



SD200 AC Drive User Manual (Version: V3.1)

Open-loop Vector Type

# SD200 AC DRIVE

## User Manual



Version: V3.1



# Preface

Thank you for purchasing the SD200 series AC drive developed by Our company.

For the users who use this product for the first time, read the manual carefully.

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# Warranty Agreement

1. The warranty period of the product is 18 months (refer to the bar code on the equipment body). During the warranty period , if the product fails or damaged under the condition of normal use by following the instruction, we will be responsible for free maintenance.
2. Within the warranty period , maintenance will be charged for the damages caused by the following reasons :
  - The damage caused by improper use or repair/modification without prior permission.
  - The damage caused by fire , flood , abnormal voltage , other natural disasters and second disaster.
  - The hardware damage caused by artificial falling or transportation after purchase.
  - The damage caused by the improper operation.
  - The damage or failure caused by the trouble out of the equipment (e.g. : External device)
3. If there is any failure or damage to the product, please fill in the information of the Product Warranty Card in details correctly.
4. The maintenance fee is charged according to the newly adjusted Maintenance Price List of our company .
5. In general , the warranty card will not be re-issued. Please keep the card and present it to the maintenance personnel when asking for maintenance .
6. If there is any problem during the service , please contact the agent of our company or our company directly .
7. The company reserves the right to interpret this agreement

# Chapter 1 Safety and Cautions

## 1.1 Safety and Cautions Definition

Read this manual carefully so that you have a thorough understanding. Installation, commissioning or maintenance may be performed in conjunction with this chapter. Our company will assume no ability and responsibility for any injury or loss caused by improper operation.





### **Danger**






Operations which are not performed comply with the requirements may cause severe hurt or even death.




### **Note**

Operations which are not performed comply with requirements may cause personal injury or property damage.

## 1.2 Safety Cautions

Use Stage	Safety Grade	Precautions
Before Installation	 <b>Danger</b>	<ul style="list-style-type: none"><li>+ Do not install the equipment if you find water seepage, component missing or damage upon unpacking.</li><li>+ Do not install the equipment if the packing list does not conform to the product you received.</li></ul>
	 <b>Danger</b>	<ul style="list-style-type: none"><li>+ Handle the equipment with care during transportation to prevent damage to the equipment.</li><li>+ Do not use the equipment if any component is damaged or missing. Failure to comply will result in personal injury.</li><li>+ Do not touch the components with your hands. Failure to comply will result in static electricity damage.</li></ul>
During Installation	 <b>Danger</b>	<ul style="list-style-type: none"><li>+ Install the equipment on incombustible objects such as metal, and keep it away from combustible materials. Failures to comply may result in a fire.</li><li>+ Do not loosen the fixed screws of the components, especially the screws with the red marks.</li></ul>
	 <b>Note</b>	<ul style="list-style-type: none"><li>+ Do not drop wire end or screw into the AC drive. Failure it will result in damage to the AC drive.</li><li>+ Install the AC drive in places free of vibration and direct sunlight.</li><li>+ When two AC drives are laid in the same cabinet ,arrange the installation positions properly to ensure the cooling effect.</li></ul>

Use Stage	Safety Grade	Precautions
At wiring	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ A circuit breaker must be used to isolate the power supply and the AC drive. Failure to comply may result a fire.</li> <li>+ Ensure that the power supply is cut off before wiring. Failure to comply may result in electric shock.</li> <li>+ Never connect the power cables to the output terminals(U,V,W) of the AC drive. Pay attention to the marks of the wiring terminals and ensure correct wiring. Failure to comply may result in damage to the AC drive.</li> <li>+ Ensure that the main cable line comply with the standard, the line meets the EMC requirements and the area safety standard. Failure to comply may result in risk or accident.</li> <li>+ Never connect the power cables the braking resistor between the DC bus terminals P+, P-. Failure to comply may result in a fire.</li> </ul>
At wiring	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Use a shielded cable for the encoder, and ensure that the shielding layer is reliably grounded.</li> </ul>
Before Power-on	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Please confirm the peripheral equipment and cable converter is configured in this manual of the recommended model, all the configuration line in accordance with the connection method of the manual provides the correct wiring. Failure to comply will result in accidents.</li> <li>+ Check that the voltage class of the power supply is consistent with the rated voltage class of the AC drive.</li> </ul>
After Power-on	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Do not open the AC drive's cover after power-on. Failure to comply may result in electric shock.</li> <li>+ Do not touch the operation of AC drive during the hands is wet. Failure to comply will result in accident.</li> <li>+ Do not touch any I/O terminal of the AC drive. Failure to comply may result in electric shock.</li> <li>+ Do not change the default settings of the AC drive. Failure to comply will result in damage to the AC drive.</li> <li>+ Do not touch the rotating part of the motor during the motor auto-tuning or running. Failure to comply will result in accident.</li> </ul>
During Operation	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Signal detection must be performed only by qualified personnel during operation. Failure to comply will result in personal injury or damage to the AC drive.</li> <li>+ Do not touch the fan or the discharging resistor to check the temperature. Failure to comply will result in personal burnt.</li> </ul>

Use Stage	Safety Grade	Precautions
During Operation	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Avoid objects falling into the AC drive when it is running. Failure to comply will result in damage to the AC drive.</li> <li>+ Do not start or stop the AC drive by turning the contactor ON/OFF. Failure to comply will result in damage to the AC drive.</li> </ul>
After Power-on	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Do not repair or maintain the AC drive at power-on. Failure to comply will result in electric shock.</li> <li>+ Ensure that the AC drive is disconnected from all power suppliers before starting repair or maintenance on the AC drive.</li> <li>+ Repair or maintenance of the AC drive may be performed only by qualified personnel. Failure to comply will result in personal injury or damage to the AC drive.</li> </ul>
After Power-on	 <b>Danger</b>	<ul style="list-style-type: none"> <li>+ Set and check the parameters again after the AC drive is replaced.</li> </ul>

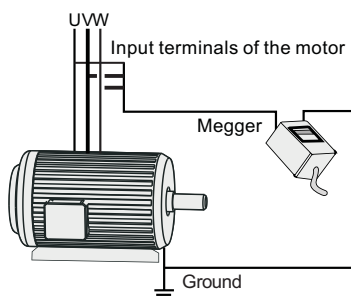
## 1.3 Cautions

### 1.3.1 Requirement on Residual Current Device(RCD)

The AC drive generates high leakage current during running, which flows earthing (PE) conductor. Thus install a type-B RCD at the transient and steady-state leakage current to ground that may be generated at startup and during running of the AC drive. You can select a specialized RCD with the function of suppressing high harmonics or general-purpose RCD with relatively large residual current.

### 1.3.2 Motor Insulation Test

Perform the insulation test when the motor is used for the first time, or when it is reused after being stored for a long time, or in a regular check-up, in order to prevent the poor insulation of motor windings from damaging the AC drive during the insulation test. A 500-V mega-Ohm meter is recommended for the test. The insulation resistance must not be less than 5 MΩ.



### 1.3.3 Thermal Protection of Motort

If the selected AC drive does not match the rated capacity of the motor , especially when the rated power of the AC drive is higher than that of the motor, adjust the parameters for motor protection in the AC drive or to install thermal relay to protect the motor .

### 1.3.4 Running Below and Above Rated Frequency

The AC drive provides frequency output of 0 to 600.00Hz. When the users use the frequency converter for a long time, please pay attention to the motor cooling or use of variable frequency motor. If the AC drive is required to run at over 50Hz, consider the capacity of the machine.

### 1.3.5 Vibration of mechanical device

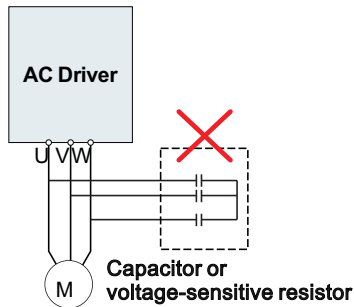
The AC drive may encounter the mechanical resonance point at some output frequencies, which can be avoided by setting the skip frequency. If the operating frequency of the customer coincide with the resonant frequency please modify the operating frequency or change the inherent resonance frequency of the mechanical system.

### 1.3.6 Motor heat and noise

The output of the AC drive is pulse width modulation (PWM) wave with certain harmonic frequencies, and therefore, the motor temperature, noise, and vibration are slightly greater than those when the AC drive runs at power frequency (50 Hz).

### 1.3.7 Voltage-sensitive device or capacitor on output side of the AC drive

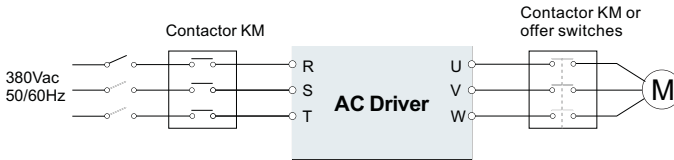
Do not install the capacitor for improving power factor or lightning protection voltage sensitive resistor on the output side of the AC drive because the output of the AC drive is PWM wave. Otherwise, the AC drive may suffer transient overcurrent or even bedamaged.



### 1.3.8 Contactor at the I/O terminal of the AC drive

When a contactor is installed between the input side of the AC drive and the power supply, the AC drive must not be started or stopped by switching the contactor on or off. If the AC drive has to be operated by the contactor, ensure that the time interval between switching is at least one hour since frequent charge and discharge will shorten the service life of the capacitor inside the AC drive.

When a contactor is installed between the output side of the AC drive and the motor, do not turn off the contactor when the AC drive is active. Otherwise, modules inside the AC drive may be damaged.



Do not start/stop the AC drive by switching the contactor on/off. If the AC drive has to be operated by the contactor, ensure that the time interval is at least one hour.

Turn on /off the contactor when the AC drive has no output. Otherwise, modules inside the AC drive may be damaged.

### 1.3.9 The Use Occasion of the External Voltage Out of Rated Voltage Range

The AC drive must not be used outside the allowable voltage range specified in this manual. Otherwise, the AC drive's components may be damaged. If required, use a corresponding voltage step-up or step-down device.

### 1.3.10 The Above Derating of the Default

Different power grade frequency converter has its default carrier frequency, when to run at a higher carrier frequency, the AC Drive must to reduce the amount when running.

### 1.3.11 Change Three Phase Input into Two Phase Input

It is not allowed to change the three phase AC drive into two phase one. Otherwise, it may cause it may cause fault or damage the AC drive.

### 1.3.12 The Protection of the Lighting Impulse

Although the AC drive has equipped with lightning overvoltage, overcurrent device, which has a certain protection function for the induction lightning. For the lightning prone areas, the user is necessary to install lightning protection device at the front of the AC drive, which will benefit to the service life of the transducer.

### **1.3.13 Ambient Temperature and De-rating**

The normal use of the frequency converter ambient temperature is  $-10^{\circ}\text{C}\sim 40^{\circ}\text{C}$ . Temperature exceeds  $40^{\circ}\text{C}$ , the equipment need to reduce the amount of use. The ambient temperature of each increase is reduced by 1.5%, the maximum use of the ambient temperature is  $50^{\circ}\text{C}$ .

### **1.3.14 Altitude and Derating**

In places where the altitude is above 1000m and the cooling effect reduces due to thin airt is necessary to de-rate the AC drive. Contact Our company for technical support.

### **1.3.15 Some Special Usages**

If writing that is not described in this manual, such as common DC bus is applied, contact the agent or Our company for technical support.

### **1.3.16 The Cautious of the AC drive Disposal**

The electrolytic capacitors on the main circuits and PCB may explore when they are burnt. Poisonous gas is generated when the plastic parts are burn. Treat them as ordinary industrial refer to relevant national laws and regulations.

### **1.3.17 Adaptable Motor**

1. The standard parameters of the adaptable motor is adaptable four-squirrel-cage asynchronous induction motor or PMSM. For other types of motor, select a proper AC drive according to the rated motor current.
2. The cooling fan and rotor shaft of general AC Drive are coaxial, which results in reduced cooling effect when the rotational speed declines. If variable speed is required, add a more powerful fan or replace.
3. The standard parameters of the adaptable motor have been configured inside the AC drive. It is still necessary to perform motor auto-tuning or modify the default values based on actual conditions. Otherwise, the running result and protection performance will be affected.
4. The AC drive may alarm or even be damaged when short-circuit exists on cables or inside the motor. Therefore, perform insulation short-circuit test when the motor and cables are newly installed or during routine maintenance. During the test, make sure that the AC drive is disconnected from the tested parts.



