control, the speed limit must be set to avoid excessive speed caused by the unlimited speed increase of the light load motor.

The torque output percentage and speed limit are set. When the load is less than the torque output, the motor will accelerate and rotate in the direction of the torque output. When the load is accelerated to the speed limit or the output torque is insufficient to support continued acceleration, the motor will stop accelerating, and the speed will fluctuate according to the load fluctuation. When the load is about equal to the torque output, the motor will stop. When the load is greater than the output torque, the motor will be dragged to reverse rotate into reverse damping torque;

H07_20	Description	Negative speed limit value for torque control		Alter mode	Advanced configuration	factory default	3000	Unit	rpm
	Parameter range	0	6000	Effective way	with immediate effect	Adaptation pattern	T	Data type	UInt16

When setting the torque mode, limit the reverse maximum speed limit of the motor. When setting the torque control, the speed limit must be set to avoid excessive speed caused by the unlimited speed increase of the light load motor.

The process principle is consistent with H07_19 torque control forward speed limit;

H07_21	Description	Torque reaches reference value		Alter mode	Advanced configuration	factory default	0	Unit	0.10%
	Parameter range	0	3000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Parameter H0B_02/H07_21/H07_22/H07_23 is used as the valid condition for the torque ToReach the output OutFun18 (ToReach). The relation is as follows:

The actual torque (H0B_02), the torque reaches the reference value (H07_21), the torque reaches the effective value (H07_22), and the torque reaches the invalid value (H07_23);

When the actual torque \geq torque reaches the reference value + torque reaches the effective value; The moment reaches the output OutFun18 (ToReach) effectively;

When the actual torque $<$ torque reaches the reference value + torque reaches the invalid value; Moment reaches output OutFun18 (ToReach) invalid;

H07_22	Description	Torque reaches effective value		Alter mode	Advanced configuration	factory default	200	Unit	0.10%
	Parameter range	0	3000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
The effective conditions for the torque ToReach the output OutFun18 (ToReach);									

H07_23	Description	Torque reaches invalid value		Alter mode	Advanced configuration	factory default	100	Unit	0.10%
	Parameter range	0	3000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	Uint16
Invalid condition for torque ToReach output OutFun18 (ToReach);									

4.1.7 Performance and protection parameters (H08~H09~H0A)

H08_00	Description	Velocity loop gain		Alter mode	Advanced configuration	factory default	200	Unit	0.1Hz
	Parameter range	1	20000	Effective way	with immediate effect	Adaptation pattern	P/S	Data type	Uint16
<p>Setting the speed loop gain can determine the speed loop to follow, changing the speed command maximum frequency;</p> <p>Under the condition that the motor does not have noise and vibration, increasing the value of this parameter appropriately can speed up the positioning time and the following property; When noise and vibration occur, the value of this parameter is reduced;</p>									

H08_01	Description	Velocity loop integration time constant		Alter mode	Advanced configuration	factory default	1000	Unit	0.01ms
	Parameter range	15	51200	Effective way	with immediate effect	Adaptation pattern	P/S	Data type	Uint16
<p>Setting the speed loop integration time constant can eliminate the speed loop deviation;</p> <p>Reducing the setting value can strengthen the integral function and speed up the positioning time, but too small the setting value is easy to cause motor and mechanical vibration;</p>									

H08_02	Description	Position loop gain		Alter mode	Advanced configuration	factory default	100	Unit	0.1Hz
	Parameter range	0	20000	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16

Setting the speed loop gain can determine the position loop to follow, changing the speed command maximum frequency;
Under the condition that the motor does not have noise and vibration, increasing the value of this parameter appropriately can speed up the positioning time and improve the ability of resisting external disturbance when the motor is static.
If the setting value is too large, the system may be unstable and oscillate.

H08_15	Description	Load moment of inertia ratio		Alter mode	Advanced configuration	factory default	0	Unit	0.01 times
	Parameter range	0	12000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Set the inertia ratio of mechanical load relative to the inertia of the motor itself; H08_15=0 indicates that the motor is not loaded. H08_15=1 indicates that the load inertia is equal to the motor inertia;

For high inertia load, increase the value of this parameter first and then adjust the gain.

H08_19	Description	Speed feedforward gain		Alter mode	Advanced configuration	factory default	0	Unit	0.1%
	Parameter range	0	1000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Increasing this parameter can improve the position command response and reduce the position deviation at fixed speed.

H09_00	Description	Self-adjusting mode selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Set 0: invalid automatic adjustment of parameters (standard rigid table), manual adjustment of gain parameters;

Set 1: the standard rigid table is used, and the gain is automatically adjusted according to the rigid table level.

H09_01	Description	Selection of rigidity level		Alter mode	Advanced configuration	factory default	10	Unit	-
	Parameter range	0	41	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

When H09_00=1, set the motor rigidity according to the rigidity table level. The higher the rigidity level, the stronger the gain and the faster the response, but too strong rigidity will cause vibration;

H0A_04	Description	Motor overload protection gain		Alter mode	Enable OFF	factory default	100	Unit	%
	Parameter range	10	300	Effective way	with immediate	Adaptation pattern	P/S/T	Data type	UInt16

					effect				
<p>By setting this parameter value, determine the motor overload fault alarm ER.620 reported time; 100% is about 10S, different motors have differences;</p> <p>Setting this parameter should be determined according to the actual heating condition of the motor. If the electric machine is too large, the electric machine will exceed its torque for a long time and fail to load alarm, which will cause the motor temperature to be too high.</p>									

H0A_10	Description	Excessive position deviation fault threshold		Alter mode	Advanced configuration	factory default	1048576	Unit	Encoder unit
	Parameter range	1	1073741824	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt32
<p>Set the position deviation too large overload alarm threshold in position mode; Default 131072*8=1048576, maximum 8 turns;</p> <p>When the deviation between the actual position of the motor and the command position exceeds this parameter value, a fault alarm will occur ER.B00;</p>									

H0A_26	Description	Motor overload shielding is enabled		Alter mode	Advanced configuration	factory default	0	Unit	Encoder unit
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
<p>Set 0: open motor overload detection alarm;</p> <p>Set 1: shield the motor overload detection alarm, and the motor will automatically run down after overload.</p>									

H0A_36	Description	Absolute encoder fault shield selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	3	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
<p>Set 0: multi-turn absolute encoder normal application;</p> <p>Set 1: Screening coil overflow detection;</p> <p>Set 2: Shield battery status detection</p> <p>Set 3: Shielding coil overflow detection + battery status detection;</p>									

H0A_44	Description	Single-phase bus overvoltage generated value		Alter mode	Advanced configuration	factory default	-	Unit	V
	Parameter range	24	500	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
<p>Driver real-time single-phase bus voltage higher than the set value, overvoltage alarm</p>									

H0A_48	Description	Single-phase bus voltage undervoltage value		Alter mode	Advanced configuration	factory default	-	Unit	V
	Parameter range	15	500	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Driver real-time single-phase bus voltage below the set value, undervoltage alarm									

H0A_50	Description	Power-on initialization delay time		Alter mode	Advanced configuration	factory default	1000	Unit	ms
	Parameter range	500	5000	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set the driver power-on initialization delay time									

H0A_51	Description	Undervoltage continues to generate alarm time		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	500	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Alarm setting time when the drive continues to underdraw									

H0A_52	Description	PULSE/DIR Signal hardware filtering		Alter mode	Advanced configuration	factory default	0	Unit	-
	0	15	7	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16
Set 1: maximum receiving pulse frequency <300KHZ; Set 2: maximum receiving pulse frequency <160KHZ; Set 3: maximum receiving pulse frequency <070KHZ; Set 4: maximum receiving pulse frequency <050KHZ; Setting the appropriate filter level of pulse instruction can effectively prevent interference. The actual maximum pulse frequency is less than the allowable value of the selected filter level									

