

520 Series AC Drive Special for Crane (Hoist)

Operation Manual

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Brief Introduction

Thank you for using 520 series ac drive special for crane (hoist).

The 520 series is a high-performance vector ac drive specially designed for the lifting industry. It is mainly used in electric hoist, winch, bridge crane, boom crane, electric winch, construction elevator and other lifting industries.

The advantages of 520:

1. It is simple and easy to use, fully adapted to the traditional operation mode of crane;
2. Stepless speed regulation of crane can be realized to improve performance;
3. It reduces the starting surge current and extends the service life of mechanical equipment.

Excellent performance:

1. Power range: 0.4KW-450KW;
2. voltage classes: 380V;Wide voltage working range: 300V-460V;
3. Strong overload capacity,150% rated load for 1 minute;120% rated load for 10 minutes;
4. Standard built-in brake unit for 0.4KW-160KW and standard external brake unit for above 160kw;
5. Excellent sensorless vector control algorithm, 0.5Hz can output 180% motor rated torque to avoid slipping accident;
6. Low voltage protection: when power supply voltage is too low, the ac drive stops out to avoid the accident;
7. Overweight protection: when load is overweight, uplink is forbidden, only downlink is allowed;
8. Reliable brake control logic improves the comfort of starting and stopping, effectively prevents the objects slipping down;
9. All-round alarm and protection function meets the lifting industry safety standards.

This manual introduces how to use 520 ac drive correctly. Please read the manual carefully before installation, operation, maintenance and inspection. In addition, please read the products safety precautions before using.

Notice
<ul style="list-style-type: none">● Please follow the operation manual to install the covering or housing.● Legend in the manual is for reference only. Maybe it is different to the one you purchased.● Due to products upgrading and standards changes, the manual contents will be revised timely to reach higher convenience and veracity without prior notice.● Please contact our agent in your area or our customer service center if you need purchase new manual book.

Open Package Inspection:

Please confirm first the name card and the rated value of the ac drive are in line with your requirements. And please check quality certificate, operation Manual and purchased machine are available or not in the package.

Please check whether there is damaged to the products which happens during delivery. Once you found there is damage or some item is lost, Please call our company or the agent from whom you purchased the machine.

To New user:

If it is the first time for you to use our product, please read carefully the operation manual. Please call our technicians for help in case you have some questions about the function and operation.

Our ac drives are to be upgraded all the time so that the operation manual and products introduction are to be revised accordingly. Due to frequent revision, we will not inform our users specially.

Chapter 1 Security & Precautions

1.1 Safety Notes

1. The AC drive should be installed and adjusted by professional electrical technicians, otherwise there is a danger of electric shock!
2. Make sure the power is off before wiring, otherwise there is a danger of electric shock!
3. Ground terminal must be reliably grounded, ground resistance should be less than 0.1Ω !
4. Do not connect the input power to the output U, V, W, otherwise the AC drive will be damaged!
5. Make sure wires diameter be accord with technical standards, otherwise fault will happen.
6. No voltage test is required for AC drive, this item has been tested when leave the factory.
7. Do not touch the AC drive terminal (Includes control terminal) after power on, otherwise there is a danger of electric shock!
8. If you want to do parameter self-learning, please be aware of the risk of injury during motor rotation, otherwise it may cause an accident!
9. Do not control the start and stop of the ac drive by the contactor on or off, otherwise the equipment will be damaged!
10. AC drive cannot be repaired or maintained immediately because there is still high voltage on the filter capacity after the power off. It needs to wait for more than 5 minutes before using a multimeter to measure the bus voltage (the voltage between (+) and (-)) should not exceed 36V.
11. Do not share the ground terminal PE with the neutral cable N terminal.

1.2 Notes

1. Insulation checking of motors

Make sure to separate the motor connection from the AC drive during insulation test(checking), It is recommended to use 500V voltage megohmmeter, and should guarantee the measured insulation resistance is not less than $5\text{ m}\Omega$.

2. About motor thermal and noise

The output voltage of the AC drive is PWM wave, which contains certain harmonics, so the temperature rise, noise and vibration of the motor will increase slightly compared with the operation of power frequency.

3.The output side cannot connect to the pressure sensitive device or improved the power factor of capacity.

4. Protection against lightning strike

This series AC drive is equipped with lightning overcurrent protection device, which has certain self-protection ability for inductive lightning. For frequent lightning, users should also install lightning protection at the front of the AC drive.

5. Disposing unwanted drive

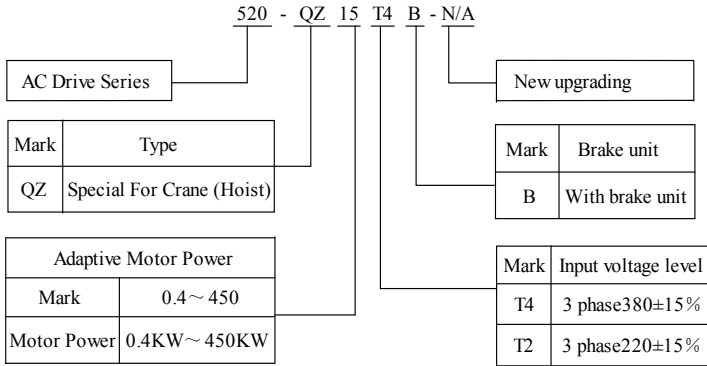
The electrolytic capacitor of the main circuit and the electrolytic capacitor on the printed board may explode during incineration. The incineration of plastic will produce poisonous gas, please deal with it as industrial waste.

6. Pay attention when the cable length is too long

When the motor cable length is longer than 50m, it is recommended to install an output reactor or output filter. If the motor cable length exceeds 100m, An output reactor or output filter must be installed, otherwise the motor insulation is easily damaged.

Chapter 2 Product Information

2.1 Naming Rules



2.2 Nameplate

Specification	MODEL: 520-QZ18.5T4B-N
Input	INPUT: AC 3PH 380V ±15% 50/60Hz
Output	OUTPUT: AC 3PH 0-380V 0-3000HZ 37A
Lot identification	S/N:

2.3 Electric Data

Model	Power Capacity KVA	Input Current A	Output Current A
520-QZ0.4T2B-N	1.5	3.4	2.1
520-QZ0.75T2B-N	3.0	5.0	3.8
520-QZ1.5T2B-N	5.0	8.0	7.0
520-QZ2.2T2B-N	5.9	10.5	9.0
520-QZ3.0T2B-N	8.9	14.6	13.0
520-QZ3.7T2B-N	11.0	20.5	17.0
520-QZ5.5T2B-N	17.0	26.0	25.0
520-QZ7.5T2B-N	21.0	35.0	32.0
520-QZ11T2B-N	24.0	38.5	37.0
520-QZ15T2B-N	30.0	46.5	45.0
520-QZ18.5T2B-N	40.0	62.0	60.0
520-QZ22T2B-N	57.0	76.0	75.0

520-QZ30T2B-N	69.0	92.0	91.0
520-QZ37T2B-N	85.0	113.0	112.0
520-QZ45T2B-N	114.0	157.0	150.0
520-QZ55T2B-N	134.0	180.0	176.0

Model	Power Capacity KVA	Input Current A	Output Current A
520-QZ0.4T4B-N	1.0	2.4	1.2
520-QZ0.75T4B-N	1.5	3.4	2.3
520-QZ1.5T4B-N	3.0	5.0	3.8
520-QZ2.2T4B-N	4.0	5.8	5.2
520-QZ3.0T4B-N	5.0	8.0	7.2
520-QZ3.7T4B-2N	5.9	10.5	9.0
520-QZ5.5T4B-A	8.9	14.6	13.0
520-QZ7.5T4B-2N	11.0	20.5	17.5
520-QZ11T4B-A	17.0	26.0	25.0
520-QZ15T4B-N	21.0	35.0	32.0
520-QZ18.5T4B-N	24.0	38.5	40.0
520-QZ22T4B-A	30.0	46.5	45.0
520-QZ30T4B-A	40.0	62.0	65.0
520-QZ37T4B-A	57.0	76.0	80.0
520-QZ45T4B-A	69.0	92.0	96.0
520-QZ55T4B-N	85.0	113.0	128.0
520-QZ75T4B-A	114.0	157.0	165.0
520-QZ93T4B-N	134.0	180.0	186.0
520-QZ110T4B-N	160.0	214.0	224.0
520-QZ132T4B-N	192.0	256.0	260.0
520-QZ160T4B-N	231.0	307.0	302.0
520-QZ185T4B-N	242.0	350.0	370.0
520-QZ200T4B-N	250.0	385.0	410.0
520-QZ220T4B-N	280.0	430.0	450.0
520-QZ250T4B-N	355.0	468.0	510.0
520-QZ280T4B-N	396.0	525.0	560.0

520-QZ315T4B-N	445.0	590.0	585.0
520-QZ350T4B-N	500.0	665.0	650.0
520-QZ400T4B-N	565.0	785.0	725.0
520-QZ450T4B-N	650.0	825.0	820.0

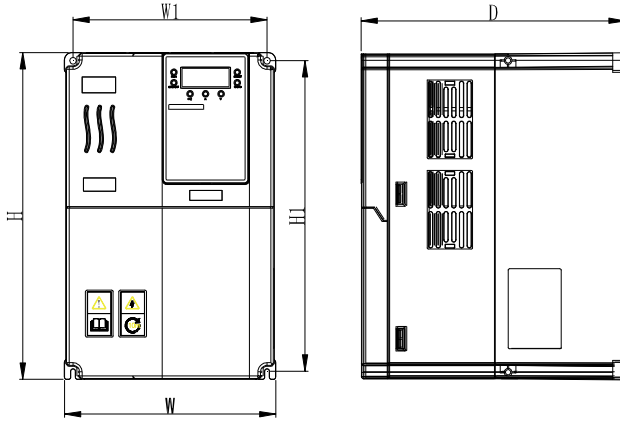
2.4 Technology Specifications

Item		Specifications
Input	Rated voltage	T2 Series: 3 phase 220V,±15% T4 Series: 3 phase 380V,±15%
	Frequency	50/60Hz ±5%
Output	Voltage	T2 Series: 3 phase 0~220V T4 Series: 3 phase 0~380V
	Frequency	Vector control: 0~300Hz V/F Control: 0~3200Hz
	Overload capacity	150% rated current for 1 minute, 180% rated current for 3 seconds
Control Performance	Control mode	Open loop vector control (SVC)、V/F control、Closed loop vector control (FVC)
	Start torque	0.5Hz/180%(SVC),0Hz/200%(FVC)
	Speed adjustment range	1: 100(V/F),1: 1000(FVC)
	Speed control precision	±0.5%(SVC), ±0.02%(FVC)
	Torque control	Response time 5ms, Precision±5%(FVC)
Protection function	25 types protection function	Including over-voltage, over-current, overheat, overload, under-voltage, short circuit, ground fault, input and output default phase, protect the frequency AC Drive running reliably all-round
Installation Environment Requirement	Environment temperature	-10℃~+40℃(ambient temperature is within 40℃~50℃, derating use is required), not allow to contact direct sunlight.
	Humidity	(Less than 90%RH, without condensation)
	Application environment	Non-corrosive, flammable, explosive, dust absorbent material, all kinds of lint does not accumulate.
	Vibration	Less than0.6G
	Altitude	0~1000m;Each rises 1000 m, derating 10% use.
	Storage temperature	-20~60℃

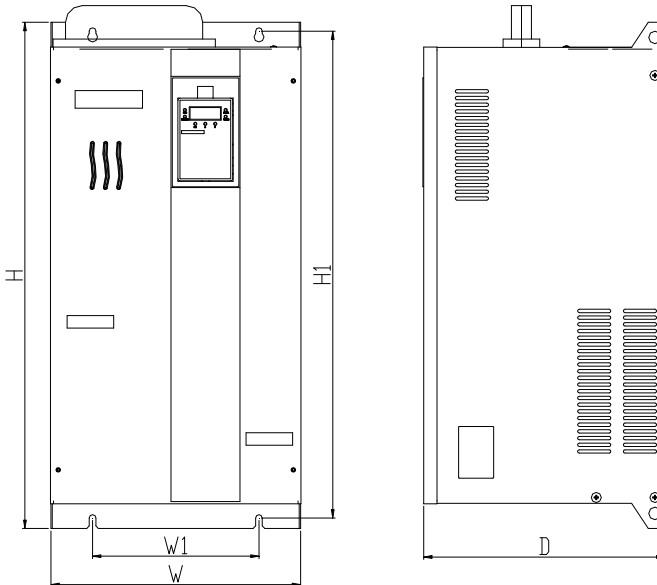
2.5 Product Outline and Installation Hole Sizes