# Chapter 2 Product Information

## 2.1 Naming Rules

SD200 - 4T - 11 G / 15 P C

①                      ②                      ③                      ④                      ③                      ④                      ⑤

Field	Mark	Explanation	Content
Ac drive series	①	Ac drive series	SD200 series
Voltage Level	②	Voltage Level	2S:single-phase 220V 2T:Three-phase 220V 4T:Three-phase 380V
Adaptive Power	③	Adaptive Power	0.7KW~500KW
Function Type	④	Function Type	G:General P:Fan pump
braking Unit	⑤	braking Unit	Null:None C:Only braking unit

Figure 2-1 Name Designation Rules

## 2.2 Nameplate

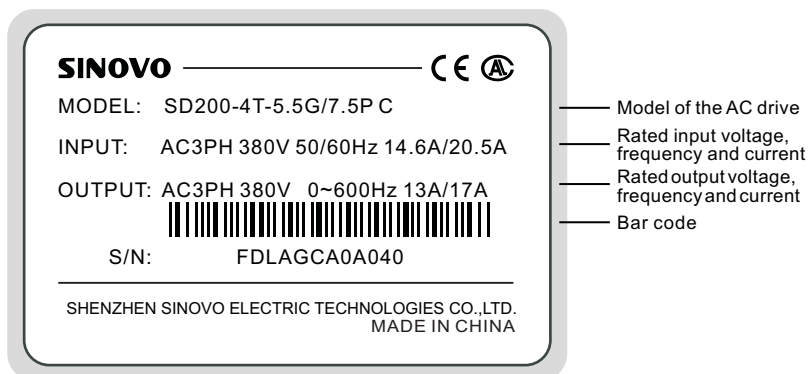


Figure 2-2 Name Designation Rules

## 2.3 SD200 Series of AC drive

Model	Power Capacity (KVA)	Input Current (A)	Output Current (A)	Adaptable Motor (KW)	Recommended input side main circuit wire (mm2)	Recommended output side main circuit wire (mm2)
single-phase 220V Range:-15%~20%						
SD200-2S-0.7G	1.5	8.2	4.7	0.75	2.5	2.5
SD200-2S-1.5G	3.0	14.0	7.5	1.5	4.0	2.5
SD200-2S-2.2G	4.0	23.0	10.0	2.2	6.0	4.0
single-phase 220V Range:-15%~20%						
SD200-2T-0.7G	1.5	5.5	4.7	0.75	2.5	2.5
SD200-2T-1.5G	3.0	7.7	7.5	1.5	4.0	2.5
SD200-2T-2.2G	4.0	12.0	10.0	2.2	4.0	4.0
Three-phase 380V Range:-15%~20%						
SD200-4T-0.7G	1.5	3.4	2.3	0.75	2.5	2.5
SD200-4T-1.5G	3.0	5.0	3.7	1.5	2.5	2.5
SD200-4T-2.2G	4.0	5.8	5.1	2.2	2.5	2.5
SD200-4T-4.0G	5.9	10.5	8.5	4.0	4.0	4.0
SD200-4T-5.5G	8.9	14.6	13	5.5	4.0	4.0
SD200-4T-7.5G	11	20.5	17	7.5	4.0	6.0
SD200-4T-11G	17	26.0	25	11	4.0	6.0
SD200-4T-15G	21	35.0	32	15	6.0	10
SD200-4T-18.5G	24	38.5	37	18.5	6	10
SD200-4T-22G	30	46.5	45	22	10	10
SD200-4T-30G	40	62.5	60	30	16	16
SD200-4T-37G	57	76.0	75	37	16	25
SD200-4T-45G	69	92.0	91	45	25	25
SD200-4T-55G	85	113	112	55	50	35
SD200-4T-75G	114	157	150	75	60	50
SD200-4T-90G	134	180	176	90	70	50
SD200-4T-110G	160	214	210	110	120	120
SD200-4T-132G	192	256	253	132	150	150
SD200-4T-160G	231	307	304	160	185	185
SD200-4T-185G	255	333	330	185	185	185
SD200-4T-200G	287	380	377	200	150*2	150*2
SD200-4T-220G	311	429	426	220	150*2	150*2
SD200-4T-250G	355	470	465	250	185*2	185*2
SD200-4T-280G	396	525	520	280	185*2	185*2
SD200-4T-315G	439	605	600	315	150*3	150*3
SD200-4T-350G	479	665	660	350	150*4	150*4
SD200-4T-400G	530	730	725	400	150*4	150*4
SD200-4T-450G	600	825	820	450	150*4	150*4
SD200-4T-500G	660	910	900	500	150*4	150*4

## 2.4 Technical Specifications

Item		Specification			
Basic Function	Maximum frequency	0~600Hz			
	Carrier frequency	2.0kHz~16.0kHz; The carrier frequency is automatically adjusted based on the load features.			
	Control mode	0: V/F control 1: Vector control 0 mode			
	Overload capacity	G type: 150% rated current for 60s		P type: 110% rated current for 60s	
	Torque boost	Auto torque boost		Manual torque boost: 0.1%~20.0%	
	V/F curve	Line	Multi-point	Square V/F curve	V/F separation
	Accelerate/Decelerate curve	Line or S-curve Acc/Dec mode, four kinds of Acc/Dec time Range of Acc/Dec time 0.0~6000.0s			
	DC braking	DC braking frequency : 0.00Hz to Maximum frequency braking time: 0.0 to 100.0s braking current : 0.0 to 150%			
	Jog control	Jog frequency range: 0.00Hz~F00.03Maximum frequency			
	Simple PLC Multi-speed	16-speed operating through built-in PLC or control terminal			
	Onboard PID	It realizes process-controlled closed loop control system easily.			
	Auto voltage regulation (AVR)	Jog frequency range: 0.00Hz~Maximum frequency			
	Overvoltage/overcurrent stall control	The current and voltage are limited automatically during the running process so as to avoid frequent tripping due to overvoltage/overcurrent.			
	Rapid current limit	It helps to avoid frequent over- current faults of the AC drive.			
	Protection function	Powered motor short circuit test; Input/output phase failure protection; Over current protection; voltage protection; Under voltage protection; Over heat protection ; Overload protection.			
Features	Non stop function	Load feedback energy compensates the voltage reduction so that the AC drive can continue to run in a short time in case of power interruption.			
	Speed tracking start	Identify the speed of rapidly rotating motor to realize a smooth start without any rush.			
	Rapid current limit	Rapid software and hardware current limiting technology helps to avoid frequent over-current fault.			
	Timing Control	Timing control: set the time range 0.0Min~6500.0Min			
	Multi-motor switch	Two independent motor parameters enable two motors switching control			
	Bus Support	Two independent Modbus communication, profibus-DP			
	Accessories	Brake unit, Simple IO expansion card, Multi-functional IO expansion card			

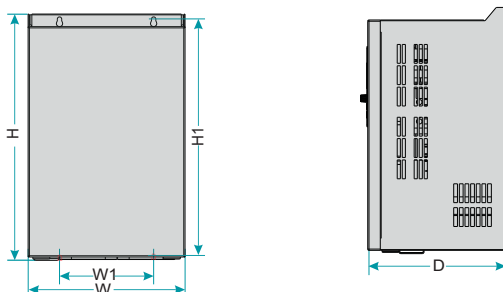
Item		Specification
Running	Command source	Given the control panel, control terminal, serial communication port given. It can be switched by a variety of ways.
	Frequency source	12 frequency sources: digital setting, analog voltage setting, analog current setting, pulse setting and serial port. It can be switched by a variety of ways.
	Auxiliary frequency source	12 auxiliary frequency source. Flexible implementation of auxiliary frequency tuning, frequency synthesis.
	Input terminal	Standard: <ul style="list-style-type: none"> <li>· Six digital input terminals, one of which support to 50kHz high-speed pulse input</li> <li>· Three analog input terminals, two of which supports -10V~10V voltage input</li> <li>· One support 0 ~ 10V voltage input or 0 ~ 20mA current input</li> </ul> Expansion capability: <ul style="list-style-type: none"> <li>· Two digital inputs</li> <li>· One analog input terminal, support 0-10.00V (0-20mA) input, and supports PT100 / Pt1000</li> </ul>
	Output terminal	Standard: <ul style="list-style-type: none"> <li>· One high-speed pulse output terminal (optional open collector type), support of 0 ~ 50kHz square wave signal output</li> <li>· One digital output terminal</li> <li>· Two relay output terminals</li> <li>· Two analog output terminals, support 0~20mA current output or 0~10V voltage output</li> </ul>
Display and operation	LED display	Display each parameter of function code group
	The key lock and function selection	Achieve some or all of the keys locked and define the scope of partial keys to prevent misuse.

## 2.5 Optional Parts

Name	Type	Function	Remark
Internal braking unit	Models followed by letter "C"	Models power under 22KW are installed with the internal braking unit as standard configuration	For 30KW model power, the braking unit is optional
External braking unit	SDBUN	37KW and above need to be configured with an external braking unit	Multiple braking ones are connected in parallel for the models above 90KW
Multi-function I/O expansion card	SDIO	Increase 3 digital inputs, 2 digital outputs, two relay outputs, two analog voltage input T_Motor	It applies to all models
Modbus communication card	SDRS485	One RS - 485 communication card, one CAN communication card.	It applies to all models
	SDCAN		
Profibus-DP card	SDDP	Profibus-DP card , DB9interface	It applies to all models

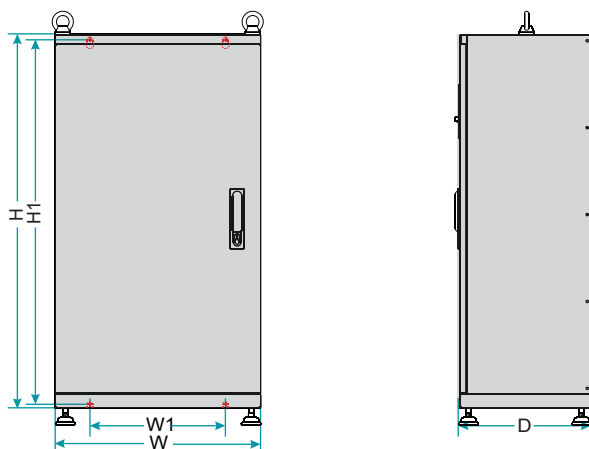
## 2.6 Product Outline, Installation Hole Size

### 2.6.1 SD200 Series 0.75KW~110KW



Model	inverter			Installation			GW(kg)
	H (mm)	W (mm)	D (mm)	H1 (mm)	W1 (mm)	Diameter (mm)	
SD200-4T-0.7G	190	110	150	178	98	Ø5	2.4
SD200-4T-1.5G							
SD200-4T-2.2G							
SD200-4T-4.0G	210	130	160	198	118	Ø5	3.5
SD200-4T-5.5G	250	155	176	236	141	Ø5	4.5
SD200-4T-7.5G							
SD200-4T-11G	285	170	162	270	135	Ø6	6.5
SD200-4T-15G	332	220	214	318	140	Ø7	10.3
SD200-4T-18.5G							
SD200-4T-22G	387	250	220	373	150		13
SD200-4T-30G							15
SD200-4T-37G	440	270	252	426	180		22.5
SD200-4T-45G							
SD200-4T-55G	550	300	258	534	200	Ø9	35.6
SD200-4T-75G	650	370	282	625	250		53
SD200-4T-90G							54
SD200-4T-110G							55

## 2.6.2 SD200 Series 132KW~185KW



Model	inverter			Installation			GW(kg)
	H (mm)	W (mm)	D (mm)	H1 (mm)	W1 (mm)	Diameter (mm)	
SD200-4T-132G	880	485	310	860	320	Ø13	99
SD200-4T-160G							
SD200-4T-185G							
SD200-4T-200G	1250	500	400	1000	440	Ø13	167
SD200-4T-220G							
SD200-4T-250G							
SD200-4T-280G	1350	650	400	1105	513	Ø13	206
SD200-4T-315G							
SD200-4T-350G							
SD200-4T-400G	1810	850	405	1410	513	Ø13	415
SD200-4T-450G							
SD200-4T-500G							

## 2.7 External Keypad Installation Dimensions

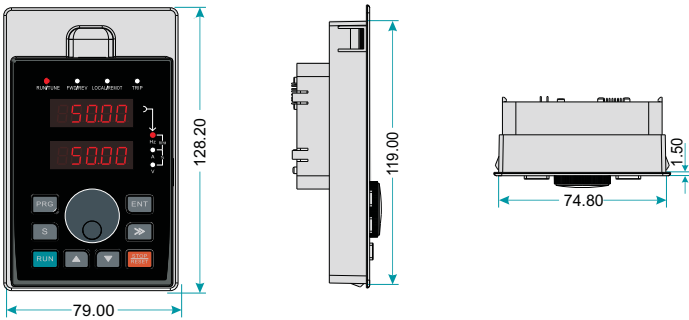


Figure 2-3 Keypad Installation dimensions

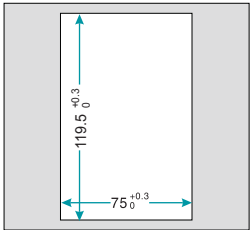


Figure 2-4  
Opening dimension diagram  
for keypad with base

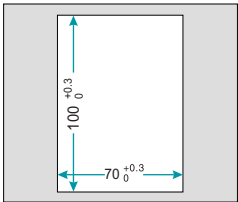
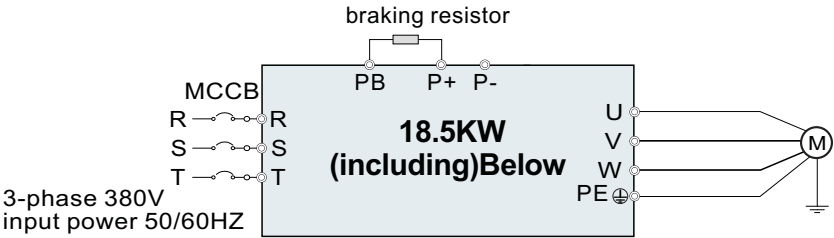


Figure 2-5  
Opening dimension diagram  
for keypad without base

## 2.8 Main Circuit Wiring Diagram



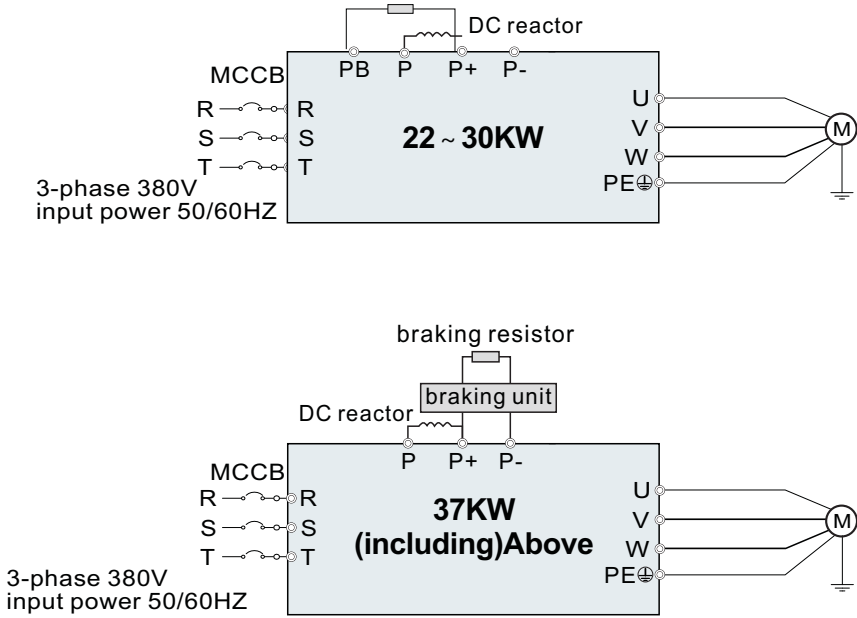


Figure 2-6 Main circuit wiring diagram

**Note:**

1. DC reactor, braking unit and braking resistor are optional accessories".
2. P1 and(+) are short circuited in factory, if need to connect with the DC reactor, please remove the contact tag between P1 and (+).
3. Do not install capacitor or surge suppressor on the output side of the AC drive. Otherwise, it may cause faults to the AC drive or damage to the capacitor and surge suppressor;
4. Input/output (main circuit) of the AC drive include harmonic components, which may interfere with the AC drive attachment communications equipment. Therefore, install an anti-aliasing filter to minimize the interference;



