Vector Frequency Inverter
Power range: 0.4kW ~ 4kW

User 's Manual

Preface

This manual introduces the features and usage of the vector type universal inverter, including product selection Please read this manual carefully before use for installation and wiring, parameter setting, operation debugging, fault diagnosis, etc. Improper use may cause abnormal operation of the inverter, malfunctions, reduced service life, and even equipment damage, personal injury or death.

This manual is a random attachment. Please hand it over to the actual user and keep it in a safe place for future reference.

The company is committed to the continuous improvement and update of products. The product hardware and software will be continuously upgraded. The information provided is subject to change without notice.

Safety Precautions

The safe operation of this product depends on correct installation, operation, maintenance and maintenance. Please read it carefully and pay attention to the safety tips in this manual.

● Use it after being familiar with the inverter knowledge, safety information and all precautions.
● This manual should be kept in the hands of actual users.
● This manual divides the safety levels into "danger" and "warning", using the following marks respectively:

⚠ DANGER If it cannot be avoided, it will result in death or serious injury.

⚠ WARNING If it cannot be avoided, it will result in death or serious injury.

Depending on the situation, warning levels may also cause serious consequences. Be sure to follow the two levels of precautions, as they are both important to personal safety.

1. Product suitable range

⚠ WARNING
(1) Not applicable to machines or systems that may put people in a life-threatening state.
(2) If it is expected that a major accident or loss will occur due to the abnormality of this product, please be sure to install a safety device.

2. Installation

⚠ DANGER
(1) Please install the inverter on non-combustible objects such as metal to avoid the risk of fire.
(2) It is strictly forbidden to install in an environment with combustible materials or explosive gases, otherwise there is a danger of explosion.

⚠ WARNING
(1) Install the inverter firmly on an object that can bear the weight of the inverter, otherwise there is a danger of injury or damage to the equipment when it falls.
(2) Do not let metal foreign objects fall into the inverter, otherwise an accident may occur.
(3) Please do not install and run the damaged inverter, otherwise accidents may occur.

3. Wiring

⚠ DANGER

(1) Install a circuit breaker matching the capacity of the inverter on the power input side of the inverter, other wise it may cause casualties, equipment damage or other accidents.

(2) The PE terminal of the inverter must be reliably grounded, otherwise electric shock or fire accidents may occur.

(3) Tighten the power input terminal and motor output terminal screws, otherwise it may cause a fire accident.

(4) Wiring must be carried out by qualified personnel.

(5) The wiring operation must be performed after confirming that the power supply has been turned off and the inverter power supply charging indicator light is off.

⚠ WARNING

(1) It must be ensured that the input power supply matches the data on the nameplate of the inverter, otherwise the inverter may be damaged.

(2) The power input line must not be connected to the output terminal (U.V.W) of the inverter, otherwise the inverter will be damaged.

4. Run operation

⚠ DANGER

(1) Before the inverter cover is closed, the power supply cannot be switched on, otherwise there is a danger of electric shock.

(2) After the inverter is connected to the power supply, even if it is in a stopped state, do not touch the main circuit terminals of the inverter, otherwise there is a danger of electric shock.

⚠ WARNING

(1) Use the "⊚" key on the keyboard or the external start -stop terminal to stop the inverter. Do not use the method of directly disconnecting the main power supply of the inverter, otherwise the inverter may be damaged.

5. Maintenance

⚠ DANGER

(1) The inverter can be inspected and repaired only after the internal charging indicator lamp of the inverter is off or the power supply is cut off for 10 minutes. Other wise, electric shock may occur.

(2) Only professionally trained personnel can maintain the inverter. Otherwise, electric shock or personal injury may occur.

⚠ WARNING

(1) After servicing the inverter, do not leave conductive objects such as metal in the inverter, otherwise it may cause damage.

(2) Before reusing the inverter that has not been used for a long time, it is necessary to charge the internal capacitor of the inverter. Use a voltage regulator to slowly increase the input voltage of the transformer (not exceed the rated input voltage of the inverter), otherwise an accident may occur.

6. Scrap

⚠ WARNING

(1) When the product is scrapped, it should be treated as industrial waste, otherwise it may Cause an accident.

Contents

1. Product introduction

This manual inverter is a vector type universal inverter product, mainly used to drive three-phase AC asynchronous motor. It adopts advanced vector control technology, with large low-frequency output torque, rapid dynamic response, strong overload capacity, modular control components and rich expansion functions, which can be widely used in machine tool, packaging, textile, ceramics, mining, food, chemical industry, transmission, woodworking, wire and cable industries.

1.1 Open box inspection

After opening the packing box, please confirm whether the inverter body and accessories are damaged during transportation, and whether the parts are damaged or fall off. The box shall contain the machine you ordered, user manual, product certificate and warranty form.

If there is any omission or damage, please contact the supplier as soon as possible.

Please confirm the following items before unpacking

(1) Whether the outer package is damaged;

(2) Whether the model and specification on the outer package label are consistent with your order requirements

1.2 Product model description

G3R75/ P31R5

	Suitable motor type	
G	General purpose
P	Fan pump type

Power level(KW)	
R75	0.75
1R5	1.5
2R2	2.2
4R0	4.0

2. Installation and wiring

This chapter will introduce the correct method of installation and wiring of the vecto r type universal inverter. In order to ensure the safety of the system and the normal operation of the equipment, please read this manual ca refully before installation. When wiring, be sure to follow the wiring method provided in this chapter.

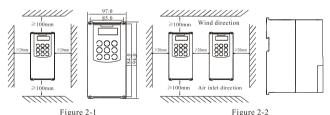# 2.1 Installation

1. Installation environment requirements

The ambient temperature range of the inverter: -10℃~40℃. When the operating environment temperature is higher than 40℃, a well-ventilated place should be selected, and the use should be derated by 10% for every 5℃ increase, and the maximum ambient temperature is 55℃. If it is installed at an altitude of 1000m or more, please use it with derating. The output current capacity of the inverter will be derated by 10% for every 1000m increase, and the maximum altitude is 3000m.

2. Installation site requirements

* Try to avoid high temperature and humidity places, humidity less than 90%, non condensing and frost free
* No water drop, steam, dust and metal dust;
* Keep away from flammable, explosive and corrosive gases and liquids;
* The installation plane is firm and the vibration is less than 5.9mm/s (0.6g);
* Keep away from electromagnetic interference sources.

3. Installation space and direction

The frequency converter is wall mounted. The installation interval and distance requirements of single inverter are shown in Figure 2-1 As shown in. When the two frequency converters are installed up and down, the middle should be equipped with a guide plate, as shown in Figure 2-2.

Figure 2-1
Distance between installations

Figure 2-2
Two frequency converters are installed
on the left and right

Power level	L	Dimensional requirements	
		H	
0.75kW-7.5kW	≥30mm	≥100mm	
11kW-22kW	≥50mm	≥200mm	
≥30kW	≥50mm	≥300mm	

When two inverters are installed left and right, the gap between the inverters shall not be less than 20mm, as shown in Figure 2-3.

≥20mm
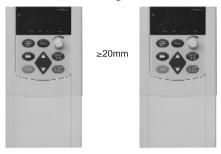
Figure2-3 Two frequency converters are installed on the left and right

⚠WARNING

√ The higher the ambient temperature, the shorter the service life of the inverter.

√ If there is a heating device near the frequency converter, please move it as far as possible. In addition, When the inverter is installed in the box, the perpendicularity and space size should be fully considered, and the heat dissipation should be utilized.

4. Installation method

This product adopts Bi hang type vertical installation mode, and the opening size refers to appendix III.

Figure 2-4 schematic diagram of wall mounted installation

5. Removal and installation of keyboard

A. Remove the keyboard, as shown in Figure 2-5 below: first press the elastic buckle of the keyboard in direction 1, and then lift the keyboard in direction 2.

Figure 2-5 removal of keyboard

B.Install the keyboard, as shown in Figure 2-6 below:put the keyboard in the keyboard slot flush, press the keyboard toward direction 1 until the "click" sound is hear d, and the key board i s flush on the front surface of the machine.

Figure 2-6 keyboard installation

6 Removal and installation of terminal cover

A. For the removal of the terminal cover, as shown in Figure 2-7, use a slotted screwdriver to rotate the plastic screw anticlockwise along direction 1, and then remove the terminal cover along direction 2.

Figure 2-7 removal of terminal cover

B. Install the upper clip of the cover into the corresponding joint of the upper shell in the direction of 28 as shown in the figure, then press the clip machine on the side of the cover with the mouth 2 along the force until the sound of "Brown feeding" is heard, and finally rotate the plastic screw 90 clockwise with a slotted screwdriver in the direction of 3.