2.5.1 520 Series AC Drive Special for Crane(hoist) Outline

1. 0.4~22KW Outline and Size Diagram



2. 30~450KW Outline and Size Diagram



2.5.2 520 Series AC Drive Special for Crane(hoist) Outline and Installation Size

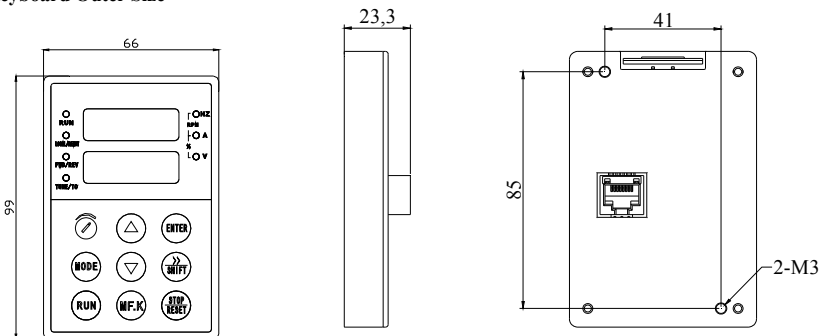
Model	The Dimension mm					Installation Aperture mm	Weight kg
	H	W	D	H1	W1		
520-QZ0.4T2B-N	170	100	140	160	90	Ø5	1.7
520-QZ0.75T2B-N							
520-QZ1.5T2B-N							
520-QZ2.2T2B-N	187	125	166	177	115	Ø5	2.4
520-QZ3.0T2B-N							
520-QZ3.7T2B-N	248	160	184	239	150	Ø5	3.7
520-QZ5.5T2B-N							
520-QZ7.5T2B-N	320	208	190	307	193	Ø6	6.7
520-QZ11T2B-N							
520-QZ15T2B-N							
520-QZ18.5T2B-N	420	270	215	404	160	Ø7	14.3
520-QZ22T2B-N							
520-QZ30T2B-N							
520-QZ37T2B-N	605	310	295	582	200	Ø8	50.9
520-QZ45T2B-N	650	350	335	630	200	Ø10	70.2
520-QZ55T2B-N							

Model	The Dimension mm					Installation Aperture mm	Weight kg
	H	W	D	H1	W1		
520-QZ0.4T4B-N	170	100	140	160	90	Ø5	1.8
520-QZ0.75T4B-N							
520-QZ1.5T4B-N							
520-QZ2.2T4B-N							
520-QZ3.0T4B-N							
520-QZ3.7T4B-2N	187	125	166	177	115	Ø5	2.5
520-QZ5.5T4B-A							
520-QZ7.5T4B-2N	248	160	184	239	150	Ø5	4
520-QZ11T4B-A							
520-QZ15T4B-N							

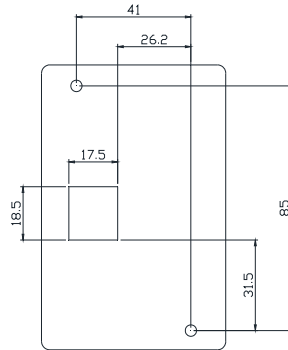
520-QZ18.5T4B-N							
520-QZ22T4B-A							
520-QZ22T4B-2N	420	270	215	404	160	Ø7	15
520-QZ30T4B-A							
520-QZ37T4B-A							
520-QZ45T4B-A	605	310	295	582	200	Ø8	52
520-QZ55T4B-N							
520-QZ55T4B-2N							
520-QZ75T4B-A	650	350	335	630	200	Ø10	72
520-QZ93T4B-N							
520-QZ110T4B-N							
520-QZ132T4B-N	1015	410	335	990	140+	Ø11.5	115
520-QZ160T4B-N							
520-QZ185T4B-N	890	500	376	866	180+	Ø12	126
520-QZ200T4B-N							
520-QZ220T4B-N							
520-QZ250T4B-N	1080	683	396	1050	250+	Ø12	177
520-QZ280T4B-N							
520-QZ315T4B-N							
520-QZ350T4B-N	1320	810	450	1290	280+	Ø14	262
520-QZ400T4B-N							
520-QZ450T4B-N							

2.5.3 Keyboard Outline and Size

1. Keyboard Outer Size

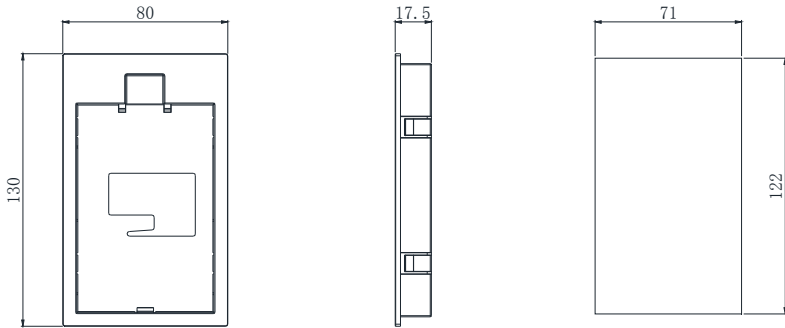


2. The fixed Aperture Size of Operation Panel Back(Without Operation Panel Tray)



2.5.4 Keyboard Tray Outline and Size

When you need pull out operation panel and fixed on the door or platform, please choose the TJ500-X2.0 type operation panel tray and extend wire group, and the aperture size is as follows;



The outline size of keyboard tray

Aperture size of keyboard tray

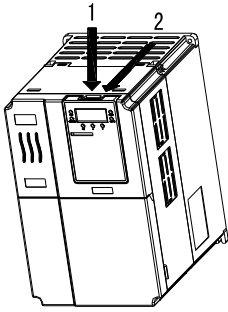
2.5.5 The Disassembly and Installation of the Keyboard

1. Disassembly the Keyboard

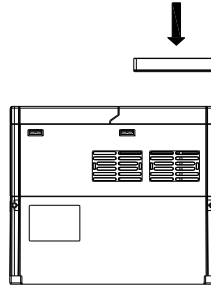
According to the indication of Figure 1, Please press the operation panel clip down with the index finger, then put up the operation panel as the direction of the Figure 2

2. Install the Keyboard

According to the direction as below, Please push down the panel vertically after aiming at the panel tray during the installation, when you hear the sound “ka” it means the installation is finished.



Remove the operation panel



Install the operation panel

2.6 Brake Group Selection Guide

1. 520 Brake Group Selection Table

VFD Model (KW)	Recommended brake resistance power(KW)	The minimum value of braking resistance(Ω)	Brake unit
0.4	0.2	$\geq 300\Omega$	Standard built-in
0.75	0.3	$\geq 300\Omega$	
1.5	1.0	$\geq 220\Omega$	
2.2	1.0	$\geq 200\Omega$	
3.0	2.0	$\geq 130\Omega$	
3.7	2.0	$\geq 130\Omega$	
5.5	3.0	$\geq 90\Omega$	
7.5	3.0	$\geq 65\Omega$	
11	6.0	$\geq 43\Omega$	
15	6.0	$\geq 32\Omega$	
18.5	9.0	$\geq 25\Omega$	
22	12.0	$\geq 22\Omega$	
30	15.0	$\geq 16\Omega$	
37	18.0	$\geq 13\Omega$	
45	21.0	$\geq 13\Omega$	
55	27.0	$\geq 10\Omega$	
75	36.0	$\geq 8\Omega$	
93	45.0	$\geq 6\Omega$	
110	55.0	$\geq 6\Omega$	
132	66.0	$\geq 4\Omega$	
160	78.0	$\geq 4\Omega$	

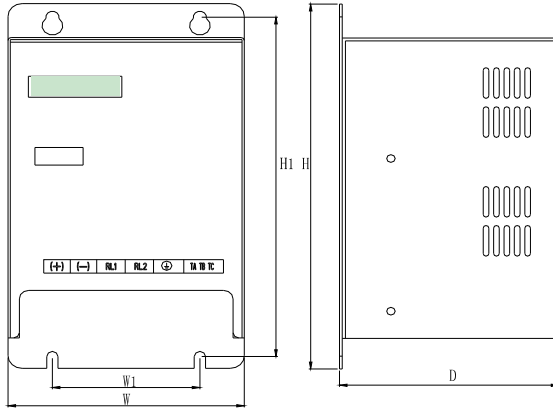
185	84.0	$\geq 3\Omega$	There are 4 external CBU93T4 braking units as standard, and the resistance value connected to a single braking unit should be bigger than 7.2Ω .
200	90.0		
220	96	$\geq 2\Omega$	
250	106		
280	118		
315	130	$\geq 1.5\Omega$	There are 6 external CBU93T4 braking units as standard, and the resistance value connected to a single braking unit should be bigger than 7.2Ω .
350	142		
400	160		
450	180		

Note: The resistance value connecting to each CBU93T4 braking unit must be bigger than 7.2Ω .

2. 520 Big and Small Cart AC Drive Brake Unit Selection List

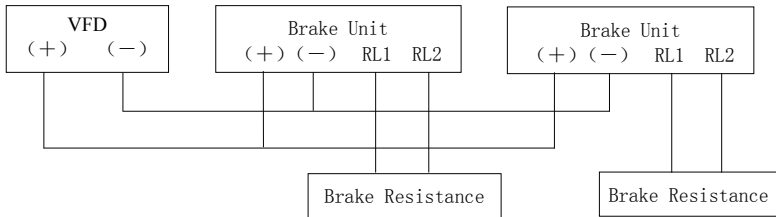
VFD Model (KW)	Recommended brake resistance power(KW)	The minimum value of brake resistance(Ω)	Brake unit
0.4	0.2	$\geq 300\Omega$	Standard built-in brake unit
0.75	0.2	$\geq 300\Omega$	
1.5	0.5	$\geq 200\Omega$	
2.2	0.5	$\geq 200\Omega$	
3.0	1.0	$\geq 130\Omega$	
3.7	1.0	$\geq 130\Omega$	
5.5	1.0	$\geq 90\Omega$	
7.5	2.0	$\geq 65\Omega$	
11	2.0	$\geq 43\Omega$	
15	3.0	$\geq 32\Omega$	
18.5	3.0	$\geq 25\Omega$	
22	6.0	$\geq 22\Omega$	
30	6.0	$\geq 16\Omega$	
37	9.0	$\geq 13\Omega$	
45	9.0	$\geq 13\Omega$	
55	15.0	$\geq 10\Omega$	
75	15.0	$\geq 8\Omega$	
93	18.0	$\geq 6\Omega$	
110	18.0	$\geq 6\Omega$	
132	21.0	$\geq 4\Omega$	
160	21.0	$\geq 4\Omega$	

2.7 Installation Dimensions of External Brake Unit Products



Model	W1 (mm)	H1 (mm)	H (mm)	W (mm)	D (mm)	Mounting hole(mm)	Fixing screws specification
CBU93T4	78	200	215	125	117	7	M5

