AM3 Economic Variable Frequency Drive

In order to use this product better, please read this manual carefully before use

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Chapter 1 Product Specifications and Models

1.1 Product Specifications

Function description		Specifications
Input	Rated voltage;frequency	AC,220v or 380v;50/60Hz
	Allowable voltage working range	Fluctuation range: ≤ ± 20%, voltage imbalance rate: ≤ 3%, frequency: ≤5%
Output	Rated voltage	AC 0~220v or 0~380v
	Rated frequency	0~999.9Hz
	Overload capacity	100% rated current 1 minute
Control performance	Control mode	V/F
	Modulation method	Space voltage PWM modulation
	Speed range	1:100
	Starting torque	150% rated torque at 3.0Hz
	Stability accuracy	≤±0.2% rated synchronous speed
	Speed fluctuation	≤±0.5% rated synchronous speed
	Torque response	≤50ms
	Torque control	Support torque control in vector control mode without PG, torque control accuracy ±5%
	Frequency accuracy	Digital setting: maximum frequency multiplied by ± 0.01%; analog setting: maximum frequency multiplied by±0.2%
	Frequency resolution	Digital setting: 0.01Hz; Analog setting: maximum frequency multiplied by±0.05%
	Torque boost	Automatic torque boost; manual torque boost 0.1%～30.0%
	V/F curve	Three methods: linear curve, square curve, multi-point VF curve
	Acceleration and deceleration curve	Linear acceleration and deceleration, time unit (minute/second), up to 999.9 seconds
	DC braking	Start frequency of DC braking at stop: 0.00～50.00Hz Braking time: 0.0～30.0s; Braking current: 0.0%～50.0% of rated current
	Automatic voltage adjustment AVR	When the grid voltage changes, it can automatically keep the output voltage constant
	Automatic current limit	Automatically limit the current during operation to prevent frequent over-current faults
	Voltage stall	Control the voltage during deceleration to prevent frequency overvoltage faults
	Automatic carrier adjustment	According to the load characteristics and temperature characteristics, the carrier frequency is automatically adjusted, and a variety of carrier modes are available
Personalization function	Frequency combination function	Run command channel and frequency given channel can be combined arbitrarily
	Jog	Jog frequency range: 0.00Hz～50.00Hz
	Multi-speed	Built-in simple PLC or control terminal to realize multi-speed operation
	Built-in closed loop control	Conveniently form a closed-loop control Xirong
	Water supply burst detection	Tube burst detection delay time, high pressure detection threshold, low pressure detection threshold

Run function	Run command channel	Operation panel, control terminal, serial port, can be switched in a variety of ways
	Frequency given channel	2 kinds of numerical setting, analog voltage setting, analog current setting, pulse setting, digital setting Fixed, multi-stage speed setting, etc.
	Auxiliary frequency setting	Realize flexible auxiliary frequency fine-tuning and frequency synthesis
	Pulse output terminal	0～50Hz pulse square wave signal output, which can realize the output of set frequency and output physical quantity
	Analog output terminal	2 channels of analog output, the output orientation can be flexibly set between 0～20mA or 0～10V, which can be implemented Now set the output of physical quantities such as frequency and output frequency
Operation panel	LED display	Display 26 parameters such as set frequency, output frequency, output voltage, output current, etc.
Buttons	Button function selection	Define the scope of some buttons to prevent misoperation
Protection	Protectio function	Phase loss protection, over current protection, over voltage protection, over voltage protection, over heat protection, overload and under protection, load drop protection, etc.
Environment	Use place	The room is not exposed to direct sunlight, dust, corrosive gas, flammable gas, oil mist, water steam, dripping or salt, etc.
	Altitude	Derating for use above 1000 meters, derating 10% for every 1000 meters
	Ambient temperature	-10℃ ～ +40℃ (the ambient temperature is between 40℃ ～ 50℃, please use with derating)
	temperature	5%～95%RH, no condensation
	shock	Less than 5.9/s2(0.6g)
	storage temperature	-40℃ ～ +70℃
Structure	Protection level	IP20
	cooling method	Air-cooled, with fan control
	Efficiency	7.5KW and below ≥93%

Product design implementation standards

- EN 61800 -3:2017 Adjustable speed electric drive system, Part 3: Electromagnetic compatibility EMC requirements and specific experimental methods
- EN 61800 -2:2015 adjustable speed electric drive system. Part 2: General requirements. Low voltage adjustable frequency AC drive rating specification
- EN 61800 -5-1:20074/A1:2017 Adjustable Speed Electric Drive System-Part 5-1: Safety Requirements-Electricity, Heat and Energy

1.2 Inverter Models

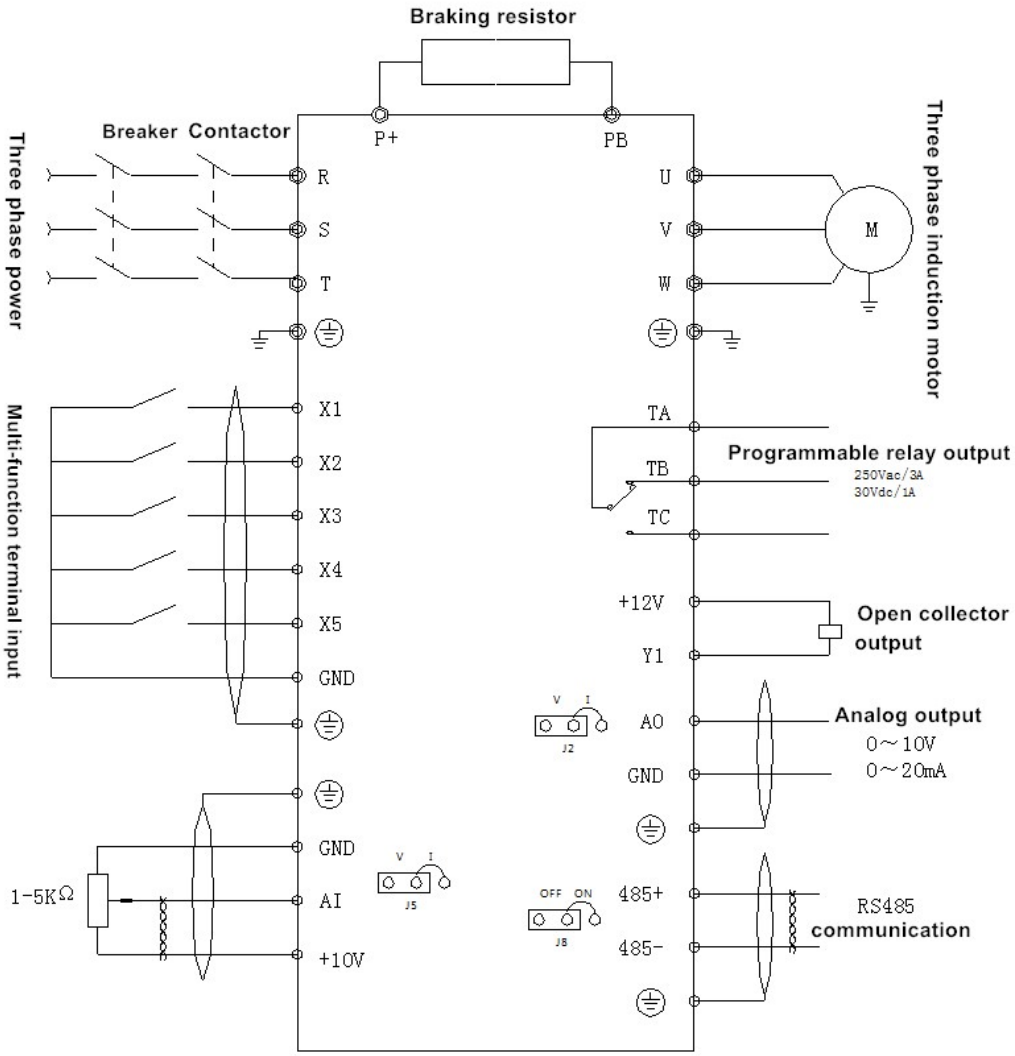
Inverter models and technical datas

Models		Power capacity KVA	Input current A	Ouput current A	Adapted motor KW
Single phase 220v	AM300R7G1	1.4	4.0	3.7	0.75
	AM301R5G1	2.6	7.0	7.0	1.5
	AM302R2G1	3.8	10.0	9.6	2.2
	AM304R0G1	8.8	16.0	16.5	4.0