Figure 2-8 installation of terminal cover

2.2 Wiring

The frequency converter wiring part is divided into main circuit and control circuit. The user can lift the cover of the shell, and then the main circuit terminal and control circuit terminal can be seen. The user must connect correctly according to the way indicated in the following figure.

1. Main circuit wiring

Main circuit terminal description

Model	Terminal wiring instructions
G3 R4/P3 R75 G3 R75/P3 1R5 G3 1R5/P3 2R2	

Main circuit terminal symbol description

Terminal symbol	Function Description
R、S、T	Main circuit three-phase AC power input
U、V、W	Connect to three-phase AC motor
P+	DC voltage measurement positive terminal
PB	P +, PB may be connected between the dynamic braking resistor
⏚	Ground terminal

⚠WARNING

√ Inverter input power supply wiring, no phase sequence requirements:

√ The wiring of the main circuit terminal shall be selected according to the recommended values in Appendix 4, and the copper wire with the corresponding specifications shall be selected, and the installation method shall conform to the local regulations and the relevant IEC standard requirements.

√ The cable from the frequency converter to the motor should try to avoid running parallel to the power line (R, S, T), preferably at a distance of more than 30cm;

√ It is forbidden to connect other equipment on the input end (R, S, T) of the inverter power supply. It is forbidden to connect the output end (U, V, w) of the inverter to the power supply, and no capacitor or surge absorber can be connected to the output side.

√ It is necessary to connect the non fuse circuit breaker between the input power source and the frequency converter, so as to avoid the expansion of the accident caused by the inverter failure, damage the power distribution device or cause the fire.

√ There is no braking resistor inside the inverter. When the load inertia is large or frequently starts and stops, a braking resistor must be installed. When the inverter uses external braking components, the wiring length of the braking unit should not exceed 10m, and the wiring distance of the braking resistor should not exceed 5m;

√ The ground terminal (PE) of the inverter must be reliably grounded, and the resistance of the ground wire must be less than 0.4. Do not share the ground terminal (PE) with the neutral terminal (N);

√ The specifications of the inverter grounding wire can be selected according to the following table;

Sectional area of a phase line (s)	Minimum cross-sectional area of grounding wire (S1)
S≤16mm^2	S
16mm^2＜S≤35mm^2	16mm^2
35mm^2＜S	S/2
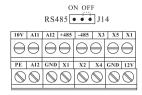
The grounding wire of frequency converter must be yellow and green cable.

2. Control circuit wiring

Control circuit terminal description
The control circuit wiring must be separated from the main circuit wiring, and cannot be placed in the same trunking.

Control terminal symbol description

Category	Terminal symbol	Terminal function description	Technical specifications
Control terminal input	X1	Multifunctional digital input terminal 1	The input impedance of drain state is 6.8K, the high and low logic threshold voltage is 9.8v, and the sampling period is 2ms
	X2	Multifunctional digital input terminal 2	
	X3	Multifunctional digital input terminal 3	
	X4	Multifunctional digital input terminal 4	
	X5	Multi function digital input terminal	It can be used as a high-speed pulse input terminal with a maximum pulse input frequency of 50kHz
	Y1	Programmable digital output 1	Provide 12V, 50mA power supply
Operation status output	TA1 TB1 TC1	Multi function relay output TA-TB normally closed TA-TC normally open	Contact drive capability: AC250V,3A,COSφ=0.4 DC 30V,1A
Analog input	AI1 AI2	Analog input 1	Voltage or current input can be selected through jumper terminals AI1 and Ai2 Input range: voltage input 0-10V, current input 0-20mA Input impedance: voltage input 100k, current input 500 Ω

Category	Terminal label	Terminal function description	Technical specifications
Analog output	AO1	Analog output 1	It is possible to select voltage or current output through jumper terminal AO1 Output voltage: 0-10V Output current: 0-20mA
RS485 Communi -cation	485+	RS485 differential signal positive	Modbus RTU communication protocol
	485-	RS485 differential signal negative	
Power supply and reference ground	10V	+10V power supply terminal	Output 10V, 20mA, precision 20%
	12V	+12V power supply terminal	Output 12V, 100mA, accuracy 15%
	GND	Control loop reference ground	Digital input, analog input and power supply share reference ground

Jumper terminal description

Jumper category	Function description	Jumper selection	
		Left (bottom)	Right (top)
AI1、AI2	AI analog input, input voltage and current selection	0-20mA	0-10V
AO1	AO1 analog output voltage and current selection	0-10V	0-20mA
485	RS485 terminal resistance selection	120 Ω	

⚠ WARNING

√ It is recommended to use 0.3 ~ 0.75mm^2 wire for terminal connection of control circuit;

√ The wiring length shall not exceed 30m;

√ In order to avoid noise and interference, the control circuit terminal connection must use shielded wire, and must be connected with the main circuit The circuit and high voltage circuit are connected separately;

√ RS485 communication recommends the use of shielded twisted pair.

3. System wiring diagram
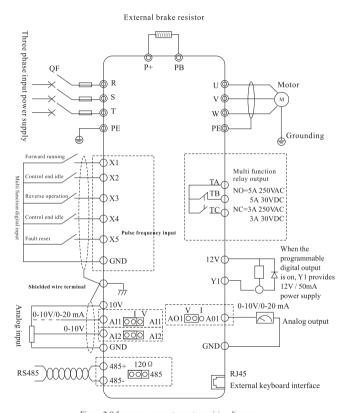
Figure 2-9 frequency converter system wiring diagram

3. Operation keyboard

This chapter will introduce the operation method and display information of the keyboard in detail. Please read this chapter carefully before you operate the inverter.

3.1 Keyboard introduction

The keyboard is composed of the following four parts: 4-digit 8-segment digital tube, 7 indicator lights, 8 keys and 1 rotary potentiometer. The user can complete the start and stop of the inverter through the keyboard, the reference and modification of function parameters, and the monitoring of status parameters. Its appearance and function distribution are shown in Figure 3-1.
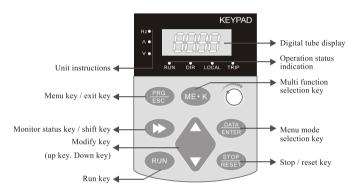
Figure 3-1 keyboard introduction

Keyboard function description

Project		Name	Function description
Display function	[8888]	Digital tube display	Display output frequency, current, each parameter setting value and abnormality
	Hz RPM A % V	Indicator light	Hz: When it is always on, it means that the current display is frequency, the unit is Hz A: When it is always on, it means that the current display is frequency, the unit is A V: When it is always on, it means that the current display is voltage, the unit is V Hz/A: When both are on, it means the current display is the speed, the unit is RPM AV: When both are on, it means the current display is a percentage, the unit is%
Keyboard function	(rotary)	Rotary potentiometer	Change the value setting, clockwise rotation value increases, counter clockwise rotation value decreases
	(ME.K)	Multiple use key	Multi function button, can be set to invalid, point or reverse function
	(PRG)	Programming key	First level menu entry or exit
	(DATA)	Confirm key	Enter the parameter menu and confirm the current modified value
	(≫)	Shift key	Operation status monitoring data switching, parameter modification shift
Keyboard function	RUN	Run key	Keyboard operation command button (turn forward when indicator light is on, stop when indicator light is off, and reverse when indicator light is on)
	STOP	Stop / reset key	Keyboard stop command button, or fault reset
	(▲)	Up key	Function code or value increase
	(▼)	Down key	Function code or value decrease

3.2 keyboard operation method

1. function parameter query and modification

The keyboard of general transformer adopts three-level menu structure for parameter setting, status monitoring and other operations They are function parameter group(first level menu), function code(second level menu) and parameter setting value (three level menu). The function parameter query and modification process is shown in Figure 3-2.

Figure 3-2 parameter query and modification process

Explain:

In the three-level menu operation, press the "RG"key or "data" key to return to the second level menu. The difference between the two is: press the "data" key to save the current setting value, and after returning to the secondary menu, it will automatically jump to the next function code; press the "PRG"key will not save the current setting value, but directly return to the secondary menu where the current function code is located.

4. Trial run

This chapter introduces the related operation and frequency conversion required for the start -up and trial operation of vector general inverter The setting of the initial value of the common parameters of the line group, and the tuning method of the motor parameters when the SVC open-loop vector is running Methods and steps.

4.1 initial setting of frequency converter

1. Control mode selection

There are two control modes of inverter: open loop vector SVC and V / F control.