2.8 External Brake Unit Wiring

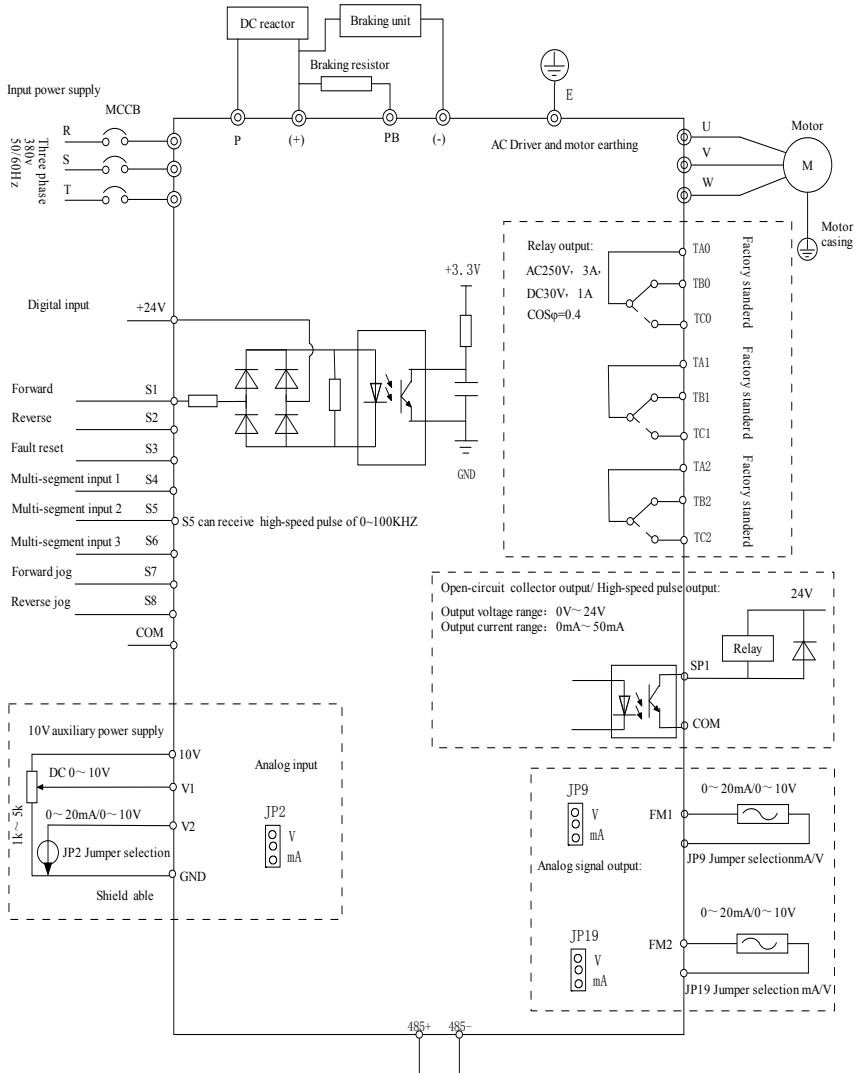


Chapter 3 Mechanical and Electrical Installation

3.1 Selection Guidance of Peripheral Electrical Components

Power KW	Air Switch (MCCB)	Recommend Contactor A	Recommend input main circuit wire mm ²	Recommend output main circuit wire mm ²	Recommend control circuit wire mm ²
0.4	6	9	0.75	0.75	0.5
0.75	6	9	0.75	0.75	0.5
1.5	10	9	0.75	0.75	0.5
2.2	10	9	0.75	0.75	0.5
3.0	16	12	1.5	1.5	0.5
3.7	16	12	1.5	1.5	0.5
5.5	20	18	2.5	2.5	0.75
7.5	32	25	4.0	4.0	0.75
11	40	32	4.0	4.0	0.75
15	50	38	6.0	6.0	0.75
18.5	50	40	10	10	1.0
22	63	50	10	10	1.0
30	100	65	16	16	1.0
37	100	80	25	25	1.0
45	123	95	35	35	1.0
55	160	115	50	50	1.0
75	225	170	70	70	1.0
93	250	205	95	95	1.0
110	315	245	95	95	1.0
132	350	300	120	120	1.0
160	400	300	150	150	1.0
185	500	410	180	180	1.0
200	500	410	185	185	1.0
220	630	475	240	240	1.0
250	630	475	2*120	2*120	1.0
280	700	620	2*120	2*120	1.0
315	800	620	2*150	2*150	1.0
350	1000	800	2*185	2*185	1.0
400	1250	800	2*240	2*240	1.0
450	1250	1000	2*240	2*240	1.0

3.2 Wire Connection Diagram



Note:

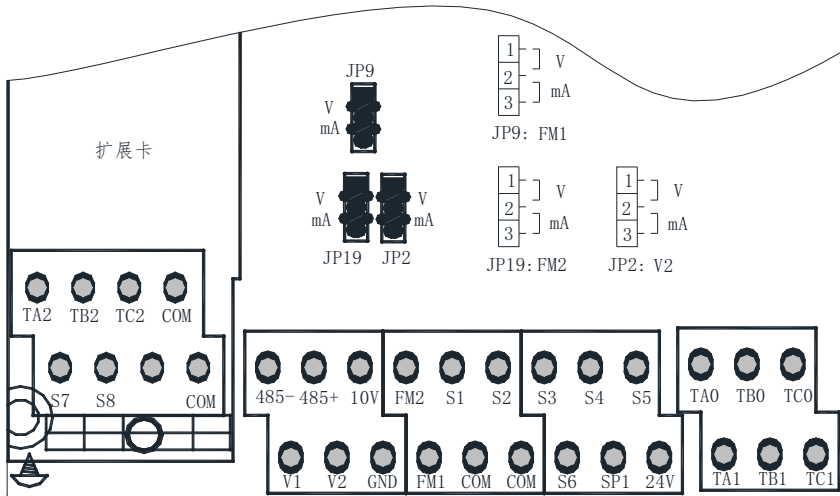
- Terminal \odot means main circuit terminal, \circ means control circuit terminal.
- The braking resistance can be selected according to the user's requirement, please refer to Chapter 2 Braking Resistor Selection Guide for details.

	S4-COM	Digital input 4	the maximum input frequency is 100KHz. However, it is necessary to replace U16 with a high-speed optocoupler, and at the same time, re-solder the RS5 resistor to the RHD1.
	S5-COM	Digital input 5	
	S6-COM	Digital input 6	
	S7-COM	Digital input 7	
	S8-COM	Digital input 8	
Analogue output	FM1-GND	Analog output 1	The JP9 jumper on the control board determines the voltage or current output. Output voltage range: 0V~10V Output current range: 0mA~20mA
	FM2-GND	Analog output 2	The JP19 jumper on the control board determines the voltage or current output. Output voltage range: 0V~10V Output current range: 0mA~20mA
Digit output	SP1-COM	Digital output	When the open collector output/high speed pulse output is constrained by the function code H5-00; As the high speed pulse output, the maximum output frequency 100KHz. However, it is necessary to replace U9 with a high-speed optocoupler, and at the same time, re-solder the RSP1 resistor to RHD0. Output voltage range: DC 0V~24V Maximum output current: 50mA
Relay output	TA0-TB0-TC0	Normal closed terminal TA0-TB0 Normal open terminal TA0-TC0	Contact drive capability: AC 250V, 3A, $\cos\phi=0.4$; DC 30V, 1A. Remark: CPU360A V1.5 and above relay T1 has normally closed terminal
	TA1-TB1-TC1	Normal closed terminal TA1-TB1 Normal open terminal TA1-TC1	
	TA2-TB2-TC2	Normal closed terminal TA2-TB2 Normal open terminal TA2-TC2	
data interface	J2	Keyboard-display interface	RJ45 interface, drawing out is available
Communication terminal	485-485+	RS485 hardware circuit	It supports standard Modbus communication

5. Control board jumper description

Jumper NO	Jumper position	Function description
JP2	Short connect 1、2 Pin V(Factory setting)	V2 analog input selection- voltage V
	Short connect 2、3 Pin mA	V2 analog input selection- current mA
JP9	Short connect 1、2 Pin V(Factory setting)	FM1 output selection-voltage V
	Short connect 2、3 Pin mA	FM1 output selection-current mA
JP19	Short connect 1、2 Pin V(Factory setting)	FM2 output selection-voltage V
	Short connect 2、3 Pin mA	FM2 output selection-current mA

6. Control board jumper description



Chapter 4 Operation and Display

4.1 Introduction of Operation and Display Interface

When the panel is operated by a keyboard, the function parameters of ac drives, the ac drive working condition monitoring and operation control (such as start, stop) can be modified, its appearance and function as shown below:

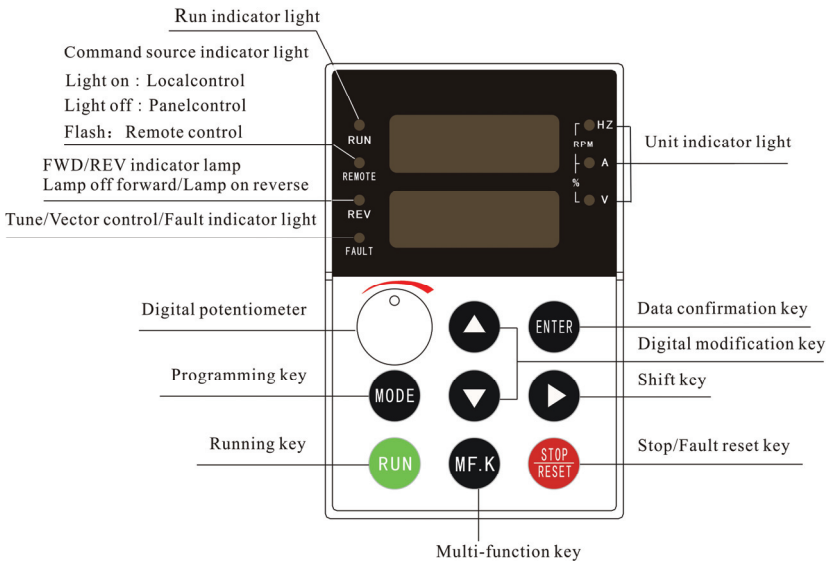
Keyboard: Double line display, Model: JP300-1

H7-03 LED The first line operation display selection

H7-04 LED The first line stop display selection

H7-00 LED The second line normal status display selection

The digital potentiometer can be used to set digital frequency or PID target setting.



4.2 Indicator Description

RUN: When light off, the ac drive is in stop status, when light on, the drive is in running status.

REMO: Keyboard operation, terminal operation and remote operations (communication control) indicator lights, light-off indicates keyboard control, light-on indicates terminal operation control, lights flash is in a state of remote communication control

REV: Forward and reverse indicator, light-on means the reverse state.

Fault: Tuning/torque control/fault indicator light, light-on indicates the torque control mode, the light slowly-flash indicates the state of tuning, light fast-flash indicates that it is in a state of faulty.

Hz: Frequency unit

A: Current unit

V: Voltage unit

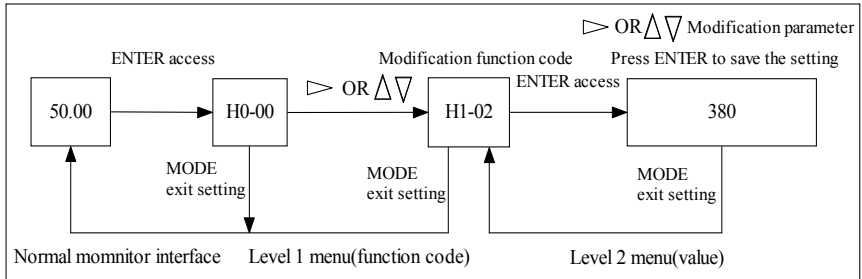
RMP(Hz+A): Speed unit

%(A+V): Percentage

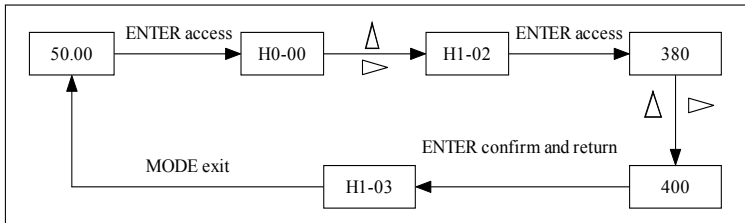
4.3 Function Code Inspection and Modification Method Description

The operation panel is designed with two-level menu structure for parameter setting and the other operations. Entering the function code by ENTER is the first-level menu, and pressing ENTER again to enter the parameter group is the second-level menu.

The operation process is shown as below:



Explanation: When modifying parameters in the second-level menu, it needs to press ENTER to save the set parameters; if directly press MODE to return to the first-level menu, the currently modified parameters are not saved. Example: An example of changing the function code H1-02 from 380V to 400V.



In the second-level menu, if the parameter does not have a flicker bit, the function code cannot be modified, possible reasons are as follows:

1. The function code is not modifiable. Such as the actual detected parameters, operation record parameters, etc.
2. The function code cannot be modified in the running state and can be modified after stop.

Chapter 5 Functional Parameters Table

H7-11 is set to a non-zero value, that is, a user password is set; please remember the password in order to enter the parameter setting. After setting the password, press the ENTER key on the normal interface, and it will display 0. 0. 0. 0. 0. to prompt you to enter the correct password to set the parameters; To cancel the password, set H7-11 to 0 after entering the password correctly.

Group H is the basic function parameter, and group d is the monitoring function parameter. The symbols in the table are described as follows:

"√": Indicates that the set value of this parameter can be changed when the frequency converter is in shut down or running state;

"×": Indicates that the set value of this parameter cannot be changed when the frequency converter is in the running state;

"○": indicates that the parameter is the actual detection record value and cannot be changed;

"*": remarks with * indicate parameter explanations in Chapter 6.