4.1.8- Monitor read-only parameters (H0B)

H0B_00	Description	Real motor speed		Alter mode	Display	factory default	-	Unit	rpm
	Parameter range	-9999	9999	Effective way	-	Adaptation pattern	-	Data type	Int16

Display the real-time speed of the motor after filtering; All display parameters of group H0B can only be read by communication and cannot be changed (written);									

H0B_02	Description	Internal real-time torque command		Alter mode	Display	factory default	-	Unit	0.10%
	Parameter range	-32767	32767	Effective way	-	Adaptation pattern	-	Data type	Int16
Display real-time internal torque output, 100.0% corresponding to the rated torque of the motor;									

H0B_03	Description	Input signal (DI signal) monitoring		Alter mode	Display	factory default	-	Unit	-
	Parameter range	0	65535	Effective way	-	Adaptation pattern	-	Data type	UInt16
Displays d hardware DI port status in decimal notation. For example, if DI1 and DI3 are valid and other DO are invalid, the binary value is 00000101 and H0B_05 is displayed as 5 (decimal).									

H0B_05	Description	Output signal (DO signal) monitoring		Alter mode	Display	factory default	-	Unit	-
	Parameter range	0	65535	Effective way	-	Adaptation pattern	-	Data type	UInt16
Decimal display hardware DO port status; For example, if DO1 and DO2 are valid and other DO are invalid, the binary value is 00000011, and H0B_05 is displayed as 3 (decimal).									

H0B_07	Description	Absolute position counter (32-bit decimal display)		Alter mode	Display	factory default	-	Unit	command unit
	Parameter range	-99999999	999999999	Effective way	-	Adaptation pattern	-	Data type	Int32
Display the real-time absolute position of the motor (command pulse unit); After the origin returns successfully, the current position will be cleared to zero;									

H0B_11	Description	Enter the speed information		Alter mode	Display	factory default	-	Unit	rpm
	Parameter range	-6000	6000	Effective way	-	Adaptation pattern	-	Data type	Int16

Display the rotational speed information corresponding to the command pulse input frequency, independent of enabling; This parameter can be used to test whether the external command pulse frequency is correct when OFF is enabled;

H0B_12	Description	Average load ratio		Alter mode	PST	factory default	-	Unit	0.10%
	Parameter range	0	5000	Effective way	-	Adaptation pattern	-	Data type	UInt16

Display the real-time percentage of the average load of the motor in the rated torque of the motor, 100.0% corresponding to the rated torque of the motor; It has a low hysteresis.

H0B_13	Description	Input command pulse counter (32-bit decimal display)		Alter mode	Display	factory default	-	Unit	command unit
	Parameter range	-99999999	999999999	Effective way	-	Adaptation pattern	-	Data type	Int32

The number of display command pulse input is accumulated or decreased according to the direction, and has nothing to do with enabling; This parameter can be used to test whether the number of external instruction pulse input is correct when OFF is enabled.

H0B_15	Description	Encoder position deviation counter (32-bit decimal display)		Alter mode	Display	factory default	-	Unit	Encoder unit
	Parameter range	-99999999	999999999	Effective way	-	Adaptation pattern	-	Data type	Int32

The motor displays the real-time deviation value between the current position and the command position

H0B_21	Description	AI1 Sampling voltage		Alter mode	Display	factory default	-	Unit	0.01V
	Parameter range	0	2000	Effective way	-	Adaptation pattern	-	Data type	UInt16

Displays the voltage value of the external analog channel 1 (AI1) input;

H0B_24	Description	Effective value of phase current		Alter mode	Display	factory default	-	Unit	0.01A
	Parameter range	0	10000	Effective way	-	Adaptation pattern	-	Data type	UInt16

Display motor real-time output phase current value;

H0B_26	Description	Bus voltage value		Alter mode	Display	factory default	-	Unit	0.1V
	Parameter range	0	10000	Effective way	-	Adaptation pattern	-	Data type	UInt16
Display drive real-time input bus voltage; Can be used to monitor external power input voltage stability;									

H0B_27	Description	Module temperature value		Alter mode	Display	factory default	-	Unit	°C
	Parameter range	0	100	Effective way	-	Adaptation pattern	-	Data type	UInt16
Display the current drive MOS real-time temperature value;									

H0B_33	Description	Error record		Alter mode	Advanced configuration	factory default	0	Unit	previous failures
	Parameter range	0	9	Effective way	with immediate effect	Adaptation pattern	-	Data type	UInt16
<p>It is used to set the faults of the motor for the last 10 times; If no fault records will not be displayed;</p> <p>Set 0: H0B_34 to display the current fault information.</p> <p>Set 1: H0B_34 displays the previous fault information.</p> <p>Set.....</p> <p>Set 9: H0B_34 displays the fault information of the last nine times.</p>									

H0B_34	Description	Selected number of fault codes		Alter mode	Display	factory default	-	Unit	-
	Parameter range	0	65535	Effective way	-	Adaptation pattern	-	Data type	UInt16
The fault information selected by H0B_33 is displayed. By default, the current fault is displayed.									

H0B_70	Description	Absolute encoder rotation number data		Alter mode	Display	factory default	-	Unit	r
	Parameter range	-32768	32767	Effective way	-	Adaptation pattern	-	Data type	Int16
<p>Display absolute value encoder rotation number data, single turn absolute value motor on the number of turns automatically reset;</p> <p>The absolute number of multi-turn motor turns is memorized;</p>									

H0B_71	Description	Absolute value of the encoder's position within 1 turn		Alter mode	Display	factory default	-	Unit	Encoder unit
	Parameter range	0	2147483647	Effective way	-	Adaptation pattern	-	Data type	UInt32
Display absolute value encoder position data in a single turn, AIMtor motor 1 turn subdivided into 131072;									

H0B_77	Description	Absolute encoder absolute position (Low 32 bits)		Alter mode	Display	factory default	-	Unit	Encoder unit
	Parameter range	-99999999	9999999999	Effective way	-	Adaptation pattern	-	Data type	Int32
Display multi-turn absolute value motor based on absolute encoder position 32 bits lower; Single-turn absolute value motor on the number of turns automatically cleared, the number of multi-turn absolute value motor turns memory;									

H0B_79	Description	Absolute encoder absolute position (high 32 bits)		Alter mode	Display	factory default	-	Unit	Encoder unit
	Parameter range	-999999999	9999999999	Effective way	-	Adaptation pattern	-	Data type	Int32
Display multi-turn absolute value motor based on absolute encoder position high 32 bits; Single-turn absolute value motor on the number of turns automatically cleared, the number of multi-turn absolute value motor turns memory;									

4.1.9-RS485 communication and function parameters (H0C)

H0C_00	Description	Servo axis address		Alter mode	Advanced configuration	factory default	1	Unit	-
	Parameter range	1	247	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set the servo shaft address; AIMotor supports broadcast mode (in broadcast mode, the host can only write to the slave station, and the slave station executes according to the command received from the master station but does not return data). When a host controls multiple slave stations, it is necessary to ensure that each slave station has a unique axis address, which cannot be repeated, otherwise the communication will fail.									