2. Select f0.02 as the command source

There are three ways to set the command source of frequency converter: keyboard control, terminal control and communication control.

The initial value F0.02 = 0, and the start and stop of the frequency converter is completed by the keyboard " RUN " " STOP "key;

3. Frequency source selection F0.03, F0.15

The frequency converter can select the main frequency source or combined frequency source through the parameter F0.03, and the initial value F0.03 =0、 P0.15 = 00, the frequency setting of the frequency converter is given by the main frequency source selecting "knob switch", which may be too high Keyboard "knob switch" key to adjust.

4.2 Simple test run

⚠ **DANGER** It is strictly forbidden to connect the input power cord to the inverter output terminals U, V, W
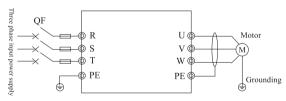
Figure 4-1 wiring diagram for trial operation

(1) Before the input power is connected to the frequency converter, confirm whether the power supply voltage is within the rated input voltage range of the frequency converter;

(2) Connect as shown in Figure 4-1;

(3) After confirming that the wiring is correct, turn on the power switch, turn on the power, and the frequency responder will display "P.OFF" first, and then turn on the power Display "50.00"

(4) control mode V / F control mode;

(5) Command source F0.02 = 0, keyboard control;

(6) 03 = 0, set the keyboard potentiometer, and turn the potentiometer knob to the minimum;

(7) Press the " RUN " key to start the inverter, the inverter outputs 0 frequency, and the keyboard displays " 0.0 " .

(8) Instantaneous needle direction adjustment button to increase the set frequency,the output frequency of the inverter will increase from "0.0" to increase the motor speed;

(9) Observe whether the motor is running normally. If there is any abnormality, stop it immediately and remove the cause before running;

(10) Adjust the button counterclockwise to reduce the set frequency,and the motor speed will drop;

(11) Press the "STOP" key to stop the inverter and cut off the input power.

4.3 open loop vector control (SVC) operation

Taking 5.5kW inverter driving 5.5kW three-phase asynchronous motor as an example, the whole operation process is introduced.

The motor nameplate parameters are as follows:

Rated power 2.2kw	Rated voltage 380V	Rated speed 1460r /min
Rated current 5A	Rated frequency 50.00Hz	

Keyboard number setting frequency and start stop control

(1) Connect the wires as shown in Figure4-1, and close the power switch after confirming that the wiring is correct;

(2) Set the following parameters in the following order:

F0.00=2.2	Rated power of motor
F4.00=380	Rated voltage of motor
F4.01=5	Rated current of motor
F4.02=1460	Rated speed of motor
F4.03=50	Rated frequency of motor

5. Function parameter list

According to the properties of the parameters, the vector general inverter is divided into 19 groups of functional parameters, among which p00-p17 is the base This function parameter, P30 is the monitoring function parameter, which makes the parameter setting and viewing easier and more in tuitive. In big In some applications, the user can complete the pre startup operation acco rding to the relevant parameter settings in the parameter group The setting of the.

The symbols in the function list are as follows:

" △ "	It indicates that the set value of the parameter can be changed when the inverter is in shutdown or running state;
" ▲ "	Indicates that the setting value of the parameter cannot be changed when the inverter is in operation;
" ● "	Indicates that the value of the parameter is the actual test record value and cannot be changed;
"H."	Indicates that the setting value of the parameter is hexadecimal;

Vector Frequency Inverter

Group F0 - basicoperating parameters					
Function code	**Name**	**Content**	**Setting range**	**Factory setting**	**Change**
F0.00	Power specification of frequency converter	Display current power	0.10～99.99KW	Model setting	◆
F0.01	Main controller Software version	Displays the current software version number	1.00～99.99	1.00	◆
F0.02	Run command Channel selection	0: panel run command channel 1: Terminal operationcommand channel 2: Communication operation command channel	0～2	0	○
F0.03	Frequency setting selection	0: panel potentiometer 1: The number isgiven as 1, and the operation panel is adjusted by▲、▼ 2: Digital given 2, terminal up / down adjustment 3: Ai1 analogsetting (0 ~ 20mA) 4: Combination given 5: AI2 (0~ 10V) 6: Communication given 7: Pulse setting Note: when the givencombination is selected, the givencombination mode is selected inf1.15.	0～7	0	○
F0.04	Maximum output frequency	The maximum output frequency is the maximum frequency allowed by the inverter,which is the reference for accelerationand deceleration setting.	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.	0.0~ Upper limit frequency	0.0Hz	×
F0.07	Lower limit frequency Arrival processing	0: zero speed operation 1: Run at lower limitfrequency 2: Shutdown	0～2	0	×

Group F0 - basicoperating parameters					
Function code	Name	Content	Setting range	Factory setting	Change
F0.08	Operating frequency Digital setting	The set value is adigital frequency Given initial value	0.0~ Upper limit frequency	10.0Hz	○
F0.09	Digital frequency control	Led bits: power downstorage 0: storage 1: No storage Led 10 bits: stop andhold 0: keep 1: Don't keep it Led 100: up /down Negative frequency regulation 0: invalid 1: Effective Led 1000 bit: PID. PLC Frequency superposition selection 0: invalid 1: F0.03+PID 2: F0.03+PLC	0000 ~ 2111	0000	○
F0.10	Acceleration time	Time required for frequency converter to accelerate fromzero frequency to maximum output frequency	0.1 ~ 999.9S	Model setting	○
F0.11	Deceleration time	Time required for frequency converter to decelerate from maximum output frequency to zero frequency	0.4 ~ 4.0KW 7.5S 5.5 ~ 7.5KW 15.0S		○
F0.12	Operator Direction setting	0: Forward rotation 1: Reverse rotation 2: Reverse is prohibited	0~2	0	○
F0.13	V / F curve set up	0: Linear curve 1: Square curve 2: Multi-point VF curve	0~2	0	×
F0.14	Torque increase	Manual torque boost, iflarge torque is needed, setit to 0.0; this value setting is relativeto the percentage of themotor's rated voltage. 0.0: Vectorcontrol	0.0 ~ 30.0%	Model setting	○

Group F0 - basicoperating parameters					
Function code	Name	Content	Setting range	Factory setting	Change
F0.15	Torque increase cut-off frequency	This setting is thecut-off frequency of manual torque lifting	0.0 ～ 50.0Hz	15.0Hz	×
F0.16	Carrier frequency setting	In the case ofsilent operation, the carrier frequency can be appropriately increased to meet the requirements, but increasing the carrier frequency will increase the heat 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～ frequency value V2	25.0%	×
F0.19	V / F frequency value F2		frequency valueF1～ frequency valueF3	25.0Hz	×
F0.20	V / F voltage V2		Voltage value V1～ Voltage valueV3	50.0%	×
F0.21	V / F frequency value F3		frequency valueF2 ～Rated frequency of motor 【F4.03】	37.5Hz	×
F0.22	V / F voltage value V3		Voltage valueV2 ～100.0% *Uoute (Rated voltage of motor 【F4.00】)	75.0%	×
F0.23	User password	To setany non-zero number, you need to waitfor 3 minutes or power downto take effect.	0～9999	0	○

Group F1 - auxiliary operating parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F1.00	Starting mode	Led bit: start mode 0: starting from starting frequency 1: DC braking first and then starting from starting frequency Led 10: power failure or abnormal restart mode 0: invalid 1: Starting from starting frequency Led 100 bits: reserved Led 1000 bits: reserved	0000 ~ 0011	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	Starting DC Braking time		0.0~30.0s	0.0s	○
F1.04	Shutdown mode	0: Deceleration stop 1: Free stop	0~1	0	×
F1.05	Shutdown DC Starting frequency of braking		0.0~ Upper limit frequency	0.0Hz	○
F1.06	Shutdown DC Braking voltage		0.0 ~50.0% × Rated voltage of motor	0.0%	○
F1.07	Shutdown DC Braking time		0.0 ~ 30.0s	0.0s	×
F1.08	Shutdown DC Brake waiting time		0.00 ~ 99.99s	0.00s	×