Basic function parameters simple list:

Function Code	Name	Setting Range	Factory Default	Modification
H0 Group Basic Function				
H0-01	Motor control mode	0: Speed sensorless vector control (SVC is required to set the motor parameters of group H1 and carry out parameter self-learning) 1: Speed sensor vector control (FVC needs to be installed PG card, motor self-learning, set H1 group related parameters) 2: V/F control (see VF parameters of H3 group) 3: SVC3 vector control (set motor parameters of H1 group and carry out parameter self-learning)	0	×
H0-02	Command source selection	0: Operation panel command channel (REMOT off) 1: Terminal command channel (REMOT is on) 2: Communication command channel (REMOT flashes) (Address 2000H)	1	√
H0-03	Main frequency source A selection	0: Digital setting (Preset frequency H0-08, UP/DOWN can be modified, no power off memory) 1: Digital setting (preset frequency H0-08,	1	×

		UP/DOWN can be modified, power off memory) 2: V1 3: V2 4: Reserved 5: HDI pulse setting (S5) 6. Multistage command (The multistage speed will be taken preferentially. When the auxiliary frequency is set to multistage speed, multistage speed will be taken preferentially) 7: Simple PLC 8: PID 9: Given communication (address: 1000H) When the combination of main and auxiliary frequencies is set, UP/DN is only valid for the main frequency Source valid		
H0-08	Preset frequency	0.00Hz~Maximum frequency(H0-10)	50.00Hz	√
H0-09	Running direction	0: Same direction 1: Opposite direction	0	√
H0-10	Maximum frequency	50.00Hz~3000Hz	50.00Hz	×
H0-11	Upper limit frequency source	0: H0-12 setting 1: V1 2: V2 3: Reserved 4: HDI pulse setting 5: Communication given	0	×
H0-12	Upper limit frequency	Lower limit frequency H0-14~Maximum frequency H0-10	50.00Hz	√
H0-13	Upper limit frequency bias	0.00Hz~Maximum frequency H0-10	0.00Hz	√
H0-14	Lower limit frequency	0.00Hz~Upper limit frequency H0-12	0.00Hz	√
H0-15	Carrier frequency	0.60kHz~16.000kHz (the maximum carrier is related to the model) the motor noise can be reduced and the line-to-ground leakage current can be reduced by increasing the carrier frequency. But it will increase the heat of the frequency converter and affect the life of the ac drive.	Model depends	√
H0-16	Carrier frequency adjusted with temperature	0: No 1: YES	1	√

H0-17	Acceleration time 1	0.1 s~3200.0 s	3.0s,	√
H0-18	Deceleration time 1	0.1 s~3200.0 s	3.0s	√
H0-19	Acceleration/ deceleration time unit	1: 0.1 second 2: 0.01 second	1	×
H0-21	Bias frequency of main and auxiliary frequency sources	0.00 Hz~ 300.00 Hz A+B or A-B or Max (A, B) or Min (A, B) is valid	0.00Hz	√
H0-22	Frequency command resolution	1: 0.1 Hz 2: 0.01 Hz Note: if this function parameter is modified, the number of decimal places of frequency-related parameters will be changed as well	2	×
H0-23	UP/DN set shutdown memory selection	0: No memory, UP/DN superposition value is cleared to 0 1: Memory	1	√
H0-34	Expansion card type	0: No expansion card is connected 1: IO card, only welding RKZK	1	×
H0-35	Calibrate AD current zero drift (V5236 and above versions)	0: Not calibration 1: Calibration zero drift	0	×
H1 Group Motor Parameters				
H1-00	Motor type selection	0: Ordinary asynchronous motor. 1: Variable frequency asynchronous motor.	0	×
H1-01	Motor rated power	0.1kW~1000.0kW	Model depends	×
H1-02	Motor rated voltage	1V~2000V	Model depends	×
H1-03	Motor rated current	0.1A~320.00 A (frequency converter power <= 55 KW) 1.0 A~3200.0 A (frequency converter power>55KW)	Model depends	×
H1-04	Motor rated frequency	1.00 Hz ~ maximum frequency	Model depends	×
H1-05	Motor rated speed rotation	10 rpm~32000 rpm	Model depends	×
H1-06	Asynchronous motor stator resistance	0.001Ω~32.000Ω (frequency converter power <= 55 kW) 0.0001Ω~3.2000Ω (frequency converter power >55 kW)	Tuning parameters	×
H1-07	Rotor resistance of induction motor	0.001Ω~32.000Ω (frequency converter power <= 55 kW) 0.0001 Ω~3.2000 Ω (frequency converter power >55 kW)	Tuning parameters	×
H1-08	Asynchronous motor leakage inductance reactance	0.01mH~320.00mH (frequency converter power <=55 kW)	Tuning parameters	×

		0.001mH~32.000mH (frequency converter power> 55 kW)		
H1-09	Asynchronous motor mutual inductance resistance	0.1mH~3200.0mH (frequency converter power <= 55 kW) 0.01mH~320.00mH (frequency converter power> 55kW)	Tuning parameters	×
H1-10	Asynchronous motor no-load current	0.01A~H1-03(frequency converter power<=55 kW) 0.1 A~H1-03 (frequency converter power>55 kW)	Tuning parameters	×
H1-27	Encoder line number	1~32000	2000	×
H1-28	Encoder type	0: ABZ Incremental encoder	0	×
H1-30	ABZ incremental encoder AB phase sequence	0: Forward 1: Reverse	0	×
H1-31	Encoder installation angle	0.0°~359.9°	0.0°	×
H1-36	Speed feedback PG disconnection detection time	0.0: No action 0.1s~10.0s	0.0	×
H1-37	Tuning selection	0: No operation 1: Static tuning of asynchronous motor (motor does not rotate) 2: Complete tuning of asynchronous motor (static self-learning first, then rotation self-learning)	0	×
H2 Group Motor vector control parameters				
H2-00	Speed loop proportional gain 1	1~200	50	√
H2-01	Speed loop integral time 1	0.01s~10.00s	1.00s	√
H2-02	Switching frequency 1	0.00~H2-05	5.00Hz	√
H2-03	Speed loop proportional gain 2	1~200	30	√
H2-04	Speed loop integral time 2	0.01s~10.00s	1.00s	√
H2-05	Switching frequency 2	H2-02~Maximum frequency	10.00Hz	√
H2-06	Vector control slip gain	50%~200%	100%	√
H2-09	Torque upper limit source in speed control mode	0: Function code H2-10 setting 1: V1 2: V2 3: Reserved 4: HDI pulse setting 5: Given communication	0	√

		6: MIN (V1, V2) 7: MAX (V1, V2) H2-10 for full scale of options 1-7		
H2-10	Digital setting of electric torque in speed control mode	50.0%~300.0% (rated torque of motor)	200.0%	√
H2-11	Digital setting of power generation torque in speed control mode	50.0% to 200.0% (relative to motor rated torque)	140.0%	√
H3 Group V/F control parameters				
H3-00	VF curve setting	0: Straight line V/F (constant torque occasion) 1: Multi-point V/F (H3-03 to H3-08, high-frequency motors, industrial washing machines, centrifuges, etc.) 2: Square V/F (fans, pumps and other light load occasions) 3: 1.2 power V/F 4: 1.4 power V/F 6: 1.6 power V/F 8: 1.8 power V/F 10: VF separation mode (H3-13~H3-16 induction heating power supply, film blowing machine, torque motor and other occasions)	0	×
H3-01	Torque boost	0.0%: (Automatic torque boost) 0.1%~30.0%	Model depends	√
H3-02	Torque boost cut-off frequency	0.00Hz~Maximum frequency	20.00Hz	×
H3-03	Multipoint VF Frequency Point 1	0. 00 Hz~Motor rated frequency (H1-04)	5.00Hz	√
H3-04	Multipoint VF voltage point1	0.0%~100.0%	15.0%	√
H3-05	Multi-point VF frequency point 2	0. 00 Hz~Motor rated frequency (H1-04)	17.50Hz	√
H3-06	Multi-point VF voltage point 2	0.0%~100.0%	45.0%	√
H3-07	Multi-point VF frequency point 3	H3-05~Motor rated frequency(H1-04)	35.00Hz	√
H3-08	Multi-point VF voltage point3	0.0%~100.0%	80.0%	√
H3-09	VF slip compensation	0.0%~200.0%	0.0%	√

	gain			
H3-10	VF over excitation gain	0~200 During the deceleration of the frequency converter, this parameter can inhibit the rise of bus voltage and avoid overvoltage fault. The larger the overexcitation gain is, the stronger the suppression effect is, but it is easy to lead to the increase of output current or speed fluctuation, which needs to be weighed in the application. For the occasion with small inertia, it is recommended to set overexcitation gain to 0; If there is a braking resistor, the overexcitation gain needs to be set to 0.	32	√
H3-11	VF Oscillation suppression gain	0~100	Model depends	√
H3-13	VF separated voltage source	0: Digital setting (H3-14) 1: V1 2: V2 3: Reserved 4: HDI pulse setting (S5) 5: Multistage command 6: Simple PLC 7: PID 8: Given communication Note: Rated voltage of motor for 100.0%	0	√
H3-14	Voltage digital setting for VF separation	0V~Rated voltage of motor	0V	√
H3-15	Voltage acceleration time of VF separation	0.0s~3200.0s (the time from 0V to rated voltage of motor)	10.0s	√
H3-16	Voltage deceleration time of VF separation	0.0s~3200.0s (the time when the rated voltage of motor reaches 0V)	10.0s	√
H3-17	Automatic voltage regulation (AVR)	0: Invalid 1: Valid in the whole process 2: Invalid only during deceleration	0	√
H4 Group Input terminals				
H4-00	S1 terminal function selection	0: No function	1	×
H4-01	S2 terminal function selection	1: Forward operation (FWD) 2: Reverse operation (REV) (To be used with	2	×

H4-02	S3 terminal function selection	H4-11 when it is set to 1,2) 3: Three-wire operation control	9	×
H4-03	S4 terminal function selection	4: Forward jog (FJOG) 5: Reverse jog (RJOG)	12	×
H4-04	S5 terminal function selection	8: Free parking in all channels 9: All channel fault reset (RESET)	13	×
H4-05	S6 terminal function selection	10: Running pause (valid for all channels) 11: External fault normally open input	14	×
H4-06	S7 Terminal function selection (equipped with expansion cards)	(E015) 12: Multistage command terminal 1 13: Multistage command terminal 2	4	×
H4-07	S8 Terminal function selection (equipped with expansion cards)	14: Multistage command terminal 3 15: Multistage command terminal 4	5	×
H4-11	Terminal command mode	0: Two-wire type 1 (forward start and stop of the forward terminal and reverse start and stop of the reverse terminal) 1: Two-wire type 2 (forward terminal starts and stops, reverse terminal changes direction) 2: Three-wire type 1 (start and stop of the forward terminal pulse and start and stop of the reverse terminal pulse, reverse terminal pulses start and stop, 3-wire terminal normally closed (stops when disconnected) 3: Three -wire type 2 (forward terminal pulse starts and stops, reverse terminal selects direction, 3-wire terminal is normally closed and shuts down when disconnected) 4: Three -wire type 3 (forward terminal pulse starts and stops the forward rotation, reverse terminal pulse starts and stops the reverse rotation, 3-wire terminal is in a normally open and shuts down when closed)	0	×
H4-12	Terminal UP/DOWN change rate	0.01 Hz/s~100.0 Hz/s	2.00Hz/s	√
H4-13	V curve1 minimum input	0.00V~H4-15	0.10V	√
H4-14	V curve 1 minimum input corresponding setting	-100.0%~+100.0%	0.0%	√

H4-15	V curve 1 maximum input	H4-13~+10.00V	9.90V	√
H4-16	V curve 1 maximum input corresponding setting	-100.0%~+100.0%	100.0%	√
H4-17	V1 input filter coefficient	0~20 (it increases appropriately when PID pressure is unstable; it decreases appropriately when CNC machine tools respond fastly)	6	√
H4-18	V2 curve minimum input	0.00V~H4-20	0.10V	√
H4-19	Corresponding setting of minimum input of V2 curve	-100.0%~+100.0%	0.0%	√
H4-20	V2 curve maximum input	H4-18~+10.00V	9.90V	√
H4-21	Corresponding setting of maximum input of V2 curve	-100.0%~+100.0%	100.0%	√
H4-22	V2 input filter coefficient	0~20 (it increases appropriately when PID pressure is unstable; it decreases appropriately when CNC machine tools respond fastly)	6	√
H4-28	HDI minimum input	0.00kHz~H4-30	0.00kHz	√
H4-29	Corresponding setting of HDI minimum input	-100.0%~100.0%	0.0%	√
H4-30	HDI maximum input	H4-28~100.00 kHz	50.00kHz	√
H4-31	HDI maximum input setting	-99.99%~100.0%	0.00%	√
H4-34	V is lower than the minimum input setting selection	0: Minimum input setting 1: 0.0%	0	√
H4-35	S1 closing delay time	0.000 s~32.000 s	0.000s	×
H4-36	S1 disconnection delay time	0.000 s~32.000 s	0.000s	×
H4-37	S2 closing delay time	0.000 s~32.000 s	0.000s	×
H4-38	S2 disconnection delay time	0.000 s~32.000 s	0.000s	×
H4-39	S3 closing delay time	0.000 s~32.000 s	0.000s	×
H4-40	S3 disconnection delay time	0.000 s~32.000 s	0.000s	×
H5 Group Output Terminal				
H5-00	SP1 terminal output mode selection	0: Pulse output (HDO,H5-09~H5-12 setting) 1: Open collector output (SP1,H5-01 setting)	1	√