	AM305R5G1	11	28.0	25.0	5.5
3phase 380v	AM300R7G3	1.5	2.3	2.1	0.75
	AM301R5G3	3.7	3.7	3.7	1.5
	AM302R2G3	4.7	5.0	5.0	2.2
	AM304R0G3	5.9	10.5	9.0	4.0
	AM305R5G3	8.9	14.6	13.0	5.5
	AM307R5G3	11	20	17.0	7.5

Chapter 2 Basic Wiring Diagram

2.1 Inverter wiring diagram

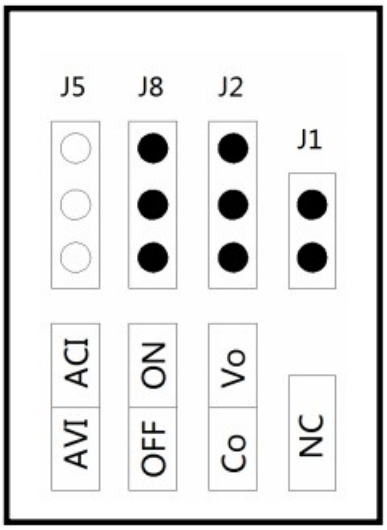


2.2 Control circuit terminals and jumpers:

2.2.1 Control circuit terminals diagram:

+10V		AO	485-	X2	X4	GND	Y1	TC
AI	GND	485+	X1	X3	X5	+12V	TA	TB

2.2.2 Control terminal jumper diagram：



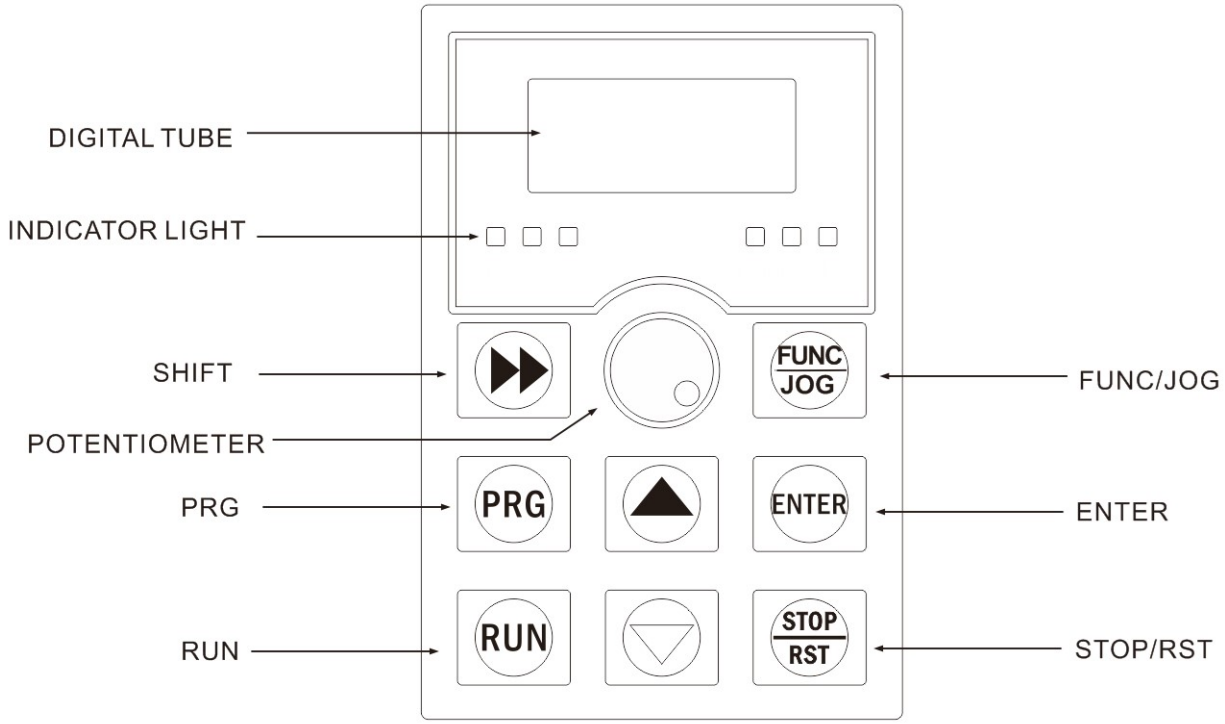
J2	
VO	Represents AO output voltage signal
CO	Represents AO output current signal
J8	
OFF	Indicates that the matched resistance on the 485 communication is not connected
ON	Indicates that the matched resistance access on 485 communication
J5	
AVI	Represents AI input voltage signal
ACI	Represents AI input current signal

Chapter 3 Description of Control Circuit Terminals

Control circuit terminal description			
Type	**Terminal label**	**Function description**	**Specification**
Multifunctionaldigital input terminal	X1	It is effective when X (X1, X2, X3, X4, X5) and GND are short-circuited, and their functions are respectively set by parameters F2.13～F2.17. (Common: GND)	INPUT, 0 ～ 10V level signal, low level effective, 5mA.
	X2		
	X3		
	X4		
	X5		
Digital signal output terminal	Y1	Multi-function programmable open-collector output, programmable defined as a switch output terminal with multiple functions. (Common: GND)	OUTPUT, the maximum load current is not more than 50mA.
Analog output input terminal	AI	ACI accepts current input, AVI only accepts voltage input. See the description of function code F2.00～F2.09 for the range setting. (Reference ground: GND)	INPUT, input voltage range: 0 ～ 10V (input impedance: 100KΩ), input current range: 0～20mA (input impedance: 500Ω).

	AO	AO provides analog voltage/current output, which can represent 6 physical quantities. The output voltage and current are selected by jumper J2 (AO jumper terminal). The factory default output voltage. If you want to output current, you only need to jumper cap short. Connect the middle and the other end. See function code for details F2.10 description. (Reference ground: GND)	OUTPUT, 0～10V DC voltage. The output voltage of the AO terminal is the PWM waveform from the central processing unit. The output voltage is proportional to the width of the PWM waveform.
Relay output terminal	TA	There are up to 14 types of programmable relay terminals TA and TC outputs. For details, please refer to F2.20 output terminal function introduction.	TA-TB: normally closed; TA-TC: normally open. Contact capacity: 250VAC/2A (COSΦ=1); 250VAC/1A (COSΦ=0.4), 30VDC/1A.
	TB		
	TC		
Power interface	10V	10V is the common power supply for the circuit of the analog input terminal	Maximum output current 20mA.
	12V	12V is the common power supply of the circuit of the digital signal input terminal	Maximum output current 100mA.
	GND	Analog signal and 10V, digital signal and 12V power reference ground.	Analog signal,digital signal common ground
Communication interface	485+	RS485 signal + terminal	Standard RS485 communication interface, not isolated from GND, please use twisted pair or shielded wire
	485-	RS485 signal - terminal	

Chapter 4 Operation Panel Introduction



S/N	Name	Explanation	
1	Status Indicator	FWD	Forward running indicator When the light is on, it means that the inverter is in forward running state
		REV	Reverse running indicator When the light is on, it means the inverter is in reverse running state
		ALM	Fault indicator When the inverter is in a fault state, the light is on; in a normal state, it is off
2	Unit indicator	HZ	Frequency unit
		A	Current unit
		V	Voltage unit
3	Digital tube display	5-digit LED display,display set frequency,output frequency,etc various monitoring data and alarm code	
4	Analog potentiometer	Panel potentiometer to adjust frequency	
5	Button area	PRG	Enter or exit the first level menu, delete the quick parameter
		ENTER	Step by step enter the menu screen, confirm the set parameters
		▲	Increment of data and function codes
		▼	Decrement of data and function codes
		▶▶	In the stop display interface and the running display interface, you can move to the right to select the display parameters circularly; When changing the parameter, you can select the modification position of the parameter
		RUN	In keyboard operation mode, it is used to run operation
		STOP/RST	In the running state, this key can be used to stop the running operation: in the fault alarm state, all control Mode can use this key to reset operation
		FUNC/JOG	The key function is set by function code F8.04