## 2.9 Control Circuit Wiring Diagram

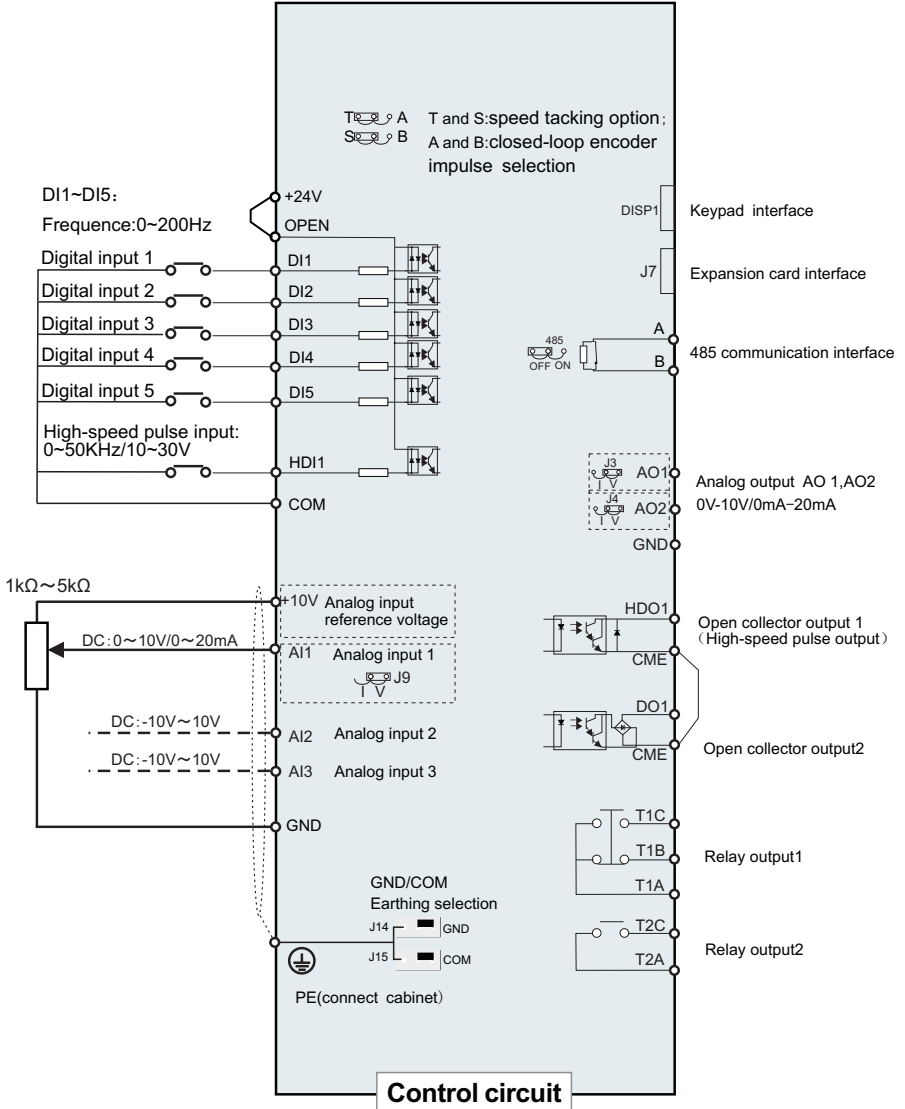


Figure 2-7 Wiring diagram of Control Circuit

## 2.10 Control Panel Terminals








Control Panel Terminal Function Instructions

Type	Terminal	Terminal name	Specification
Analog input	+10V	Analog input reference voltage	10.5V(+3%)
			Maximum output current 25mA/ the potentiometer resistance range is more than 4KΩ.
	GND	Analog ground	Internal isolated with COM
	AI1	Analog Input 1	0~20mA: Input resistance 500Ω, max input current is 25mA
			0~10V: Input resistance 100KΩ, max input voltage 12.5V
			Input range: 0~10VDC/0~20 mA, switched by jumper J9 on the control board and factory defaulted as voltage input.
Analog output	AI2	Analog Input 2	-10V~10V: Input resistance 25KΩ
	AI3	Analog Input 3	Max. input voltage range:-12.5V~+12.5V
	AO1	Analog output 1	0~20mA:Input resistance 200Ω~500Ω
			0~10V: Input resistance >10KΩ
	AO2	Analog output 2	Switched by jumper J3 on the control board and factory defaulted as voltage input.
	GND	Analog ground	Internal isolated with COM
Digital input	+24V	+24V	24V±10%: Internal isolated with GND
	OPEN	Digital input terminal common	Switch the high and low electric level during digital input, it was connected with + 24 V short circuit in factory which means it's effective when the digital input is with low level.
	COM	+24V	Internal isolated with GND
	DI1~DI5	Digital input 1-5	Input specification: 24VDC/5mA
			Frequency range: 0~200Hz; Voltage range: 10V~30V
	HDI1	High-speed pulse input / digital input 6	Voltage Pulse input: Maximum frequency 50KHz
			Voltage range: 10~30V
			Digital input: equal with DI1~DI5
Digital output	DO1	Open collector output	Voltage range: 0~24V
			Current range: 0~50mA
	HDO1	High-speed pulse output	Pulse output: 0~50KHz
	CME	DO1/HDO1 Digital output public ground	0~20mA: Input impedance: 500Ω, Max input current: 25mA
			CME and COM is internal isolated, but the factory has an external short circuit (DO1 default is + 24V drive). when DO1 driven with an external power supply, it must be disconnected the external shorting of CME and COM.

Control Panel Terminal Function Instructions(continued)

Type	Terminal	Terminal name	Specification
Relay output	T1A、T1B、T1C	Relay 1 output	T1A-T1B:NC T1A-T1C:NO
			Contact capacity: 250VAC/5A/30VDC/5A
	T2A、T2C	Relay 2 output	T2A-T2C:NO
			Contact capacity: 250VAC/3A/30VDC/3A
Rs485 communication	A	485 differential signal +	Speed rate1200/2400/4800/9600/19200/38400
	B	485 differential signal -	Use twisted pair or shielded cable, the longest distance:300m
	GND	Analog ground	Internal isolated with COM

Switching Dial Code Switch Function Description

Name	Jumpers Figure	Function	Factory setting
485		Rs485 communication terminating resistor selection ON: 120Ω termination resistor connection is valid OFF: Without termination resistor connection	OFF
AI1		I is the current input: 0~20mA. V is voltage input: 0~10V.	0~10V
AO1		I is current output: 0~20mA. V is voltage output: 0~10V.	0~10V
AO2		I is current output: 0~20mA. V is voltage output: 0~10V.	0~10V
T/A,S/B		Speed tracking / closed-loop encoder input function selection T and S group: speed tracking option A and B group: closed-loop encoder impulse selection	Note: only allow appear the following combination:T and S, or A and B 
J14,J15		Choose whether connect PE with GND/COM. Occasions with interference, Connect PE with GND/COM can improve the ability to resist the interference.	When no connection(Jumper is on the right side of the control board when you face to the control board)

**Note:**

For the selection of the jumper of T/A,S/B, when you choose the speed tracking start function, please set the combination of T and S.

# Chapter 3 Operation And Display

## 3.1 Introduction of the keypad

The keypad is used to control inverters, read the state data and adjust parameters.

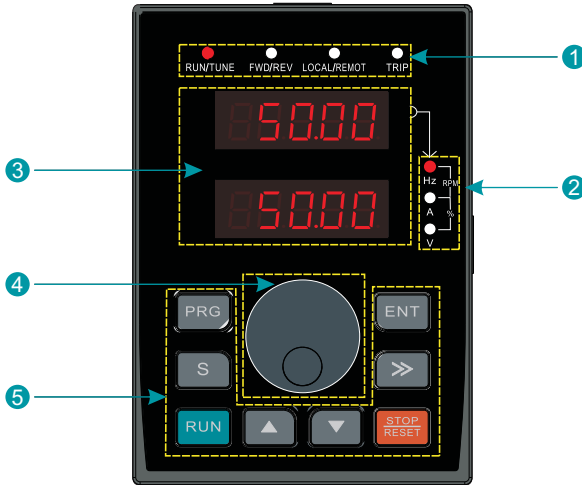
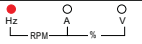
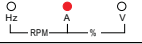
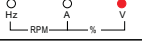
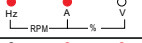











Figure 3-1 Keypad diagram

No.	Name	Instructions	
①	Status indicator	RUN/TUNE	LED off means that the AC drive is in the stopping state; LED blinking means the AC drive is in the parameter autotuning state; LED on means the AC drive is in the running state.
		FWD/REV	OFF means the AC drive is in the forward rotation state ON means the AC drive is in the reverse rotation state.
		LOCAL/ REMOT	○ LOCAL/REMOT : OFF      Operation panel control
			● LOCAL/REMOT : PN      Terminal control
			◐ LOCAL/REMOT : Flash      Communication control
		TRIP	LED for faults: LED on when the AC drive is in the fault state; LED off in normal state LED blinking means the AC drive is in the pre-alarm state.

No.	Name	Instructions		
2	Unit indicator	It represents the current display of the Keypad		
			Hz	Frequency unit
			A	Current unit
			V	Voltage unit
			RPM	Speed unit
			%	Percentage
3	Code Display Zone	5-figure LED display displays various monitoring data and alarm code such as set frequency and output frequency.		
4	Potentiometer	When the frequency source A or B is set to 1, the setting of the frequency source is determined by the analog potentiometer input voltage .		
5	Keypad button zone		Program key	Enter or escape from the first level menu and remove the parameter quickly
			Entry key	Enter the menu step-by-step confirm parameters
			Up key	Increase data or function code progressively
			Down key	Decrease data or function code progressively
			Right-Shift key	Move right to select the displaying parameter circularly in stopping and running mode. Select the parameter modifying digit during the parameter modification
			Run key	The key is used to operate on the AC drive in key operation mode
			Stop/Reset	This key is used to stop in running state; This key is used to reset all control modes in the fault state.
			S Key	F07.01=0 without function F07.01=1 jog running F07.01=2 shift key to change the display state F07.01=3 switch between forward and reverse F07.01=4 clear UP/DOWN setting F07.01=5 coast to stop F07.01=6 command frequency

## 3.2 Keypad Operation

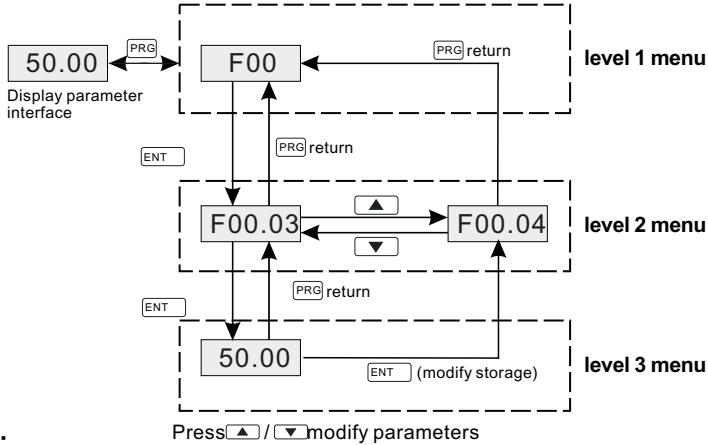
Operate the AC drive via operations panel. See the detailed structure description of function code in the brief diagram of function codes.

### 3.2.1 How to modify the function codes of the inverter

The AC drive has three-level menus, they are:

1. Group number of function code(first-level menu)
- 2.Tab of function code(second-level menu)
- 3.Set value of function code(third-level menu)

Operation procedure on the operation panel:



#### Note:

Press both the "PRG" and the "ENT" key to return to level2 menu from the level3 menu. The difference is: pressing "ENT" will save the set parameters into the control panel, and then return to the level2 menu with shifting to the next function code automatically; while pressing "PRG" will directly return to the level 2 menu without saving the parameters, and keep staying at the current function code.

In Level 3 menu, if the parameter has no blinking digit, it means that the parameter cannot be modified. This may be because:

- a. Such a function code is only readable, such as, AC drive model, actually detected parameter and running record parameter;
- b. Such a function code cannot be modified in the running state and can only be changed to stop.

**Example:** Set function code F0C.02 from 10.00Hz to 15Hz.

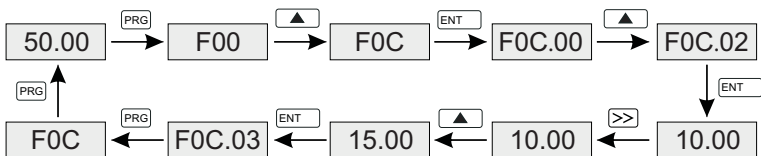


Figure 3-2 Modifying parameters diagram

# Chapter 4 Function Parameters Table

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## 4.1 Function Parameters Table

The function parameters of SD200 series AC drive have been divided into 18 groups(F00-F0F and A01-A03) according to the function. Each function group contains certain function codes applying 3-level menus. For example, "F08.08" means the eighth function code in the F8 group function, F0F group is factory Reserved, and users are forbidden to access these parameters.

For the convenience of function codes setting, the function group number corresponds to the first level menu, the function code corresponds to the level 2 menu and the function code corresponds to the level 3 menu.

1. Below is the instruction of the function lists:

The first line "Function code": codes of function parameter group and parameters;

The second line "Name": full name of function parameters;

The third line "Setting range": effective setting value of the function parameters;

The fourth line "Default value": the original factory values of the function parameter;

The fifth line "Modify": the modifying character of function codes (the parameters can be modified or not and the modifying conditions), below is the instruction:

"○": means the set value of the parameter can be modified on stop and running state;

"◐": means the set value of the parameter can not be modified on the running state;

"●": means the value of the parameter is the real detection value which can not be modified.

2. "Parameter radix" is decimal (DEC), if the parameter is expressed by hex, then the parameter is separated from each other when editing. The setting range of the certain bits are 0-F (hex).

3. "The default value" means the function parameter will restore to the default value during default parameters restoring. But the detected parameter or recorded value won't be restored.