Group F1 - auxiliary operating parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F1.09	Forward turning inching Frequency setting	Set point dynamic forward and reverse frequency	0.0 ～ 50.0Hz	10.0Hz	○
F1.10	Reverse inching Frequency setting				
F1.11	Inching acceleration time	Set the acceleration and deceleration time of inching	0.1～ 999.9S 0.4～4.0KW 10.0S 5.5～7.5KW 15.0S	Model setting	○
F1.12	Inching deceleration time				
F1.13	Jump frequency	By setting the jump frequency and range, the inverter can avoid the mechanical resonance point of the load.	0.0～ Upper limit frequency	0.0Hz	○
F1.14	Jump range		0.0 ～ 10.0Hz	0.0Hz	○
F1.15	Frequency combination Given way	0: potentiometer + digital frequency 1 1: Potentiometer + digital frequency 2 2: Potentiometer +Ai1 3: Digital frequency 1+ Ai1 4: Digital frequency 2+ Ai1 5: Digital frequency 1+ multistage speed 6: Digital frequency 2+ multistage speed 7: Potentiometer + multi speed	0～7	0	×
F1.16	Programmable operation Control (simple PLC operation)	Led bit: PLC enablecontrol 0: invalid 1: valid Led 10: operation modeselection 0: single loop 1: Continuous cycle 2: The final valueis maintained after a single cycle Led 100 bit: startingmode 0: restart from thefirst stage 1: Start from the phaseat the time of shutdown (failure) 2: Start from the phase and frequency of shutdown (fault) time Led 1000 bit: powerdown memory selection 0: do not store 1: Storage	0000 ～ 1221	0000	×

Group F1 - auxiliary operating parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F1.17	Multistage frequency 1	Set segment speed 1 frequency	-Upper limit frequency ~ Upper limit frequency	5.0Hz	○
F1.18	Multi speed frequency 2	Set segment speed 2 frequency	-Upper limit frequency ~ Upper limit frequency	10.0Hz	○
F1.19	Multi speed frequency 3	Set segment speed 3 frequency	-Upper limit frequency ~ Upper limit frequency	15.0Hz	○
F1.20	Multi speed frequency 4	Set segment speed 4 frequency	-Upper limit frequency ~ Upper limit frequency	20.0Hz	○
F1.21	Multi speed frequency 5	Set segment speed 5 frequency	-Upper limit frequency ~ Upper limit frequency	25.0Hz	○
F1.22	Multi speed frequency 6	Set segment speed 6 frequency	-Upper limit frequency ~ Upper limit frequency	37.5Hz	○
F1.23	Multi speed frequency 7	Set segment speed 7 frequency	-Upper limit frequency ~ Upper limit frequency	50.0Hz	○
F1.24	Phase 1 run time	Set the running time of segment speed 1 (the unit is selected by [f1.35], the default is seconds)	0.0 ~ 999.9s	10.0s	○
F1.25	Phase 2 run time	Set the running time of segment speed 2 (the unit is selected by [f1.35], the default is seconds)	0.0 ~ 999.9s	10.0s	○
F1.26	Phase 3 run time	Set the running time of segment speed 3 (the unit is selected by [f1.35], the default is seconds)	0.0 ~ 999.9s	10.0s	○
F1.27	Phase 4 run time	Set the running time of segment speed 4 (the unit is selected by [f1.35], the default is seconds)	0.0 ~ 999.9s	10.0s	○
F1.28	Phase 5 running time	Set the running time of segment speed 5 (the unit is selected by [f1.35], the default is seconds)	0.0 ~ 999.9s	10.0s	○

Group F1 - auxiliary operating parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F1.29	Phase 6 running time	Set the unit of running time of segment speed 6 selected by [f1.35], and the default is seconds)	0.0 ~ 999.9s	10.0s	○
F1.30	Phase 7 run time	Set the unit of running time of segment speed 7 selected by [f1.35], and the default is seconds)	0.0 ~ 999.9s	10.0s	○
F1.31	Stage acceleration and deceleration Time selection 1	Led bits: Stage 1 Acceleration and deceleration time 0 ~ 1 Led 10 bit: Stage2 Acceleration and deceleration time 0 ~ 1 Led 100: stage 3 Acceleration and deceleration time 0 ~ 1 Led 1000 bit: stage4 Acceleration and deceleration time 0 ~ 1	0000 ~ 1111	0000	○
F1.32	Stage acceleration and deceleration Time selection 2	Led bits: stage 5 Acceleration and deceleration time 0 ~ 1 Led 10 bits: stage6 Acceleration and deceleration time 0 ~ 1 Led 100: stage 7 Acceleration and deceleration time 0 ~ 1 Led 1000 bits: 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	10.0s	○
F1.34	Deceleration time 2		5.5 ~ 7.5KW 15.0s		
F1.35	Time unit selection	Led bit: process PID Time unit Led 10 bits: simple PLC Time unit Led 100: conventional acceleration and deceleration Time unit Led 1000 bits: reserved 0: the unit is 1 second 1: The unit is 1 point 1: The unit is 0.1 second	000 ~ 211	000	×

Function code	Name	Content	Minimum unit	Factory setting	Change
Group F2 - analogand digital input and outputparameters					
F2.00	AI1 input Lower limit voltage	Setting the upper and lower limits of Ai1 voltage	0.00 ~ 【F2.01】	0.00V	○
F2.01	AI1 input Upper limit voltage		【F2.01】 ~ 10.00V	10.00V	○
F2.02	AI1 lower limit Corresponding setting	Set Ai1 upperand lower limit corresponding setting, which corresponds to the percentageof upper limit frequency [f0.05]	-100.0% ~ 100.0%	0.0%	○
F2.03	Ai1 upper limit Corresponding setting			100.0%	○
F2.04	AI2 input Lower limit current	Set AI2 inputupper and lower limit current	0.00 ~ 【F2.05】	0.00mA	○
F2.05	AI2 input Upper limit current		【F2.04】 ~ 20.00mA	20.00mA	○
F2.06	AI2 lower limit Corresponding setting	Set AI2 upperand lower limit corresponding setting, which corresponds to the percentageof upper limit frequency [f0.05].	-100.0% ~ 100.0%	0.0%	○
F2.07	AI2 upper limit Corresponding setting			100.0%	○
F2.08	Analog input Signal filtering time constant	This parameter is usedto filter the input signals ofAi1, AI2 andpanel 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, the frequency fluctuation caused by this fluctuation can be suppressedby setting f2.09.	0.00 ~ 0.10V	0.00V	○
F2.10	AO1 analog Output terminal Function selection	0: output frequency 1: Output current 2: Motor speed 3: Output voltage 4:AI1 5:AI2	0~5	0	○

Function code	Name	Content	Minimum unit	Factory setting	Change
		Group F2 - analogand digital input and outputparameters			
F2.11	AO output lower limit	Set the upper andlower limits of AO1output	0.00～10.00V/	0.00V	○
F2.12	AO output upper limit		0.00～20.00mA	10.00V	○
F2.13	Input terminal X1 function	0: control side idle 1: Forward turning inching control 2: Reverse inching control 3: Forward control (FWD) 4: Reverse control (Rev) 5: Three wireoperation co ntro l	0～27	3	×
F2.14	Input terminal x2 function	6: Free stop control 7: External stop signalinput (STOP) 8 external reset signalinput (RST) 9: External fault normally open input	0～27	4	×
F2.15	Input terminal X3 function	10: Up command 11: Frequency decrement command(DOWN) 13: Multi speed selectionS1 14: Multi speed selectionS2 15: Multi speed selectionS3	0～27	0	×
F2.16	Input terminal X4 function	16: Run command channel enforcement Is the terminal 17: Run command channel enforcement For communication 18: Stop DC brakecommand 19: Frequency switch toAi1	0～27	0	×
F2.17	Input terminal X5 function	20: Frequency switch to digital frequency 1 21: frequency switch to Digital frequency 2 22: pulse frequency input (valid for X5 only) 23: counter clear signal 24: counter trigger signal 25: timer clear signal 26: timer trigger signal 27: acceleration and deceleration time selection	0～27	22	×

Group F2 - analogand digital input and outputparameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F2.18	FWD / rev terminal control mode	0: two line controlmode 1 1: Twoline control mode 2 2: Three wirecontrol mode 1 3: Three wirecontrol mode 2	0~3	0	×
F2.19	Terminal function detection and selection when power on	0: invalid terminal operation command when power on 1: The terminaloperation command is valid whenthe power is on	0~1	0	×
F2.20	Relay R output	0: idle 1: Inverter ready foroperation 2: Inverter in operation 3: In zero speedoperation of frequency converter	0~14	5	○
F2.21	Y1 open collector output	4: External fault shutdown 5: Frequency converter fault 6: Frequency / speedarrival signal (far) 7: Frequency / speedlevel detection signal (FDT)	0~14	0	○
F2.22	Y4 open collector output	8: The output frequency reaches the upper limit 9: The output frequency reaches the lower limit 10: Frequency converter overload warning	0~14	0	○
F2.23	Y3 open collector output	11: Timeroverflow signal 12: Counter detection signal 13: Counter reset signal 14: Auxiliary motor	0~14	0	○
F2.24	R closing delay	The delay from thechange of relay R stateto the change of output	0.0~255.0s	0.0s	×
F2.25	R off delay				
F2.26	The frequency reaches far detection amplitude	When the output frequency is within the positiveand negative detection width of the set frequency,the terminal outputs an effectivesignal (low level).	0.0Hz~15.0Hz	5.0Hz	○
F2.27	FDT level set point		0.0Hz~Upper limit frequency	10.0Hz	○
F2.28	FDT hysteresis value		0.0~30.0Hz	1.0Hz	○