H0C_02	Description	Serial port baud rate setting		Alter mode	Advanced configuration	factory default	5	Unit	-
	Parameter range	0	6	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Set servo shaft communication baud rate, factory default 57600; The baud rate of the servo axis must be consistent with that of the host, otherwise communication cannot be established;

Setting Value	Baud rate	Remark	
0	2400kbp/s	The lower the baud rate, the slower the communication speed and the less susceptible to external signals. When connecting the debugging software of the manufacturer's upper computer, it is recommended to use high baud rate, which is more smooth.	
1	4800kbp/s		
2	9600kbp/s		
3	19200kbp/s	The higher the baud rate, the faster the communication speed is, and it is relatively easy to be interfered by external signals. It is recommended to use low baud rate to ensure communication stability in case of severe electromagnetic or long-distance communication.	
4	38400kbp/s		
5	57600kbp/s		
6	115200kbp/s		

H0C_03	Description	MODBUS data format		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	3	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Set the servo shaft communication data verification mode; Servo axis Modbus data format is consistent with the host;

Set 0 to zero check and two end bits. Let 1: parity check, 1 end bit; Set 2: odd check, 1 end bit; Set 3: no parity, 1 end bit;

H0C_13	Description	Whether the MODBUS communication write is updated to the EEPROM		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

The parameter value changed by communication is saved in the temporary storage area for effect. After power failure, the parameter will be restored to the value before the change. This parameter determines whether to permanently save the modified parameter value.

Set 1: Save the parameters changed by communication into EEPROM, and automatically set to 0 if the parameters are saved successfully;

4.1.10- Auxiliary function parameters (H0D)

H0D_00	Description	Software reset		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 1: the software of the motor system is reset and restarted, similar to the effect of power-off restart; Automatically set to 0 after successful reset;									

H0D_01	Description	Error reset		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 1: reset driver fault alarm state (some fault alarms do not support fault reset need to check the reason after power restart);									

H0D_05	Description	E-STOP		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 0; Lift emergency shutdown; Set 1: internal emergency stop, the motor immediately stop after emergency stop to keep the position locked;									
H0D_20	Description	Absolute value encoder reset enabled		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	2	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 0; Have no effect; Set 1: Reset the internal fault information of the absolute encoder; Set 2: Reset the internal fault information of absolute encoder + clear multi-circle data;									

4.1.11- Internal multibit parameters (H11)

H11_00	Description	Multi-segment position operation mode		Alter mode	Enable OFF	factory default	1	Unit	-
	Parameter range	0	5	Effective way	with immediate	Adaptation pattern	P	Data type	UInt16

					effect				
If H02_00=1 selects the position control mode and H05_00=2 selects the position command from multiple segments, set the multi-segment operation mode in the following table									
Setting value	Running way			Remark					
0	Stop at the end of single cycle operation			It will stop after running for 1 round, and will start to run when the multi-stage enable level is effective. The segment number is automatically incremented from the first segment to the final segment, and a waiting time can be set between segments. Multi-bit OFF, force stop;					
1	Cycle running			Cyclic operation, multi-segment enable level when the start of operation; The segment number is automatically incremented from the first segment to the final segment. After the final segment completes the waiting time, it automatically repeats from the first segment. Multi-bit OFF, force stop;					
2	DI switching operation			To set the DI switching operation, there must be at least one DI associated with multi-segment running instruction switching. InFun6 (CMD1) InFun7 (CMD2) multi-segment switch instruction 1, 2; The number of segments to run is determined by the DI terminal combination logic (position/speed/acceleration/deceleration pre-set within the segment); There is no waiting time between segments, depending on the timing of the call; After the DI terminal is logically determined, you need to enable the multi-bit function Run when the rising edge is triggered. The combination logic of DI terminals is shown in Note 2.					
Note 1: All multi-bit running modes must associate DI with an InFun28 (PosInSen) multi-bit enable.									
Note 2: DI switching operation combination logic is as follows:									
Multistage switching Instruction 1 (CMD1)		Multistage switching Instruction 2 (CMD2)		Multi-segment enable (PosInSen)		Running position segment			
OFF		OFF		OFF→ ON		1			
ON		OFF		OFF→ ON		2			
OFF		ON		OFF→ ON		3			
ON		ON		OFF→ ON		4			

H11_01	Description	Number of end segments of displacement command		Alter mode	Enable OFF	factory default	1	Unit	-
	Parameter range	1	4	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Set the total number of multi-segment running, different number of segments can be set different displacement, speed, acceleration and deceleration time;

When the multi-segment running mode ≠2, the multi-segment segment number is automatically increased and the switching sequence is 1,2... H11_01 end segment;

H11_02	Description	Allowance treatment method		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16

When the multi-bit operation mode =0/1, if the mode is switched or the multi-bit enable signal changes from ON to OFF in the multi-bit operation, the operation is suspended and the processing mode is re-run;

Set 0: continue to run the number of remaining segments. If the last run is suspended in the middle of the second segment, the re-run will abandon the remainder of the second segment 2 and continue to run from the third segment;

Set 1: Restart the operation from the first segment. If the last operation is suspended in the middle of the second segment, the restart will abandon the remaining segments and restart the operation from the first segment.

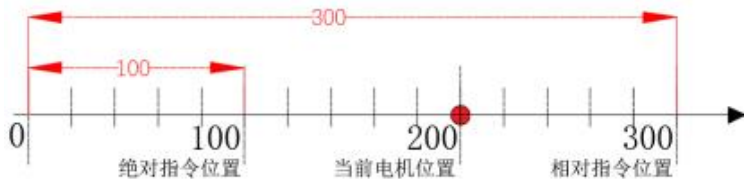
H11_04	Description	Displacement instruction type selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	1	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16

Set 0: Relative shift instruction (incremental shift instruction based on current position)

Set 1: Absolute displacement instruction (incremental displacement instruction based on zero (origin) coordinates)

As shown in the figure, the current position of the motor is 200. If the relative position instruction is executed, the displacement is 100. Then the motor finally moves to 200+100=300 position;

As shown in the figure, the current position of the motor is 200. If the absolute position instruction is executed, the displacement is 100. Then the motor finally moves to the 0+100=100 position;



H11_05	Description	Sequential mode runs starting segment selection		Alter mode	Enable OFF	factory default	0	Unit	-
	Parameter range	0	4	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16

When H11_00=3, H11_05 = 0: indicates that the sequence runs from segment 1 to the end of a single cycle.

When H11_00=3, H11_05≠0: indicates that the sequence runs from segment 1 to the end segment and then the number of segments set by this parameter is the starting segment to continue the cycle sequence.

H11_12	Description	Paragraph 1 moves the displacement		Alter mode	Advanced configuration	factory default	1000	Unit	command unit
	Parameter range	-1073741824	1073741824	Effective way	with immediate effect	Adaptation pattern	P	Data type	Int32

When H11_04=0 relative displacement command, set the relative displacement increment of the first segment of multi-segment position. Motor movement direction depends on the set positive and negative;

When H11_04=1 absolute displacement command, the first segment of multi-segment position is set to move the target position. The motor movement direction depends on the current position and the coordinate direction of the target position.

The same is true for the following other segments;

H11_14	Description	Maximum running speed of displacement in section 1		Alter mode	Advanced configuration	factory default	200	Unit	rpm
	Parameter range	1	6000	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16

Set the highest speed to perform the first stage of position operation; When the displacement is very small, the motor will start to slow down in the process of acceleration, and the stop position will not reach the maximum speed.