4. For a better parameter protection, the AC drive provides password protection to the parameters. After setting the password (set F07.00 to any non-zero number), the system will come into the state of password verification firstly after the user press "PRG" to come into the function code editing state. And then "0.0.0.0.0" will be displayed. Unless the user input right password, they cannot enter into the system. For the factory setting parameter zone, it needs correct factory password (remind that the users cannot modify the factory parameters by themselves, otherwise, if the parameter setting is incorrect, damage to the AC drive may occur). If the password protection is unlocked, the user can modify the password freely and the AC drive will work as the last setting one. When F07.00 is set to 0, the password can be canceled. If F07.00 is not 0 during powering on, then the parameter is protected by the password. When modify the parameters by serial communication the function of the password follows the above rules, too.

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
<b>Group F00 Basic Function Group</b>				
F00.00	Motor 1 control mode	0: V/F control 1: Vector control 0 mode	1	⊙
F00.01	Run command channel	0: Keypad run command channel(LED is OFF) 1: Terminal command channel / Keypad STOP disabled(LED is ON) 2: Terminal command channel / Keypad STOP enable(LED is ON) 3:Communication command / Keypad STOP disabled(LED is flashes) 4:Communication command / Keypad STOP enabled(LED is flashes)	0	○
F00.02	Communication run command channel selection	0: MODBUS Communication channel 1: CAN Communication channel 2: Profibus-DP communication channel Note: 1,2 means to extension, need to insert the card	0	○
F00.03	Max output frequency	F00.04~600.00Hz	50.00Hz	⊙
F00.04	Upper limit frequency	F00.05~F00.03(Maximum frequency)	50.00Hz	⊙
F00.05	Lower limit frequency	0.00Hz~F00.04 (Operating frequency upper limit)	0.00Hz	⊙
F00.06	A frequency command	0: Keypad digital setting 1: Keypad potentiometer setting 2: Analog AI1 setting 3: Analog AI2 setting 4: Analog AI3 setting 5: High-speed pulse HDI1 setting 6: Simple PLC program setting 7: Multi-speed running setting	0	○
F00.07	B frequency command	8: PID control setting 9: MODBUS Communication setting 10: CAN Communication setting 11: Profibus-DP communication setting Note: 10,11 means to extension function, need to insert the card	3	○
F00.08	B frequency command reference	0: Maximum output frequency 1: A frequency command	0	○
F00.09	B frequency maximum output frequency	0.0~100.0%	100.0%	○



**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F00.10	Combination of the setting codes	0: A 1: B 2: A+B 3: A-B 4: MAX(A,B) 5: MIN(A,B)	0	○
F00.11	Keypad setting frequency	0.00 Hz~F00.03(Max. frequency)	50.00Hz	○
F00.12	Acc-time 1	0.0~6000.0s	Model dependent	○
F00.13	Dec-time 1	0.0~6000.0s	Model dependent	○
F00.14	Running direction	0: Runs at the default direction 1: Runs at the reverse direction 2: Forbid to run in reverse direction	0	○
F00.15	Carrier frequency setting	2.0~16.0kHz	Model dependent	○
F00.16	Speed track direction setting	0: Forward and reverse can be tracked 1: Fixed forward track 2: Fixed reverse track	0	◎
F00.17	Motor parameter autotuning	0: No operation 1: Rotation autotuning 2: Static autotuning	0	◎
F00.18	Function restore parameter	0: No operation 1: Restore the default value 2: Cancel the fault record	0	◎
<b>Group F01 Startup and stop Control</b>				
F01.00	Start mode	0: Start-up directly 1: Start-up after DC braking 2: Start-up after Speed tracking	0	◎
F01.01	Starting frequency of direct start	0.00~10.00Hz	0.50Hz	◎
F01.02	Retention time of the starting frequency	0.0~100.0s	0.0s	◎
F01.03	The braking current before starting	0.0~150.0%	0.0%	◎
F01.04	The braking time before starting	0.0~100.0s	0.0s	◎
F01.05	ACC/DEC selection	0: Linear type 1: S-curve type	0	◎
F01.06	S curve start ratio	0.0~50.0%(Acc/Dec time)	30.0%	◎
F01.07	S curve end ratio	0.0~50.0%(Acc/Dec time)	30.0%	◎

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F01.08	Stop Mode	0: Decelerate to stop 1: Coast to stop	0	○
F01.09	Starting frequency of DC braking	0.00~F00.03(Max. frequency)	0.00Hz	○
F01.10	Waiting time of DC braking	0.00~100.0s	0.05s	○
F01.11	Stopping DC braking current	0.0~150.0%	0.0%	○
F01.12	Stopping DC braking time	0.0~100.0s	0.0s	○
F01.13	Dead time of FWD/REV rotation	0.0~6000.0s	0.0s	○
F01.14	Stopping frequency	0.00~100.00Hz	0.50Hz	○
F01.15	Reserved	Reserved	0	●
F01.16	Reserved	Reserved	0	●
F01.17	The protection of theelectric terminals	0: Invalid operation command on terminal 1: valid operation command on terminal	0	○
F01.18	Select restart after power failure	0: prohibit restart 1: allow restart	0	○
F01.19	Restart waiting time	0.0~6000.0s(F01.18 equal to1is valid)	1.0s	○
F01.20	Reserved	Reserved	0	●
F01.21	Action if running frequency<lower limit frequency(valid>0)	0: Operating frequency lower limit 1: Stop(close PWM output) 2: Zero speed operation	0	◎
F01.22	Reserve			
<b>Group F02 Motor 1 Parameter Group</b>				
F02.00	Load Type	0: G type(Constant torque/ overloaded type) 1: P type(Variable torque/ lightload type)	0	◎
F02.01	Motor type 1	0: Ordinary asynchronous motor (with low-frequency compensation) 1: AC drive motor (without low frequency compensation)	0	◎
F02.02	Rated power of motor 1	0.1~1000.0kW	Model dependent	◎
F02.03	Rated voltage of motor 1	0~1200V	Model dependent	◎
F02.04	Rated current of motor 1	0.8~6000.0A	Model dependent	◎
F02.05	Rated frequency of motor 1	0.01Hz~F00.03(Maximum)	50.00Hz	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F02.06	Rated speed of motor1	1~36000rpm	Model dependent	○
F02.07	Stator resistance of motor 1	0.001~65.535Ω	Model dependent	○
F02.08	rotor resistance of motor 1	0.001~65.535Ω	Model dependent	○
F02.09	leakage inductance of motor 1	0.1~6553.5mH	Model dependent	○
F02.10	Mutual inductance of motor 1	0.1~6553.5mH	Model dependent	○
F02.11	Non-load current of motor 1	0.1~6553.5A	Model dependent	○
F02.12~F02.24	Reserved	0	0	●
F02.25	Motor 1 overload protection selection	0: Protection is not valid 1: Protection is valid	1	◎
F02.26	Motor 1 overload protection coefficient	50.0~120.0%	100.0%	○
<b>Group F04 V / F Control Group</b>				
F04.00	Motor 1V / F curve setting	0: Straight line V / F curve 1: Multi-dots V / F curve 2: 1.3th power low torque V/F curve 3: 1.7th power low torque V/F curve 4: 2.0th power low torque V/F curve 5: Customized V/F(V/F separation)	0	◎
F04.01	Torque boost of motor 1	0.0%(automatic torque boost) 0.1%~20.0%(Manual torque boost)	0.0%	○
F04.02	Torque boost close of motor 1	0.0%~50.0% (Relative motor 1 rated frequency)	20.0%	○
F04.03	V/F frequency 1 of motor 1	0.00Hz~F04.05	0.00Hz	○
F04.04	V/F Voltage 1 of motor 1	0.0%~100.0%(motor1 rated voltage)	00.0%	○
F04.05	V/F frequency 2 of motor 1	F04.03~F04.07	0.00Hz	○
F04.06	V/F Voltage 2 of motor 1	0.0%~100.0%(motor1 rated voltage)	00.0%	○
F04.07	V/F frequency 3 of motor 1	F04.05~F02.02 (motor1 rated frequency)	0.00Hz	○
F04.08	V/F Voltage 3 of motor 1	0.0%~100.0%(motor1 rated voltage)	00.0%	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F04.09	V/F slip compensation on gain of motor 1	0.0~200.0%	100.0%	○
F04.10	Vibration control factor at low frequency of motor 1	0~30	2	○
F04.11	Vibration control factor at high frequency of motor 1	0~30	2	
F04.12	Vibration control threshold of motor 1	0.00Hz~F00.03(max. frequency)	30.00Hz	○
F04.13	Motor 2 V/F curve setting	0: Straight V / F curve 1: Multi-point V / F curve 2: 1.3 thpower decreasing torque V/F curve 3: 1.7 th power decreasing torque V/F curve 4: 2.0 th power decreasing torque V/F curve 5: Custom V / F (V / F separation)	0	◎
F04.14	Torque boost of motor 2	0.0%: automatic torque boost; 0.1%~20.0%	0.0%	○
F04.15	Torque boost close of motor 2	0.0%~50.0% (relative to motor rated frequency)	20.0%	○
F04.16	V/F frequency 1 of motor 2	0.00Hz~F04.18	0.00Hz	○
F04.17	V/F voltage 1 of motor 2	0.0%~100.0%(motor 2 rated voltage)	00.0%	○
F04.18	V/F frequency 2 of motor 2	F04.16~F04.20	00.00Hz	○
F04.19	V/F voltage 2 of motor 2	0.0%~100.0%(motor 2 rated voltage)	00.0%	○
F04.20	V/F frequency 3 of motor 2	F04.18~F0D.06(motor 2 rated frequency)	00.00Hz	○
F04.21	V/F voltage 3 of motor 2	0.0%~100.0(motor 2 rated voltage)	00.0%	○
F04.22	V/F slip compensation gain of motor 2	0.0~200.0%	100%	○
F04.23	Vibration control factor at low frequency of motor 2	0~30	2	○
F04.24	Vibration control factor at high frequency of motor 2	0~30	2	○
F04.25	Vibration control threshold of motor 2	0.00Hz~F00.03(max. frequency)	30.00Hz	○
F04.26	Energy-saving operation	0: No operation 1: Automatic energy-saving operation	0	◎

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F04.27	Voltage setting	0: Keypad: the output voltage is determined by F04.28 1: AI1 setting voltage 2: AI2 setting voltage 3: AI3 setting voltage 4: HDI1 setting voltage 5: Multi-setp setting voltage (setting value is determined by F0B set of parameters of multi-speed ) 6: PID setting voltage 7: MODBUS communication setting voltage 8: CAN communication setting voltage 9: Profibus-DP Communication setting voltage Note: 8,9 means to extension, it need to insert the card	0	○
F04.28	Keypad setting voltage	0.0%~100.0%	100.0%	○
F04.29	Voltage increasing time	0.0~6000.0s	5.0s	○
F04.30	Voltage decreasing time	0.0~6000.0s	5.0s	○
F04.31	Maximum output voltage	F04.32~100.0% ( the rated voltage of the motor)	100.0%	◎
F04.32	Minimum output voltage	0.0%~F04.31 ( the rated voltage of the motor)	0.0%	◎
F04.33	AVR function selection	0: Invalid 1: Valid	1	○
F04.34	Reserved	0	0	●
<b>Group F05 Input Terminal Group</b>				
F05.00	HDI1 input selection	0: High pulse input ( see F05.29 ~ F05.34) 1: Digital inputs ( see F05.08)	0	◎
F05.01	DI1 terminals function selection	0: No function 1: Forward rotation operation 2: Reverse rotation operation 3: Three-wire control operation 4: Forward Jogging 5: Reverse Jogging 6: Coast to stop 7: Fault reset 8: Operation Pause 9: External fault input 10: Increase frequency setting (UP) 11: Decrease frequency setting (DOWN) 12: Frequency setting clear 13: Shift between A setting and B setting 14: Shift between combination setting and A setting	1	◎
F05.02	DI2 terminals function selection		4	◎
F05.03	DI3 terminals function selection		7	◎

Function Parameters Table

Function code	Name	Setup range	Default Value	Modification
F05.05	DI5 terminals function selection	15: Shift between combination setting and B setting 16: Multi-step speed terminal 1 17: Multi-step speed terminal 2 18: Multi-step speed terminal 3 19: Multi-step speed terminal 4 20: Multi-step speed pause 21: DEC/ACC time 1 22: DEC/ACC time 2	0	⊙
F05.06	DI6 terminals function selection (extension card function)	23: Simple PLC stop reset 24: Simple PLC pause 25: PID control pause 26: Traverse pause (stop at the current frequency) 27: Traverse reset (return to the center frequency) 28: Counter reset 29: Torque control disabling	0	⊙
F05.07	DI7 terminals function selection (extension card function)	30: DEC/ACC disabling 31: Counter triggering 32: Length reset 33: Cancel the frequency change setting temporarily 34: DC brake 35: Shift the motor 1 into motor 2 36: Shift the command to the keypad 37: Shift the command to the terminal1 38: Shift the command to the terminal 2 39: Shift the command to the communication 1 40: Shift the command to the communication 2	0	⊙
F05.08	HDI1 terminal function selection	41: Model dependent 42: PID Parameters Switching 43: External terminal stop (equal to keypad STOP) 44: PID second digital given switching terminal 45: External fault input 2 46: Length counter input terminals 47~63: RESERVE	0	⊙
F05.09	Polarity selection of the input terminals	0x00~0xFF	0x00	○
F05.10	ON-OFF filter time	0.000~1.000s	0.010s	○
F05.11	Virtual terminals setting	0: Virtual terminal disabled 1: MODBUS communication virtual terminal enabled 2: CAN communication virtual terminal is valid 3: Profibus-DP communication virtual terminal is valid	0	○
F05.12	Terminals control running mode	0: 2-wire control 1 1: 2-wire control 2 2: 3-wire control 1 3: 3-wire control 2	0	⊙
F05.13	Switch-on delay of DI1 terminal	0.000~50.000s	0.000s	○
F05.14	Switch-off delay of DI1 terminal	0.000~50.000s	0.000s	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F05.15	Switch-on delay of DI2 terminal	0.000~50.000s	0.000s	○
F05.16	Switch-off delay of DI2 terminal	0.000~50.000s	0.000s	○
F05.17	Switch-on delay of DI3 terminal	0.000~50.000s	0.000s	○
F05.18	Switch-off delay of DI3 terminal	0.000~50.000s	0.000s	○
F05.19	Switch-on delay of DI4 terminal	0.000~50.000s	0.000s	○
F05.20	Switch-off delay of DI4 terminal	0.000~50.000s	0.000s	○
F05.21	Switch-on delay of DI5 terminal	0.000~50.000s	0.000s	○
F05.22	Switch-off delay of DI5 terminal	0.000~50.000s	0.000s	○
F05.23	Switch-on delay of DI6 terminal	0.000~50.000s	0.000s	○
F05.24	Switch-off delay of DI6 terminal	0.000~50.000s	0.000s	○
F05.25	Switch-on delay of DI7 terminal	0.000~50.000s	0.000s	○
F05.26	Switch-off delay of DI7 terminal	0.000~50.000s	0.000s	○
F05.27	Switch-on delay of HDI1 terminal	0.000~50.000s(only F05.00=1 enable)	0.000s	○
F05.28	Switch-off delay of HDI1 terminal	0.000~50.000s(only F05.00=1 enable)	0.000s	○
F05.29	Hdi high-speed pulse input function selection 0: Frequency setting input 1: Counter input 2: Length counting input		0	◎
F05.30	Lower limit frequency of Hdi1	0.00KHz~F05.32	0.00 KHz	○
F05.31	Corresponding setting of lower limit frequency of HDI1	-100.0%~100.0%	0.0%	○
F05.32	Upper limit frequency of HDI 1	F05.30~50.00KHz	50.00 KHz	○
F05.33	Corresponding setting of upper limit frequency of HDI1	-100.0%~100.0%	100.0%	○
F05.34	HDI1 frequency input filter time	0.000s~10.000s	0.100s	○