H5-01	Control board SP1 open collector output function selection	0: No output 1: The frequency converter is in operation 2: Failure output (failure shutdown)	0	√
H5-02	Control board relay 0 function selection (TA0-TB0-TC0)	6: Motor overload pre-alarm (H9-02) 7: Frequency converter overload pre-alarm (H9-51)	2	√
H5-03	Control board relay 1 function selection (TA1-TB1-TC1)	43: Brake control (in HE-00 =1 lifting mode, it is controlled by brake releasing and holding frequency, releasing and holding current and releasing and holding time; in HE.00=0 translation mode, release the brake when starting, and hold the brake after stopping)	43	√
H5-05	Relay 2 Output function selection (TA2-TB2-TC2)	44: Motor fan control	43	√
H5-06	HDO (SP1) high-speed pulse output feature selection	0: Running frequency (maximum frequency for 10 V) 1: Set frequency (maximum frequency for 10 V)	0	√
H5-07	FM1 analog output function selection	2: Output electric current (twice the rated current of the motor for 10 V)	0	√
H5-08	FM2 analog output function selection	3: Output torque (twice the rated torque of the motor for 10 V) 4: Output power (twice the rated power of the motor for 10 V) 5: Output voltage (1.2 times the rated voltage of the frequency converter for 10 V) 6: HDI high-speed pulse input (100.00 KHz for 10V) 7: V1 8: V2 10: Length (0~maximum set length) 11: Count value (0~maximum count value) 12: Communication setting (address 2004H, 2002H, 2003H) 13: Motor speed (0~speed at maximum output frequency) 14: Output current (1000.0A for 100.0%) 15: Output voltage (1000.0V for 100.0%) 16: Output torque (-twice of the rated torque of the motor ~ 2 of the rated torque of the motor)	1	√

		17: Output percentage designated value (H5-23)		
H5-09	HDO output maximum frequency	0.01kHz~100.00kHz (High-speed optocouplers need to be replaced in case of greater than 20.00 KHz)	20.00kHz	√
H5-10	HDO upper percentage limit	0.00~100.00%	100.00%	√
H5-11	HDO minimum output frequency	0.00 kHz~100.00 kHz	0.00kHz	√
H5-12	HDO lower percentage limit	0.00~100.00%	0.00%	√
H5-13	FM1 maximum output	0.00 V~10.00 V	10.00V	√
H5-14	FM1 upper percentage limit	0.0%~100.0%	100.0%	√
H5-15	FM1 minimum output	0.00 V~10.00 V	0.00V	√
H5-16	FM1 lower percentage limit	0.0%~100.0%	0.0%	√
H5-17	FM2 maximum output	0.00 V~10.00 V	10.00V	√
H5-18	FM2 upper percentage limit	0.0%~100.0%	100.0%	√
H5-19	FM2 minimum output	0.00 V~10.00 V	0.00V	√
H5-20	FM2 lower percentage limit	0.0%~100.0%	0.0%	√
H5-21	Output selection below lower limit	0: Output 0 V 1: Output lower limit	1	√
H6 Group Start and Stop Control				
H6-00	Startup mode	0: Direct start (H6-03, H6-04) 1: Speed tracking restart (H6-02, H6-36) 2: DC braking start (H6-05, H6-06)	0	×
H6-02	Speed tracking frequency setting	0.00 Hz~100.00 Hz	20.00Hz	√
H6-03	Start frequency	0.00 Hz~50.00 Hz	0.00Hz	√
H6-04	Start frequency hold time	0.000 s~32.000 s	0.000s	×
H6-05	Starting DC braking current	0%~100%	0%	×
H6-06	Starting DC braking time	0.000 s~32.000 s	0.000s	×
H6-07	Acceleration and deceleration mode	0: Linear acceleration and deceleration 1: S-curve acceleration and deceleration A	0	×
H6-08	S-curve start time proportion	0. 0%~(100.0%-H6-09)	30.0%	×
H6-09	S-curve end time proportion	0. 0%~ (100.0%-H 6-08)	30.0%	×
H6-10	Normal shutdown mode	0: Slow shutdown 1: Free parking	0	√

H6-11	Slow shutdown DC braking initial frequency	0.00 Hz~maximum frequency	0.00Hz	√
H6-12	DC braking waiting time for slow shutdown	0.0 s~32.000 s	0.0s	√
H6-13	Slow shutdown DC braking current	0%~100%	0%	√
H6-14	Slow shutdown DC braking time	0.0s~32.000s (When it's 0.0 s, no DC braking)	0.0s	√
H6-16	Reset operation enabled after automatic reset	0: Disabled 1: Enabled, resume operation	1	√
H6-18	Inching stop mode	0: Slow shutdown 1: Free shutdown	0	√
F6-19	Direct starting acceleration time	0.01 s~320.00 s	0.01s	√
H6-24	Enable auto start of re-power-on after power off (Increased for V5640 and above)	0: Disabled 1: Enabled Indicates that when the frequency converter is powered off and then powered on, it will automatically recover the operation state before power failure. That is, if it is the operation state before power failure, it will automatically start operation after the restart waiting time set by H6-27 is delayed. If the frequency converter is in the shutdown state before power failure after power-on, it will not start automatically. This function is only valid for keyboard control. Caution: the user must carefully select the function to allow the restart function, otherwise there may be serious consequences.	0	√
H6-25	Enable quick stop and restart	0: Disabled 1: Enabled	0	√
H6-26	Waiting time for transient recovery and restart	0.000 s~10.000 s	1.000s	√
H6-27	Automatic startup wait time	0.0 s~3200.0 s	2.0s	√
H6-32	Hardware tracking direction	0: Current measurement direction 1: Add DC excitation and judge the direction every time 2: Memorize the operating direction before shutdown	2	√

		3: Take the target frequency direction as the tracking frequency direction		
H6-33	Percentage of speed tracking excitation current	10%~200.0%	130.0%	√
H6-34	Speed tracking excitation time	0.000 s~10.000 s	0.100s	√
H6-35	Speed calculation and judgment time	0.000 s~5.000 s	0.200s	√
H6-36	Voltage output soft-start time	0.001 s~32.000 s	1.500s	√
H7 Group Keyboard and Display				
H7-00	LED second line normal status display selection (It is valid for double line display keyboard only)	Same as H7-03、H7-04 parameter definition	4	√
H7-01	MF.K key function selection	0: MF.K invalid 1: Switch between the command channel of the operation panel and the remote command channel (terminal command channel or communication command channel) 2: Forward/Reverse switching 3: Forward jog 4: Reverse jog	0	×
H7-02	STOP/RESET key function	0: Only in keyboard operation mode, the Stop/Reset key shutdown function is valid 1: In any operation mode, STOP/RESET key shutdown function is valid 2: In any operation mode, STOP/RESET key shutdown function is valid; (For terminal or communication control, E037 external fault is reported)	2	√
H7-03	LED First line running display selection	00: Operating frequency 01: Set frequency 02: Bus voltage 03: Output voltage 04: Output current	0	√
H7-04	LED First line stop display selection	05: Output power (kW) 06: Output torque (%) 07: S Input terminal status 08: DO Output terminal status 09: V1 voltage (V)	1	√

		10: V2 voltage (V) 11: Reserved 12: Count value 13: Length value 14: Load speed display 15: PID setting 16: PID feedback 17: PLC stage 18: HDI input (S5 terminal) pulse frequency (kHz) 19: Feedback operating frequency (Hz) 20: Timing remaining operating time 21: FM1 output voltage (V) 22: FM2 output voltage (V) 23: HDO pulse output frequency (KHz) 24: Reserved 25: Cumulative power-on time (H) 26: Timing elapsed time (Min) 27: Timing setting time (Min) 28: Communication setting value 29: Reserved 30: Main frequency A display (Hz) 31: Auxiliary frequency B display (Hz) 32: Multistage speed current stage speed 33: PLC total set time 34: PLC running time 35: Sleep timing 36: PLC remaining running time		
H7-06	Load speed display factor	0.001~32.000	1.0000	√
H7-07	Inverter module radiator temperature	0.0°C~100.0°C	-	○
H7-10	Cumulative power consumption	0kw.H~32767kw.H	-	○
H7-11	User password (for locking the keyboard)	0~32766 (after setting, be sure to keep in mind)	0	√
H7-12	Cumulative power-on time	0.0 Min~3276.7 Min	-	○
H7-13	Cumulative power-on time	0 H~32767 H	-	○
H8 Group Auxiliary Functions				
H8-00	Jog running frequency	0.00 Hz~maximum frequency	2.00Hz	√
H8-01	Jog acceleration time	0.1 s~3200.0 s	20.0s	√

H8-02	Jog deceleration time	0.1 s~3200.0 s	20.0s	√
H9 Group Faulty and Protection				
H9-00	Motor overload protection selection	0: Not allowed 1: Allowed	1	√
H9-01	Motor overload protection gain	50%~120% (rated current of the motor)	100%	√
H9-02	Motor overload pre-warning coefficient	20%~100% (for the maximum number of motor overload accumulation) is used to give the control system an early warning signal through DO before the motor overload fault protection. This early warning factor is used to determine the extent to which the motor is warned before overload protection. The larger the value, the shorter the time of pre-alarm	50%	√
H9-03	Overvoltage stall gain	0~100, the larger this value, the stronger the ability to suppress overvoltage, but the actual deceleration time will be longer. Without overvoltage, the smaller the gain setting, the better it is.	0	√
H9-04	Overvoltage stall protection voltage	115%~150% During the deceleration process of the frequency converter, when the DC bus voltage exceeds overvoltage stalling protection voltage, the frequency converter stops deceleration and maintains the current operating frequency, and continues to decelerate after the bus voltage drops.	133%	√
H9-05	Over current stall gain	0~100 (When it is 0, the overcurrent stalling function is canceled) The larger this value, the stronger the ability to suppress overcurrent. For loads with small inertia, overcurrent stalling gain should be small, otherwise the dynamic response of the system will be slowed down. For loads with large inertia, this value should be large, otherwise the suppression effect is not good and overcurrent fault may occur.	5	√
H9-06	Over current stall protection current	10%~210% in the acceleration and deceleration process of the frequency converter, when the output current exceeds the overcurrent stall protection current, the frequency converter stops the acceleration and deceleration process, and continues to	180%	√

		accelerate and decelerate after the output current decreases.		
H9-08	VF overcurrent overvoltage stalling enabled	0: Disabled 1: Enabled	1	√
H9-09	Number of automatic fault reset	0~20	0	√
H9-10	During the automatic fault reset, the fault DO outputs terminal acts	0: Inaction 1: Action	0	√
H9-11	Interval time of automatic fault reset	0.100 s~32.000 s	1.000s	√
H9-12	Input phase loss protection selection (7.5 kW and above)	0: Forbidden 1: Allowed	1	√
H9-13	Output phase loss/output current unbalance protection selection	0: Forbidden 1: Allowed	1	√
H9-14	The first fault type	0: No fault 1: IGBT short circuit fault 2: Acceleration overcurrent 3: Deceleration overcurrent 4: Constant speed overcurrent 5: Acceleration overvoltage 6: Deceleration overvoltage	—	○
H9-15	The second fault type	7: Constant speed overvoltage 8: Shutdown overvoltage 9: Running undervoltage 10: Frequency converter overload	—	○
H9-16	The third (latest) fault type	11: Motor overload 12: Input phase loss 13: Output phase loss or three-phase output unbalanced 14: Module overheating 15: External fault 16: Communication abnormality 19: Abnormal motor tuning 21: Parameter read and write exception 22: Frequency converter hardware fault (clear latch timeout) 23: Motor short circuited to ground 24: Excessive AD zero drift	—	○

		26: Temperature sensor disconnection fault 27: User-defined fault 1 28: User-defined fault 2 29: Power-on timeout 31: PID feedback disconnection fault 37: Keyboard STOP key shutdown failure 40: Fast current limiting timeout 41: The number of automatic reset exceeds the limit		
H9-17	Frequency at the third (latest) fault	—	—	○
H9-18	Current at the third (latest) fault	—	—	○
H9-19	Bus voltage at the third (latest) fault	—	—	○
H9-20	Input terminal status at the third (latest) fault	—	—	○
H9-21	Output terminal status at the third (latest) fault	—	—	○
H9-22	Frequency converter status at the third (latest) fault	—	—	○
H9-23	Cumulative power-on time at the third (latest) fault	—	—	○
H9-27	Frequency at the second fault	—	—	○
H9-28	Current at the second fault	—	—	○
H9-29	Bus voltage at the second fault	—	—	○
H9-30	Input terminal status at the second fault	—	—	○
H9-31	Output terminal status at the second fault	—	—	○
H9-32	Frequency converter status at the second fault	—	—	○
H9-33	Accumulated power-on time during the second fault	—	—	○
H9-37	Frequency at the first fault	—	—	○