The same is true for the following other segments;

H11_15	Description	Section 1 displacement acceleration and deceleration time		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P	Data type	Uint16

Set the acceleration time of 0-1000rpm and deceleration time of 1000-0rpm when executing the first segment of position. The same is true for the following other segments;

The same is true for the following other segments;

H11_16	Description	Wait time after the completion of the first shift		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	10000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

Set the delay time to pause the setting after the end of the first segment, and then execute the next segment;

This parameter is invalid when H11_00=2 (DI switching runs) and H11_00=3 (sequential runs). The same is true for the following other segments;

H11_17	Description	Paragraph 2 moves the displacement		Alter mode	Advanced configuration	factory default	1000	Unit	Instruction Unit
	Parameter range	-10737418 24	1073741824	Effective way	with immediate effect	Adaptation pattern	P	Data type	Int32

H11_19	Description	Section 2 displacement maximum running speed		Alter mode	Advanced configuration	factory default	200	Unit	rpm
	Parameter range	1	6000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_20	Description	Section 2 displacement acceleration and deceleration time		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_21	Description	Wait time after the completion of the second shift		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	10000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_22	Description	Paragraph 3 moves the displacement		Alter mode	Advanced configuration	factory default	1000	Unit	Instruction unit
	Parameter range	-10000000	10000000	Effective way	with immediate effect	Adaptation pattern	P	Data type	Int32

H11_24	Description	Section 3 displacement maximum running speed		Alter mode	Advanced configuration	factory default	200	Unit	rpm
	Parameter range	1	6000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_25	Description	Section 3 displacement acceleration and deceleration time		Alter mode	Advanced configuration	factory default	10	Unit	ms
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H11_26	Description	Wait time after the completion of the Third shift		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	10000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_27	Description	Paragraph 4 moves the displacement		Alter mode	Advanced configuration	factory default	1000	Unit	Instruction unit
	Parameter range	-10000000	10000000	Effective way	with immediate effect	Adaptation pattern	P	Data type	Int32

H11_29	Description	Section 4 displacement maximum running speed		Alter mode	Advanced configuration	factory default	200	Unit	rpm
	Parameter range	1	6000	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_30	Description	Section 4 displacement acceleration and deceleration time		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	P	Data type	UInt16

H11_31	Description	Wait time after the completion of the Forth shift		Alter mode	Advanced configuration	factory default	10	Unit	ms
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4.1.12-Internal multi-stage velocity parameter (H12)

H12_00	Description	Multi - speed command operation mode		Alter mode	Enable OFF	factory default	1	Unit	-
	Parameter range	0	2	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16

When H02_00=0 selects the position control mode and H06_00=1 selects the speed command from multi-speed, set the multi-speed operation mode in the following table

Set value	Running mode	Remark
0	Stop at the end of single cycle operation	The machine will stop after running for 1 round, and the servo enable level will start to run when it is effective. The segment number is automatically incremented from the first segment to the final segment, and the running time of each segment can be set. The servo is enabled to OFF, and the motor stops according to the enabled OFF mode set by H02_05;
1	cycle operation	Cyclic operation, start operation when the servo enable level is effective; The segment number is automatically incremented from the first segment to the final segment, and the running time of each segment can be set. When the running time of the end section is finished, the loop is repeated from the first section. The servo is enabled to OFF, and the motor stops according to the enabled OFF mode set by H02_05;
2	DI Switchover Operation	To set the DI switching operation, there must be at least one DI associated with multi-segment running instruction switching. InFun6 (CMD1) InFun7 (CMD2) multi-segment switch instruction 1, 2; The number of segments (intra-segment speed/segment running time) determined by the DI terminal combination logic; Each time the DI terminal logic is determined and the servo is enabled, the corresponding segment will be switched immediately.

Note 1: DI switching operation combination logic is as follows:

Multistage switching Instruction 1 (CMD1)	Multistage switching Instruction 2 (CMD2)	Enable(SON)	Running speed range
OFF	OFF	ON	1
ON	OFF	ON	2
OFF	ON	ON	3
ON	ON	ON	4

H12_01	Description	Speed command end segment number selection		Alter mode	Enable OFF	factory default	4	Unit	-
	Parameter range	1	4	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16

Set the total number of multi-speed running segments, different number of segments can be set different running speed and running time;
When the multi-segment running mode $\neq 2$, the multi-segment speed segment number is automatically increased and the switching sequence

is 1,2... H12_01 end segment;

H12_03	Description	acceleration time		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
Set the acceleration time from 0-1000rpm; When switching from segment to segment, the motor will automatically accelerate and decelerate smoothly. The number of all segments is universal;									

H12_04	Description	deceleration time		Alter mode	Advanced configuration	factory default	10	Unit	ms
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
Set the acceleration time of 1000-0rpm; When switching from segment to segment, the motor will automatically accelerate and decelerate smoothly. The number of all segments is universal;									

H12_20	Description	Paragraph 1 Speed command		Alter mode	Advanced configuration	factory default	0	Unit	rpm
	Parameter range	-6000	6000	Effective way	with immediate effect	Adaptation pattern	S	Data type	Int16
Set the maximum speed to perform the first speed run; Motor movement direction depends on the set positive and negative; The same is true for the following other segments;									

H12_21	Description	Paragraph 1 indicates the running time		Alter mode	Advanced configuration	factory default	50	Unit	0.1s
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
Set the time to execute the first speed run; Time to reach this section of the run is complete; The same is true for the following other segments;									

H12_23	Description	Paragraph2 Speed command		Alter mode	Advanced configuration	factory default	100	Unit	rpm
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H12_24	Description	Paragraph2 indicates the running time		Alter mode	Advanced configuration	factory default	50	Unit	0.1s
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	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16
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H12_26	Description	Paragraph 3 Speed command		Alter mode	Advanced configuration	factory default	300	Unit	rpm
	Parameter range	-6000	6000	Effective way	with immediate effect	Adaptation pattern	S	Data type	Int16

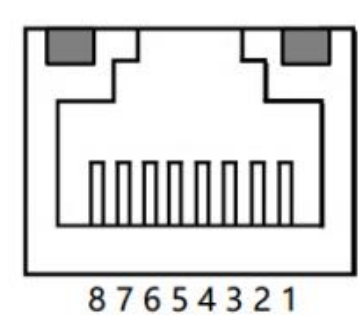
H12_27	Description	Paragraph 3 indicates the running time		Alter mode	Advanced configuration	factory default	50	Unit	0.1s
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16

H12_29	Description	Paragraph4 Speed command		Alter mode	Advanced configuration	factory default	500	Unit	rpm
	Parameter range	-6000	6000	Effective way	with immediate effect	Adaptation pattern	S	Data type	Int16

H12_30	Description	Paragraph 4 indicates the running time		Alter mode	Advanced configuration	factory default	50	Unit	0.1s
	Parameter range	0	65535	Effective way	with immediate effect	Adaptation pattern	S	Data type	UInt16

Chapter 5 RS485 communication function

5.1communication interface



D-AIS22020、D-AIS22030

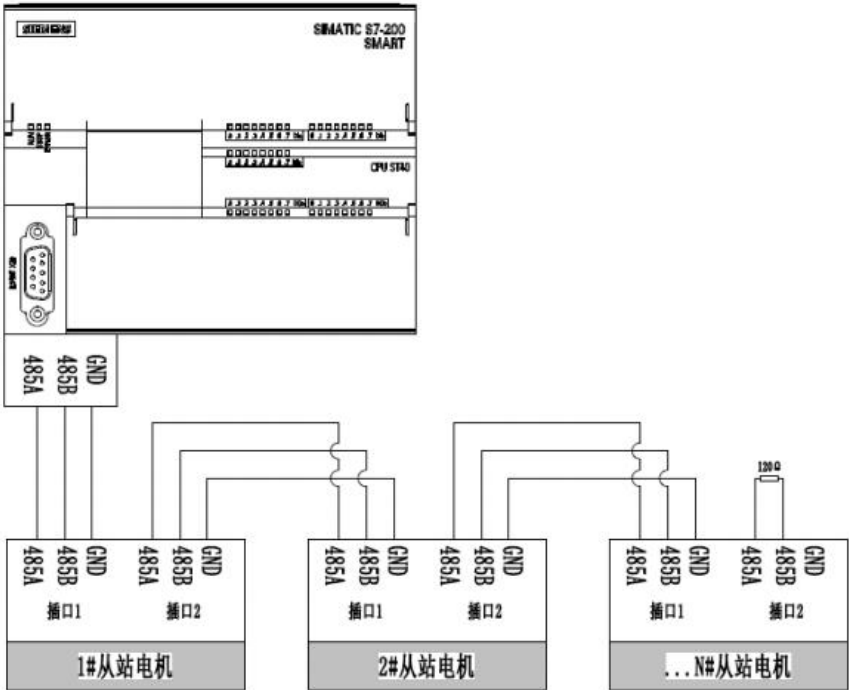


D-AIS22030、D-AIS22050、
D-AIS380100、D-AIS380150、D-AIS380200

communication interface	485A send pin	485B receive pin	GND Pin
RJ45 net opening	4	5	3
1394 socket	6	5	2
The communication distance using twisted-pair shielded cables is up to 500m, and within 300m is recommended for normal use.			