Function Parameters Table

Function code	Name	Setup range	Default Value	Modification
F05.35	Reserved	0	0.010s	●
<b>Group F06 Output Terminal Group</b>				
F06.00	HDO1 output	0: Open collector pole high speed pulse output( See F06.16 for detailed information of the related function) 1: Open collector pole output(See F06.02 for detailed information of the related function)	0	◎
F06.01	DO1 output	0: Invalid 1: In operation 2: Forward rotation operation 3: Reverse rotation operation 4: Jogging operation 5: AC drive fault 6: Frequency degree test FDT1 7: Frequency degree test FDT2 8: Frequency arrival 9: Zero-speed running 10: Upper limit frequency arrival 11: Lower limit frequency arrival 12: Ready for operation 13: Pre-Magnetizing	0	○
F06.02	HDO1 output	14: Overload pre-alarming 15: Underload per-alarming 16: Completion of Simple PLC stage 17: Completion of Simple PLC Circle 18: Setting count value arrival 19: Defined count value arrival 20: External fault valid 21: Length arrival	0	○
F06.03	Relay T1 output	22: Running time arrival 23: MODBUS communications virtual terminal output 24: AC drive is sleeping 25: PROFIBUS communication virtual terminals output 26: Any frequency 1 arrival 27: Any frequency 2 arrival; 28~30: Reserved	1	○
F06.04	Relay T2 output		5	○
F06.05	Polarity of output terminals	0x00~0x0F: BIT3 BIT2 BIT1 BIT0 T2 T1 HDO1 DO1	0x00	○
F06.06	DO1 switch-on delay time	0.000~50.000s	0.000s	○
F06.07	DO1 switch- off delay time	0.000~50.000s	0.000s	○
F06.08	HDO1 switch-on delay time	0.000~50.000s(only F06.00=1 enable)	0.000s	○
F06.09	HDO1 switch- off delay time	0.000~50.000s(only F06.00=1 enable)	0.000s	○
F06.10	T1 switch-on delay time	0.000~50.000s	0.000s	○
F06.11	T1 switch-off delay time	0.000~50.000s	0.000s	○
F06.12	T2 switch-on delay time	0.000~50.000s	0.000s	○
F06.13	T2 switch-off delay time	0.000~50.000s	0.000s	○



**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F06.14	AO1 output	0: Running frequency 1: Set frequency 2: Ramp reference frequency 3: Running rotation speed 4: Output current (relative to the rated current of AC drive) 5: Output current (relative to the rated current of the motor)	0	○
F06.15	AO2 output	6: Output voltage 7: Output torque 8: Set torque value 9: Output torque 10: Analog A11 input value 11: Analog A12 input value 12: Analog A13 input value	0	○
F06.16	HDO1 output	13: High speed pulse HDI1 input value 14: PID reference 15: PID feedback 16: Modbus communications reference 1 17: Modbus communications reference 2 18: Bus voltage 19: Profibus-DP communication given 1 20: Profibus-DP communication given 2	0	○
F06.17	Lower output limit of AO1	-100.0%~F06.19	0.0%	○
F06.18	Corresponding AO1 output of lower limit	0.00V~10.00V	0.00V	○
F06.19	Upper output limit of AO1	F06.17~100.0%	100.0%	○
F06.20	The corresponding AO1 output of upper limit	0.00V~10.00V	10.00V	○
F06.21	AO1 output filter time	0.000s~10.000s	0.000s	○
F06.22	Lower output limit of AO2	-100.0%~F06.24	0.0%	○
F06.23	Corresponding AO2 output of lower limit	0.00V~10.00V	0.0%	○
F06.24	Upper output limit of AO2	F06.22~100.0%	100.0%	○
F06.25	The corresponding AO2 output of upper limit	0.00V~10.00V	10.00V	○
F06.26	AO2 output filter time	0.000~10.000s	0.000s	○
F06.27	Lower output limit of HDO1	0.0%~F06.29	0.0%	○
F06.28	Corresponding HDO1 output of lower limit	0.00~50.00kHz	0.00Hz	○
F06.29	Upper output limit of HDO1	F06.27~100.0%	100.0%	○
F06.30	Corresponding HDO1 output of upper limit	0.00~50.00kHz	50.00 kHz	○
F06.31	HDO1 output filter time	0.000s~10.000s	0.000s	○
<b>Group F07 HMI Group</b>				
F07.00	User's password	0~65535	0	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F07.01	The key of S function selection	0: Without function 1: Jogging 2: Shift the display state by the shifting key 3: Shift between forward rotations and reverse rotations 4: Clear UP / DOWN settings 5: Coast to stop 6: Command source switch	0	⊙
F07.02	Parameters state 1	0x0000~0xFFFF BIT0: Running frequency(Hz ON) BIT1: Setting frequency(Hz flickering) BIT2: Bus voltage(V ON) BIT3: Output voltage(V ON) BIT4: Output current(A ON) BIT5: Running rotation speed (rpm ON) BIT6: Output power(% ON) BIT7: Output torque(% ON) BIT8: PID reference (% ON) BIT9: PID feedback(% ON) BIT10: Input state BIT11: Output terminal state BIT12: Torque setting value(% ON) BIT13: Pulse count value BIT14: Length value BIT15: PLC current segment number	0x0031	○
F07.03	Parameters state 2	0x0000~0x1FFF BIT0: The current number of multistage speed BIT1: AI1(V on) BIT2: AI2(V on) BIT3: AI3(V on) BIT4: HDI frequency BIT5: Motor overload percentage(% on) BIT6: The inverter overload percentage(% on) BIT7: Ramp frequency given value(Hz on) BIT8: Linear speed BIT9: AC inlet current(A on) BIT10: Set rotary speed BIT11: Set linear speed BIT112: IGBT temperature BIT113~15: Reserve	0X0000	○
F07.04	Parameters for stopping state	0x0000~0xFFFF BIT0: Set frequency(Hz on, frequency flicking slowly) BIT1: Bus voltage(V on) BIT2: Input terminals state BIT3: Output terminals state BIT4: PID reference(% flicking) BIT5: Set rotary speed BIT6: Torque reference(% on) BIT7: AI1(V on) BIT8: AI2(V on) BIT9: AI3(V on) BIT10: HDI1 frequency	0x03FF	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F07.04	Parameters for stopping state	BIT11: PLC current stage BIT12: Set linear speed BIT13: Pulse counters BIT14: Length value BIT15: IGBT temperature	0x03FF	○
F07.05	Frequency coefficient	0.01~20.00 Display frequency=Running frequency ×F07.05	1.00	○
F07.06	Rotation Speed	0.1~999.9% Mechanical rotation speed=60× running frequency×F07.06/Motor pole pairs	100.0%	○
F07.07	Linear speed coefficient	0.1~999.9% Mechanical rotation speed=60×diapalyed running frequency×F07.06/Motor pole pairs	1.0%	○
F07.08	Rectifier bridge module temperature	-20.0~120.0	----	●
F07.09	Converter module temperature	-20.0~120.0	----	●
F07.10	Software version	1.00~655.35	----	●
F07.11	Local accumulative running time	0~65535h	----	●
F07.12	Reserved	0	----	●
F07.13	Reserved	0	----	●
F07.14	Load Type	0: G type Constant torque load 1: P type Variable torque load	----	●
F07.15	AC drive rated power	0.4~1000.0kW	----	●
F07.16	AC drive rated voltage	20~1200V	----	●
F07.17	AC drive rated current	0.1~6000.0A	----	●
F07.18	Current fault type	Please refer to Chapter 5 Fault Instruction and Solution	----	●
F07.19	The 1 times before fault type		----	●
F07.20	The 2 times before fault type		----	●
F07.21	The 3 times before fault type		----	●
F07.22	The 4 times before fault type		----	●
F07.23	The 5 times before fault type		----	●
F07.24	Running frequency at current fault	----	0.00Hz	●

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F07.25	Ramp reference frequency at current fault	----	0.00Hz	●
F07.26	output voltage at the current fault	----	0V	●
F07.27	output current at current fault	----	0.0A	●
F07.28	Bus voltage at current fault	----	0.0V	●
F07.29	The Max. temperature at current fault	----	0.0	●
F07.30	Input terminals state at current fault	----	0	●
F07.31	Output terminals state at current fault	----	0	●
F07.32	Running frequency at previous fault	----	0.00Hz	●
F07.33	Ramp reference frequency at previous fault	----	0.00Hz	●
F07.34	Output voltage at previous fault	----	0V	●
F07.35	The output current at previous fault	----	0.0A	●
F07.36	Bus voltage at previous fault	----	0.0V	●
F07.37	The Max. temperature at previous fault	----	0.0°C	●
F07.38	Input terminals state at previous fault	----	0	●
F07.39	Output terminals state at previous fault	----	0	●
F07.40	Running frequency at previous 2 fault	----	0.0A	●
F07.41	Ramp reference frequency at previous 2 fault	----	0.0V	●
F07.42	Output voltage at previous 2 faults	----	0.0°C	●
F07.43	Output current at previous 2 fault	----	0	●
F07.44	Bus voltage at previous 2 fault	----	0	●
F07.45	The Max. temprature at previous 2 fault	----	0.0°C	●

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F07.46	Input terminals state at previous 2 fault	----	0	●
F07.47	Output terminals state at previous 2 fault	----	0	●
<b>Group F08 Strengthen Function Groups</b>				
F08.00	ACC time2	0.0~6000.0s	Model dependent	○
F08.01	DEC time2	0.0~6000.0s	Model dependent	○
F08.02	ACC time3	0.0~6000.0s	Model dependent	○
F08.03	DEC time3	0.0~6000.0s	Model dependent	○
F08.04	ACC time4	0.0~6000.0s	Model dependent	○
F08.05	DEC time4	0.0~6000.0s	Model dependent	○
F08.06	Jogging frequency	0.00~F00.03(Max. frequency)	5.00Hz	○
F08.07	Jogging ACC time	0.00~6000.0s	Model dependent	○
F08.08	Jogging DEC time	0.00~6000.0s	Model dependent	○
F08.09	Fault reset times	0~10	0	○
F08.10	Interval time of automatic fault reset	0.1~100.0s	1.0s	○
F08.11	Frequency decreasing ratio of the dropping control	0.00~10.00Hz	0.00Hz	○
F08.12	Motor shifting	0: Terminal shifting 1: MODBUS Communication shifting 2: CAN Communication shifting 3: Profibus-DP communication switch Note: 2,3 is function, only valid with card.	0	◎
F08.13	FDT1 electrical level detection value	0.00~F00.03(Max. frequency)	50.00Hz	○
F08.14	FDT1 retention detection value	-100.0~100.0%(FDT1 level)	5.0%	○
F08.15	FDT2 electrical level detection	0.00~F00.03(Max. frequency)	50.00Hz	○
F08.16	FDT2 retention detection value	-100.0~100.0%(FDT2 level)	5.0%	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F08.17	Frequency arrival detection value	0.0~F00.03(Max. frequency)	0.00Hz	○
F08.18	Energy braking enable	0: Disable 1: Enable	1	○
F08.19	Threshold voltage	350.0~2000.0V	220V (380V)	○
		620.0~2000.0V	380V (700V)	
F08.20	PWM over commission selection	0: Invalid 1: Valid	1	◎
F08.21	Keypad data control	0x000~0x1221 LED ones: Frequency control selection 0: $\wedge/\vee$ keys are valid 1: $\wedge/\vee$ key are invalid LED tens: Frequency control selection 0: Only valid when F00.06=0 or F00.07=0 1: Valid for all frequency setting manner 2: Invalid for multi-step when multi-step has the priority LED hundreds: Action selection during stopping 0: Setting is valid 1: Valid during running, cleared after stopping 2: Valid during running, cleared after receiving the stop command LED thousands: $\wedge/\vee$ keys integral function 0: The integral function is valid 1: The integral function is invalid	0x0000	○
F08.22	Integral ratio of the keypad $\wedge/\vee$	0.1~10.0s	1.0s	○
F08.23	UP/DOWN terminal control	0x00~0x221 LED ones: Frequency control selection 0: UP/DOWN terminals setting valid 1: UP/DOWN terminals setting invalid LED tens: Frequency control selection 0: Only valid when F00.06=0 or F00.07=0 1: All frequency means are valid 2: When the multi-step are priority, it is invalid to the multi-step LED hundreds: Action selection when stop 0: Setting valid 1: Valid in the running, clear after stop 2: Valid in the running, clear after receiving the stop commands	0x000	○
F08.24	UP terminals frequency changing ratio	0.01~50.00s	0.50s	○
F08.25	DOWN terminals frequency changing ratio	0.01~50.00s	0.50s	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F08.26	Frequency setting at power loss	0x000~0x111 LED ones: Action selection when power off 0: Save when power off 1: Clear when power off LED tens: Action selection when MODBUS set frequency off 0: Save when power off 1: Clear when power off LED hundreds: Action selection when other frequency set frequency off 0: Save when power off 1: Clear when power off	0x000	○
F08.27	Magnetic flux braking	0: Invalid 1~100: The bigger the coefficient, the stronger the braking is)	0	○
F08.28	Auxiliary Monitoring	0: Running frequency 1: Set frequency 2: Bus voltage 3: Output voltage 4: output current 5: Running rotation speed 6: Output power 7: Output torque 8: PID reference 9: PID feedback 10: Input terminals state 11: Output terminals state 12: Torque setting value 13: Pulse counter value 14: Length value 15: PLC current stage 16: The current number of multi-stage speed 17: AI1 value 18: AI2 value 19: AI3 value 20: HDI1 frequency 21: Motor overload percentage(% on) 22: AC drive overload percentage(% on) 23: Ramp frequency given value(Hz on) 24: Linear speed 25: AC inlet current(A on) 26: set rotary speed 27: set linear speed 28: IGBT temperature	1	○
F08.29	Parameter copy selection	0: No operation ; 1: Control panel parameter upload to the keypad EEPROM ; 2: Keypad EEPROM parameter download to the control panel and do not download motor parameter; 3: Keypad EEPROM parameter download to the control panel and download motor parameter;	0	◎