H9-38	Current at the first fault	—	—	○
H9-39	Bus voltage at the first fault	—	—	○
H9-40	Input terminal status at the first fault	—	—	○
H9-41	Output terminal status at the first fault	—	—	○
H9-42	Status of frequency converter at the first fault	—	—	○
H9-43	Power-on time at the first fault	—	—	○
H9-49	Time of three consecutive failure pauses	1.0 s ~ 600.0 s	30.0s	√
H9-50	Hardware overcurrent elimination time	0.1 s ~ 600.0 s	0.1s	√
H9-51	Overload warning coefficient of frequency converter	0~100% (for maximum cumulative overload of frequency converter)	50%	√
H9-52	Software current limit and frequency reduction enabled	0: Enabled 1: Disabled	0	√
H9-53	Software current limiting and frequency reduction level	120.0%~220.0% (for rated current of frequency converter)	170.0%	√
H9-54	Maximum rate of drop at current limit	0.00 Hz ~ 100.00 Hz	2.50Hz	√
H9-55	Current limiting and frequency reducing cut-off frequency	0.00 Hz ~ 100.00 Hz	10.00Hz	√
H9-59	Instantaneous power-off deceleration power generation enabled	0: Invalid 1: Decelerate power generation to maintain bus voltage (Deceleration time set by H9-66)	0	√
H9-60	Judgment voltage of power generation rise in instantaneous power failure	70.0% ~ 100.0% (standard bus voltage)	90.0%	√
H9-61	Judgment time of power generation rise in instantaneous power failure	0.00 s ~ 100.00 s	0.50s	√
H9-62	Instantaneous power	60.0% ~ 100.0% (standard bus voltage)	80.0%	√

	outage deceleration power generation start operation voltage			
H9-63	Load loss protection selection	0: Invalid 1: Valid Then when the output current of the frequency converter is less than the load loss detection level H9-64, and the duration is longer than the load loss detection time H9-65, the load loss fault E030 is displayed.	0	√
H9-64	Load loss detection level	0.0~100.0%	10.0%	√
H9-65	Load loss detection time	0.0~60.0s	1.0s	√
H9-66	Deceleration time of power generation in instantaneous power failure	0.0 s ~ 3200.0 s	3.0S	√
H9-67	FVC overspeed detection value	0.0 % ~ 50.0 % (maximum frequency)	20.0%	√
H9-68	FVC overspeed detection time	0.0s no detection 0.1~60.0s	0.0s	√
H9-69	FVC detection value of excessive speed deviation	0.0 % ~ 50.0 % (maximum frequency)	20.0%	√
H9-70	FVC detection time of excessive speed deviation	0.0s no detection 0.1 s ~ 60.0 s	0.0s	√
H9-71	Hall abnormality detection time	0.0s no detection 0.1 s ~ 60.0 s	5.0s	√
H9-72	Temperature disconnection detection time	0.0s no detection 0.1 s ~ 60.0 s	15.0s	√
HC Group Multi-segment Instrument				
HC-00	Multi-segment instrument 0	-100.0%~100.0% When it is a negative value, no matter the forward command or the reverse command, it will run in reverse; when it is a positive value, the forward command will start forward running, and the reverse command will start reverse running.	0.0%	√
HC-01	Multi-segment instrument 1	-100.0%~100.0%	0.0%	√
HC-02	Multi-segment instrument 2	-100.0%~100.0%	0.0%	√
HC-03	Multi-segment instrument 3	-100.0%~100.0%	0.0%	√

HC-04	Multi-segment instrument 4	-100.0%~100.0%	0.0%	√
HC-05	Multi-segment instrument 5	-100.0%~100.0%	0.0%	√
HC-06	Multi-segment instrument 6	-100.0%~100.0%	0.0%	√
HC-07	Multi-segment instrument 7	-100.0%~100.0%	0.0%	√
HC-08	Multi-segment instrument 8	-100.0%~100.0%	0.0%	√
HC-09	Multi-segment instrument 9	-100.0%~100.0%	0.0%	√
HC-10	Multi-segment instrument 10	-100.0%~100.0%	0.0%	√
HC-11	Multi-segment instrument 11	-100.0%~100.0%	0.0%	√
HC-12	Multi-segment instrument 12	-100.0%~100.0%	0.0%	√
HC-13	Multi-segment instrument 13	-100.0%~100.0%	0.0%	√
HC-14	Multi-segment instrument 14	-100.0%~100.0%	0.0%	√
HC-15	Multi-segment instrument 15	-100.0%~100.0%	0.0%	√
HC-51	Multi-segment instrument 0 given mode	0: Function code HC-00 given 1: V1 2: V2 3: Reserved 4: HDI pulse 5: PID 6: Preset frequency (H0-08) given	0	√
Hd group communication parameters				
Hd-00	Baud rate	3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS	5	√
Hd-01	MODBUS data format	0: No parity (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity 8-N-1 (MODBUS valid)	0	√
Hd-02	Local address	1~247, 0 is the broadcast address	1	√

Hd-03	Response delay	0.000 s ~ 1.000 s (valid for MODBUS)	0.002s	√
Hd-04	Communication timeout	0.000 s to 30.000 s (valid for MODBUS) 0.0 (no judgment of communication failure) If the correct communication data is not received beyond this set time, the communication failure (E016) of the frequency converter will be displayed.	0.000s	√
HE Group Crane (hoist) Special Purpose Function				
HE-00	Lifting enabled	0: Translation 1: Lifting	1	×*
HE-01	Rising brake release frequency	0.00 Hz ~ 20.00 Hz	2.00Hz	×*
HE-02	Rising brake holding frequency	0.00 Hz ~ 20.00 Hz	2.00Hz	×*
HE-03	Falling brake release frequency	0.00 Hz ~ 20.00 Hz	3.00Hz	×*
HE-04	Falling brake holding frequency	0.00 Hz ~ 20.00 Hz	3.00Hz	×*
HE-05	Holding time of brake release frequency	0.000~32.000 s	0.200s	×*
HE-06	Holding time of brake holding frequency	0.000~32.000 s	0.200s	×*
HE-07	Start direction during reverse rotation	0: Normal startup 1: Start in forward direction Firstly, start forward operation at set frequency of HE-03 (hold HE-05 time), then directly start descending operation from HE-03 (no hold time).	0	×*
HE-08	UP brake release current	0.0 ~ 120.0% (Rated current of motor)	30.0%	√*
HE-11	Command reverse control	0: Pause between forward/reverse switching, the brake holding logic performs the brake holding, zero crossing point switching time, and then the brake release logic performs brake release; 1: The forward/reverse switching is directly switched at the frequency set by HE-12, without brake holding or brake release, and without waiting for zero switching time.	0	×*
HE-12	ZCP hopping frequency	0.00~20.00Hz	2.00 Hz	×*
HE-13	Brake release frequency acceleration time	0.0 ~ 3200.0 s	3.0s	√*
HE-14	Brake holding frequency	0.0 ~ 3200.0 s	3.0s	√*

	deceleration time			
HE-15	Zero crossing point switching time	0. 0~20.0 s	0.3s	×*
HE-22	Downstream brake release current	0.0 ~ 120.0% (Rated current of motor)	30.0%	√*
HE-23	Overload protection enabled	0: Disabled 1: Enabled (judgment only for upper start, when the output current exceeds HE-24 and the duration exceeds HE-25, report overweight fault E048)	0	×*
HE-24	Overload protection judgment current	30.0%~150.0% (rated current of motor)	125.0%	√*
HE-25	Overload judgment time	0.500~30.000 s	3.000s	×*
HP Group Function Code Management				
HP-00	Program version	-	-	○
HP-01	Parameter initialization	00: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear log information 03: Restore factory parameters (all)	0	×
HP-04	Parameter lock	0: Not locked; 1: Locked	0	√
HH、Hn Group Reserved				

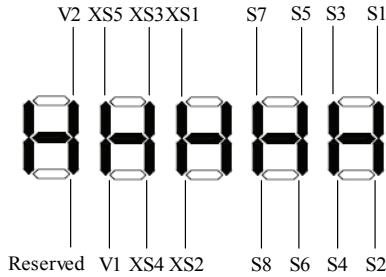
d0 group monitoring parameter group

The d0 parameter group is used to monitor the operating status information of the frequency converter, which can be viewed by the customer through the panel for convenient on-site debugging. the specific parameter function code, parameter name and minimum unit are shown in the table below.

Function code	Name	Setting range	Remarks
d0-00	Operating frequency (Hz)	0.01Hz	0.1Hz when H0-22=1 0.01Hz unit when H0-22=2
d0-01	Set frequency (Hz)	0.01Hz	0.1Hz when H0-22=1 0.01Hz unit when H0-22=2
d0-02	Bus voltage (V)	0.1V	
d0-03	Output voltage (V)	1V	
d0-04	Output current (A)	0.1A	0.1 A ~ 320.00 A (frequency converter power≤55 KW) 1. 0 A ~ 3200.0 A (frequency converter power>55 KW)
d0-05	Output power (kW)	0.1kW	
d0-06	Output torque (%)	0.1%	

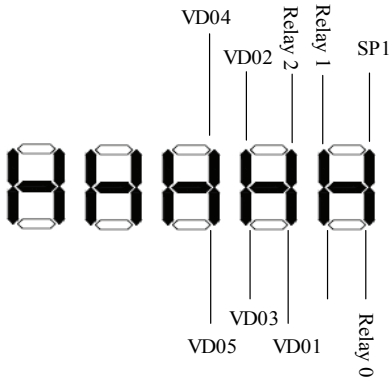
d0-41	Intuitive display of S terminal input status	1	See diagrams below
d0-42	Intuitive display of DO terminal output status	1	See diagrams below

Input terminal status and meaning:



Display corresponding input terminal:
 The corresponding display tube is on, indicating that the input is valid.

Output terminal status and meaning:



Display corresponding DO output terminal:
 The corresponding display tube is on, indicating that the output is valid.

Chapter 6 Crane(hoist) Special Parameters Instrument

Multistage speed description of HC group

Function description of multistage command: four multistage command terminals can be combined into 16 states, which correspond to 16 command set values, as shown in the following table.

Multistage command terminal 4	Multistage command terminal 3	Multistage command terminal 2	Multistage command terminal 1	Command setting	Corresponding parameter
OFF	OFF	OFF	OFF	Multistage command 0	HC-00
OFF	OFF	OFF	ON	Multistage command 1	HC-01
OFF	OFF	ON	OFF	Multistage command 2	HC-02
OFF	OFF	ON	ON	Multistage command 3	HC-03
OFF	ON	OFF	OFF	Multistage command 4	HC-04
OFF	ON	OFF	ON	Multistage command 5	HC-05
OFF	ON	ON	OFF	Multistage command 6	HC-06
OFF	ON	ON	ON	Multistage command 7	HC-07
ON	OFF	OFF	OFF	Multistage command 8	HC-08
ON	OFF	OFF	ON	Multistage command 9	HC-09
ON	OFF	ON	OFF	Multistage command 10	HC-10
ON	OFF	ON	ON	Multistage command 11	HC-11
ON	ON	OFF	OFF	Multistage command 12	HC-12
ON	ON	OFF	ON	Multistage command 13	HC-13
ON	ON	ON	OFF	Multistage command 14	HC-14
ON	ON	ON	ON	Multistage command 15	HC-15

When the frequency source is selected as multistage speed, the function code HC-00~HC-15 is 100.0% at the maximum frequency H0-10.

HE group basic function group

HE-00	Lifting enabled		Factory default	1
	Setting range	0	Translation	
		1	Lifting	

This parameter is used to select the type of hoisting mechanism driven by the frequency converter. It is mainly used to distinguish the best performance under different working conditions and the factory default of starting braking sequence.

HE-01	Rising brake release frequency		Factory default	2.00Hz
	Setting range		0.00 Hz~20.00 Hz	

This parameter indicates the output frequency of the frequency converter before the brake release signal is output when rising, and is used to make the frequency converter with full torque output when brake is released (see 6-1 for the sequence diagram).

HE-02	Rising brake holding frequency	Factory default	2.00Hz
	Setting range	0.00 Hz~20.00 Hz	

This parameter indicates that after the rise running command is cancelled, the brake holding signal is output immediately when the deceleration running is lower than this frequency (see 6-1 for the sequence diagram).

HE-03	Falling brake release frequency	Factory default	3.00Hz
	Setting range	0.00 Hz~20.00 Hz	

This parameter indicates the output frequency of the frequency converter before the brake release signal is output when it declines, making the frequency converter output with full torque at the time of brake release (see 6-1 for the sequence diagram).

HE-04	Falling brake holding frequency	Factory default	3.00Hz
	Setting range	0.00 Hz~20.00 Hz	

This parameter indicates that after the declining running commands are cancelled, the brake holding signal will be output immediately when the deceleration running is lower than the frequency (see 1 for the sequence diagram).

HE-05	Holding time of brake release frequency	Factory default	0.200s
	Setting range	0.000 s ~ 32.000 s	

During this time, the frequency converter maintains the output of the rising or falling brake release frequency, and outputs brake release signal after the time expires to ensure sufficient torque when the brake release is released (see 6-1 for the sequence diagram).