5.2 RS485 communication cable

Multiple slave station connections



Note 1: If the communication signal is noisy, it is recommended to add a 120 ohm terminal resistor to the last slave station to ensure the communication quality;

Note 2: Communication related review (4.1.9 Section RS485 related parameters)

Connects to the upper computer for debugging



Note 1: Usually there is no direct 485 interface on the computer, you need to convert the USB to 485 to connect to the slave motor drive.

Note 2: We can download the PC debugging software on the official website, which is convenient for users to debug. (www.sihengmotor.com)

5.3 Introduction to communication protocols

The servo driver is embedded with the standard Modbus RTU communication protocol, which supports the operation of reading and writing single or multiple parameters by the Modbus RTU master station. When there is Modbus

After the protocol controller is successfully connected to the servo driver, the controller can directly perform parameter setting, monitoring and reading operations on the servo driver. The servo drive is in In the communication control mode, the controller can modify the position, speed, and torque operation command parameters in real time to change the motor's operating position, speed, and torque.

The mapping between the function ID of the driver and the Modbus address of the device is as follows:

Parameter Function No.		Calculation mode	Modbus address
hexadecimal	10hex	(hexadecimal group number) × 256 + (decimal group number)	10hex
H02	00	02 (02) × 256 + 00	512
H0C	12	0C (12) × 256 + 13	3085
H11	04	11 (17) × 256 + 04	4356
Parameter Function group number (hexadecimal) × 256 + Parameter group address number (decimal) = Modbus register control address (decimal)			

Modbus RTU protocol has a variety of bus commands, the servo driver supports the most commonly used three kinds of function code commands (03H/06H/10H), these three kinds of function code commands can meet the controller's omnidirectional control of the servo driver.

1 : Communication read/write parameter data length

The Modbus register is 16 bits long. Pay attention to the data type of the access parameter when using the Modbus command.

Parameter data type is UInt16, Int16 should use function code 03H read, 06H write;

Parameter Data type: Int32 or read/write multiple parameters using function code 03H for reading and 10H for writing.

2 : 03H(read a single register)

If a parameter is read only with FUNCTION code 03H, the register starts at the register address for that parameter. The return data is the data corresponding to the parameter.

Example: The host sends the following request data frame to read the driver communication address station number 01 and parameter number H0B_00 (current motor speed) data.

The H0B_00 register address is 0B00H; The number of read registers is 1(data type Int16); Send request needle ↓;

Slave address	Function No	Register start address high order	Register start address low order	Read the high order of the number of registers	Read the low order of the number of registers	CRC check high bit	CRC check lower bit
01H	03H	0BH	00H	00H	01H	86H	2EH

Assume that the current speed of the motor is 0, and the correct return of the driver is ↓. The return start address data is H0B_00 data.

Slave address	Function No	Return the length of data bytes	Return start address data high bit	Return start address data low bit	CRC check high bit	CRC check high bit
01H	03H	02H	00H	00H	B8H	44H

3 : 06H(Write a single register)

The 06H function code can only write a 16-bit data length parameter, the register starting address is the register address of the parameter, the driver will receive the request data frame after the success of this parameter value changed to write data; For example, the host sends the following request data frame and writes data 1 to drive communication address station 01 and parameter H02_00 (control mode selection).

H02_00 register address is 0200H; The write data is 1 and the data type is Int16. Send the request needle ↓

Slave address	Function No	Register start address high order	Register start address low order	Write register data high bits	Write register data low bits	CRC check high bit	CRC check high bit
01H	06H	02H	00H	00H	01H	49H	B2H

The value of ↓H0B_00 returned by the drive will be changed to 1.

Slave address	Function No	Register start address high order	Register start address low order	Received register data high bits	Received register data low bits	CRC check high bit	CRC check high bit
01H	06H	02H	00H	00H	01H	49H	B2H

4 : 03H(Read successive registers)

Parameter table Some parameters are of 32-bit data type, and some parameters have jumps. For example, the next parameter of H0B_00 is H0B_02. If you want to read multiple parameter data continuously, you need to use 03H function to read multiple 16-bit registers continuously. When 03H is used to read consecutive parameters, the register starts at the register address of the first parameter. Return continuous data in the order of the first parameter data → the second parameter data → the NTH parameter data; The system is based on the return of the first parameter data automatically sequentially offset, the amount of data returned depends on the number of read registers;

Example: The host sends the following request data frame, reads the driver communication address station number is 01, the parameter number is H0B_02 (motor real-time torque) and its next parameter H0B_03(input DI monitoring) and its next parameter H0B_05(output DO monitoring) three parameter data.

The register address of the start parameter H0B_02 is 0B02H. The parameter data type is H0B_02(Int16), H0B_03(UInt32), H0B_05(UInt16), number of registers to read according to the parameter data type is 4. Send request needle ↓;

Slave address	Function No	Register start address high order	Register start address low order	Read the high order of the number of registers	Read the low order of the number of registers	CRC check high bit	CRC check high bit
01H	03H	0BH	02H	00H	04H	E7	ED

Assume that the current parameter values H0B_02=100, H0B_03=1, and H0B_05=3 drive correctly returns the reply pin as

↓

Slave address	Function No	return data byte length	Return start address data high bit	Return start address data low bit	Return starting address + 1 high data bit	Return starting address + 1 low data bit	Return starting address + 2 high data bit	Return starting address + 2 low data bit	Return starting address + 3 high data bit	Return starting address + 3 low data bit	CRC check high bit	CRC check high bit
01H	03H	08H	00H	64H	00H	00H	00H	01H	00H	03H	A1H	D0H
			H0B_02 parameter return value		H0B_03 Parameter Returned value (Lower 16 bits in front, higher 16 bits in back)				H0B_05 parameter return value			

5 : 10H(Write to multiple registers in succession)

Parameter table Some parameters are of 32-bit data type, and some parameters have jumps. For example, the next parameter of H05_04 is H05_07. If you want to write multiple parameter data consecutively, you need to write multiple 16-bit registers consecutively using the 10H function code. When using 10H to read consecutive parameters, the register address starts with the first parameter's register address. Write continuous data in the order of the first parameter data → the second parameter data → the NTH parameter data; The system is automatically sequentially offset according to the received first parameter data, written data;

Example: THE host sends the following request data frame, writing the drive communication address station number 01, parameter number H11_12 (segment 1 displacement) to 1000 and its next parameter H11_14(segment 1 maximum speed) to 200.