**Function Parameters Table**

Function code	Name	Setup range		Default Value	Modification
F08.30	IO expansion card	0: Enable 1: Disable		0	○
F08.31	Power failure under voltage decelerate stop	0: invalid 1: valid		0	○
F08.32	Power failure under voltage decelerate time	0~6000.0 s		0.5S	○
F08.33	Run power failure decelerate cut-off voltage	80~800V	200V(3 phase)	◎	
			120V(single phase)		
F08.34	Detection time 1 of arbitrary frequency arrival	0~F00.03		50.00Hz	○
F08.35	Detection width 1 of arbitrary frequency arrival	0~100.0%(Max. frequency)		0	○
F08.36	Detection time 2 of arbitrary frequency arrival	0~F00.03		50.00Hz	○
F08.37	Detection width 2 of arbitrary frequency arrival	0~100.0%(Max. frequency)		0	◎
F08.38	Jogging selection under running situation	0: Enable 1: Disable		0	◎
F08.39	Binding command source to frequency source	0x000~0xCCC  Unit's digit: Binding operation panel command to frequency source 0: No binding 1: Keypad digital setting 2: Keypad potentiometer setting 3: Analog AI1 setting 4: Analog AI2 setting 5: Analog AI3 setting 6: High-speed pulse HDI1 setting 7: Simple PLC program setting 8: Multi-speed running setting 9: PID control setting A: MODBUS Communication setting B: CAN Communication setting C: Profibus-DP communication setting  Ten's digit: Binding terminal command to frequency source 0~C same as unit's digit  Hundred's digit (Binding communication command to frequency source) 0~C, same as unit's digit		0x000	◎
F08.40	Brake use ratio	0.0%~100.0%		100.0%	◎



**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
<b>Group F09 PID control Group</b>				
F09.00	PID reference source	0: Keypad(F09.01) 1: AI1 2: AI2 3: AI3 4: HDI 5: Multi-step speed set 6: MODBUS communication set 7: CAN communication setting 8: Profibus-DP Communication set 9: Panel potentiometer Note: 7,8 CAN communication setting need corresponding extension cards.	0	○
F09.01	Keypad PID preset	0~100.0%	50.0%	○
F09.02	Keypad feedback source	0:AI1 1:AI2 2:AI3 3:HDI 4:MODBUS communication set 5:CAN communication setting 6:Profibus-DP communication feedback Note: 5 ,6 CAN communication setting need corresponding extension cards.	0	○
F09.03	PID output feature	0: PID output is positive 1: PID output is negative	0	○
F09.04	Proportional gain(Kp)	0.00~100.00	0.50	○
F09.05	Intergal time(Ti)	0.00~10.00s	0.20s	○
F09.06	Differential time(Td)	0.00~10.00s	0.00s	○
F09.07	Sampling cycle(T)	0.00~10.00s	0.10s	○
F09.08	PID control deviation limit	0.00~10.00%	0.2%	○
F09.09	Output upper limit of PID	F09.10~100.0%(max. frequency or voltage)	0.0%	○
F09.10	Output lower limit of PID	-100.0~F09.09 (max. frequency or voltage)	100.0%	○
F09.11	Detection value of feedback offline	0.0~100.0%	0.0%	○
F09.12	Detection time of feedback offline	0.0~3600.0s	1.0s	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F09.13	PID adjustment	<p><b>0x0000~0x1111</b>  <b>LED ones</b>                      0: Keep on integral adjustment when the frequency achieves the upper and low limit; the integration shows the change between the reference and the feedback unless it reaches the internal integral limit. When the trend between the reference and the feedback changes, it needs more time to offset the impact of continuous working and the integration will change with the trend.                      1: Stop integral adjustment when the frequency achieves the upper and low limit. If the integration keeps stable, and the trend between the reference and the feedback changes, the integration will change with the trend quickly.</p> <p><b>LED tens</b>                      0: The same with setting direction; if the output of PID adjustment is different from the current running direction, the internal will output 0 forcedly.                      1: Opposite to the setting direction</p> <p><b>LED hundreds</b>                      0: PID given value cannot adjust by the UP/DOWN key.                      1: PID given value can adjust by the UP/DOWN key.</p> <p><b>LED thousands</b>                      0: When AC drive power off, PID given value set UP/DOWN by will not save.                      1: When AC drive power off, PID given value set UP/DOWN by will save.</p>	0x1100	○
F09.14	Proportional gain 2(Kp2)	0.00~100.00	0.50	○
F09.15	Integral time(Ti2)	0.00~10.00s	0.2S	○
F09.16	Differential time(Td2)	0.00~10.00s	0.00S	○
F09.17	PID Parameters Switching	0: No switching 1: According to the switching input bias 2: According terminal switching	0	◎
F09.18	Deviation threshold when PID is switching	0.0%~100.0%	20%	○
F09.19	PID Hibernate Frequency	0.00~F00.03(Max Frequency)	0.0	○
F09.20	PID Hibernate Delay Time	0.0~3600.0s	30.0s	○
F09.21	PID Awaken Value	0.0~100.0%	0.0%	○
F09.22	PID Awaken Value delay time	0.0~60.0s	0.5S	○
F09.23	PID Preset Value	0.0~100.0%	0.0%	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F09.24	PID Preset Value Keeping time	0.0~600.0s	0.0s	○
F09.25	PID initial value restarts effective selection	0: the frequency source is given from other given switching to PID, and the initial value is invalid. 1: the frequency source runs efficiently from other given handover to PID given.	0	○
F09.26	PID second digital given	0.0~100.0%: Note: through terminal function: 44, implement PID given source switch	50.0%	○
F09.27	PID range	0~9999	100	○
F09.28	PID range decimal number	0~3	1	○
F09.29	PID Hibernate stop mode	0: Decelerate to stop 1: Coast to stop	1	○
F09.30	PID feedback limit detection value	0.0~100.0%	100.0%	○
F09.31	PID feedback limit detection time	0.0~3600.0s	1.0s	○
<b>Group F0A Swing Frequency, Fixed Length, Count and Timing</b>				
F0A.00	Swing frequency amplitude	0.0~100.0%(Setting frequency)	0.0%	○
F0A.01	Kick frequency amplitude	0.0~100.0%(Swing frequency amplitude)	0.0%	○
F0A.02	Rise time of swing frequency	0.0~3600.0s	0.0s	○
F0A.03	Decline time of swing frequency	0.0~3600.0s	0.0s	○
F0A.04	Setup length	0~65536m	0m	○
F0A.05	Designed length	0~65536m	0m	●
F0A.06	The number of pulses of each rotate	1~10000	1	○
F0A.07	Circumference of the shaft	0.01~100.00cm	10.00cm	○
F0A.08	Length multiples	0.001~10.000	1.000	○
F0A.09	Length correction factor	0.001~1.000	1.000	○
F0A.10	Set count value	F0A.11~65535	0	○
F0A.11	Designated count value	0~F0A.10	0	○
F0A.12	Running time setting	0~65535min	0	○
F0A.13	Exact stop mode	0: invalid 1: setting length arrive 2: setting count value arrive 3: setting running time arrive	0	○
F0A.14	Actual running time	0~65535min	0	●

Function Parameters Table

Function code	Name	Setup range	Default Value	Modification
<b>Group F0B Simple PLC and Multi-speed Control Group</b>				
F0B.00	Simple PLC running method	0: Stop after running once 1: Run at the final value after running once 2: Cycle running	0	○
F0B.01	Simple PLC memory selection when in power loss	0: Power loss without memory 1: Power loss memory	0	○
F0B.02	Multi-step speed 0	-100.0~100.0%	0.0%	○
F0B.03	The running time of step 0	0.0~6553.5s(min)	0.0s	○
F0B.04	Multi-step speed 1	-100.0~100.0%	0.0%	○
F0B.05	The running time of step 1	0.0~6553.5s(min)	0.0s	○
F0B.06	Multi-step speed 2	-100.0~100.0%	0.0%	○
F0B.07	The running time of step 2	0.0~6553.5s(min)	0.0s	○
F0B.08	Multi-step speed 3	-100.0~100.0%	0.0%	○
F0B.09	The running time of step 3	0.0~6553.5s(min)	0.0s	○
F0B.10	Multi-step speed 4	-100.0~100.0%	0.0%	○
F0B.11	The running time of step 4	0.0~6553.5s(min)	0.0s	○
F0B.12	Multi-step speed 5	-100.0~100.0%	0.0%	○
F0B.13	The running time of step 5	0.0~6553.5s(min)	0.0s	○
F0B.14	Multi-step speed 6	-100.0~100.0%	0.0%	○
F0B.15	The running time of step 6	0.0~6553.5s(min)	0.0s	○
F0B.16	Multi-step speed 7	-100.0~100.0%	0.0%	○
F0B.17	The running time of step 7	0.0~6553.5s(min)	0.0s	○
F0B.18	Multi-step speed 8	-100.0~100.0%	0.0%	○
F0B.19	The running time of step 8	0.0~6553.5s(min)	0.0s	○
F0B.20	Multi-step speed 9	-100.0~100.0%	0.0%	○
F0B.21	The running time of step 9	0.0~6553.5s(min)	0.0s	○
F0B.22	Multi-step speed 10	-100.0~100.0%	0.0%	○
F0B.23	The running time of step 10	0.0~6553.5s(min)	0.0s	○
F0B.24	Multi-step speed 11	-100.0~100.0%	0.0%	○
F0B.25	The running time of step 11	0.0~6553.5s(min)	0.0s	○
F0B.26	Multi-step speed 12	-100.0~100.0%	0.0%	○
F0B.27	The running time of step 12	0.0~6553.5s(min)	0.0s	○
F0B.28	Multi-step speed 13	-100.0~100.0%	0.0%	○
F0B.29	The running time of step 13	0.0~6553.5s(min)	0.0s	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F0B.30	Multi-step speed 14	-100.0~100.0%	0.0%	○
F0B.31	The running time of step 14	0.0~6553.5s(min)	0.0s	○
F0B.32	Multi-step speed 15	-100.0~100.0%	0.0%	○
F0B.33	The running time of step 15	0.0~6553.5s(min)	0.0s	○
F0B.34	Simple PLC 0-7 step ACC/DEC time	0x0000~0xFFFF	0x0000	○
F0B.35	Simple PLC 8-15 step ACC/DEC time	0x0000~0xFFFF	0x0000	○
F0B.36	PLC restart	0: Restart from the first stop 1: Continue to run from the stage range frequency 2: Continue to run from the running frequency	0	◎
F0B.37	Multi-step time unit	0: S 1: Min	0	◎
F0B.38	Multi-step speed 0 source	0: Set by F0B.02 1: Keypad digital setting 2: Keypad potentiometer setting 3: Analog AI1 setting 4: Analog AI2 setting 5: Analog AI3 setting 6: High-speed pulse HDI1 setting 7: MODBUS Communication setting	0	◎
<b>Group F0C Protection Parameters Group</b>				
F0C.00	Phase loss protection	0x00~0x11 LED ones: 0: Input phase loss protection disable 1: Input phase loss protection enable LED tens: 0: Input phase loss protection disable 1: Input phase loss protection enable	0x11	◎
F0C.01	Frequency decreasing at sudden power loss	0: Enable 1: Disable	0	○
F0C.02	Frequency decreasing ratio at sudden power loss	0.00Hz~F00.03/s(Max. frequency)	10.00 Hz/s	◎
F0C.03	Over-voltage stall protection	0: Invalid 1: Valid	1	○
F0C.04	Voltage protection of over-voltage stall	120~150%(AC drive standard bus voltage)	120% (220V) 130% (380V)	○

**Function Parameters Table**

Function code	Name	Setup range		Default Value	Modification
F0C.05	Current limit action selection	0: Disable 1: Enable		1	⊙
F0C.06	Automatic current limit	50.0~200.0%	166%(G-type load)	○	
			120%(P-type load)		
F0C.07	Frequency decreasing ratio during current limit	0.00~50.00Hz/s		10.00 Hz/s	⊙
F0C.08	Phase loss protection	0x000~0x111 LED ones: 0: Overload pre-alarm of the motor, relative to the rated current of the motor 1: Overload pre-alarm of the AC drive, relative to the rated current of the AC drive LED tens: 0: The AC drive continues to work after underload pre-alarm 1: The AC drive continues to work after underload pre-alarm and the AC drive stops to run after overload fault LED hundreds: 0: Detection all the time 1: Detection in constant running		0x000	○
F0C.09	Overload pre-alarm detection	F0C.12~200%	G type:150%	○	
			P type: 120%		
F0C.10	Overload pre-alarm detection time	0.1~60.0s		1.0s	○
F0C.11	Underload pre-alarm of motor/AC drive	0x000~0x111 LED ones: 0: Motor underload pre-alarm, relative to the motor rated current 1: Motor underload pre-alarm, relative to the AC drive rated current LED tens: 0: AC drive continue running after overload alarm 1: AC drive stops after underload fault LED hundreds: 0: Detection all the time 1: Detection in constant running		0x100	○
F0C.12	Underload pre-alarm detection	0%~F0C.09		30%	○
F0C.13	Underload pre-alarm detection time	0.1~60.0s		1.0s	○