Chapter 5 Monitoring Parameter Group Function Code

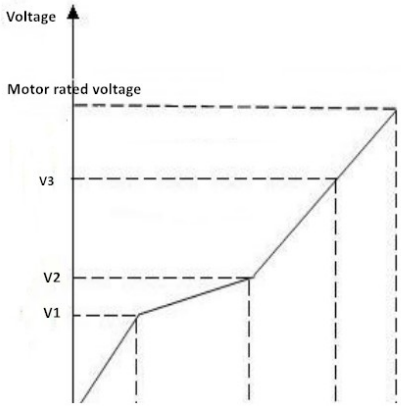
d group monitoring parameter group					
Function code	Name	Range	Minimum unit	Factory set	Change
d-00	Output frequency (Hz)	0.0～999.9Hz	0.1Hz	0.0Hz	◆
d-01	Setting frequency (Hz)	0.0～999.9Hz	0.1Hz	0.0Hz	◆
d-02	Output voltage (V)	0～999V	1V	0V	◆
d-03	Bus voltage (V)	0～999V	1V	0V	◆
d-04	Output current (A)	0.0～999.9A	0.1A	0.0A	◆
d-05	Motor speed (Krpm)	0～60000Krpm	1Krpm	Model setting	◆
d-06	Analog input AVI (V)	0.00～10.00V	0.01V	0.00V	◆
d-07	Analog input ACI (mA)	0.00～20.00mA	0.01mA	0.00mA	◆
d-08	Analog output AO (V/mA)	0.00～10.00V/0.00～20.00mA	0.01V/0.01mA	0.00V/mA	◆
d-09	Reserve	-	-	0	◆
d-10	Pulse input frequency (KHz)	0.00～99.99KHz	0.01KHz	0.00KHz	◆
d-11	PID pressure feedback value	0.00～10.00V/0.00～99.99(MPa、Kg)	0.01V/(MPa、Kg)	0.00V/(MPa、Kg)	◆
d-12	Current count value	0～9999s	1s	0s	◆
d-13	Current timing value (s)	0～9999s	1s	0s	◆
d-14	Input terminal status (X1-X5)	0～1FH	1H	0H	◆
d-15	Output status (Y/R)	0～3H	1H	0H	◆
d-16	Module temperature (℃)	0.0～132.3℃	0.1℃	0.0	◆
d-17	Software upgrade date (years)	2010～2026	1	2017	◆
d-18	Software upgrade date(Month Day)	0～1231	1	0914	◆
d-19	Second failure code	0～19	1	0	◆
d-20	Last failure code	0～19	1	0	◆
d-21	Output frequency at the last failure (Hz)	0.0～999.9Hz	0.1Hz	0.0Hz	◆
d-22	At the time of the	0.0～999.9A	0.1A	0.0V	◆

	last failure Output current (A)				
d-23	Bus voltage at the last failure (V)	0～999V	1V	0V	◆
d-24	At the time of the last failure Module temperature (℃)	0.0～132.3℃	0.1℃	0.0℃	◆
d-25	Accumulated time of inverter operation (h)	0～9999h	1h	0h	◆
d-26	Inverter status	0～FFFFH BIT0: run/stop transfer BIT1: down/positive BIT2: Jog BIT3: Shutdown BIT4: reserved BIT5: Compression limit BIT6: Constant speed and frequency BIT7: Overcurrent limit BIT8~9:00-zero speed/01-acceleration/10-stop/11-same speed BIT10: Overload pre-alarm BIT11: reserved BIT12~13 run command channel: 00-panel/01-terminal/10-reserved BIT14~15 bus voltage status: 00-normal/01-low voltage protection /10-Overpressure protection	1H	0H	◆
d-27	Software version	1.00～99.99	0.01	1.00	◆
d-28	Power model	0.10～99.9KW	0.01kw	Model setting	◆
d-29	Motor estimated frequency	0.0 ～ Maximum output frequency [F0.04] Note: The operating frequency of the motor is converted from the estimated speed of the motor	0.1Hz	0.0Hz	◆
d-30	output torque	-200～+200%	1%	0%	◆

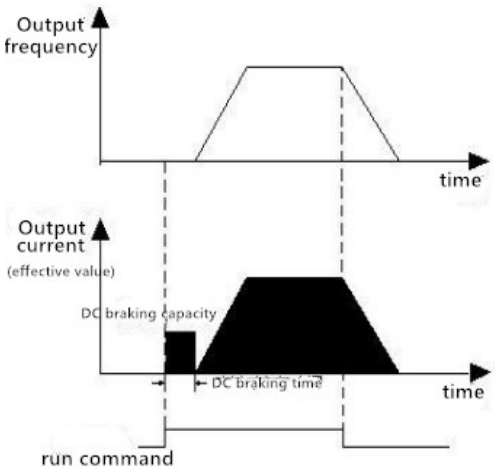
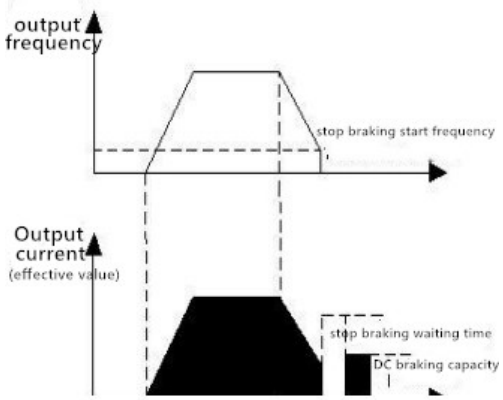
Chapter 6 Function Parameter Table

Parameter Description					
○—parameters that can be modified in any state; ×—parameters that cannot be modified in the running state; ◆—The actual test parameters cannot be modified; ◇—Manufacturer's parameters are limited to the manufacturer's modification, and users are forbidden to modify;					
F0 group basic operating parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F0.00	Inverter power	Display current power	0.10～99.99KW	Model setting	◆
F0.01	Main controller software version	Display the current software version number	1.00～99.99	1.00	◆
F0.02	Run command channel selection	0: Panel run command channel 1: Terminal run command channel 2: Communication operation command channel	0～2	0	○
F0.03	Frequency setting selection	0: Panel potentiometer 1: Digital setting 1, operation panel ▲, ▼ keys to adjust 2: Digital setting 2, terminal UP/DOWN adjustment 3: AI analog setting (0～10V/0-20mA) 4:Combination setting 5:Reserved 6:Communication setting 7:Reserved Note: When combination setting is selected, the combination setting mode is selected in F1.15.	0～7	0	○
F0.04	Maximum output frequency	The maximum output frequency is the highest frequency that the inverter allows to output, It is the basis for acceleration and deceleration settings.	MAX｛50.0,【F0.05】｝～999.9Hz	50.0Hz	×
F0.05	Upper limit frequency	The operating frequency cannot exceed this frequency	MAX{0.1，【F0.06】}～【F0.04】	50.0Hz	×
F0.06	Lower limit frequency	The operating frequency cannot be lower than this frequency	0~Upper limit frequency	0.0Hz	×
F0.07	Lower limit frequency arrival processing	0: Zero speed operation 1: Run at the lower frequency limit 2: shutdown	0～2	0	×
F0.08	Digital setting of operating	The set value is the initial value of frequency digital reference	0~Upper limit	10.0Hz	○

	frequency		frequency		
F0.09	Digital frequency control	LED ones place: power-down storage 0: store 1: Do not store LED tens place: stop keeping 0: keep 1: Do not keep LED hundreds place: UP/DOWN negative frequency adjustment 0: invalid 1: Effective LED thousands place: PID, PLC frequency superposition selection 0: invalid 1: F0.03+PID 2: F0.03+PLC	0000～2111	0000	○
F0.10	Acceleration time	The time it takes for the inverter to accelerate from zero frequency to the maximum output frequency	0.1～999.9S 0.4～4.0KW 7.5S 5.5～7.5KW 15.0S	Model setting	○
F0.11	Deceleration time	The time required for the inverter to decelerate from the maximum output frequency to zero frequency			
F0.12	Rotation direction setting	0: forward 1: Reverse 2: Reversal is prohibited	0～2	0	○
F0.13	V/F curve setting	0: linear curve 1: Square curve 2: Multi-point VF curve	0～2	0	×
F0.14	Torque boost	Manual torque boost, the setting is the percentage relative to the rated voltage of the motor	0.0～30.0％	Model setting	○
F0.15	Torque boost cut-off frequency	This setting is the boost cut-off frequency point during manual torque boost	0.0～50.0Hz	15.0Hz	×
F0.16	Carrier frequency setting	For occasions that require silent operation, the carrier frequency can be appropriately increased to meet the requirements, but increasing the carrier frequency will increase the heat generation of the inverter.	2.0～16.0KHz 0.4～3.0KW 4.0KHz 4.0～7.5KW 3.0KHz	Model setting	×
F0.17	V/F frequency value F1		0.1～frequency value F2	12.5Hz	×
F0.18	V/F voltage value V1		0.0～Voltage value V2	25.0％	×
F0.19	V/F frequency value F2		Frequency value F1～frequency value F3	25.0Hz	×
F0.20	V/F voltage value		Voltage value	50.0％	×