The register address of the start parameter H11_12 is 110CH. The parameter data types are H11_12(Int32), H11_14(UInt16); The number of registers written according to the parameter data type is 3; Send request needle ↓;

Slave address	Function No	Register start address high order	Register start address low order	Write register number high	Write register number low	number of bytes written	Start address data high order	Start address data low order	Start address + 1 data high order	Start address + 1 data low order	Start address + 2 data high order	Start address + 2 data low order	CRC check high bit	CRC check high bit
01H	10H	11H	0CH	00H	03H	06H	00H	00H	03H	E8H	00H	C8H	F7H	65H
							Data written by H11_12				H11_14data			

The value of ↓H11_12 is changed to 1000. H11_14 will be changed to 200;

Slave address	Function No	Register start address high order	Register start address low order	Received register count high order	Received register count low order	CRC check high bit	CRC check high bit
01H	10H	11H	0CH	00H	03H	45H	37H

6:Communication error code

If the MASTER sends an INCORRECT data frame or the slave server receives an error message from the master due to interference during communication, the slave will return an error data frame in the following format

Slave address	Function error code	Error number	CRC check high bit	CRC check high bit
Return according to the actual communication station number	(When using 03H code) = 83H (When using 06H code) = 86H (When using 10H code) = 90H	(Function code error) =01H (parameter address error)=02H (CRC check error)=04H	Checksum based on the first three byte values	

5.2-Communication control scheme

1:Communication controls the speed of operation

First, use the debugging software of the upper computer to set the following parameters in advance

Parameter No	Set Value	Function description	Modification	Effective way	parameter range	Data type
H02_00	0	Control mode selection: speed control	Enable disconnect	Effective immediately	0~2	UInt16
H03_02	1	DI1 Association: Servo enable control	Run settings	Effective immediately	0~41	UInt16
H03_03	0	DI1 Logical selection: valid and logical	Run settings	Effective immediately	0~1	UInt16
H04_00	19	DO1 association: Speed reaches output	Run settings	Effective immediately	0~19	UInt16
H04_01	0	DO1 logic selection: conduction output when signal is valid, positive logic	Run settings	Effective immediately	0~1	UInt16
H06_02	0	Speed Command Source: Internal Speed Command	Enable disconnect	Effective immediately	0~1	UInt16
H0C_13	1	Parameter is saved to EEPROM and automatically set to 0 after success. Power to keep	Run settings	Effective immediately	0~1	UInt16

Then communication controls the following parameter table object

Parameter No	Function description	Modification	Effective way	parameter range	Unit	Data type
H06_03	Sets the running speed command communication setting value	Run settings	Effective immediately	-6000~6000	rpm	Int16
H06_05	Set the speed to run the speedup time	Run settings	Effective immediately	0~65535	ms	UInt16
H06_06	Set the deceleration time for the speed operation	Run settings	Effective immediately	0~65535	ms	UInt16
H06_18	Speed reaches signal threshold	Run settings	Effective immediately	10~6000	rpm	UInt16
H03_03	Set 1 to enable the conduction motor to run; Set 0 to stop the motor Or DI1 external signal, control motor operation and stop	Run settings	Effective immediately	0~1	-	UInt16

Note: The servo enable in this control scheme is not only the motor enable switch, but also the start speed running switch; If the running process is interrupted and enabled, the motor will stop according to the method of H05_05 parameter setting; If the current actual motor speed $H0B_{00} \geq H06_{18}$, DO1 speed reaches the output effectively;

2 : Communication control position operation

First, use the debugging software of the upper computer to set the following parameters in advance

Parameter No	Set Value	Function description	Modification	Effective way	parameter range	Data type
H02_00	1	Control mode selection: position control	Enable disconnect	Effective immediately	0~2	UInt16
H03_02	1	DI1 Association: Servo enable control	Run settings	Effective immediately	0~41	UInt16
H03_03	0	DI1 Logical selection: valid and logical	Run settings	Effective immediately	0~1	UInt16
H03_04	28	DI2 Association: Enable multi-bit running	Run settings	Effective immediately	0~41	UInt16
H03_05	0	DI2 Logical selection: valid and logical	Run settings	Effective immediately	0~1	UInt16
H04_00	5	DO1 association: Positioning is complete	Run settings	Effective immediately	0~19	UInt16
H04_01	0	DO1 logic selection: conduction output when signal is valid, positive logic	Run settings	Effective immediately	0~1	UInt16
H05_00	2	Position command source: internal multi-segment bit command	Enable disconnect	Effective immediately	0~1	UInt16
H11_00	0	Multi-segment operation mode: The end of a single cycle	Enable disconnect	Effective immediately	0~3	UInt16
H11_01	1	End segment of displacement command: run only 1 segment;	Enable disconnect	Effective immediately	1~4	UInt16
H0C_13	1	Parameter is saved to EEPROM and automatically set to 0 after success. Power to keep	Run settings	Effective immediately	0~1	UInt16

Then communication controls the following parameter table object

Parameter No	Function description	Modification	Effective way	parameter range	Unit	Data type
H05_21	Positioning Completion Signal Threshold	Run settings	Effective immediately	0~65535	Encoder	UInt16
H11_04	Set 0 relative displacement; set 1 absolute displacement	Run settings	Effective immediately	0~1	-	UInt16
H11_12	Set the displacement amount of the run	Run settings	Effective immediately	-9999999~9999999	rpm	Int32
H11_14	Set the running speed	Run settings	Effective immediately	0~6000	ms	UInt16
H11_15	Set the acceleration and deceleration time	Run settings	Effective immediately	0~65535	ms	UInt16
H03_03	Set 1 motor to enable conduction; Set 0 to enable the motor to be disconnected Or DI1 external signal, control motor enable on and off.	Run settings	Effective immediately	0~1	-	UInt16
H03_05	Set 1 more segment to start running; Let 0 multibit stop Or DI2 external signal, control multi-bit enable start and stop	Run settings	Effective immediately	0~1	-	UInt16

Note: Multi-stage enabling is similar to multi-stage running switch. The multi-stage enabling motor starts to run according to the set position and speed, and the motor stops automatically after running. Running again requires re-enabling multibit enablement. If the multi-segment enable is disconnected during operation, the motor will stop immediately;

If the current value of the current deviation counter H0B_15<H05_21, the output of DO1 is valid after the completion of DO1 positioning;

3 : Communication control torque operation

First, use the debugging software of the upper computer to set the following parameters in advance

Parameter No	Set Value	Function description	Modification	Effective way	parameter range	Data type
H02_00	2	Control mode selection: torque control	Enable disconnect	Effective immediately	0~2	UInt16
H03_02	1	DI1 Association: Servo enable control	Run settings	Effective immediately	0~41	UInt16
H03_03	0	DI1 Logical selection: valid and logical	Run settings	Effective immediately	0~1	UInt16
H04_00	18	DO1 association: Torque reaches output	Run settings	Effective immediately	0~19	UInt16
H04_01	0	DO1 logic selection: conduction output when signal is valid, positive logic	Run settings	Effective immediately	0~1	UInt16
H0C_13	1	Parameter is saved to EEPROM and automatically set to 0 after success. Power to keep	Run settings	Effective immediately	0~1	UInt16

Then communication controls the following parameter table object

Parameter No	Function description	Modification	Effective way	parameter range	Unit	Data type
H07_03	Set the communication setting value of the running torque command	Run settings	Effective immediately	-3000~3000	0.1%	Int16
H07_19	Set forward maximum speed limit for torque operation	Run settings	Effective immediately	0~6000	rpm	UInt16
H07_20	Sets reverse maximum speed limit for torque operation	Run settings	Effective immediately	0~6000	rpm	UInt16
H07_21	Set the torque to reach the reference value	Run settings	Effective immediately	0~3000	0.1%	
H07_22	Set the torque to an effective value	Run settings	Effective immediately	0~3000	0.1%	
H07_23	Set the torque to an invalid value	Run settings	Effective immediately	0~3000	0.1%	
H03_03	Set 1 to enable the conduction motor to run; Set 0 to stop the motor Or DI1 external signal, control motor operation and stop.	Run settings	Effective immediately	0~1	-	UInt16

Note: The servo enable in this control scheme is not only the motor enable switch, but also the switch to start the torque operation; If the running process is interrupted and enabled, the motor will stop according to the method of H05_05 parameter setting;

If the actual motor torque $H0B_02 \geq (H07_21 + H07_22)$ DO1 torque reaches the output, it is effective;

If the current motor actual torque $H0B_02 < (H07_21 + H07_23)$ DO1 torque reaches the output invalid;

Chapter 6 Application of multi-circle absolute value system

6.1 Application of the multi-turn absolute value system

Using the multi-turn absolute value system application, it is necessary to install a multi-turn absolute value encoder on the matched motor, which detects the bits within one rotation of the motor

The number of turns of the motor is also counted, and the maximum recording range is -32768-32767 turns; Multi-turn absolute encoders require external uninterruptible power supply in order for position data not to be lost. In the case of servo drive power, the driver is connected

The encoder extension cable provides power to the encoder, and the battery on the encoder extension cable provides power to the encoder in the case of power loss of the driver

No more than 2 years is recommended.