HE-06	Holding time of brake holding frequency	Factory default	0.200s
	Setting range	0.000 s ~ 32.000 s	

This parameter is the time from the action to the complete closing of the mechanical brake holding. During this time, the frequency converter maintains the frequency output of the brake holding to increase or decrease (see 6-1 for the sequence diagram), and free shutdown is invalid.

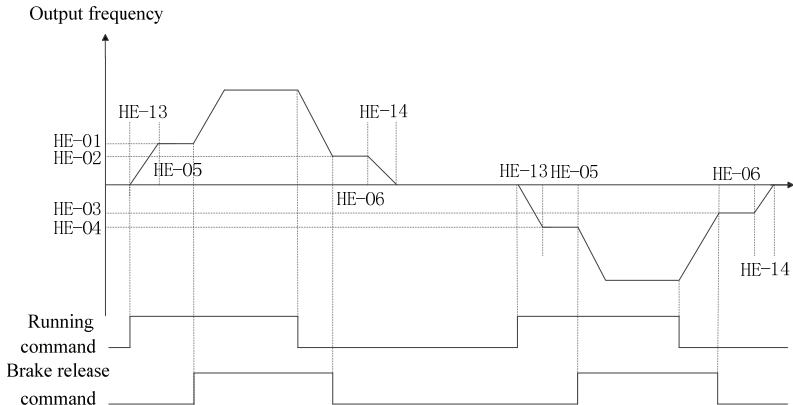


Figure 6-1 Sequence Diagram of Brake Release and Holding

Brake holding logic:

When the upstream and downstream stop frequency reaches, the brake holding signal will be sent and the brake holding starts and the frequency converter stops output after the delay of HE -06 for waiting time of brake holding.

Brake release logic:

After the UP or Down operation reaches the brake release frequency, the holding time HE-05, and the output current reaches the UP brake release current HE-08 or Down brake release current HE-22, and the brake release signal is output. Then the frequency converter continues to run at the normal acceleration time.

Setting H5-00~H5-05 to 43 is the brake releasing and holding output.

HE-07	Start direction during reverse rotation	Factory default	0
	Setting range	0	Normal start
		1	Forward startup

0: Normal start and operate normally at the acceleration time of H0-17, and the output torque is the same as the operation direction. See 6-2 for the Sequence Diagram.

1: Start in the forward direction, first operate in forward direction at the set frequency of HE-03 to keep the time of HE-05 (ensure that the initial output torque is upward), and then directly start the downward operation from HE-03 (no hold time). See 6-3 for sequence diagram.

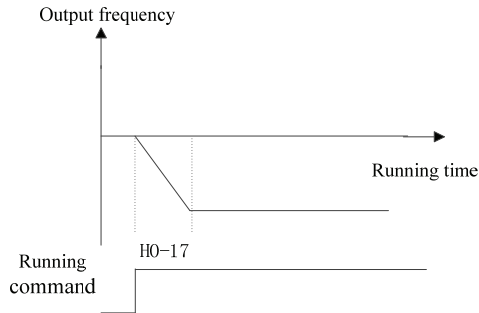


Figure 6-2 Brake Release Torque Sequence Diagram 1

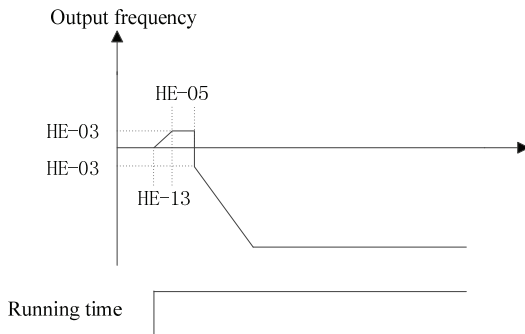


Figure 6-3 Brake Release Torque Sequence Diagram 2

HE-08	UP brake release current	Factory default	30.0%
	Setting range	0.0 ~ 120.0% (Rated current of motor)	

When the frequency reaches HE-01 and the holding time of HE-05 expires, it is judged that the current reaches the brake release current before brake release (for the rated current of the motor), otherwise the frequency continues to rise until the current meets the conditions before brake release.

HE-11	Command reverse control		Factory default	0
	Setting range	0	Disabled	
		1	Enabled	

0: Pause between forward/reverse switching, and do brake holding, apply the brake holding according to the brake holding logic, and then do brake release according to brake release logic;

1: The forward/reverse switching is directly done at the frequency set by HE-12 or HE-04, and do not hold or release the brake.

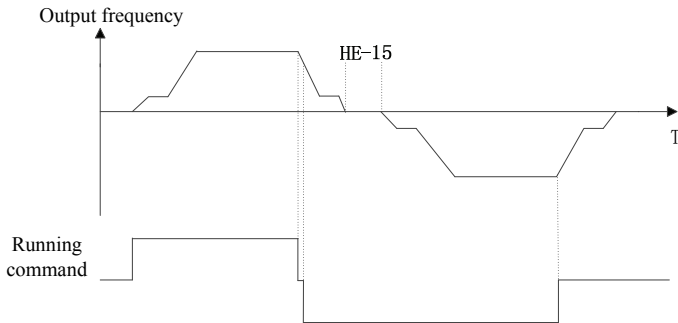


Figure 6-4 Command Reverse Control Sequence Diagram 1

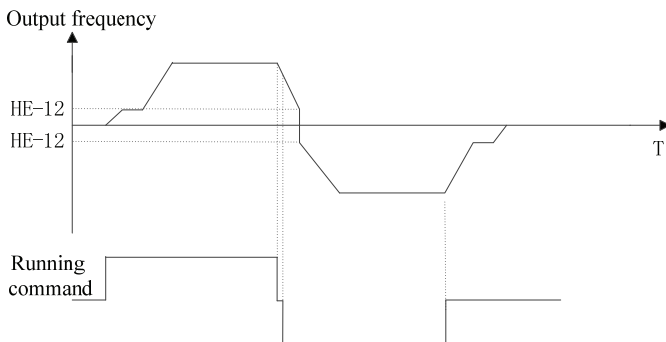


Figure 6-5 Command Reverse Control Sequence Diagram 2

HE-12	ZCP hopping frequency	Factory default	2.00Hz
	Setting range	0.00~20.00Hz	

This value is limited by the starting frequency HE-03 and is not greater than HE-03.

HE-13	Brake release frequency acceleration time		Factory default	3.0s
	Setting range	0. 0 ~ 3200.0 s		

If acceleration time from 0 to the set brake release frequency (HE-01 or HE-03) at start-up is set to zero, it will start directly from brake release frequency (see figure 1 for the sequence).

HE-14	Brake holding frequency deceleration time		Factory default	3.0s
	Setting range	0. 0 ~ 3200.0 s		

The time when the stopping frequency decreases from the brake holding frequency (HE-02 or HE-04) to 0 is set to 0, the machine will decelerate to the brake holding frequency and stop directly (see 6-1 for Sequence Diagram).

HE-15	Zero crossing point switching time		Factory default	0.3s
	Setting range	0. 0~20.0 s		

The waiting time between forward/reverse switching.

HE-22	Downstream brake release current		Factory default	30.0%
	Setting range	0.0 ~ 120.0% (Rated current of motor)		

HE-23	Overload protection enabled		Factory default	1
	Setting range	0	Disabled	
		1	Enabled	

HE-24	Overload protection judgment current		Factory default	125.0%
	Setting range	30.0~150.0% refers to the rated current of motor		

HE-25	Overload judgment time		Factory default	3.000s
	Setting range	0.500~30.000 s		

In the uplink process, after the output frequency reaches the set frequency, when it is detected that the output current exceeds the judgment current of overweight, it starts timing. After the accumulated time exceeds the overload judgment time, the frequency converter stops and can only respond to the downlink command.

Chapter 7 Communication Protocol

1. Communication configuration

The communication baud rate is set by Hd-00, and data form set by Hd-01.

2. Slave address

The address of the drive is set by Hd-02, and 0 is the broadcast address. slave address can be set 1 ~ 247.

3. Function code 03: The function code for reading variable.

1. Readable parameter address distribution:

Function name	Address	Data and implications
Running status	3000H	0001: Forward
		0002: Reverse
		0003: Stop
Monitoring parameter	1000H	Frequency /PID/Torque communication set value(-10000~10000)(Decimal)
	1001H	Operating frequency
	1002H	Bus voltage
	1003H	Output voltage
	1004H	Output current
	1005H	Output power
	1006H	Output torque
	1007H	Running speed
	1008H	S Terminal input flag
	1009H	DO Terminal output flag
	100AH	V1 voltage
	100BH	V2 voltage
	100CH	IGBT temperature
	100DH	Count value input
	100EH	Length value input
	100FH	Load speed
	1010H	PID setting
	1011H	PID feedback
1012H	PLC step	
1013H	HDI input pulse frequency , Unit 0.01kHz	
1014H	Feedback speed, Unit 0.1Hz	
1015H	Remaining running time	

	1016H	V1 Input voltage
	1017H	V2 Input voltage
	1018H	Reserved (no function)
	1019H	Line speed
	101AH	Present Power-on time
	101BH	Present running time
	101CH	HDI input pulse frequency, unit 1Hz
	101DH	Communication set value
	101EH	Actual feedback speed
	101FH	Main frequency A display
	1020H	Auxiliary frequency B display
Fault	8000H	0000: No fault
		0001: IGBT short circuit
		0002: Acceleration overcurrent
		0003: Deceleration overcurrent
		0004: Constant speed overcurrent
		0005: Acceleration overvoltage
		0006: Deceleration overvoltage
		0007: Constant speed overvoltage
		0009: Under-voltage fault
		000A: Drive overload
		000B: Motor overload
		000C: Input phase-loss
		000D: Output phase-loss/ output current unbalanced
		000E: IGBT overheating
		000F: External fault
		0010: Communication anomaly
		0012: Current detection fault
		0013: Motor tuning fault
		0015: Parameter read-write anomaly
		0016: Drive hardware fault
001A: Operating time reached		
001B: User-defined fault 1		
001C: User-defined fault 2		
001D: Power-on time reached		

		001E: Load loss
		001F: PID feedback loss in running
		0020: PID feedback overvoltage
		0028: Fast current limit timeout fault
		0029: The number of automatic resets exceeds the limit
Function parameter	FX.YZ	Corresponding to the current value of the function code, high address: FX, low address: YZ
H0~HE Group	F000H~FEFFH	The function code is HC.21, The address is FC15H
HP Group	1F00H~1F04H	
HH Group	A000H~A008H	
d0 Group	0x7000~0x70FF	

2. Communication frame content

The upper computer reads 2 data from the drive as the running frequency and the bus voltage. The address is 1001H and 1002H. The upper computer needs to send the following data to the drive:

Slave address	Function code	Parameter address high byte	Parameter address low byte	Read Data high byte	Read data low byte	CRC Parity bit high byte	CRC Parity bit low byte
01	03	10	01	00	02	91	0B

The drive frequency set value is 50.00Hz (hexadecimal is 1388H), and the bus voltage is 540.0V (hexadecimal is 1518H). The drive feedback the following data to the upper computer: where n=2 is the number of read variables.

Slave address	Function code	Read byte quantity (2*n)	The first data high byte	The first data low byte	The second data high byte	The second data low byte	CRC Parity high byte	CRC Parity low byte
01	03	04	13	88	15	18	70	07

4. 4. Function code 06: The function code that represents the write variable.

1. Writable parameter address distribution:

Function name	Address	Data and implications
Communication control command	2000H	0001: Forward
		0002: Reverse
		0003: Jog forward
		0004: Jog reverse
		0005: Free stop
		0006: Deceleration stop
		0007: Fault reset
Frequency /PID/ Torque communication set frequency value address	1000H	0.00%~100.00%,when setting 10000(Hexadecimal: 2710H),corresponding maximum frequency or Maximum PID setting or maximum torque.
Password address	1F00H	0.0%~100.0%

Relay setting	2001H	BIT2: TA0-TB0-TC0 relay output control BIT3: TA1-NC-TC1 relay output control BIT4: SP1 output control
FM1 output control	2002H	0%~100%
FM2 output control	2003H	0%~100%
Pulse(HDI)output control	2004H	0.00~100.00KHz
Function code group Number	Communication Address	The function code address in RAM modified by Communication
H0~HE Group	F000H~FEFFH If the function code is HC.21, the address is expressed as FC15H	0000H~0EFFH If the function code is HC.21, the address is expressed as 0C15H;
HP Group	1F00H~1F04H	0F00H~0F04H
HH Group	A000H~A008H	4000H~4008H
Hn Group	A500H~A509H	4500H~4509H

☞Note: Frequently writing function code parameters will reduce EPROM service life. Some parameters need not be stored in the communication mode, only the values in RAM need to be modified.

☞Note: The communication set value is the percentage of relative value, 10000 corresponds to 100.00%, and -10000 corresponds to -100.00%.