	V2		V1～Voltage value V3		
F0.21	V/F frequency value F3		Frequency value F2～motor rated frequency 【F4.03】	37.5Hz	×
F0.22	V/F voltage value V3		Voltage value V2～100.0% x U(motor rated voltage 【F4.00】)	75.0％	×
F0.23	User password	Setting any non-zero number will take effect after 3 minutes or power failure.	0～9999	0	○
F0.24	Frequency display resolution selection	0: 0.1Hz 1: 1Hz Note: To set this parameter, be sure to check the frequency-related parameters such as maximum output frequency (F0.04), frequency upper limit (F0.05), motor rated frequency (F4.03).	0~1	0	○
F0.25	Motor control mode	0: VF control 1: Advanced VF Control 2: Simple vector control 3: Advanced vector control 4: Torque control	0~4	0	×
F0.26	Function macro definition (temporarily reserved)	0: common mode 1: Single pump constant pressure water supply mode 2: One drag two constant pressure water supply mode 3: Backpack smart small water pump mode 4: Engraving machine mode 5: Safe scene application mode 6: High torque starting scene application mode 7: Quick start and stop scene application mode 8: Automatic energy-saving scene application mode 9: Custom mode (please refer to the custom macro parameter group, the maximum supported 16 parameter application combinations) 10: reserved	0~10	0	×

F1 group Auxiliary operating parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F1.00	Starting method	LED ones place: start mode 0: Start from the starting frequency 1: DC braking first and then starting from the starting frequency	0000～0011		

		LED tens place: restart mode after power failure or abnormal 0: invalid 1: Start from the starting frequency LED hundreds place:reserved LED thousands place:reserved		00	×
F1.01	Starting frequency		0.0～50.0Hz	1.0Hz	○
F1.02	Starting DC braking voltage		0.0～50.0%× rated voltage of motor	0.0%	○
F1.03	Start DC braking time		0.0～30.0s	0.0s	○
F1.04	Stop mode	0: Decelerate to stop 1: Free stop	0～1	0	×
F1.05	Start frequency of DC braking at stop		0.0～upper limit frequency	0.0Hz	○
F1.06	DC braking voltage at stop		0.0～50.0% ×motor rated voltage	0.0%	○
F1.07	DC braking time at stop		0.0～30.0s	0.0s	×
F1.08	Stop DC braking wiating time		0.00～99.99s	0.00s	×
F1.09	Forward jog frequency setting	Set jog forward and reverse frequency	0.0～50.0Hz	10.0Hz	○
F1.10	Reverse jog frequency setting				
F1.11	Jog acceleration time	Set jog acceleration and deceleration time	0.1～999.9S 0.4～4.0KW 10.0S 5.5～7.5KW 15.0S	Model setting	○
F1.12	Jog deceleration time				
F1.13	Hop frequency	By setting the skip frequency and range, the inverter can avoid the mechanical resonance point of the load.	0.0 ～ upper limit frequency	0.0Hz	○
F1.14	Hop range		0.0～10.0Hz	0.0Hz	○
F1.15	Frequency combination given	0: Potentiometer + digital frequency 1 1: Potentiometer + digital frequency 2			

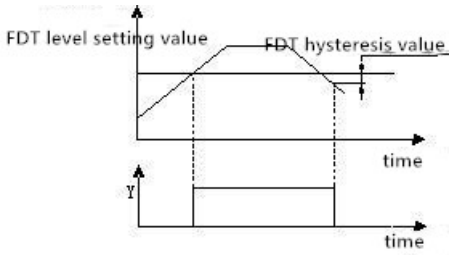
	method	2: Potentiometer+AI 3: Digital frequency 1+AI 4: Digital frequency 2+AI 5: Digital frequency 1+multi-speed 6: Digital frequency 2+multi-speed 7: Potentiometer + multi-speed 8:AI+PLC (same direction superposition) 9:Reserved	0～9	0	×
F1.16	Programmable operation control (simple PLC operation)	LED ones place: PLC enable control 0: invalid 1: Effective LED tens place: operation mode selection 0: single loop 1: Continuous loop 2: Keep the final value after a single cycle LED hundreds place: start mode 0: restart from the first segment 1: Start from the stage at the moment of shutdown (fault) 2: Starting from the stage and frequency at the moment of shutdown (fault) LED thousands place: Power-down storage options 0: do not store 1: storage	0000~1221	0000	×
F1.17	Multi-speed frequency 1	Set stage speed 1 frequency	-Upper limit frequency ~ upper limit frequency	5.0Hz	○
F1.18	Multi-speed frequency 2	Set stage speed 2 frequency	-Upper limit frequency ~ upper limit frequency	10.0Hz	○
F1.19	Multi-speed frequency 3	Set stage speed 3 frequency	-Upper limit frequency ~ upper limit frequency	15.0Hz	○
F1.20	Multi-speed frequency 4	Set stage speed 4 frequency	-Upper limit frequency ~ upper limit frequency	20.0Hz	○
F1.21	Multi-speed frequency 5	Set stage speed 5 frequency	-Upper limit frequency ~ upper limit frequency	25.0Hz	○
F1.22	Multi-speed frequency 6	Set stage speed 6 frequency	-Upper limit frequency ~ upper limit frequency	37.5Hz	○

F1.23	Multi-speed frequency 7	Set stage speed 7 frequency	-Upper limit frequency ~ upper limit frequency	50.0Hz	○
F1.24	Phase 1 running time	Set the running time of stage speed 1 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.25	Phase 2 running time	Set the running time of stage speed 2 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.26	Phase 3 running time	Set the running time of stage speed 3 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.27	Phase 4 running time	Set the running time of stage speed 4 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.28	Phase 5 running time	Set the running time of stage speed 5 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.29	Phase 6 running time	Set the running time of stage speed 6 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.30	Phase 7 running time	Set the running time of stage speed 7 (the unit is selected by【F1.35】, the default is second)	0.0～999.9s	10.0s	○
F1.31	Phase acceleration and deceleration time selection 1	LED ones place: Phase 1 acceleration and deceleration time 0～1 LED tens place: Phase 2 acceleration and deceleration time 0～1 Hundreds place of LED: Phase 3 acceleration and deceleration time 0～1 Thousands of LED: Phase 4 acceleration and deceleration time	0000～1111	0000	○
F1.32	Phase acceleration and deceleration time selection 2	LED ones place: Phase 5 acceleration and deceleration time 0～1 LED tens place: Phase 6 acceleration and deceleration time 0～1 LED hundreds place:Phase 7 acceleration and deceleration time 0～1 LED thousands place:reserved	000～111	000	○
F1.33	Acceleration time 2	Set acceleration and deceleration time 2	0.1～999.9s 0.4～4.0KW 10.0s 5.5～7.5KW 15.0s	10.0s	○
F1.34	Deceleration time 2				
F1.35	Time unit selection	LED ones place: process PID time unit LED tens place: simple PLC time unit LED hundreds place: conventional acceleration and deceleration time unit LED thousands place: reserved 0: The unit is 1 second 1: The unit is 1 minute 2: The unit is 0.1 second	000～211	000	×
F1.36	Forward and reverse dead time	Transition time for the inverter to wait at the output zero frequency during the transition from	0.00~999.9S	0	○

		forward operation to reverse operation, or from reverse operation to forward operation.			