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F0C.14	Output terminal action during fault	0x00~0x11 LED ones: 0: Action under fault undervoltage 1: No action under fault undervoltage LED tens: 0: Action during the automatic reset 1: No action during the automatic reset	0x00	○
F0C.15	Carrier frequency adjustment selection	0x00~0x11 LED ones: 0: Fixed carrier frequency 1: Carrier frequency automatically adjust as the temperature arises. LED tens: 0: Fixed carrier frequency 1: Carrier frequency is automatically adjusted when it is overloaded	0x00	○
F0C.16	PWM mode	0: Three-phase modulation 1: Three-phase and two-phase modulation switching	1	◎
F0C.17	Low frequency filter selection	0: Low frequency filter valid 1: Low frequency filter invalid	1	◎
F0C.18	Reserved	0	0	●
<b>Group F0D Motor 2 Parameter Group</b>				
F0D.00	Motor type 2 control mode	0: V/F control 1: Vector mode 0 control	1	◎
F0D.01	Load type	0: G-type (constant torque load) 1: P-type (variable torque / light load)	0	◎
F0D.02	Motor type2	0: Ordinary asynchronous motor (with low-frequency compensation) 1: Frequency asynchronous motor (without low frequency compensation)	0	◎
F0D.03	Rated power of motor 2	0.1~1000.0kW	Model dependent	◎
F0D.04	Rated voltage of motor 2	0~1200V	Model dependent	◎
F0D.05	Rated current of motor 2	0.8~6000.0A	Model dependent	◎
F0D.06	Rated frequency of motor 2	0.01Hz~F00.03(max. frequency)	Model dependent	◎
F0D.07	Rated speed of motor 2	1~36000rpm	Model dependent	◎
F0D.08	Stator resistor of motor2	0.001~65.535Ω	Model dependent	◎

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
F0D.09	Rotor resistor of motor 2	0.001~65.535Ω	Model dependent	⊙
F0D.10	Leakage inductance of motor 2	0.1~6553.5mH	Model dependent	⊙
F0D.11	Mutual inductance of motor 2	0.1~6553.5mH	Model dependent	⊙
F0D.12	Non-load current of motor 2	0.1~6553.5A	Model dependent	⊙
F0D.13~25	Reserved	0	0	●
F0D.26	Motor 2 overload protection selection	0: Invalid 1: Valid	1	⊙
F0D.27	Motor 2 overload protection factor	50.0%~120.0%	100.0%	⊙
<b>Group F0E Serial Communication Function Group</b>				
F0E.00	Local communication address	0~247 (0 is communication address)	1	○
F0E.01	Communication baud ratio	0: 1200BPS 1: 2400BPS 2: 4800BPS 3: 9600BPS 4: 19200BPS 5: 38400BPS	4	○
F0E.02	Digital bit checkout	0: No check(N, 8, 1)for RTU 1: Even check(E, 8, 1)for RTU 2: Odd check(O, 8, 1)for RTU 3: No check(N, 8, 2)for RTU 4: Even check(E, 8, 2)for RTU 5: Odd check(O, 8, 2)for RTU	1	○
F0E.03	Answer delay	0~200ms	5	○
F0E.04	Fault time of communication overtime	0.0: Invalid; 0.1~60.0s	0.0s	○
F0E.05	Transmission fault processing	0: Alarm and stop freely 1: No alarm and continue to run 2: No alarm and stop according to the stop mode (Only under the communication control) 3: No alarm and stop according to the stop mode (Under all control modes)	0	○
F0E.06	Communication processing action selection	0: Write with response 1: Write without response	0	○
F0E.07	Interval time send by Master	10ms-5000ms	200ms	○
F0E.08	MODBUS Communication mode selection	0: Standard RTU mode 1: Mode 1 2: Mode 2	0	○



**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
<b>Group A01 A1 Curve Setting Function Group</b>				
A01.00	Lower limit of AI 1	0.00V~ A01.02	0.00V	○
A01.01	Corresponding setting of the lower limit of AI 1	-100.0%~100.0%	0.0%	○
A01.02	Upper limit of AI 1	A01.00~10.00VA01.02	10.00V	○
A01.03	Corresponding setting of the upper limit of AI 1	-100.0%~100.0%	100.0%	○
A01.04	AI1 input filter time	0.000s~10.000s	0.100s	○
A01.05	Lower limit of AI2	-10.00V~ A01.09	-10.00V	○
A01.06	Corresponding setting of the lower limit of AI2	-100.0%~100.0%	-100.0%	○
A01.07	Upper limit of AI2	A01.09~10.00V	10.00V	○
A01.08	Corresponding setting of the upper limit of AI2	-100.0%~100.0%	100.0%	○
A01.09	Middle value of AI2	A01.05~A01.07	0.00V	○
A01.10	Corresponding middle setting of AI2	-100.0%~100.0%	0.0%	○
A01.11	AI2 input filter time	0.000s~10.000s	0.100s	○
A01.12	Lower limit of AI3	-10.00V~A01.14	-10.00V	○
A01.13	Corresponding setting of the lower limit of AI3	-100.0%~100.0%	-100.0%	○
A01.14	Upper limit of AI3	A01.12~10.00V	10.00V	○
A01.15	Corresponding setting of the upper limit of AI3	-100.0%~100.0%	100.0%	○
A01.16	Middle value of AI3	A01.12~A01.14	0.00V	○
A01.17	Corresponding middle setting of AI3	-100.0%~100.0%	0.0%	○
A01.18	AI3 input filter time	0.000s~10.000s	0.100s	○
A01.19	Keypad analog filter time	0.000~10.000s	0.050s	○
A01.20	AI lower than minimum input setting selection	Ones: AI1 lower than minimum input setting selection 1-0.0% Tens: AI2 lower than minimum input setting selection(As above) Hundreds: AI3 lower than minimum input setting selection(As above)	0x000	◎

**Function Parameters Table**

Function code	Name	Setup range	Default Value	Modification
A01.21	AI,AO corrective active selection	0: No action 1: AI1 channel correction 2: AI2 channel correction 3: AI3 channel correction 4: AO1 channel correction 5: AO2 channel correction	0	⊙
A01.22	AI1display voltage1	0~10.000V	1.000	⊙
A01.23	AI1 measured voltage1	0~10.000V	1.000	⊙
A01.24	AI1display voltage 2	0~10.000V	9.000	⊙
A01.25	AI1measured voltage2	0~10.000V	9.000	⊙
A01.26	AI2 display voltage1	-10.000~10.000V	1.000	⊙
A01.27	AI2 measured voltage1	-10.000~10.000V	1.000	⊙
A01.28	AI2 display voltage 2	-10.000~10.000V	9.000	⊙
A01.29	AI2 measured voltage 2	-10.000~10.000V	9.000	⊙
A01.30	AI3 display voltage 1	-10.000~10.000V	1.000	⊙
A01.31	AI3 measured voltage 1	-10.000~10.000V	1.000	⊙
A01.32	AI3 display voltage 2	-10.000~10.000V	9.000	⊙
A01.33	AI3 measured voltage 2	-10.000~10.000V	9.000	⊙
A01.34	AO1 display voltage 1	0~10.000V	1.000	⊙
A01.35	AO1 measured voltage 1	0~10.000V	1.000	⊙
A01.36	AO1 display voltage 2	0~10.000V	9.000	⊙
A01.37	AO1 measured voltage 2	0~10.000V	9.000	⊙
A01.38	AO2 display voltage1	0~10.000V	1.000	⊙
A01.39	AO2 measured voltage1	0~10.000V	1.000	⊙
A01.40	AO2 display voltage 2	0~10.000V	9.000	⊙
A01.41	AO2 measured voltage 2	0~10.000V	9.000	⊙
<b>Group A02 Monitoring Function Group</b>				
A02.00	Setting frequency	0.00Hz~F00.03	0.00Hz	●
A02.01	Output frequency	0.00Hz~F00.03	0.00Hz	●
A02.02	Ramp reference frequency	0.00Hz~F00.03	0.00Hz	●
A02.03	Output voltage	0~1200V	0V	●
A02.04	Output current	0.0~5000.0A	0.0A	●
A02.05	Motor speed	0~65535rpm	0rpm	●
A02.06	Reserved	0	0	●
A02.07	Reserved	0	0	●

Function Parameters Table

Function code	Name	Setup range	Default Value	Modification
A02.08	Output power	-300.0~300.0%(the rated current of the motor)	0.0%	●
A02.09	Output torque	-250.0~250.0%(the rated current of the motor)	0.0%	●
A02.10	Evaluated motor frequency	0.00~F00.03	0.00Hz	●
A02.11	DC bus voltage	0.0~2000.0V	0V	●
A02.12	Digital input terminals state	0x00~0xFF	0x00	●
A02.13	Digital output terminals state	0x0~0xF	0x00	●
A02.14	Digital adjustment	0.00Hz~F00.03	0.00Hz	●
A02.15	RESERVED			●
A02.16	Linear speed	0~65535	0	●
A02.17	Length value	0~65535	0	●
A02.18	Counting value	0~65535	0	●
A02.19	AI1 input voltage	0.00~10.00V	0.00V	●
A02.20	AI2 input voltage	-10.00~10.00V	0.00V	●
A02.21	AI3 input voltage	-10.00~10.00V	0.00V	●
A02.22	HDI1input frequency	0.00~50.00kHz	0.00kHz	●
A02.23	PID reference	-100.0~100.0%	0.0%	●
A02.24	PID feedback	-100.0~100.0%	0.0%	●
A02.25	PID output	-100.0~100.00%	0.00%	●
A02.26	Power factor of the motor	-1.00~1.00	0.0	●
A02.27	Current running time	0~65535min	0m	●
A02.28	Simple PLC and the current step of the multi-step speed	0~15	0	○
A02.29	ASR controller output	-300.0%~300.0% (the rated current of the motor)	0.0%	●
A02.30	AO1 Output	0-10.00V	0	●
A02.31	AO2 Output	0-10.00V	0	●
A02.32	AC current	0.0~5000.0A	0.0A	●
A02.33	Output torque	-3000.0Nm~3000.0Nm	0.0Nm	●
A02.34	Count value of motor overload	0~100 (100 report E.OPL1 fault)	0	●
A02.35	Copy keypad EEPROM software version	0	0	●
A02.36	Reserved	0	0	●
A02.37	Current motor selection	1: Current motor 1 2: Current motor 2	1	●

# Chapter 5 Troubleshooting



## Danger

- ✦ Only qualified electricians are allowed to maintain the AC drive. Read the safety instruction in chapter safety precaution before working on the AC drive.

No.	Code	Fault	Cause	Solution
1	E.out 1	IGBT U phase protection	<ul style="list-style-type: none"> <li>◆ The acceleration is too fast .</li> <li>◆ There is damage to the internal to IGBT of the phase.</li> <li>◆ The connection of the driving wires and the grounding is not good.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Increase Acc time.</li> <li>◆ Change the power unit.</li> <li>◆ Check the driving wires.</li> <li>◆ Check if there is strong interference to the external equipment</li> </ul>
2	E.out 2	IGBT V phase protection		
3	E.out 3	IGBT W phase protection		
4	E.oc 1	Accelerating overcurrent	<ul style="list-style-type: none"> <li>◆ The acceleration or deceleration is too fast.</li> <li>◆ The voltage of the grid is too low.</li> <li>◆ The power of the AC drive is too low.</li> <li>◆ The load transient or abnormal.</li> <li>◆ The grounding is short circuited or the output is phase loss.</li> <li>◆ There is strong external interference.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Increase the Acc time.</li> <li>◆ Check the input power.</li> <li>◆ Select the AC drive with a large power.</li> <li>◆ Check if the load is short circuited(the grounding short circuited) or the rotation is not smooth.</li> <li>◆ Check the output configuration.</li> <li>◆ Check if there is strong interference.</li> </ul>
5	E.oc 2	Accelerating overcurrent		
6	E.oc 3	Accelerating overcurrent		
7	E.ou 1	Accelerating overvoltage	<ul style="list-style-type: none"> <li>◆ The input voltage is abnormal.</li> <li>◆ There is large energy feedback.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the input power.</li> <li>◆ Check if the DEC time of the load is too short or the AC drive starts during the rotation of the motor or it needs to increase the energy consumption components</li> </ul>
8	E.ou 2	Decelerating overvoltage		
9	E.ou 3	Constant overvoltage		
10	E.LU	Bus under-voltage fault	<ul style="list-style-type: none"> <li>◆ The voltage of the power supply is too low.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the input power of the supply line.</li> </ul>
11	E. ol 1	Motor overload	<ul style="list-style-type: none"> <li>◆ The voltage of the power supply is too low.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the input power of the supply line.</li> </ul>
12	E. ol 2	Inverter overload	<ul style="list-style-type: none"> <li>◆ The acceleration is too fast.</li> <li>◆ Reset the rotating motor.</li> <li>◆ The voltage of the power supply is too low.</li> <li>◆ The load is too heavy.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Increase the Acc time.</li> <li>◆ Avoid the restarting after stopping.</li> <li>◆ Check the power of the supply line,</li> <li>◆ Select an AC drive with bigger power,</li> <li>◆ Select a proper motor.</li> </ul>

## Troubleshooting

No.	Code	Fault	Cause	Solution
13	E.SPI	Input phase loss	◆ Phase loss or fluctuation of input R,S,T.	◆ Check input power
14	E.SPO	Output phase loss	◆ U,V,W phase loss input (or serious asymmetrical three phase of the load)	◆ Check input power
15	E.OH1	Rectifying module overheated	◆ Air duct jam or fan damage.	◆ Check input power
16	E.OH2	IGBT overheated	◆ Ambient temperature is too high. ◆ The time of overload running is too long	◆ Check input power
17	E.EF	External fault	◆ SI external fault input terminals action.	◆ Check input power
18	E.CF	485 communication fault	◆ The baud rate setting is incorrect. ◆ Fault occurs to the communication wiring. ◆ The communication address is wrong. ◆ There is strong interference to the communication.	◆ Set proper baud rate. ◆ Check the communication connection distribution. ◆ Set proper communication address. ◆ Change or replace the connection distribution or improve the anti-interference capability.
19	E.LCE	Current-detecting fault	◆ The connection of the control board is not good. ◆ Hoare components is broken ◆ The modifying circuit is abnormal.	◆ Check the connector and repatch. ◆ Change the hoare. ◆ Change the main panel.
20	E.TUE	Motor-autotuning fault	◆ The motor capacity does not comply with the AC drive capability. ◆ The rated parameter of the motor does not set correctly. ◆ The offset between the parameters from autotune and the standard parameter is huge. ◆ Autotune overtime.	◆ Check the connector and repatch. ◆ Change the hoare. ◆ Change the main panel.
19	E.LCE	Current-detecting fault	◆ The connection of the control board is not good. ◆ Hoare components is broken ◆ The modifying circuit is abnormal.	◆ Check the connector and repatch. ◆ Change the hoare. ◆ Change the main panel.
20	E.TUE	Motor-autotuning fault	◆ The motor capacity does not comply with the AC drive capability. ◆ The rated parameter of the motor does not set correctly. ◆ The offset between the parameters from autotune and the standard parameter is huge. ◆ Autotune overtime.	◆ Change the AC drive mode. ◆ Set the rated parameter according to the motor name plate. ◆ Empty the motor load and reidentify. ◆ Check the motor connection and set the parameter.