Group F2 - analog and digital input and output parameters

Function code	Name	Content	Minimum unit	Factory setting	Change
F2.29	UP/DOWN	The function code is set to up/Down terminal setting frequency The frequency modification rate at the same time, That is up / down terminal and GND terminal is short circuited for one second, The magnitude of the frequency change.	0.1Hz ~ 99.9Hz/s	1.0Hz/s	○
F2.30	Input terminal pulse trigger mode setting (XL ~ x5)	0: indicates the level trigger mode 1: Indicates the pulse trigger mode	0~1FH	0	○
F2.31	Input terminal effective logic setting (x1~x5)	0: represents positive logic, that is, xn end It is efficient to connect the sub with the common end, Break invalid 1: indicates reverse logic Series, namely xn terminal and common terminal The connection is invalid and the disconnection is valid	0~1FH	0	○
F2.32	X1 filter coefficient	For setting input terminals Sensitivity. If digital input The terminals are easy to be disturbed In case of misoperation, this parameter can be used With the increase of the number, the anti-interference ability is improved The force is increased, but the setting is too large This will cause the input terminal to fail The sensitivity decreased. 1: Representative 2m scanning time unit	0~9999	5	○
F2.33	X2 filter coefficient		0~9999	5	○
F2.34	X3 filter coefficient		0~9999	5	○
F2.35	X4 filter coefficient		0~9999	5	○
F2.36	X5 filter coefficient		0~9999	5	○

Group F3 - PID parameters

Function code	Name	Content	Minimum unit	Factory setting	Change
F3.00	PID Function setting	Led bit: PID regulation characteristics 0: invalid 1: Positive effect When the feedback signal is greater than the given value of PID, the output frequency of inverter is required to decrease (that is, to reduce the feedback signal). 2: Negative effects When the feedback signal is larger than the given value of PID, the output frequency of inverter is required to rise (that is, to reduce the feedback signal).	0000 ~ 2122	1010	×

Group F3 - PIDparameters

Function code	Name	Content	Minimum unit	Factory setting	Change
F3.00	PID function setting	Led 10 bit PID for quantitative input passageway 0: keyboard potentiometer PID dosing is controlledby operation surface The potentiometer on the boardis given. 1: Number given PID is given bydigital Set by function codef3.01. 2: Given pressure (MPa,kg) By setting f3.01, f3.18 Given pressure. Led 100 bit: PIDfeedback Input channel 0:AI1 1:AI2 Led 1000 bit PIDsleep selection 0: invalid 1: General dormancy This mode needs toset f3.10~ F3.13 and other specific parameters. 2: Disturbance dormancy When the sleep modeis 0 The parameter setting ofPD is the same The feedback value iswithin the range of f3.14setting value When it is withinthe range, sleep should be maintained After a long time,she went into disturbed sleep. The feedback value isless than the awakening threshold (PID) When the polarity ispositive, wake up immediately.			×
F3.01	Give quantitative digital setting	Use the operation keyboard toset the given quantity of PIDcontrol, only when the given PIDchannel selects the given number(f3.00 ten digit is 1or 2), this function is effective. If f3.00decimal is 2, it is used aspressure setting, This parameter is consistent with the unit off3.18.	0.0 ～ 100.0%	0.0%	○

Group F3 - PIDparameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F3.02	Feedback channel gain	When the feedback channel level is inconsistent with the set channel level, this function can be used to adjust the gain of the feedback channel signal.	0.01 ~ 10.00	1.00	○
F3.03	Proportion increase p	The speed of PID regulation is set by the two parameters of proportional gain and integral time, It is required that the regulation speed be fast, the proportional gain be increased, the integral time be reduced, and the regulation speed be slow It is necessary to reduce the proportional gain and increase the integration time. In general, the differential time is not set.	0.01 ~ 5.00	2.00	○
F3.04	Integral 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 is, the slower the response is, but the better the suppression effect on the interference signal is It doesn't have to be set.	0.1 ~ 10.0s	0.0s	○
F3.07	Deviation limit	The deviation limit is the ratio of the absolute value of the system feedback quantity and the given quantity deviation to the given quantity. When the feedback quantity is within the deviation limit, the PID regulation does not act.	0.0 ~ 20.0%	0.0%	○
F3.08	Closed loop preset frequency	Frequency and time of frequency converter before PID put into operation	0.0~ Upper limit frequency	0.0Hz	○
F3.09	Preset frequency Hold time		0.0 ~ 999.9s	0.0s	×
F3.10	Wake up valve Value coefficient	If the actual feedback value is greater than the set value and the output frequency of the frequency converter reaches the lower limit frequency, the frequency converter will enter the sleep state (i.e. zero speed operation) after the delay waiting time defined by f3.12; This value is a percentage of the PID set point.	0.0 ~ 150.0%	100.0%	○

Group F3 - PID parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F3.11	Recovery threshold coefficient	If the actual feedback value is less than the set value, the inverter will go out of sleep and start to work after the delay waiting time defined by F3.13; This value is a percentage of the PID set point.	0.0 ∼ 150.0%	90.0%	○
F3.12	Sleep delay time	Set sleep delay time	0.0 ∼ 999.9s	100.0s	○
F3.13	Recovery delay time	Set the recovery delay time	0.0 ∼ 999.9s	1.0s	○
F3.14	The deviation between the feedback and the set pressure during sleep	This function parameter is only valid for disturbance sleep mode	0.0 ∼ 10.0%	0.5%	○
F3.15	Tube burst detection delay time	Setting delay time of tube burst detection	0.0 ∼ 130.0s	0.0S	○
F3.16	High pressure inspection Measurement threshold	When the feedback pressure is greater than or equal to the set value, the pipe burst fault "epa0" will be reported after f3.15 pipe burst delay. When the feedback pressure is less than the set value, the pipe burst fault "epa0" will reset automatically; The threshold is the percentage of a given pressure.	0.0 ∼ 200.0%	150.0%	○
F3.17	Low pressure inspection Measurement threshold	When the feedback pressure is less than the 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 "EPAO" will be automatically reset; the threshold is for Set the percentage of 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	○

Group F4 - advanced function parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F4.00	Rated voltage of motor	Motor parameter setting	0~500V:380V 0~250V:220V	Model setting	×
F4.01	Rated current of motor		0.1 ~ 999.9A	Model setting	×
F4.02	Rated speed of motor		0 ~ 60000Krpm	Model setting	×
F4.03	Rated frequency of motor		1.0 ~ 999.9Hz	50.0Hz	×
F4.04	Motor stator resistance	Setting motor stator resistance	0.001 ~ 200. 0Ω	Model setting	○
F4.05	No load current of motor	Set motor no-load current	0.1~ 【F4.01】	Model setting	×
F4.06	AVR function	0: invalid 1: The whole process is effective 2: Invalid only when decelerating	0~2	0	×
F4.07	Cooling fan control	0: automatic control mode 1: Direct operation during power on	0~1	0	○
F4.08	Fault auto Reset times	When the number of fault reset is set to 0 No automatic reset function, only Manual reset, 10 times Unlimited, that is, countless times.	0~10	0	×
F4.09	Automatic fault reset Interval time	Set fault auto reset Interval time	0.5~25.0s	3.0s	×
F4.10	Energy consumption braking Starting voltage	If the internal DC side voltage of the inverter is higher than the starting voltage of energy consumption braking, the built-in braking unit will act. If the brake resistor is connected at this time, the internal voltage energy of the inverter will be released through the brake resistor, so that the DC voltage will fall back.	330~380 /660 ~800V	350/780V	○
F4.11	Energy consumption braking Action proportion		10~100%	100%	○