F2 group Analog and digital input and output parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F2.00	AI input lower limit voltage	Set AI upper and lower limit voltage	0.00～【F2.01】	0.00V	○
F2.01	AI input upper limit voltage		【F2.01】～10.00V	10.00V	○
F2.02	AI lower limit corresponding setting	Set the corresponding setting of the upper and lower limit of AI, which corresponds to the percentage of the upper limit frequency [F0.05].	-100.0～100.0%	0.0%	○
F2.03	AI upper limit corresponding setting			100.0%	○
F2.04~F2.07	Reserved	–	–	0	◆
F2.08	Analog input signal filtering time constant	This parameter is used to filter the input signal of AI and panel potentiometer to eliminate the influence of interference.	0.1～5.0s	0.1s	○
F2.09	Analog input anti-shake deviation limit	When the analog input signal fluctuates frequently near the given value, you can set F2.09 to suppress the frequency fluctuation caused by this fluctuation.	0.00～0.10V	0.00V	○
F2.10	AO analog output terminal function selection	0: output frequency 1: output current 2: Motor speed 3: Output voltage 4: AI 5: Reserved	0～5	0	○
F2.11	AO output lower limit	Set the upper and lower limits of AFM output	0.00～10.00V/ 0.00～20.00mA	0.00V	○
F2.12	AO output upper limit			10.00V	○
F2.13	Input terminal X1 function	0: The console is idle 1: forward jog control 2: reverse jog control 3: Forward rotation control (FWD) 4: Reverse control (REV) 5: Three-wire operation control 6: Free stop control 7: External stop signal input (STOP) 8: External reset signal input (RST) 9: External fault normally open input 10: Frequency increase command (UP) 11: Frequency decrement command (DOWN)	0～30	3	×
F2.14	Input terminal X2 function		0～30	4	×
F2.15	Input terminal X3 function		0～30	0	×
F2.16	Input terminal X4 function		0～30	0	×
F2.17	Input terminal X5 function		0～30	22	×

		13: Multi-stage speed selection S1 14: Multi-stage speed selection S2 15: Multi-stage speed selection S3 16: The running command channel is forced to be a terminal 17: The running command channel is forced to communicate 18: Shutdown DC braking command 19: Frequency switch to AI 20: Frequency switching to digital frequency 1 21: Frequency switching to digital frequency 2 22: reserved 23: Counter clear signal 24: Counter trigger signal 25: Timer clear signal 26: Timer trigger signal 27: Acceleration and deceleration time selection 28: Wobble frequency pause (stop at the current frequency) 29: Wobble frequency reset (back to center frequency) 30: External stop/reset signal input (STOP/RST)			
F2.18	FWD/REV terminal control mode	0: Two-wire control mode 1 1: Two-wire control mode 2 2: Three-wire control mode 1 3: Three-wire control mode 2 4: Three-wire control mode 3 5: reserved	0～5	0	×
F2.19	Terminal function detection selection at power-on	0: Terminal running command is invalid when power on 1: Terminal running command is valid when power is on	0～1	0	×
F2.20	Relay output setting	0: idle 1: Inverter ready for operation 2: The inverter is running 3: The inverter is running at zero speed 4: External fault shutdown 5: Inverter failure 6: Frequency/speed arrival signal (FAR) 7: Frequency/speed level detection signal (FDT) 8: The output frequency reaches the upper limit 9: The output frequency reaches the lower limit 10: Inverter overload pre-alarm 11: Timer overflow signal 12: Counter detection signal 13: Counter reset signal 14: Auxiliary motor 15: forward rotation	0～17	5	○
F2.21	Y1 open collector output		0～17	0	○

		16: reverse 17: Output indication signal when the output frequency drops to the speed detection level			
F2.22	R close delay	The delay from the change of the state of the relay R to the change of the output	0.0～255.0s	0.0s	×
F2.23	R off delay				
F2.24	Frequency reaches FAR detection range	The output frequency is within the positive and negative detection width of the set frequency, and the terminal outputs a valid signal (low level).	0.0Hz～15.0Hz	5.0Hz	○
F2.25	FDT level setting value		0.0Hz～upper limit frequency	10.0Hz	○
F2.26	FDT hysteresis value		0.0～30.0Hz	1.0Hz	○
F2.27	UP/DOWN terminal modification rate	This function code is to set the frequency modification rate when the UP/DOWN terminal sets the frequency, that is, when the UP/DOWN terminal is short-circuited with the COM terminal for one second, the magnitude of the frequency change.	0.1Hz～99.9Hz/s	1.0Hz/s	○
F2.28	Input terminal pulse trigger mode setting (X1～X6)	0: Indicates level trigger mode 1: Indicates the pulse trigger mode	0～3FH	0	○
F2.29	Input terminal valid logic setting (X1～X6)	0: indicates positive logic, that is, the connection between the Xi terminal and the common terminal is valid, and the disconnection is invalid 1: Represents the inverse logic, that is, the connection between the Xi terminal and the common terminal is invalid, and the disconnection is valid	0～3FH	0	○
F2.30	X1 filter coefficient	Used to set the sensitivity of the input terminal. If the digital input terminal is susceptible to interference and cause misoperation, this parameter can be increased to enhance the anti-interference ability, but setting too large will cause the sensitivity of the input terminal to decrease. 1: Represents the 2MS scan time unit	0～9999	5	○
F2.31	X2 filter coefficient		0～9999	5	○
F2.32	X3 filter coefficient		0～9999	5	○
F2.33	X4 filter coefficient		0～9999	5	○
F2.34	X5 filter coefficient		0～9999	5	○
F2.35	X1 access delay time	Used to set the input terminal access delay time	0.00~655.00s	0.00	○
F2.36	X2 access delay time		0.00~655.00s	0.00	○
F2.37	X3 access delay time		0.00~655.00s	0.00	○
F2.38	X4 access delay time		0.00~655.00s	0.00	○

F2.39	X4 access delay time		0.00~655.00s	0.00	○
F2.40	X1 disconnection delay time	Used to set the input terminal disconnection delay time	0.00~655.00s	0.00	○
F2.41	X2 disconnection delay time		0.00~655.00s	0.00	○
F2.42	X3 disconnection delay time		0.00~655.00s	0.00	○
F2.43	X4 disconnection delay time		0.00~655.00s	0.00	○
F2.44	X5 disconnection delay time		0.00~655.00s	0.00	○
F2.45	X6/AO enable selection	0: AO is valid 1: X6 is valid	0~1	0	x
F2.46	Input terminal X6 function	Same function as F2.13～F2.17	0~30	0	x
F2.47	X6 filter coefficient	See F2.30～F2.34 for details	0~9999	5	○
F2.48	X6 access delay time	Used to set the input terminal access delay time of X6	0.00~655.00s	0.00	○
F2.49	X6 disconnection delay time	Used to set the input terminal disconnection delay time of X6	0.00~655.00s	0.00	○

F3 group PID parameter					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F3.00	PID function setting	LED ones place: PID adjustment characteristics 0: invalid 1: Positive effect When the feedback signal is greater than the PID setting, the output frequency of the inverter is required to decrease (that is, to reduce the feedback signal). 2: Negative effect When the feedback signal is greater than the PID setting, the inverter output frequency is required to increase (that is, to reduce the feedback signal). LED tens place: PID given input channel 0: keyboard potentiometer The PID given amount is given by the potentiometer on the operation panel. 1: Number given PID given amount is given by numbers and set by function code F3.01. 2: Pressure setting (MPa, Kg) The pressure is given by setting F3.01 and F3.18. LED hundreds place: PID feedback input channel 0: AI 1:Reserved	0000～2122	1010	×