6.2 Fault Code ER.731/ ER.730/ ER.735

ER.731 (Multi-turn absolute encoder battery failure) is to remind the user that the multi-turn absolute encoder is powered off, the recorded number of turns data is lost, and it needs to be re-repeated

Bit encoder H0D_20=2, if using absolute value positioning need to re-confirm the coordinate position;

ER.731 (multi-turn absolute encoder battery failure)

1: Connect the motor, drive and extension cables at the first time, power on the drive, and the drive will alarm ER.731;

2: Forcibly replace the battery in the case of power loss of the driver, or the battery extension cable connected to the motor encoder is disconnected, the driver will alarm ER.731;

3: The battery connected to the encoder is damaged and cannot continue to provide power to the motor encoder, and the driver will alarm ER.731;

After ensuring that the battery can supply power to the multi-turn absolute encoder normally, the H0D_20=2 reset operation is performed.

H0D_20	Description	Absolute value encoder reset enabled		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	2	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16

Set 0; Have no effect;

Set 1: Reset the internal fault information of the absolute encoder;

Set 2: Reset the internal fault information of absolute encoder + clear multi-circle data;

ER.730 (Multi-turn absolute encoder battery Warning), when the detected battery voltage is less than 3.0V to remind the user to replace the battery in time, otherwise the encoder data may be lost

To lose; For details about how to replace the battery, see the next section. When the battery is correctly replaced without affecting the recorded number of turns, this warning is automatically lifted without the need for an encoder reset; The wrong battery replacement method will cause the multi-turn absolute encoder to be powered off, and the recorded number of turns data will be lost. The driver will alarm ER.731

ER.735 (multi-turn absolute encoder number overflow), when the encoder multi-turn data positive revolution is greater than 32767 turns or reverse is less than -32768 will alarm; If multiple

In the case of linear continuous rotation, over a period of time, the number of turns will always exceed the upper limit or lower that the multi-turn absolute value encoder can count

Limit, can be H0A_36=1, shielding ring number overflow fault alarm;

H0A_36	Description	Absolute encoder fault shield selection		Alter mode	Advanced configuration	factory default	0	Unit	-
	Parameter range	0	3	Effective way	with immediate effect	Adaptation pattern	P/S/T	Data type	UInt16
Set 0: multi-turn absolute encoder normal application; Set 1: Screening coil overflow detection; Set 2: Shield battery status detection Set 3: Shielding coil overflow detection + battery status detection;									

Note: When matching the motor with the absolute value of multiple turns, it does not use its absolute value function, and is only used as an incremental motor, it can be equipped with no battery requiring H0A_36=2 shielding

Check the battery status. The number of turns overflow detection is also not required. H0A_36=3 Number of turns overflow detection + battery status detection is also not required

6.3 Precautions for Replacing the absolute value encoder Battery

When do I need to replace the encoder battery?

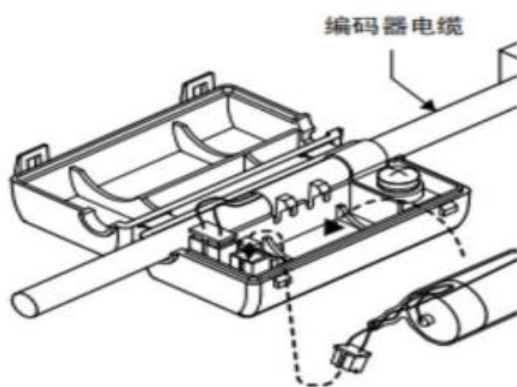
- 1: The servo is in normal use, and the encoder cable has not been removed, if the alarm ER.730, it indicates a battery warning, reminding the user to replace the encoder in time. Or else
Loss of position data recorded by the encoder may occur;
- 2: The servo is in normal use, and the encoder cable has not been removed. If the alarm is sent to ER.731, it indicates that the battery is faulty and reminds the user that the encoder battery must be replaced.
Encoder position data has been lost;
- 3: The encoder battery needs to be replaced immediately if the encoder battery is leaking, damaged, or bulging, to prevent the encoder position data from being lost due to battery loss.

How to properly replace the encoder battery

- 1: Ensure that power is generated in the driver and the encoder cable is normally connected to the driver;
- 2: Disconnect the drive, open the battery box cover in non-running state, take out the old battery, install the new battery;
- 3: The end of the replacement, ER.730 automatic release indicates that the encoder position data is not lost;

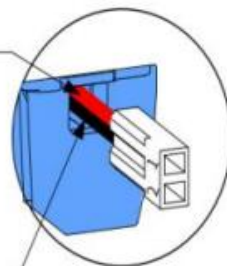
Note:

- 1: Recommended battery specifications: 3.6V 2500mAh;
- 2: Install a new battery pay attention to distinguish between positive and negative battery, generally red positive, black negative. The reverse connection of positive and negative poles may cause damage to the motor encoder;
- 3: Improper battery replacement causes the encoder to lose power abnormally, resulting in position data loss alarm ER.731 battery fault, need to be re-connected after the recovery
Reset encoder H0D_20=2. If absolute value positioning is used, the coordinate position needs to be reconfirmed.



针脚号	线色	针脚定义
1	红色	电源正

针脚号	线色	针脚定义
2	黑色	电源负



Chapter 7 Alarm and handling

7.1-Status light and alarm information

AIMtor series products have a variety of alarm protection functions, through the body panel alarm code to view the fault information, can also connect to the host computer debugging software to view the more Detailed alarm information, according to the obtained alarm information to investigate the corresponding cause of alarm and solve

Fault alarm and treatment

1. Warning warning type, no fault signal is output, the warning is automatically lifted after the warning condition is not established, and no fault reset is required.
2. alarm fault type, will output a fault signal, need to reset the fault to remove the fault.