Group F5 - protectionfunction parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F5.00	Protection settings	Led bit: motor overload Protection options 0: invalid 1: Effective Led 10 bits: PIDfeedback Disconnection protection 0: invalid 1: Protection action andfree shutdown Led 100 bit: 485 communication Failure handling 0: protection action andfree shutdown 1: Alarm butmaintain the status quo 2: Alarm andshut down according to the setmode Led 1000 bit: vibration suppression selection 0: invalid 1: Effective	0000 ∼ 1211	0001	✕
F5.01	motor overload Protection factor	The overload protection coefficient of motoris the percentage of motor rated current value to inverter rated output current value.	30% ∼ 110%	100%	✕
F5.02	Undervoltage protection level	This function code specifies the allowable lower limit voltage of DC buswhen the inverter works normally.	50∼280/ 50∼480V	180/360V	✕
F5.03	Deceleration voltage Limiting factor	This parameter is usedto adjust the ability ofinverter to suppress overvoltage during deceleration.	0：OFF, 1∼255	1	✕
F5.04	Overvoltage limit level	The overvoltage limit level defines the operating voltage of overvoltage stall protection.	350∼400/ 660∼850V	375/790V	✕
F5.05	Accelerating current Limiting factor	This parameter is usedto adjust the ability ofinverter to restrain over-current during acceleration.	0：关闭, 1∼99	10	✕

Group F5 - protection function parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F5.06	Constant speed current Limiting facto r	This parameter is used to adjust the ability of inverter to restrain over-current in the process of constant speed.	0: 关闭, 1~10	0	×
F5.07	Current limiting level	The current limiting level defines the current threshold value of automatic current limiting action, and its setting value is the percentage relative to the rated current of frequency converter.	50% ~ 200%	180%	×
F5.08	Feedback broken line detection value	This value is the given percentage of PID. When the feedback value of PID is less than the feedback disconnection detection value continuously, the inverter will make corresponding protection action according to the f5.00 setting. When f5.08 = 0.0%, it is invalid.	0.0 ~ 100.0%	0.0%	×
F5.09	Feedback disconnection Test time	The delay time before protection action after feedback disconnection.	0.1 ~ 999.9S	10.0s	×
F5.10	Inverter overload Pre warning level	The current threshold value of overload pre alarm action of frequency converter, whose setting value is relative to the percentage of rated current of frequency converter.	0~150%	120%	○
F5.11	Inverter overload Pre alarm delay	The delay time between the output current of the frequency converter continuously exceeding the overload pre alarm level amplitude (f5.10) and the output overload pre alarm signal.	0.0~15.0s	5.0s	×
F5.12	Inching priority enable	0: invalid 1: When the inverter is running, the jog has the highest priority	0~1	0	×
F5.13	Oscillation suppression coefficient	In case of motor vibration, f5.00 thousand bit should be set to be effective, the vibration suppression function should be turned on, and then the vibration suppression coefficient should be set to adjust. Generally, the vibration amplitude is large, and the vibration suppression coefficient f5.13 should be increased, F5.14 ~ f5.16 do not need to be set; In case of special occasions, f5.13 ~ f5.16 should be used 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	○

Group F5 - protectionfunction parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F5.17	Wave by wave current limiting selection	Led bit: select in acceleration 0: invalid 1: Effective Led 10 bits: selectionin deceleration 0: invalid 1: Effective Led 100 bits: thechoice of constant speed 0: invalid 1: Effective Led 1000 bits: reserved	000～111	011	×

Group F6 - protectionfunction parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F6.00	Local address	Set the local address,0as the broadcast address	0～247	1	×
F6.01	MODBUS Communica ti on configuration	LED bit: baud rateselection 0: 9600BPS l: 19200BPS 2: 384 00BPS Led 10 bits: dataformat 0: no verification 1: Even check 2: Odd check Led 100 bit: communication response mode 0: normal response 1: Respond to slaveaddress only 2: No response 3: The slave does not respond to the free stopcommand of the host in broadcastmode LED 1000 bits: reserved	0000～0322	0000	×

Function code	Name	Content	Minimum unit	Factory setting	Change
Group F6 - protection function parameters					
F6.02	Communication timeout Detection time	If the machine does not receive the correct data signal within the time interval defined by the function code, the machine thinks that the communication is faulty, and the inverter will decide whether to protect according to the setting of the action mode of communication failure Or maintain the status quo operation; When this value is set to 0.0, RS485 communication timeout detection will not be performed.	0.1 ～ 100.0s	10.0s	×
F6.03	Local response delay	This function code defines the intermediate time interval between the end of data frame receiving and sending 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 chain coefficient	This function code is used to set the frequency converter as the weight coefficient of the frequency command received by the slave through RS485 interface. The actual running frequency of this machine is equal to the value of this function code multiplied by the value of frequency setting comm and received through RS485 interface. In the continuous control, this function code can set the proportion of operating frequency of multiple inverters.	0.01 ～ 10.00	1.00	○

Group F7 - Supplementary functional parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F7.00	Counting and timing mode	Led bits: counting arrival processing 0: one week count, stop output 1: One week count, continue to output 2: Cycle count, stop output 3: Cycle count, continue output Led 10 + bits: reserved Led 100 bits: timing arrival processing 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 1000 bits: reserved	000～303	103	×
F7.01	Counter complex Bit setting	Set counter reset value	【F7.02】～9999	1	○
F7.02	Counter check Measurement setting	Set counter detection value	0～【F7.01】	1	○
F7.03	Timing time setting	Set timing time	0～9999s	0s	○
F7.04	External pulse X5 input lower limit frequency	Set the upper and lower limit frequency of external pulse X5 input	0.00～【F7.14】	0.00KHz	○
F7.05	Upper limit frequency of external pulse X5 input		【F7.13】～99.99KHz	20.00KHz	○
F7.06	Corresponding setting of lower limit of external pulse X5	Set the upper and lower limits of external pulse X5 corresponding to the setting, which is the percentage relative to the maximum output frequency.	-100.0%～100.0%	0.0%	○
F7.07	The upper limit of external pulse X5 corresponds to the setting		-100.0%～100.0%	100.0%	○

| **Group F8 - manageand display parameters** | | | | | |
Function code	Name	Content	Minimum unit	Factory setting	Change
F8.00	Operation monitoring Project selection	For example: if 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	Shutdown monitoring Project selection	For example, if f8.01 = 3, that is, bus voltage(d-03) is selected, the default display item of the mainmonitoring interface is the currentbus voltage value.	0～26	1	○
F8.02	Display coefficient	It is used tocorrect the display error of speedscale and has no effect on the actual speed.	0.01 ～ 99.99	1.00	○
F8.03	Parameter initialization	0: no operation The inverter is innormal parameter reading and writing state. Function code setting value. Whether it can bechanged depends on the settingstate of the user passwordand the current working state ofthe inverter. 1: Restore factory settings All user parameters are restored to factory settings according to the model. 2: Clear fault record Clear the contents offault records (D-19 ~ d-24). After the operation, the function code will becleared automatically.	0～2	0	×
F8.04	MEK key setting	0: ME.K 1: Forward and reverse switching 2:Clear the frequency setting of ▲/▼ 3: Reverse operation (atthis time, the run keydefaults to forward rotation)	0～3	0	×
F8.05	Selection of slip compensation	0: invalid 1: Effective The speed of asynchronous motor will decrease afterload. The speed of themotor can be close to itssynchronous speed by using the compensation of the rotor difference, so that the motor speed control accuracy is higher.	0～1	0	×

Group F8 - Manufacturer parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
F9.00	Manufacturer password	1～99991	1	****	◇

Group d - Monitoringparameter group					
Function code	Name	Content	Minimum unit	Factory setting	Change
d-00	Output frequency (Hz)	0.0～999.9Hz	0.1Hz	0.0Hz	◆
d-01	Set 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 Ai1 (V)	0.00～10.00V	0.01V	0.00V	◆
d-07	Analog input Ai2 (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	retain	─	─	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	0～9999s	1s	0s	◆
d-13	Current timing value (<)	0～9999s	1s	0s	◆

Function code	Name	Content	Minimum unit	Factory setting	Change
Group d - Monitoringparameter group					
d-14	Input terminal status (x1-x5)	0～1FH	1H	0H	◆
d-15	Output relay status (R)	0～1H	1H	0H	◆
d-16	Module temperature (℃)	0.0～132.3℃	0.1℃	0.0	◆
d-17	Software upgrade date (year)	2010～2026	1	2017	◆
d-18	Software upgrade date (month, day)	0～1231	1	0914	◆
d-19	Second fault code	0～19	1	0	◆
d-20	Last fault code	0～19	1	0	◆
d-21	Output frequency at the last fault (Hz)	0.0～999.9Hz	0.1Hz	0.0Hz	◆
d-22	Output current at last fault (a)	0.0～999.9A	0.1A	0.0V	◆
d-23	Bus voltage at last fault (V)	0～999V	1V	0V	◆
d-24	Module temperature at last failure (℃)	0.0～132.3℃	0.1℃	0.0℃	◆
d-25	Accumulated running time of frequency converter (H)	0～9999h	1h	0h	◆