		LED thousands place: PID sleep selection 0: invalid 1: Normal sleep This method needs to set specific parameters such as F3.10～F3.13. 2: Disturbance sleep The parameter setting is the same as when the sleep mode is selected as 0. If the PID feedback value is within the range of the F3.14 setting value, the sleep delay time will be maintained and the disturbance sleep will be entered. When the feedback value is less than the wake-up threshold (PID polarity is positive), it wakes up immediately.			
F3.01	Set a given amount of digital	Use the keyboard to set the given amount of PID control. This function is valid only when the PID given channel selects the digital given (the tens place of F3.00 is 1 or 2). If the tens place of F3.00 is 2, it is used as pressure setting. This parameter is consistent with the unit of F3.18.	0.0～100.0%	0.0%	○
F3.02	Feedback channel gain	When the feedback channel is inconsistent with the set channel level, this function can be used It can adjust the gain of the feedback channel signal.	0.01～10.00	1.00	○
F3.03	Proportional gain P	The speed of PID adjustment is set by the two parameters of proportional gain and integral time. If the adjustment speed is fast, it needs to increase the proportional gain and reduce the integral time. If the adjustment speed is slow, it needs to reduce the proportional gain and increase the integral time. Generally, the derivative time is not set.	0.01～5.00	2.00	○
F3.04	Integration time Ti		0.1～50.0s	1.0s	○
F3.05	Differential time Td		0.1～10.0s	0.0s	○
F3.06	Sampling period T	The larger the sampling period, the slower the response, but the better the interference signal suppression effect. Generally, it is not necessary to set it.	0.1～10.0s	0.0s	○
F3.07	Deviation limit	The deviation limit is the ratio of the absolute value of the deviation between the system feedback quantity and the given quantity to the given quantity. When the feedback quantity is within the deviation limit, the PID adjustment will not act.	0.0～20.0％	0.0％	○
F3.08	Closed loop preset frequency	The frequency and running time of the inverter before the PID is put into operation	0.0～upper limit frequency	0.0Hz	○
F3.09	Preset frequency hold time		0.0～999.9s	0.0s	×
F3.10	Sleep threshold coefficient	If the actual feedback value is greater than the set value and the output frequency of the inverter reaches the lower limit frequency, the inverter will	0.0～150.0%	100.0％	○

		enter the sleep state (that is, running at zero speed) after the delay waiting time defined by F3.12; Percentage of PID set value.			
F3.11	Wake-up threshold coefficient	If the actual feedback value is less than the set value, the inverter will leave the sleep state and start working after the delay waiting time defined by F3.13; this value is the percentage of the PID set value.	0.0～150.0%	90.0％	○
F3.12	Sleep delay time	Set sleep delay time	0.0～999.9s	100.0s	○
F3.13	Wake-up delay time	Set wake-up delay time	0.0～999.9s	1.0s	○
F3.14	Deviation between feedback and set pressure when entering sleep	This function parameter is only valid for disturbed sleep mode	0.0～10.0％	0.5%	○
F3.15	Burst detection delay time	Set the burst detection delay time	0.0～130.0s	30.0S	○
F3.16	High pressure detection threshold	When the feedback pressure is greater than or equal to this set value, the pipe burst fault “EPA0” will be reported after the F3.15 burst delay. When the feedback pressure is less than this set value, the pipe burst fault “EPA0” will automatically reset; the threshold is the percentage of set pressure.	0.0～200.0％	150.0%	○
F3.17	Low pressure detection threshold	When the feedback pressure is less than this set value, the pipe burst fault "EPA0" will be reported after the F3.15 burst delay. When the feedback pressure is greater than or equal to this set value, the pipe burst fault "EPA0" will automatically reset; the threshold is the percentage of set pressure.	0.0～200.0％	50.0%	○
F3.18	Sensor range	Set the maximum range of the sensor	0.00～99.99 (MPa,Kg)	10.00MPa	○

F4 group　Advanced function parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F4.00	Motor rated voltage	Motor parameter setting	0～500V：380V 0～250V：220V	Model setting	×
F4.01	Motor rated current		0.1～999.9A	Model setting	×
F4.02	Motor rated speed		0～9999RPM	Model setting	×
F4.03	Motor rated frequency		1.0～999.9Hz	50.0Hz	×
F4.04	Motor stator resistance	Set motor stator resistance	0.001～20.000Ω	Model setting	○
F4.05	Motor no-load	Set motor no-load current	0.1～【F4.01】	Model	×

	current			setting	
F4.06	AVR function	0: invalid 1: Valid throughout 2: Invalid only when decelerating	0～2	0	×
F4.07	Cooling fan control	0: automatic control mode 1: Always running during power-on	0～1	0	○
F4.08	Automatic fault reset times	When fault reset times is set to 0, there is no automatic reset function, only manual reset, 10 means unlimited times, that is, countless times.	0～10	0	×
F4.09	Automatic fault reset interval time	Set the interval time for automatic fault reset	0.5～25.0s	3.0s	×
F4.10	Energy consumption braking initial voltage	If the internal DC side voltage of the inverter is higher than the initial voltage of dynamic braking, the built-in braking unit will act. If a braking resistor is connected at this time, the internal voltage energy of the inverter will be released through the braking resistor to make the DC voltage drop.	330～380/660～800V	350/780V	○
F4.11	Energy consumption braking action proportion		10～100％	100％	○
F4.12	Overmodulation function selection	0: invalid 1: Valid	0~1	0	×
F4.13	PWM mode	0: Seven bands of full frequency 1: Full frequency five-band 2: Seven-stage to five-stage	0~2	0	×
F4.14	slip compensation coefficient	After the asynchronous motor is loaded, the speed will drop, and the use of slip compensation can make the motor speed close to its synchronous speed, so that the motor speed control accuracy is higher. This coefficient is only valid for common V/F and simple vector.	0~200%	100%	×
F4.15	slip compensation mode	0: invalid 1: low frequency compensation Note: This parameter is only valid for advanced V/F	0~1	0	×
F4.16	Motor parameter self-learning	0: invalid 1: Static self-learning (Start will be displayed immediately after starting, and END will be displayed after 1S to turn off,)	0~1	0	×
F4.17	Motor rated power	After changing the motor rated power F4.17, F4.01, F4.02, F4.04, F4.05, F4.18 ～ F4.20 are automatically updated to the default parameters of the motor with corresponding power.	0.0~2000.0KW	Model Settings	○
F4.18	Motor rotor resistance		0.00~200.00Ω	Model Settings	○
F4.19	motor stator and rotor inductance		0.00~200.00mH	Model Settings	○
F4.20	Motor stator and rotor mutual inductance		0.00~200.00mH	Model Settings	○

F4.21	Speed loop (ASR1) proportional gain	Function codes F4.21~F4.26 are valid in vector control mode. By setting proportional gain P and integral time I, the speed response characteristic of vector control can be changed.	1~100	30	x
F4.22	Speed loop (ASR1) integral time		0.01~10.00s	0.5	○
F4.23	toggle low frequency		0.0~10Hz	5.0	x
F4.24	Speed loop (ASR2) proportional gain		1~100	20	○
F4.25	Speed loop (ASR2) integral time		0.01~10.00s	1.0	○
F4.26	switch high frequency		F4.23~300Hz	10.0	x
F4.27	Vector slip compensation	In the vector control mode, this parameter is used to adjust the steady speed accuracy of the motor. When the motor is heavily loaded and the speed is low, increase this parameter, otherwise decrease this parameter.	50%~200%	100	○
F4.28	Speed loop filter time constant	Set the speed loop filter time constant	0.000~1.000s	0.010	○
F4.29	Reserved	-	-	0	◆
F4.30	Speed loop torque limit	The setting value is the percentage of the rated current of the motor	0.0%~200.0%	150.0	○
F4.31	Torque command selection	0: keyboard number given 1: AI 2: reserved	0~2	0	x
F4.32	Torque digital given	The setting value is the percentage of the rated current of the motor	0.0%~200.0%* motor rated current	150.0	○
F4.33	Torque control forward maximum frequency	It is used to set the forward or reverse maximum operating frequency of the inverter in the torque control mode.	0.0~3200.0Hz	50.0	○
F4.34	Torque control reverse maximum frequency		0.0~3200.0Hz	50.0	○
F4.35	Torque rise time	The torque rise/fall time defines the time when the torque rises from 0 to the maximum value or falls from the maximum value to 0.	0.00~1.00s	0.00	x
F4.36	Torque drop time		0.00~1.00s	0.00	x

F5 group Protection function parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F5.00	Protection settings	LED ones place: motor overload protection selection 0: invalid 1: Effective LED tens place: PID feedback disconnection protection			