Failure warning table

Alarm warning message	Alarm code	Type	Alarm warning principle	Possible causes	Solution
Position overshoot	ER.B00	Fault Alarm	In the position control mode, the position deviation is greater than the H0A-10 threshold	motor is blocked due to mechanical factors	Check the mechanical factors to ensure that the machine is smooth
				motor does not respond to higher input pulse frequency	Reduce the input pulse frequency
				When the motor starts and stops or reverses, the acceleration and deceleration are too fast and the motor cannot respond	Increase acceleration and deceleration time
				motor selection is too small, and the torque is not enough, resulting in large position following error	Motor selection enlargement
				Servo driver gain is low, motor response is slow	Increase the gain parameter value
				Driver UVW output phase break or encoder break	Checking Cable connections
				load inertia is large and the motor response is not timely	Appropriately increase the H0A-10 threshold
Driver overvoltage	ER.400	Fault Alarm	input voltage exceeds the allowable value	input power supply is unstable	Stable input power quality
				load inertia is large, and the motor generates regenerative energy when starting and stopping, resulting in high bus voltage	Increase acceleration and deceleration time to smooth start and stop Regenerative braking resistance is added to absorb regenerative energy
Driver undervoltage	ER.410	Fault Alarm	input voltage is lower than the allowable value	input power supply is unstable	Stable input power quality
				input power is too small, resulting in insufficient power when the load is running and the voltage is lowered	Increase the input power
Motor overload	ER.620	Fault Alarm	The overload energy exceeds the	load is too heavy, and the running torque of the motor exceeds the rated torque for a	Motor selection enlargement

Driver overload			allowable value of the system	long time	
				Start-stop commutation is too frequent or the load inertia is too large	Increase acceleration and deceleration time to smooth start and stop
				Due to mechanical factors, the motor is blocked, resulting in excessive load during operation	Check the mechanical factors to ensure that the machine is smooth
				gain adjustment is inappropriate or the rigidity is too strong, resulting in uncontrolled torque output	Reasonably adjusted gain
				Driver UVW output phase break or encoder break	Checking Cable connections
Motor stalling	ER.630	Fault Alarm	There are motion commands and no motion feedback	motor is blocked due to mechanical factors	Check the mechanical factors to ensure that the machine is smooth
				Driver UVW output phase break or encoder break	Checking Cable connections

Alarm warning message	Alarm code	Type	Alarm warning principle	Possible causes	Solution
Driver hardware overcurrent	ER.201	Fault Alarm	output current exceeds the hardware or software range	Improper gain adjustment or too rigid, resulting in uncontrolled current output	Reasonably adjusted gain
				Driver UVW output phase break or encoder break	Checking Cable connections
driver software overflows	ER.207	Fault Alarm		Transient load mutation	Check the mechanical factors to ensure that the machine is smooth
				Driver output short-circuited, UVW cable short-circuited	Check the drive output and measure the motor cable
				Driver damage or motor coil short circuit	Check the motor coil to make sure there is no short circuit
Motor Overspeed	ER.500	Fault Alarm	Motor running speed oversize value	The actual motor speed exceeds the maximum allowable value	Slow down
motor or driver temperature is too high	ER.650	Fault Alarm	Driver temperature detection exceeds allowable value	Ambient temperature is too high	Increase environmental cooling measures
				After overload, turn off the power to reset and restart repeatedly full load operation	Motor selection is increased to avoid full load operation
				Long time full load operation causes the motor to overheat	
Parameters that require power off and restart (Warning)	ER.941	Fault Alarm	Remind the user that the parameter value takes effect only after the power is powered on again	Alert the user that a parameter has been changed that will not take effect until power on again	After confirming that the modified parameter is the expected value, save it permanently, power off and restart the parameter to take effect, and the warning is automatically cleared
origin does not match	ER.668	Fault Alarm	Return to the origin mode does not match	Origin resetting mode H05-31 selects 14/15/16 single-turn electrical resetting	If H05-31 single turn back to zero mode, H05-30 should choose electrical return to zero

				mode, while H05-30 chooses origin resetting control	trigger
				Origin recovery mode H05-31 Select 6/7/10/11, H05-36 mechanical origin offset positive and negative direction error, (positive = positive direction, negative = negative direction)	Change the direction of the offset value of the origin of the H05-36 parameter Make it move in the right direction offset position
				Origin resetting mode H05-31 selects either an external origin switch condition or an over-the-range limit switch condition but does not associate the condition to the corresponding physical DI pin	Assign the corresponding DI function to the physical DI input port based on the origin restore mode selected by H05-31
				In the process of return to zero, the external origin switch and the over-range limit switch signal are connected at the same time, or the positive and negative over-range limit signal are connected at the same time	Check the external origin switch or POT/NOT limit switch for simultaneous conduction

Alarm warning message	Alarm code	Type	Alarm warning principle	Possible causes	Solution
Back to origin timeout	ER.601	Fault Alarm	Origin return The origin was not found within the H05_35 time limit	When using the origin return function, the distance from the origin is far away, and the origin is not found within the specified time	Increase the H05_33/ H05_34 origin search speed to find the origin in the specified time
				external origin switch or deceleration point has no signal, so the origin can not be found	Check whether the external origin switch or deceleration point switch signal is normal
				When Z phase is used to return to zero, a limit is encountered, resulting in a logical conflict that keeps finding the origin	Check whether the POT/NOT position of the limit switch is reasonable and change the installation position of the limit switch
Encoder fault	ER.A33	Fault Alarm	Encoder communication failure	encoder wire is broken or not contacted well, resulting in the driver not recognizing the encoder signal	Check the encoder connection cables Check the encoder connection port
				encoder is faulty or damaged	Replace motor encoder
				encoder cable is interfered with externally; Cause the driver to not recognize the encoder signal	motor drive is properly grounded, and the encoder cable is isolated from the high-current and high-power source
EEPROM parameter error	ER.101	Fault Alarm	EEPROM Wrong	system detected very frequent parameter changes written to the EEPROM in a short time	Check the communication mode and modify parameters to avoid repeatedly permanently saving parameters into EEPROM
				Internal parameters are abnormal. Procedure	All factory Settings need to be restored
				Hardware EEPROM chip damage	Replace hardware

MCU program exception	ER.105	Fault Alarm	internal program is abnormal. Procedure	Internal watchdog trigger	If the power-off is not resolved, return it to the factory for testing
Other alarms or warnings	ER.730	Fault Alarm	ncoder battery warning	For motors using multi-turn absolute encoders, the externally supplied battery voltage is below 3.0V Note: This warning message, the fault signal is not output	Replace the encoder battery in time to ensure that the battery voltage is greater than 3.0V, please refer to Chapter 6 for details
	ER.731	Fault Alarm	Encoder battery failure	In a motor using a multi-turn absolute encoder, the encoder is powered off, resulting in loss of the number of position turns	Check the encoder battery power cable, Check the encoder battery, Please refer to Chapter 6 for details
	ER.735	Fault Alarm	Multiple absolute number of turns overflow	For a motor using a multi-turn absolute encoder, the number of turns counts in the range of positive revolutions greater than 32767 or reversals less than -32768	Avoid turning count out of range Continuous rotation can mask this alarm, Please refer to Chapter 6 for details
	ER.950	Fault Alarm	forward overdrive POT is connected	To remind that the forward overrange POT limit signal is on, the forward motion will be restricted;	this warning is automatically lifted when the forward overrange POT limit signal is disconnected
	ER.952	Fault Alarm	Negative overdrive is NOT connected	The reminder that the negative overrange POT limit signal is on will limit the negative movement	This warning is automatically lifted when the negative overreach NOT limit signal is disconnected
	ER.130	Fault Alarm	DI terminal function is reassigned	Multiple DI terminals are assigned to the same DI input function, resulting in repeated assignment	reassignment DI function is associated with an input terminal
	ER.900	Fault Alarm	Scram signal in effect	DI function stops in an emergency. The associated DI connection takes effect	DI associated with emergency stop is disconnected, and this warning is automatically cleared
				internal emergency stop of the upper computer takes effect	internal emergency stop of the upper computer is disconnected, and this warning is automatically lifted
	ER.234	Fault Alarm	Motor racing	Rapid motor shaft movement was detected during power-on initialization, and there is a hidden danger.	When powering on, ensure that the motor shaft is free of external interference, so that it is stationary
	ER.102	Fault Alarm	Parameter EEPRM exception	Specifications Unregistered Hardware The EEPROM chip is damaged	Motor drive is not registered, returned to factory registration, hardware EEPROM chip
	Er.104	Fault Alarm	Imported parameter area EEPRM exception		