No.	Code	Fault	Cause	Solution
21	E.EEP	EEPROM operation fault	<ul style="list-style-type: none"> <li>◆ Error of controlling the write and read of the parameters.</li> <li>◆ Damage to EEPROM.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Press STOP/RESET to reset.</li> <li>◆ Change the main control panel.</li> </ul>
22	E.PID	PID feedback outline fault	<ul style="list-style-type: none"> <li>◆ PID feedback offline.</li> <li>◆ PID feedback source disappear.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the PID feedback signal.</li> <li>◆ Check the PID feedback source.</li> </ul>
23	E.BRE	Braking circuit fault	<ul style="list-style-type: none"> <li>◆ Braking circuit fault or damage to the braking pipes.</li> <li>◆ The external braking resistor is not sufficient.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the braking unit and change new braking pipe.</li> <li>◆ Increase the braking resistor.</li> </ul>
24	E.End	Running time arrival	<ul style="list-style-type: none"> <li>◆ The actual running time of the AC drive is above the internal setting running time.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Ask for the supplier and adjust the setting running time.</li> </ul>
25	E.oL3	Electronic overload fault	<ul style="list-style-type: none"> <li>◆ The AC drive will report the overload pre-alarm according to the set value.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the load and the overload pre-alarm point.</li> </ul>
26	E.PCE	Keypad communication fault	<ul style="list-style-type: none"> <li>◆ The connection of the Keypad wires is not good or broken.</li> <li>◆ The Keypad wire is too long and affected by strong interference.</li> <li>◆ There is circuit fault on the communication of the Keypad and main board</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the Keypad wires and ensure whether there is mistake.</li> <li>◆ Check the environment and avoid the interference source.</li> <li>◆ Change the hardware and ask for service.</li> </ul>
27	E.UPE	Parameters uploading fault	<ul style="list-style-type: none"> <li>◆ The connection of the keypad wires is not good or broken.</li> <li>◆ The keypad wire is too long and affected by strong interference.</li> <li>◆ Ensure keypad whether support copy function</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the keypad wires and ensure whether there is mistake.</li> <li>◆ Change the hardware and ask for service</li> <li>◆ Change the hardware and ask for service</li> </ul>
28	E.DnE	Parameters uploading fault	<ul style="list-style-type: none"> <li>◆ The connection of the keypad wires is not good or broken.</li> <li>◆ The keypad wire is too long and affected by strong interference.</li> <li>◆ Ensure download parameter version whether same with the control panel software version</li> <li>◆ Ensure keypad whether repack-up parameter</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the keypad wires and ensure whether there is mistake.</li> <li>◆ Change the hardware and ask for service</li> <li>◆ Repack-up the data in the keypad</li> <li>◆ Ensure both version are the same before download, please check A2.35 whether same with F07.10</li> </ul>
29	E.ErH1	Grounding shortcut fault 1	<ul style="list-style-type: none"> <li>◆ The output of the AC drive is short circuited with the ground.</li> <li>◆ There is fault in the current detection circuit.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The output of the AC drive is short circuited with the ground.</li> <li>◆ There is fault in the current detection circuit.</li> </ul>

## Troubleshooting

No.	Code	Fault	Cause	Solution
30	E.ErH2	Grounding shortcut fault 2	<ul style="list-style-type: none"> <li>◆ The output of the AC drive is short circuited with the ground.</li> <li>◆ There is fault in the current detection circuit.</li> </ul>	<ul style="list-style-type: none"> <li>◆ The output of the AC drive is short circuited with the ground.</li> <li>◆ There is fault in the current detection circuit.</li> </ul>
31	E.dEu	Speed deviation fault	<ul style="list-style-type: none"> <li>◆ The load is too heavy or stalled.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the load and ensure it is normal. Increase the detection time.</li> <li>◆ Check whether the control parameters are normal.</li> </ul>
32	E.STo	Maladjustment fault	<ul style="list-style-type: none"> <li>◆ The control parameters of the synchronous motors not set properly.</li> <li>◆ The autoturn parameter is not right.</li> <li>◆ The AC drive is not connected to the motor.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the load and ensure it is normal.</li> <li>◆ Check whether the control parameter is set properly or not.</li> <li>◆ Increase the maladjustment detection time.</li> </ul>
33	E.Esd1	Encoder disconnect fault	<ul style="list-style-type: none"> <li>◆ Closed loop control, encoder signal disconnect.</li> <li>◆ Encoder damage.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check encoder connection, reconnected circuit.</li> <li>◆ Check whether the encoder is input or output.</li> </ul>
34	E.Ecd2	Encoder reverse fault	<ul style="list-style-type: none"> <li>◆ Closed loop control, encoder disconnection, damage or connect fault.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check encoder connection, adjust wiring.</li> </ul>
35	E.Ptc	Motor overheated fault	<ul style="list-style-type: none"> <li>◆ Motor long-term overload running or abnormal, temperature detect resistance.</li> <li>◆ Motor overheated improper protection point.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the motor and maintain.</li> <li>◆ Check whether normal the temperature sensor.</li> <li>◆ Reset the motor overheated protection point.</li> </ul>
36	E.LL	Electronic underload fault	<ul style="list-style-type: none"> <li>◆ The AC drive will report the underload pre-alarm according to the set value.</li> </ul>	<ul style="list-style-type: none"> <li>◆ Check the load and the underload pre-alarm point.</li> </ul>
37	E.dp	Dp Communication Fault	<ul style="list-style-type: none"> <li>◆ Improper setting of baud rate,</li> <li>◆ Communication line fault,</li> <li>◆ Wrong communication address,</li> <li>◆ Strong interference towards communication</li> </ul>	<ul style="list-style-type: none"> <li>◆ Set proper baud rate.</li> <li>◆ check the interface line of communication.</li> <li>◆ set correct communication address.</li> <li>◆ change or replace the line to improve the ability to resist the interference.</li> </ul>
38	E.cAN	Can Communication fault	<ul style="list-style-type: none"> <li>◆ Improper setting of baud rate,</li> <li>◆ Communication line fault,</li> <li>◆ Wrong communication address,</li> <li>◆ Strong interference towards communication</li> </ul>	<ul style="list-style-type: none"> <li>◆ Set proper baud rate.</li> <li>◆ check the interface line of communication.</li> <li>◆ set correct communication address.</li> <li>◆ change or replace the line to improve the ability to resist the interference.</li> </ul>

# Chapter 6 Rs485 Communication Protocol

## 6.1 Function Protocol

### 1. Read a single or multiple data ( 0x03 )

ADDR	xx
CMD	0x03
High bit of the start	xx
Low bit of the start	xx
High bit of data number	xx
Low bit of data number	xx
Check low bit of CRC	xx
Check high bit of CRC	xx

Read data: Slave responding frame

ADDR	xx
CMD	0x03
Byte number N*2	N*2
High bit of data 1	xx
Low bit of data 1	xx
.....	xx
High bit of data N	xx
Low bit of data N	xx
Check low bit of CRC	xx
Check high bit of CRC	xx

### 2. Write a single data ( 0x06 )

ADDR	xx
CMD	0x06
High bit of register Add.	xx
Low bit of register Add.	xx
High bit of write data	xx
Low bit of write data	xx
Check low bit of CRC	xx
Check high bit of CRC	xx

Write data response :

ADDR	xx
CMD	0x06
High bit of register Add.	xx
Low bit of register Add.	xx
High bit of write data	xx
Low bit of write data	xx
Check low bit of CRC	xx
Check high bit of CRC	xx

### 3. Host broadcast frequency and start-stop command(0x20)

ADDR	xx
CMD	0x20
High bit of start-stop commandXX	xx
Low bit of start-stop command XX	xx
High bit of setting frequency value XX	xx
Low bit of setting frequencyvalue XX	xx
Check low bit of CRC	xx
Check high bit of CRC	xx



#### 4. The error message response

Sometimes, errors occurs during the process of the communication. For example, reading or writing data to an illegal address, etc., then the slave will not work as a normal read-write response to reply the host, but send a wrong message frame. Error message frame format is as follows, where the command code is the result of the operation between highest-bit (Bit 7) of host operation and 1 ( read error is 0x83 / write error is 0x86).

ADDR	xx
CMD	0x83 or 0x86
Error code	xx
Check low bit of CRC	xx
Check high bit of CRC	xx

The error code define as follows:

Error Code	Error Name	Descriptions
0x01	Illegal CMD	Slave received command code is illegal or does not exist
0x02	Illegal Data Add	Slave receives operation addis cross-border operation or illegal
0x03	Illegal Data	Slave received data is not within the scope of the function or the range set by other functional limitations is illegal.
0x04	Operation failed	Write operating parameters, set for the function is invalid, for example, the function of the input terminals can not duplicate definition
0x05	Password error	Written password is different from password set by the user
0x06	Data frame error	Slave received data frame length is incorrect or CRC checksum and other frames can not be wrong
0x07	Parameters only for read	Slave received the function of the write operation parameters as read-only
0x08	Parameters can not be changed during running	Slave in operation of the received write operation functions do not modify theparameters in running
0x09	Password protection	Slave has set up a user's password, and failed to pass the password authentication

## 6.2 Communication Parameters Address

MODBUS communication includes read and write functions of the parameters of the operation of some special registers read and write operations, which include the control register, set register, state register and factory information.

### 9.5.1 The Definition of Communication Parameter Add.

The function code number and parameter label is the representation rule of the parameter address.

High byte: F00-F0E(F group), A00-A03(A group); Low byte: 00-FF

For example, to access F04.13, the access address of the parameter is 0xF40D.

Function code group	Absolute Add.	Function code group	Absolute Add.
F00 Group	0x00	F01 Group	0x01
F02 Group	0x02	F03 Group	0x03
F04 Group	0x04	F05 Group	0x05
F06 Group	0x06	F07 Group	0x07
F08 Group	0x08	F09 Group	0x09
F0A Group	0x0A	F0B Group	0x0B
F0C Group	0x0C	F0D Group	0x0D
F0E Group	0x0E	A00 Group	0x0F
A01 Group	0x10	A02 Group	0x11
A03 Group	0x12		

Note: Because EEPROM is frequently stored, it will reduce the life of EEPROM. Therefore, some parameters in the mode of communication don't need to store as long as change the value of RAM. Absolute address in the table corresponds to the high byte of RAM address, to achieve this function, as long as the absolute address can be done as address high byte.

For example:

The parameter F04.13 is stored in EEPROM , and the address is represented as 0xF40D;

The parameter F04.13 is not stored in the EEPROM, and the address is represented as 0x040D;

Read of both EEPROM address and RAM address are valid.

When read the function code parameters, user can only read the maximum of 16 consecutive address parameters.more than 16, the AC drive will return the illegal data.

When writing function parameter, each can only write a parameter. Users should pay attention to the setting value that cannot exceed the set range of function parameters.

Function parameters set permissions and function code attributes related parameters, such as read-only parameter is not writable, the operation cannot be changed in the running also cannot be written.

The password is set by the user, in the case without decryption, all of the parameters cannot write. User password and parameter autotune cannot via communication to write. Otherwise, the AC drive will return the fault information.

### 6.3 The Definition of the Special Register Address

Register	Function instruction	Add.	Setting instruction	R/W
Control register	Control register	2000H	0001H: Forward running 0002H: Reverse running 0003H: Forward jogging 0004H: Reverse jogging 0005H: Dcclerate stop 0006H: Coast to stop(emergency stop) 0007H: Fault reset 0008H: Jogging stop 0009H: Pre-exciting	W
Setting register	Setting frequency	3000H	0~Fmax(Unit:0.01Hz)	W
	PID reference	3001H	-1000~1000 (Correspond to -100.0%~100.0%)	W
	PID feedback	3002H	-1000~1000 (Correspond to -100.0%~100.0%)	W
	Torque setting	3003H	-3000~3000 (1000 corresponds to 100.0% o f the rated current of the motor)	W
	Special control command	3008H	BIT0~1: =00: Motor 1 =01: Motor 2       =10: Motor3 BIT2: =1 Torque control =0 Speed control	W
	Virtual input terminal command	3009H	0x0000~0x00FF	W
	Virtual input terminal command	300AH	0x0000~0x00FF	W
	Voltage setting value	300BH	0~1000; 1000 corresponds to 100.0% of the rated voltage of the motor)	W
	AO 1 output setting	300CH	0~1000 (1000 corresponds to100.0%)	W
	AO 2 output setting	300DH	0~1000 (1000 corresponds to 100.0%)	W
State register	State register 1	6000H	0001H: Forward running 0002H: Reverse running 0003H: Stop 0004H: Fault 0005H: P.OFF state	R
	State register 2	6001H	BIT0:       =0: ready for operation =1: not ready for operation BIT1~BIT2: =00: motor 1 =01: motor2 BIT3:       =0: asynchronous motor =1: synchronous motor BIT4:       =0: pre-alarm without overload =1: overload pre-alarm BIT5~BIT6: =00: keypad control =01: terminal control =10: communication control	R
	Fault code	6002H	Read the register will return the last fault of the AC drive corresponding to the code. The fault code comply to chapter 5 to receive the fault and other informations.	R