		0: invalid 1: Protection action and free stop LED hundreds place: 485 communication failure handling 0: Protection action and free stop 1: Alarm but maintain the status quo operation 2: Alarm and stop according to the set method LED thousands place: Vibration suppression options 0: invalid 1: Effective	0000～1211	0001	×
F5.01	Motor overload protection factor	The motor overload protection coefficient is the percentage of the rated current value of the motor to the rated output current value of the inverter.	30％～110％	100%	×
F5.02	Undervoltage protection level	This function code specifies the allowable lower limit voltage of the DC bus when the inverter is working normally.	50～280/50～480V	180/360V	×
F5.03	Deceleration voltage limit coefficient	This parameter is used to adjust the inverter's ability to suppress overvoltage during deceleration.	0:close,1～255	1	×
F5.04	Overvoltage limit level	The overvoltage limit level defines the operating voltage of the overvoltage stall protection	350~400/660~850V	375/790V	×
F5.05	Accelerating current limit coefficient	This parameter is used to adjust the inverter's ability to suppress overcurrent during acceleration.	0:close,1～99	10	×
F5.06	Constant speed current limit coefficient	This parameter is used to adjust the inverter's ability to suppress overcurrent during constant speed.	0:close,1～10	0	×
F5.07	Current limit level	The current limit level defines the current threshold value of the automatic current limit action, and its set value is the percentage relative to the rated current of the inverter.	50％～250％	180%	×
F5.08	Feedback disconnection detection value	This value is the percentage of PID given amount. When the PID feedback value is continuously smaller than the feedback disconnection detection value, the inverter will make corresponding protection actions according to the setting of F5.00. When F5.08=0.0%, it is invalid.	0.0～100.0%	0.0％	×
F5.09	Feedback disconnection detection time	The delay time before the protection action after the feedback disconnection occurs.	0.1～999.9S	10.0s	×
F5.10	Inverter overload pre-alarm level	The current threshold of the inverter overload pre-alarm action, and its set value is the percentage relative to the inverter rated current.	0～150％	120％	○
F5.11	Inverter overload pre-alarm delay	The inverter output current has been continuously greater than the overload pre-alarm level range (F5.10), the delay time between outputting the	0.0～15.0s	5.0s	×

		overload pre-alarm signal.			
F5.12	Jog priority enable	0: invalid 1: When the inverter is running, the jog has the highest priority	0～1	0	×
F5.13	Oscillation suppression coefficient	When the motor oscillates, you need to set the F5.00 thousand digits to be effective, turn on the oscillation suppression function, and then adjust by setting the oscillation suppression coefficient. Generally, the oscillation amplitude is large, increase the oscillation suppression coefficient F5.13, F5.14 ～ F5. 16 No need to set; if you encounter special occasions, you need to use F5.13～F5.16 together.	0～200	30	○
F5.14	Amplitude suppression coefficient		0～12	5	○
F5.15	Oscillation suppression lower limit frequency		0.0～【F5.16】	5.0Hz	○
F5.16	Oscillation suppression upper limit frequency		【F5.15】～【F0.05】	45.0Hz	○
F5.17	Wave-by-wave current limit selection	LED ones place: select during acceleration 0: invalid 1: Effective LED tens place: select during deceleration 0: invalid 1: Effective LED hundreds place: choose in constant speed 0: invalid 1: Effective LED thousands place: reserved	000～111	011	×
F5.18	Output phase loss protection detection coefficient	When the ratio of the maximum value to the minimum value of the three-phase output current is greater than this coefficient and lasts for more than 6 seconds, the inverter will report the output current imbalance fault EPLI; when F5.18=0.00, the output phase loss protection is invalid.	0.00~20.00	2.00	○

F6 group Communication parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F6.00	Local address	Set the local address, 0 is the broadcast address	0～247	1	×
F6.01	MODBUS communication configuration	LED ones place: baud rate selection 0: 9600BPS 1: 19200BPS 2: 38400BPS LED tens place: data format 0: no check 1: Even parity 2: Odd parity LED hundreds place: Communication response method 0: normal response	0000～0322	0000	×

		1: Only respond to the slave address 2: No response 3: The slave does not respond to the free stop command of the master in the broadcast mode LED thousands place: reserved			
F6.02	Communication timeout detection time	If the machine does not receive the correct data signal within the time interval defined by this function code, the machine thinks that the communication has failed, and the inverter will determine whether to protect or maintain the current operation according to the setting of the communication failure action mode; When the value is set to 0.0, RS485 communication timeout detection is not performed.	0.1～100.0s	10.0s	×
F6.03	Local answer delay	This function code defines the intermediate time interval between the end of the frequency converter data frame reception and the sending of the response data frame to the upper computer. If the response time is less than the system processing time, the system processing time shall prevail.	0～200ms	5ms	×
F6.04	Proportional linkage coefficient	This function code is used to set the weight coefficient of the frequency command received by the inverter as a slave through the RS485 interface. The actual operating frequency of the machine is equal to the value of this function code multiplied by the frequency setting command value received through the RS485 interface. In linked control, this function code can set the ratio of the running frequency of multiple inverters.	0.01～10.00	1.00	○
F6.05	Multi-vendor protocol selection (reserve)	0: M series 1: 380 series 2: ZC series 3: CHF series Compatible with multi-manufacturer communication protocols as much as possible depending on the memory capacity	0~3	0	x

F7 group Supplementary function parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F7.00	Counting and timing mode	LED ones place: count arrival processing 0: Count in a single week, stop output 1: Count in a single week and continue to output 2: Cycle counting, stop output 3: Cycle counting, continue to output LED tens place: reserved LED hundreds place: Timing arrival processing	000～303	103	×

		0: One-week timing, stop output 1: One-week timing, continue to output 2: Cycle timing, stop output 3: Cycle timing, continue to output LED thousands place: reserved			
F7.01	Counter reset value setting	Set counter reset value	【F7.02】～9999	1	○
F7.02	Counter detection value setting	Set counter detection value	0～【F7.01】	1	○
F7.03	Timing time setting	Set timing time	0～9999s	0s	○
F7.04 ~ F7.07	Reserved	-	-	0	○
F7.08	swing frequency control	0: disabled 1: Valid	0~1	0	x
F7.09	swing control	0: fixed swing The swing reference value is the maximum output frequency (F0.04). 1: variable amplitude The swing reference value is a given channel frequency.	0~1	0	x
F7.10	Wobble frequency stop and start mode selection	0: Start according to the state memorized before stopping 1: restart start	0~1	0	x
F7.11	swing frequency amplitude	Wobble frequency amplitude is the percentage relative to the maximum output frequency (F0.04).	0.0~100.0%	0.0%	○
F7.12	Kick frequency	This function code refers to the range of rapid drop after the frequency reaches the upper limit of the swing frequency during the wobble process, and of course it also refers to the range of rapid rise after the frequency reaches the lower limit of the wobble frequency. The value is the phase For the percentage of swing frequency amplitude (F7.11), if it is set to 0.0%, there will be no jump frequency.	0.0~100.0%	0.0%	○
F7.13	Wobble frequency rise time	The running time from the lower limit frequency of the wobble frequency to the upper limit frequency of the wobble frequency.	0.1~3600.0s	5.0	○
F7.14	Wobble down time	The running time from the upper limit frequency of the wobble frequency to the lower limit frequency of the wobble frequency.	0.1~3600.0s	5.0	○
F7.15	Wobble frequency upper limit frequency delay	Set the upper and lower limit frequency delay of the wobble frequency.	0.1~3600.0s	5.0	○
F7.16	Wobble frequency lower limit frequency delay		0.1~3600.0s	5.0	○

F8 group Management and display parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F8.00	Operation monitoring parameter project selection	For example: F8.00=2, that is, select the output voltage (d-02), then the default display item of the main monitoring interface is the current output voltage value.	0～26	0	○
F8.01	Selection of shutdown monitoring parameters	For example: F8.01=3, that is, select the bus voltage (d-03), then the default display item of the main monitoring interface is the current bus voltage value.	0～26	1	○
F8.02	Motor speed display coefficient	It is used to correct the display error of the speed scale and has no effect on the actual speed.	0.01～99.99	1.00	○
F8.03	Parameter initialization	0: No operation The inverter is in normal parameter reading and writing status. Function code setting value. Whether it can be changed is related to the setting status of the user password and the current working status of the inverter. 1: Restore factory settings All user parameters are restored to factory settings according to the model. 2: Clear fault record Clear the contents of the fault record (d-19 ～ d-24). After the operation is completed, this function code is automatically cleared to 0.	0～2	0	×
F8.04	JOG key setting	0: JOG 1: Forward and reverse switching 2: Clear ▲/▼ key frequency setting 3: Reverse operation (the RUN key at this time defaults to forward rotation)	0～3	0	×
F8.05	Reserved	-	-	0	◆
F8.06	Run auxiliary display (only valid for dual display)	For example: F8.02=4, that is, select the output current (d-02), then the default display item on the main monitoring interface is the current output voltage value.	0~30	4	○
F8.07	Shutdown auxiliary display (only valid for dual display)	For example: F8.03=3, that is, select the bus voltage (d-03), then the default display item on the main monitoring interface is the current bus voltage value.	0~30	3	○