Group 9 - Manufacturer parameters					
Function code	Name	Content	Minimum unit	Factory setting	Change
d-26	Inverter status	0~FFFFH BIT0: operation / shutdown BIT1: reverse / forward rotation BIT2: inching BIT3: DC braking BIT4: reserved BIT5: over voltage limit BIT6: constant speed frequency reduction BIT7: over current limit BIT8 ~ 9:00 - zerospeed / 01- Acceleration / 10 deceleration / 11 uniform speed BIT10: overload pre alarm BIT11: reserved BIT12 ~ 13 operation command Channel: 00 panel / 01terminal /10 - reserved BIT14 ~ 15 bus voltage Status: 00 normal / 01low pressure Protection / 10 - over pressure protection	1H	0H	◆

6. Faults and diagnosis

Group E - Faultcode				
Fault code	Name	Possible causes of failure	Trouble shooting	Code
E0C1	Over current in accelerated operation	The acceleration time istoo short	Extend acceleration time	1
		Low power of frequency converter	Select the inverter with high power level	
		V / F curve or torque Improper lifting setting	Adjust V / F curve or Torque increase	
E0C2	Over current in deceleration operation	The deceleration time istoo short	Extend deceleration time	2
		Inverter power is toosmall.	Select the inverter with high power level	
E0C3	Over current in uniform speed operation	Low grid voltage	Check the input power supply	3
		Sudden or abnormal loadchanges	Check the load or reduce the load mutation	
		Inverter power is toosmall.	Select the inverter with high power level	

Group E - Faultcode				
Fault code	**name**	**Possible causes of failure**	**Trouble shooting**	**Code**
EHU1	Over voltage during accelerated operation	Abnormal input voltage	Check the input power supply	4
		Restart the rotating motor	Set to start afterDC braking	
EHU2	Over voltage during deceleration operation	Deceleration time, too short	Extend deceleration time	5
		Abnormal input voltage	Check the input power supply	
EHU3	Over voltage in uniform speed operation	Abnormal input voltage	Check the input power supply	6
EHU4	Overvoltage during shutdown	Abnormal input voltage	Check the supply voltage	7
ELU0	Under voltage in operation	The input voltage isabnormal or the relay isnot closed	Check the power supply voltage or seek service from the manufacturer	8
ESC1	Power module failure	Inverter output short circuit or grounding	Check the motor wiring	9
		Instantaneous over current of frequency converter	Refer to overcurrent countermeasures	
		Abnormal or serious interference of control board	Seeking services from manufacturers	
		Power device damage	Seeking services from manufacturers	
E-OH	heatsink OT	The ambient temperature is too high	Reduce the ambient temperature	10
		The fan is damaged	Replace the fan	
		Air duct blocked	Dredge the air passage	
EOL1	Inverter overload	V / Fcurve or torque Improper lifting setting	Adjust V /F curve and torque increase	11
		The grid voltage istoo low	Check the grid voltage	
		The acceleration time is too short	Extend acceleration time	
		Motor overload	Choose a more powerful inverter	

Group E - Faultcode				
Fault code	name	Possible causes of failure	Trouble shooting	Code
EOL2	Motor overload	Improper setting of V / F curve or torque increase	Adjust V /F curve and torque increase	12
		The grid voltage is too low	Check the grid voltage	
		Motor locked rotor or excessive load mutation	Check the load	
		Incorrect setting of motor overload protection coefficient	Setting motor overload protection coefficient correctly	
E-EF	External device failure	External device failure Input terminal closed	Disconnect the fault input terminal of external equipment and clear the fault (pay attention to check the cause)	13
EPID	PID feedback disconnection	The PID feedback circuit is loose	Check the feedback connection	14
		The feedback value is less than the disconnection detection value	Adjust the detection input threshold	
E485	RS485 communication failure	It does not match the baud rate of upper computer	Adjust baud rate	15
		RS485 channel interference	Check whether the communication wiring is shielded and whether the wiring is reasonable. If necessary, parallel filter capacitor should be considered	
		Communication timeout	retry	
ECCF	Current detection fault	Fault of current sampling circuit	Seeking services from manufacturers	16
		Auxiliary power failure		
EEEP	EEPROM read / write error	EEPROM fault	Seeking services from manufacturers	17
EPAO	Tube burst failure	The feedback pressure is less than or equal to the low pressure detection threshold	Check the feedback connection or adjust the high and low pressure threshold	18
EPOF	Dual CPU communication failure	CPU communication failure	Seeking services from manufacturers	19

Appendix 1 Product Technical Specifications

Project		Specifications	
Input	Rated voltage, frequency	380-480V，50/60Hz	
	Allowable voltage fluctuation range	Fluctuation range：320-528V　　Unbalance：＜3% Frequency range：47-63Hz	
output	output voltage	0-INPUT	
	output frequency	0-320Hz	
	Overload capacity (below 160kW)	G：150%-60s；180%-3s；200%-0.5s P：120%-60s；150%-3s；180%-0.5s	
Control characteristics	control mode	V/F control, open loop vector control	
	Starting torque	0.5Hz150%(SVC)	
	Speed range	1:200(SVC)	1:100(V/F)
	Steady speed accuracy	≤±0.6%（SVC）	
	Speed fluctuation	≤±0.6%(SVC)	
	Torque response	≤40ms(SVC)	
	Frequency accuracy	Low frequency operation mode	High frequency operation mode
		Digital setting: 0.01Hz Analog setting: max frequencyx0.2%	Digital setting: 0.01Hz Analog setting: max frequencyx0.2%
	frequency resolution	0.01Hz	0.1Hz
	modulation mode	SVPWM	
	carrier frequency	0.5-16khz, modulated according to the model	
	Automatic carrier adjustment	When this function is selected, the frequency converter can automatically adjust the carrier frequency according to the internal temperature	
	Torque increase	Under V /F control mode, the manual torque is increased by 0.1% - 30.0%	
	Torque curve	0: user defined V / F curve, 1: 2 power curve; 2: 1.7 power curve; 3: 1.2 power curve	
	Acceleration and deceleration time	0-6500.0s, linear acceleration and deceleration or S-curve acceleration and deceleration mode, four groups of acceleration and deceleration time can be selected	

Project		Specifications
Basic function	Inching function	Inching frequency range: 0.00-50.00hz
		Inching acceleration / deceleration time: 0.1-60.0s
		The interval time of inching can be set as 0.0-100.0s
	Simple PLC, multi-stage speed control	Through built-in PLC function and control terminal function The maximum speed is 16 segments
Basic function	Internal PID	It is convenient to realize closed-loop control;
	Sleep arousal	The process PID has the function of sleep and wake-up;
	Torque limit	In speed control, the torque can be limited to avoid frequent over-current alarm;
	DC braking	Starting frequency of DC braking: 0.00 - maximum set frequency;
		DC braking time: 0.01-30.00s(0.0: no action);
		DC braking current: 0.0-100.0% rated current of frequency converter;
	Automatic voltage regulation (AVR)	When the input voltage deviates from the rated value, this function can keep the output voltage constant, Therefore, under normal circumstances, the AVR should operate, especially when the input voltage is higher than the rated value.
	Automatic current limiting	Control the output current of the inverter, when the output current reaches the automatic current limiting level, Adjust the output frequency of the frequency converter so that the current value does not exceed the set automatic current limiting level, It can prevent the inverter from over-current fault to the max extent and ensure the uninterrupted operation of the inverter.
	Over voltage stall control	Restrain the DC bus voltage in the operation of frequency converter to prevent DC bus overvoltage.
	MODBUS Communication	Standard modbus communication protocol, convenient and fast communication with peripheral devices.