The percentage is the percentage of the maximum frequency (H0-05) for the frequency dimension. For the data of the torque dimension, the percentage is value of H2-10 (the torque upper limit digital setting).

2. Communication frame content

Example1:

The acceleration time of the drive is modified by the upper computer to 30.0s, which corresponding to the hexadecimal of 012CH, and the setting value is automatically saved when power-off. The acceleration time H0-17 corresponding to the hexadecimal address:F011H.

Then the upper computer sends the following data to the drive:

Slave address	Function code	Parameter address high byte	Parameter address low byte	Data high byte	Data low byte	CRC parity high byte	CRC parity low byte
01	06	F0	11	01	2C	EA	82

The drive responds the following data to the upper computer:

Slave address	Function code	Parameter address high byte	Parameter address low byte	Data high byte	Data low byte	CRC parity high byte	CRC parity low byte
01	06	F0	11	01	2C	EA	82

Example 2:

The deceleration time of the drive is modified by the upper computer to 30.0s, which corresponds to the hexadecimal data: 012CH, but set value will not be saved. The deceleration time H0-18corresponds to the hexadecimal address: 0012H.

Then the upper computer sends the following data to the drive:

Slave address	Function code	Parameter address high byte	Parameter address low byte	Data high byte	Data low byte	CRC parity high byte	CRC parity low byte
01	06	00	12	01	2C	29	82

The drive responds the following data to the upper computer.

Slave address	Function code	Parameter address high byte	Parameter address low byte	Data high byte	Data low byte	CRC parity high byte	CRC parity low byte
01	06	00	12	01	2C	29	82

Chapter 8 Fault Diagnosis and Countermeasures

8.1 Fault Alarm and Countermeasures

Fault code	Fault type	Troubleshooting	Countermeasures
E001	Inverse unit protection	<ol style="list-style-type: none"> 1.Short circuit of frequency converter output 2.The wiring of motor and frequency converter is too long 3.The internal wiring of the drive is loose 4.Driving board anomaly 	<ol style="list-style-type: none"> 1.Eliminate peripheral faults. 2.Install reactor or output filter. 3.Plug in all connections reliably 4. Change the board
E002	Acceleration overcurrent	<ol style="list-style-type: none"> 1.The acceleration time is too short 2.Vector control mode and no parameter identification is performed 3.Manual torque boost or V/F curve is not suitable 4.Start the rotating motor 5.Impact Load during acceleration 6.The drive capacity is small 	<ol style="list-style-type: none"> 1.Increase the acceleration time 2.identify the motor parameters 3.Adjust the torque or V/F curve manually 4.Select speed tracking to start or wait for the motor to stop before starting 5.Cancel the impact load 6.Select the frequency converter with higher power level
E003	Deceleration overcurrent	<ol style="list-style-type: none"> 1.The deceleration time is too short. 2.Vector control mode and no parameter identification is performed. 3. Impact load during deceleration. 4. No braking unit and brake resistance are installed. 	<ol style="list-style-type: none"> 1.Increase deceleration time. 2.Identify the motor parameters. 3.Cancel the impact load. 4. Install the brake unit and resistance.
E004	Constant speed overcurrent	<ol style="list-style-type: none"> 1.Vector control mode and no parameter identification is performed. 2.Whether there is a impact load in the operation. 3.Lower capacity of ac drive 	<ol style="list-style-type: none"> 1.Identify the motor parameters. 2. Cancel the impact load. 3.Select the ac drive with higher power level.
E005	Acceleration overvoltage	<ol style="list-style-type: none"> 1.High input voltage. 2.Drag the motor to run in the acceleration process. 3.The acceleration time is too short. 4. No braking unit and brake resistance are installed. 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range. 2.Cancel the force or install the braking resistance. 3. Increase the acceleration time. 4.Install the braking unit and resistance.

E006	Deceleration overvoltage	<ol style="list-style-type: none"> 1.High input voltage. 2.Drag the motor to operate during the deceleration process. 3.The deceleration time is too short. 4.No braking unit and brake resistance are installed. 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range. 2. Cancel the force or install the braking resistance. 3. Increase deceleration time. 4. Install the braking unit and resistance.
E007	Constant speed overvoltage	<ol style="list-style-type: none"> 1. High input voltage. 2. There are external forces to drive the motor during operation. 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range. 2. Cancel the force or install the braking resistance.
E008	stop overvoltage	<ol style="list-style-type: none"> 1. Bus voltage detection disconnection, bus voltage detection circuit failure 	<ol style="list-style-type: none"> 1. check the bus voltage wire connection and change the powerboard
E009	Under-voltage fault	<ol style="list-style-type: none"> 1. Instantaneous power failure 2. The input voltage of the converter is not in the scope of the specification. 3. The bus voltage is abnormal. 4. The rectifier bridge and buffer resistance are abnormal. 5.Abnormal powerboard and control board 	<ol style="list-style-type: none"> 1. Reset failure. 2. Adjust voltage to normal range. 3. Seek technical support.
E010	Drive overloaded.	<ol style="list-style-type: none"> 1. Whether the load is too large or the motor is blocked. 2. The drive capacity is small. 	<ol style="list-style-type: none"> 1. Reduce load and check motor and mechanical conditions. 2. Select the drive with higher power
E011	Motor overload	<ol style="list-style-type: none"> 1. Whether the setting of the motor protection parameter H9-01 is appropriate. 2. Whether the load is too large or the motor is blocked. 3. The drive capacity is small 	<ol style="list-style-type: none"> 1. Set this parameter correctly. 2. Reduce load and check motor and mechanical conditions. 3. Select the drive with higher power
E012	Input phase loss	<ol style="list-style-type: none"> 1.The three-phase input power supply is abnormal. 2.Abnormal driving board, lightning protection board and control board. 	<ol style="list-style-type: none"> 1. Check and solve the problems existing in the peripheral circuit. 2. Seek technical support.
E013	Output phase loss and three phase output unbalanced	<ol style="list-style-type: none"> 1.Abnormal leads of the converter to the motor. 2.Unbalanced three-phase output of drive during motor operation. 3.Abnormal driving board and IGBT 	<ol style="list-style-type: none"> 1. Eliminate peripheral faults. 2. Check whether the three-phase winding of the motor is normal and eliminate. 3.Change the boards

E014	Module overheating	<ol style="list-style-type: none"> 1.The environment is too hot. 2.Air duct obstruction. 3.Fan damage 4.Thermal resistance of the module is damaged. 5.the drive module damage 	<ol style="list-style-type: none"> 1.Reduce the ambient temperature. 2.Clear the air duct. 3.Replace the fan 4.Replace the thermistor. 5.Replace the drive module.
E015	External equipment failure	<ol style="list-style-type: none"> 1.Input the signal of external fault via the multi-function terminal S. 	<ol style="list-style-type: none"> 1.Reset operation.
E016	Communication failure	<ol style="list-style-type: none"> 1.The upper computer is not working properly. 2.The communication line is abnormal. 3.The communication parameter group HD is not set correctly. 	<ol style="list-style-type: none"> 1.Check the upper computer connection. 2.Check the communication cable. 3.Set the communication parameters correctly.
E019	Motor tuning fault	<ol style="list-style-type: none"> 1. The motor parameters are not set according to the rating plate. 2. Parameter identification process time out. 	<ol style="list-style-type: none"> 1. Set motor parameters correctly according to the rating plate. 2. Check wiring from the drive to the motor
E021	EEPROM Read/write failure	<ol style="list-style-type: none"> 1.EEPROM chip damage 	<ol style="list-style-type: none"> 1.Replace main control board
E022	Drive hardware failure.(Clear latch timeout)	<ol style="list-style-type: none"> 1. Overvoltage 2. Overcurrent 	<ol style="list-style-type: none"> 1. Overvoltage fault treatment. 2. Overcurrent fault treatment.
E023	Short circuit to ground	<ol style="list-style-type: none"> 1.The motor is short circuit to the ground. 	<ol style="list-style-type: none"> 1.Replace cable or motor.
E024	AD Zero drift is too large	<ol style="list-style-type: none"> 1.Check Hall device abnormal 2. Powerboard abnormal 	<ol style="list-style-type: none"> 1.change the hall devices 2.change the powerboard
E026	Temperature sensor disconnection fault	<ol style="list-style-type: none"> 1.Temperature sensor bad connection 	<ol style="list-style-type: none"> 1.Check the temperature sensor wire connection
E027	User-defined fault. 1	<ol style="list-style-type: none"> 1.Input the signal of user-defined fault 1 via the multi-function terminal S. 	<ol style="list-style-type: none"> 1.Reset operation.
E028	User-defined fault. 2	<ol style="list-style-type: none"> 1.Input the signal of user-defined fault 2 via the multi-function terminal S. 	<ol style="list-style-type: none"> 1.Reset operation.
E029	Accumulated power-on time reached fault	<ol style="list-style-type: none"> 1.Accumulated power-on time reached the set value. 	<ol style="list-style-type: none"> 1.Use parameter initialization to clear record information.

E031	PID feedback disconnection fault	1.PID feedback is less than HA-26 setting value	1. Check PID feedback signal or set HA-26 as one suitable value
E037	STOP key on keyboard stop fault	1.In terminal running channel or communication running channel, press the stop key on the keyboard	1.Check whether it is human operation
E040	hardware current limit over time faulty	1. Whether the load is too large or the motor is blocked 2.The drive capacity is too small	1.Reduce the load and check the motor and mechanical conditions 2.Choose a frequency converter with a higher power rating
E041	Automatic resets times exceeds the limit	1.External fault or ac drive fault	1.Check the fault record for corresponding troubleshooting

8.2 Common Faults and Solutions

The following faults may be encountered during the operating of the drive. Please refer to the following methods for simple failure analysis:

Number	Fault phenomenon	Possible reasons	Solutions
1	Power-on and no display	No grid voltage or too low; Failure of switch-power supply on frequency converter drive board; The rectifier bridge is damaged; Frequency converter buffer resistance damage; Control board, keyboard failure; The control board is disconnected from the driver board and the keyboard;	Check the input power; Check the bus voltage; Replug 8 cores and 28 core ribbon cable; Seek factory service;
2	Display software version	The connection between the drive board and the control board is poor; Damage of components on the control board; The motor or motor line is short-circuited to ground; Hall failure; The grid voltage is too low;	Replug 8 cores and 28 core ribbon cable; Seek factory service;
3	Power-on and display "E023" alarm	The motor or output wires are short-circuited to ground Frequency converter damage;	Measuring the insulation of the motor and the output line with a megger; Seek factory service;

4	The drive display normally, and the "program version" is displayed during operation and immediately stopped	Fan damaged or blocked; The peripheral control terminal wiring has a short circuit to ground.	Replace the fan; Eliminate external short circuit fault
5	Frequently report E014 (module overheating failure)	High carrier frequency setting; Fan damage or duct blockage; Internal device damage (thermocouple or other);	Reduce carrier frequency (H0-22); Replace fan and clean air duct; Seek factory service;
6	The motor does not rotate after the drive running.	Motor and motor line; Parameter setting error of frequency converter (motor parameter); Poor connection between the drive board and the control board; Driver board failure;	Reconfirm the connection between the drive and the motor; Replace the motor or eliminate mechanical failure; Check and reset the motor parameters;
7	Input terminal disabled	Parameter setting error; External signal error; The OP and 24V jumper is loose; Control board failure;	Check and reset the H4 group related parameters; Reconnect external signal lines; Reconfirm OP and 24V jumper; Seek factory service;
8	Requency converter frequently display overcurrent and overvoltage faul	The motor parameter setting is not correct; The acceleration/deceleration time is not suitable; Load fluctuation;	Reset motor parameters or carry out motor tuning; Set appropriate acceleration/deceleration time; Seeking factories and services;
10	Power-on display EEEE	Damage of related devices on the control board;	Replace the control board;

Guarantee Agreement

Warranty of the company products executes in accordance with "the quality assurance" in instructions.

1. Warranty period is 12 months from the date of purchasing the product
2. Even within 12 months, maintenance will also be charged in the following situations:
 - 2.1. Incorrect operation (according to the manual) or the problems are caused by unauthorized repair or transformation.
 - 2.2. The problems are caused by exceeding the requirements of standards specifications to use the drive.
 - 2.3. After purchase, loss is caused by falling damage or improper transportation.
 - 2.4. The devices' aging or failure is caused by bad environment (corrosive gas or liquid).
 - 2.5. Earthquake, fire wind disaster, lightning, abnormal voltage or other accompanied natural disasters cause the damage.
 - 2.6. Damage is caused during transport (note: the mode of transportation is determined by customers, the company helps to handle the transferring procedures of goods).
 - 2.7. Unauthorized tearing up the product identification (e.g.: Nameplate, etc.); the serial number does not match the warranty card.
 - 2.8. Failing to pay the money according purchase agreement.
 - 2.9. Cannot objectively describe the installation, wiring, operation, maintenance or other using situation to the company's service units.