F9 group Factory parameters					
Function code	**Name**	**Setting range**	**Setting range**	**Factory setting**	**Change**
F9.00	Factory password	1～9999	1	****	◇

Chapter 7 Fault Diagnosis and Countermeasures

E group Fault Code				
Error code	**Name**	**Possible cause of failure**	**Failure countermeasures**	**Code**
EOC1	Overcurrent during accelerated operation	Acceleration time is too short	Extend acceleration time	1
		Inverter power is too small	Choose a frequency converter with a large power rating	
		Improper setting of V/F curve or torque boost	Adjust V/F curve or torque boost	
EOC2	Overcurrent during deceleration operation	Deceleration time is too short	Extend the deceleration time	2
		Inverter power is too small	Choose a frequency converter with a large power rating	
EOC3	Overcurrent in uniform operation	Grid voltage is low	Check input power	3
		Sudden change or abnormal load	Check the load or reduce the load mutation	
		Inverter power is too small	Choose a frequency converter with a large power rating	
EHU1	Overvoltage during accelerated operation	Abnormal input voltage	Check input power	4
		Restart the rotating motor	Start after setting to DC braking	
EHU2	Overvoltage during deceleration	Deceleration time is too short	Extend the deceleration time	5
		Abnormal input voltage	Check input power	
EHU3	Overpressure in uniform operation	Abnormal input voltage	Check input power	6
EHU4	Overvoltage during shutdown	Abnormal input voltage	Check the power supply voltage	7
ELU0	Undervoltage during operation	The input voltage is abnormal or the relay is not closed	Check the power supply voltage or seek service from the manufacturer	8
ESC1	Power module failure	The inverter output is short-circuited or grounded	Check motor wiring	9
		Inverter instantaneous overcurrent	See overcurrent countermeasures	
		The control board is abnormal or has serious interference	Seek service from the manufacturer	
		Power device is damaged	Seek service from the manufacturer	
E-OH	Radiator overheated	The ambient temperature is too high	Lower the ambient temperature	10
		Broken fan	Replace the fan	
		Air duct blocked	Dredge	
EOL1	Inverter overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost	11
		Grid voltage is too low	Check the grid voltage	
		Acceleration time is too short	Extend acceleration time	
		Motor load is too heavy	Choose a more powerful inverter	
EOL2	Motor overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost	12
		Grid voltage is too low	Check the grid voltage	

		The motor is blocked or the load sudden change is too large	Check load	
		The motor overload protection coefficient is not set correctly	Correctly set the motor overload protection coefficient	
E-EF	External device failure	The external equipment fault input terminal is closed	Disconnect the external equipment fault input terminal and clear the fault (pay attention to check the reason)	13
EPOF	Dual CPU communication failure	CPU communication failure	Seek service from the manufacturer	14
EPID	PID feedback disconnection	The PID feedback circuit is loose	Check the feedback connection	15
		The feedback amount is less than the disconnection detection value	Adjust the detection input threshold	
E485	RS485 communication failure	Does not match the baud rate of the host computer	Adjust the baud rate	16
		RS485 channel interference	Check whether the communication connection is shielded, whether the wiring is reasonable, and if necessary, consider connecting the filter capacitor in parallel	
		Communication timeout	Retry	
ETUN	Motor tune failure	Motor parameter setting error	Re-set motor parameter	17
ECCF	Current detection failure	Current sampling circuit failure	Seek service from the manufacturer	18
		Auxiliary power failure		
EEEP	EEPROM read and write error	EEPROM failure	Seek service from the manufacturer	19
EPL1	Output phase loss protection	Output U, V, W has phase loss	Check output wiring	20
EPAO	Burst failure	The feedback pressure is less than the low pressure detection threshold or greater than or equal to the high pressure detection threshold	Detect the feedback connection or adjust the detection high and low pressure threshold	21

Chapter 8 Communication Protocol

1. RTU mode and format

When the controller communicates on the Modbus bus in RTU mode, each 8-bit byte in the message is divided into two 4-bit hexadecimal characters. The main advantage of this mode is that the density of characters transmitted is higher than that of ASCII mode at the same baud rate, each message must be transmitted continuously.

(1) The format of each byte in RTU mode

Coding system: 8-bit binary, hexadecimal 0-9, A-F.

Data bit: 1 start bit, 8 data (low bit is sent first), stop bit occupies 1 bit, parity bit can be selected. (Refer to RTU data frame for sequence diagram)

Error check area: Cyclic Redundancy Check (CRC).

(2) RTU data frame bit sequence map

with parity check

Start	1	2	3	4	5	6	7	8	Par	Stop

without parity check

Start	1	2	3	4	5	6	7	8	Stop

2. Read and write function codes description:

Function code	Function description
03	Read register
06	Write register

3. Communication protocol parameter address description:

Function description	Address definition	Data meaning description	R/W
Communication control command	2000H	0001H: shutdown	W
		0012H: forward running	
		0013H: Forward jog operation	
		0022H: Reverse running	
		0023H: Reverse jog operation	
Communication setting frequency address	2001H	The communication setting frequency range is -10000～10000. Note: The communication setting frequency is a percentage relative to the maximum frequency, and its range is -100.00%～100.00%	W
Communication control command	2002H	0001H: External fault input	W
		0002H: fault reset	
Read operation/stop parameter	2102H	Setting frequency (two decimal places)	R

description	2103H	Output frequency (two decimal places)	R
	2104H	Output current (one decimal place)	R
	2105H	Bus voltage (one decimal place)	R
	2106H	Output voltage (one decimal place)	R
	210DH	Inverter temperature (one decimal place)	R
	210EH	PID feedback value (two decimal places)	R
	210FH	PID setting value (two decimal places)	R
	2101H	Bit0: Run Bit1: stop Bit2: Jog Bit3: Forward rotation Bit4: Reverse Bit5～Bit7: reserved Bit8: Communication setting Bit9: Analog signal input Bit10: Communication operation command channel Bit11: Parameter lock Bit12: Running Bit13: Toggle command Bit14～Bit15: reserved	R
Read fault code description	2100H	00: No exception 01: Module failure 02: Overvoltage 03: Temperature failure 04: Inverter overload 05: Motor overload 06: External fault 07～09: reserved 10: Overcurrent during acceleration 11: Overcurrent during deceleration 12: Overcurrent at constant speed 13: reserved 14: Undervoltage	R

4. 03 Read function mode:

Inquiry information frame format(send frame):

Address	01H
Function	03H
Starting data address	21H
	02H
Data(2Byte)	00H
	02H

CRC CHK Low	6FH
CRC CHK High	F7H

Data analysis of this section:

01H is the inverter address

03H is read function code

2102H is the starting address

0002H is the number of read addresses, and 2102H and 2103H

F76FH are 16-bit CRC verification codes

Response information frame format(return frame):

Address	01H
Function	03H
DataNum x2	04H
Data1[2Byte]	17H
	70H
Data2[2Byte]	00H
	00H
CRC CHK Low	FEH
CRC CHK High	5CH

Data analysis of this section:

01H is the inverter address

03H is read function code

04H is the read item x2

1770H is to read the data of 2102H (set frequency)

0000H is to read the data of 2103H (output frequency)

5CFEH is a 16-bit CRC check code

5. 06H write function mode

Inquiry information frame format(send frame):

Address	01H
Function	06H
Starting data address	20H
	00H
Data(2Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

Data analysis of this section:

01H is the inverter address

06H is writing function code

2000H is the control command address

0001H is the stop command

43CAH is a 16-bit CRC verification code

Response information frame format(return frame):

Address	01H
Function	06H
Starting data address	20H
	00H
Number of Data(Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

Data analysis in this section: If the settings are correct, return the same input data.

Warranty Card

<table>
<tr><td rowspan="3">Client information</td><td colspan="2">Company add:</td></tr>
<tr><td>Company name:

Post code:</td><td>Contact people:</td></tr>
<tr><td></td><td>Contact phone:</td></tr>
<tr><td rowspan="3">Product information</td><td colspan="2">Product model:</td></tr>
<tr><td colspan="2">Body barcode (pasted here):</td></tr>
<tr><td colspan="2">Agent name:</td></tr>
<tr><td>Fault details</td><td colspan="2">Repair time and content:

Repairman:</td></tr>
</table>