Project		Specifications
basic function	Binding function	The operation command channel is bound with the frequency input channel, and the rated parameter setting is not required
	Input terminal drain / source selection	Through jumper terminals, the leakage and source of x1-x5 terminals can be selected to meet the needs of different occasions
	Correction of multi segment AI curve	AI curve can be set at most four points, which is flexible and convenient for curve correction
	Double motor parameters	Memory two sets of asynchronous motor parameters, can realize two different electric switching control
	Virtual I / O port	With 5 virtual AI / AO ports, it can easily realize complex logic control applications
Characteristic function / Operation and operation	Command source channel	The keyboard is given, the external terminals are given, and the communication is given in three ways.
	Frequency source channel	Digital setting, analog setting, pulse setting, multistage speed setting, communication setting, etc. are available in various ways
	Input terminal	5-channel digital input terminal, xi1-x5, can select drain and source input, XS can be used as high-speed pulse input, support 12V level, maximum frequency 50KHz
		2 analog input terminals, Ai1: 0-10V or 0-20mA optional; AI2: 0-10V through parameter setting, two analog terminals AI can be used as digital input terminal DI
	Output terminal	1 way programmable switch quantity output, when open, output level 12V
		1 channel programmable relay output 250 VAC / 3A 30 VDC / 3A
		1 channel analog output terminal AOI: 0-10V or 0-20mA optional;

Appendix 2 Product Technical Parameters

Inverter model	Power capacity (kVA)	Input current (A)	Output current (A)	Adaptive motor		Heating power consumption kW
				kW	HP	
G3-d75 ---	1.5	3.4	2.1	0.75	1	0.027
G3-1d5 P3-1d5	3	5	3.8	1.5	2	0.050
G3-2d2 P3-2d2	4	5.8	5.1	2.2	3	0.066
G3-004 P3-004	5.9	10.5	9	3.7	5	0.120
G3-5d5 P3-5d5	8.9	14.6	13	5.5	7.5	0.195

Appendix 3 Product installation dimensions

1. Installation dimension of keyboard

Figure C-1 keyboard installation size (unit: mm)

According to the actual installation requirements, the installation mode with base can be selected by operating the keyboard. The hole size of the base is as follows:

Figure C-2 mounting dimensions of keyboard base (unit: mm)

Note: the connecting cable between the control end of the keyboard and the body of the inverter is less than 10m, and the remote keyboard is required when it is necessary to operate above this distance.

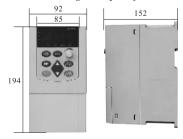## 2. Installation dimension drawing of frequency converter

Figure C-3 installation dimension of frame a (unit: mm)
Applicable models of frame a: 4T007G, 4T001 5G, 4T0022G, as shown in Figure C-3.

Appendix IV Selection of Peripheral Electrical Components

Inverter model	Air switch (MCCB) (A)	Recommended contactor (A)	Recommended input side main circuit wire mm²	Recommended input side main circuit wire mm²	Recommended control loop lead mm²
G3-d75/P3-1d5	10	10	2.5	2.5	1.0
G3-1d5/P3-2d2	16	10	2.5	2.5	1.0
G3-2d2/P3-004	16	10	2.5	2.5	1.0
G3-004/P3-5d5	25	16	4.0	4.0	1.0

Appendix 5 Braking resistor selection

When the frequency converter drives the motor to reverse or decelerate to stop, the DC bus voltage of the inverter will increase due to the energy feedback of the motor. In order to prevent the inverter from suspending operation due to overvoltage protection, before the DC bus voltage reaches the protection point, the inverter automatically turns on the energy-consumption braking circuit, and uses the braking resistor to release the excess energy in the form of heat, thereby suppressing the voltage. Continue to rise to protect the normal operation of the inverter.

1. Selection of braking resistance

When braking, almost all regenerative energy of motor is consumed in braking resistance.
According to the formula: UXU/R = Pb

> U - Braking voltage of the system during stable braking (different system voltage values - 380VAC)
> The value of the system is generally 700V
> Pb brake power

2. Selection of braking resistance power

Theoretically, the power of the brake resistor is the same as that of the brake, but in practice, the brake resistor is usually used with derating.
According to the fraction: X Pr=Pb X ED%

> - the coefficient of derating is generally 70%.
> Pr- braking resistor power
> ED%- braking efficiency (the ratio of energy regeneration process to the whole working process) is 10%.

Please refer to the table below.

Load type	Elevator	Rewinding 、 unwinding	Centrifuge	Accidental braking load	General occasions
Brake utilization rate	20%~30%	20%~30%	50%~60%	5%	10%

3. Selection table of braking resistance

Inverter model	Braking resistance power(kW)	Braking resistance(Ω)
G3-d75/P3-1d5	150W	≥300 Ω
G3-1d5/P3-2d2	150W	≥220 Ω
G3-2d2/P3-004	250W	≥200 Ω
G3-004/P3-5d5	300W	≥130 Ω

Appendix 6 MODBUS protocol description

(the following data are all in 16 hexadecimal).

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 characters transmitted under the same baudrate are different. The density is higher than ASCII mode, each message must be transmitted continuously.

(1) RTU mode format of each byte

Coding system: 8-bit binary, hexadecimal 0-9, A-F.
Data bits: 1 start bit, 8-bit 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 diagram

Parity check

Start	1	2	3	4	5	6	7	8	Par	Stop

No parity check

Start	1	2	3	4	5	6	7	8	Stop

2, read and write function code description

Function code	Function description
03	Read register
06	Write register

3、Address of communication protocol parameter

Function description	Address definition	Explanation of data meaning	R/W
Communication control command	2000H	0001H: shutdown 0012H: forward running 0013H: forward rotation inching operation 0022H: reverse operation 0023H: reverse inching operation	W
Communication setting frequency address	2001H	The set frequency range of communication is -10000 ~ 10000 Note: the communication setting frequency is the percentage relative to the maximum frequency, and its range is -100.00% ~ 100.00%)	W
Communication control command	2002H	0001H: external fault input 0002H: fault reset	W
Read operation / shutdown parameter description	2102H	Set frequency (two decimal places)	R
	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	Converter temperature (one decimal place)	R
	210EH	PID feedback value (two decimal places)	R
	210FH	PID set value (two decimal places)	R
	2101H	Bit0: running Bit1: shutdown Bit2: inching Bit3: forward rotation Bit4: reverse Bit5 ~ bit7: reserved Bit8: Communication given Bit9: analog signal input Bit10: communication operation command channel Bit11: parameter locking Bit12: running Bit13: inching command Bit14 ~ bit15: reserved	R

Function description	Address definition	Explanation of data meaning	R/W
Read fault code description	2100H	00: no abnormality 01: module fault 02: overvoltage 03: temperature fault 04: inverter overload 05: motor overload 06: external fault 07 ~ 09: reserved 10: Over current in acceleration 11: Over current in deceleration 12: Over current in constant speed 13: Reserved 14: Under voltage	R

4、03 Reading 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

This data analysis:

01H is the inverter address
03H is the read function code
2102H is the starting address
0002H is the number of read addresses, and 2102H and 2103H
F76FH is a 16 bit CRC verification code

Response information frame format (Return frame):

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

This data analysis:

01H is the inverter address
03H is the read function code
04H is the product of read item * 2
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

This data analysis:

    01H is the inverter address

    06H is to write function code

    2000H is the control command address

    0001H is the stop command

    43CAH is a 16 bit CRC validation 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: if set correctly, return the same input data.

Warranty terms

The company solemnly promises that users will enjoy the following after-sale service from the date when they purchase products from the manufacturer Warranty service:

This product is guaranteed free of charge for 18 months from the date of purchase (export:Except for foreign and non-standard products).

2、 This product from the user from the date of purchase from the manufacturer, within a month of quality problems, manufacturer guarantee return Replacement and repair are guaranteed.

3、 If the quality problem occurs within three months from the date of purchase, the manufacturer shall replace it Repair is guaranteed.

4、 This product from the user from the date of purchase from the manufacturer, enjoy life-long paid service.

5、 Exemption clause: if the product is damaged or malfunctioned due to the following reasons, it will be exempted from liability for ten months Within the scope of repair service

1) Damage to the machine caused by not following the user's manual or exceeding the standard;

2) Machine damage caused by earthquake, fire, flood, abnormal voltage, other irresistible disasters, etc

3) Machine damage caused by improper use or unauthorized disassembly, repair and transformation;

4) Machine damage caused by using this product for abnormal functions;

5) Machine damage caused by improper storage.

6、 The manufacturer has the right to refuse to provide warranty service under the following circumstances:

1) When the relevant information of the product (nameplates, labels, serial numbers, etc.) cannot be confirmed;

2) When the user fails to pay off the payment in accordance with the purchase and sale contract signed by the buyer and the seller;

3) The user intentionally conceals from the manufacturer's after-sales service provider that the product has been installed, wired, operated and maintained In the process of bad use.

Product warranty card

Customer information	Company name:	
	Company address:	
	contacts:	Telephone:
Product information	Fax:	Post code:
	Product model:	Body barcode:
	Date of purchase:	Failure date:
	Motor power:	Application site:
	Name of agent:	
Fault information	(maintenance time and content)	
	Repairman Date	