Gearmiter

GM series controller instruction manual

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Gearmiter

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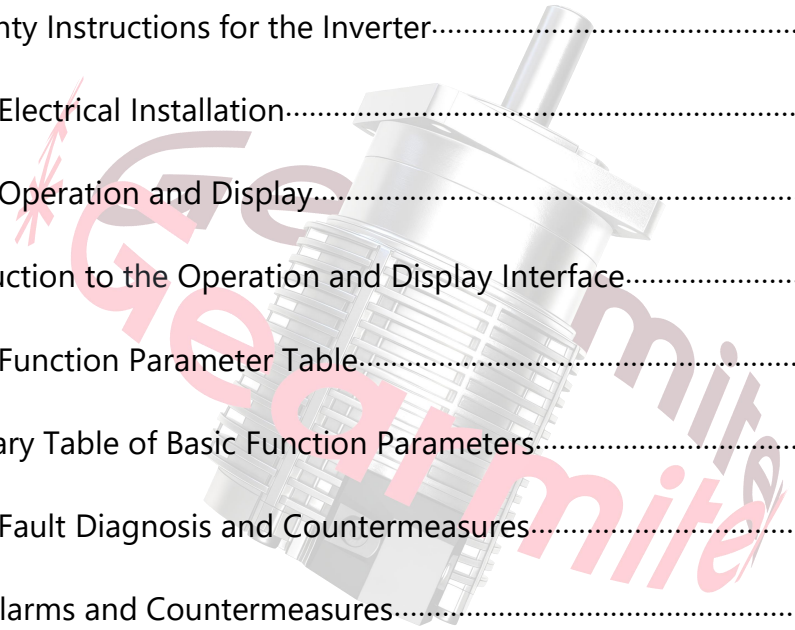


Chapter 1 Product Information

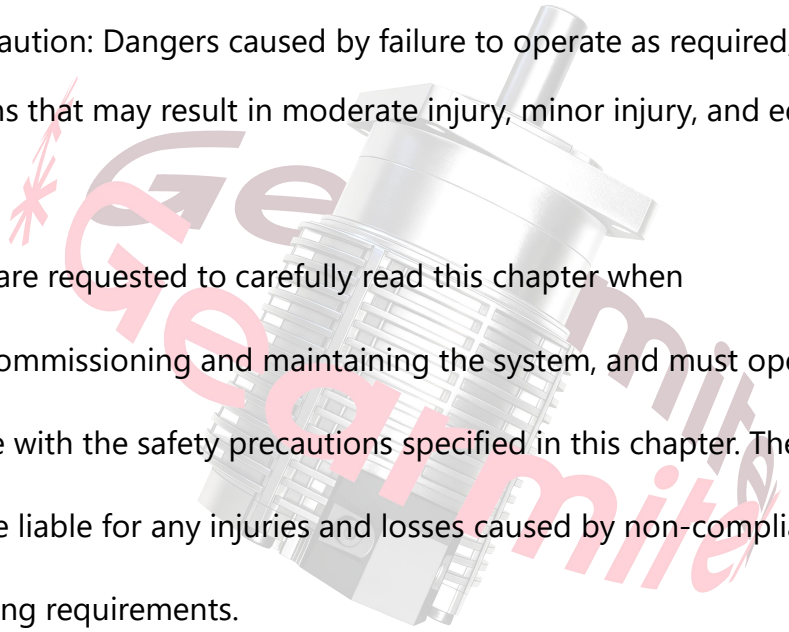
1.1 Safety Information and Precautions

Safety Definitions: In this manual, safety precautions are classified into the following two categories:

Hazard: Dangers caused by failure to operate as required, referring to situations that may result in serious injury or even death:

Caution: Dangers caused by failure to operate as required, referring to situations that may result in moderate injury, minor injury, and equipment damage:

Users are requested to carefully read this chapter when installing,commissioning and maintaining the system, and must operate in accordance with the safety precautions specified in this chapter. The company shall not be liable for any injuries and losses caused by non-compliance with the operating requirements.



1.4 Specifications of GC7K5 Frequency Inverter Series

Table 1-1 GC7K5 Inverter Model and Technical Data

Inverter Model	Power Capacity (KVA)	Input Current (A)	Output Current (A)	Applicable Motor Power	
				kW	HP
Single-phase 220V Power Supply: 220V, 50/60Hz					
GC7K5-	2.0	12.5	5.0	0.75	1
GC7K5-	3.0	19.0	8.0	1.5	2
GC7K5-	4.3	24.0	11.0	2.2	3
GC7K5-	6.8	30.0	17.0	3.7	4
GC7K5-	8.9	26.0	25.0	5.5	5
Three-phase 220V Power Supply: 220V, 50/60Hz					
GC7K5-	1.0	4.0	2.5	0.4	0.5
GC7K5-	2.0	6.0	4.2	0.75	1
GC7K5-	2.6	8.0	6.0	1.5	2
GC7K5-	4.3	14.0	11.0	2.2	3
GC7K5-	6.8	23.0	17.0	2.2	3
GC7K5-	8.9	26.0	25.0	5.5	5
GC7K5-	21	35.0	32.0	7.5	10
Three-phase Power Supply: 380V, 50/60Hz					
GC7K5-	1.5	3.4	2.5	0.75	1
GC7K5-	3.0	5.0	4.2	1.5	2
GC7K5-	4.0	5.8	6.0	2.2	3
GC7K5-	5.9	10.5	9.5	3.7	5
GC7K5-	8.9	14.6	13.0	5.5	7.5
GC7K5-	11.0	20.5	17.0	7.5	10
GC7K5-3T11GB	17.0	26.0	25.0	11.0	15
GC7K5-3T15GB	21.0	35.0	32.0	15.0	20

1.5 Product Outline Drawing and Mounting Hole Dimensions

1.5.1 Product Outline Drawing (Reference)

(Q6-HB200 Series)

(Q4-GC7K5 Series)

1.5.2 Outline Dimensions of the External Keyboard

(Please replace the image by yourself)

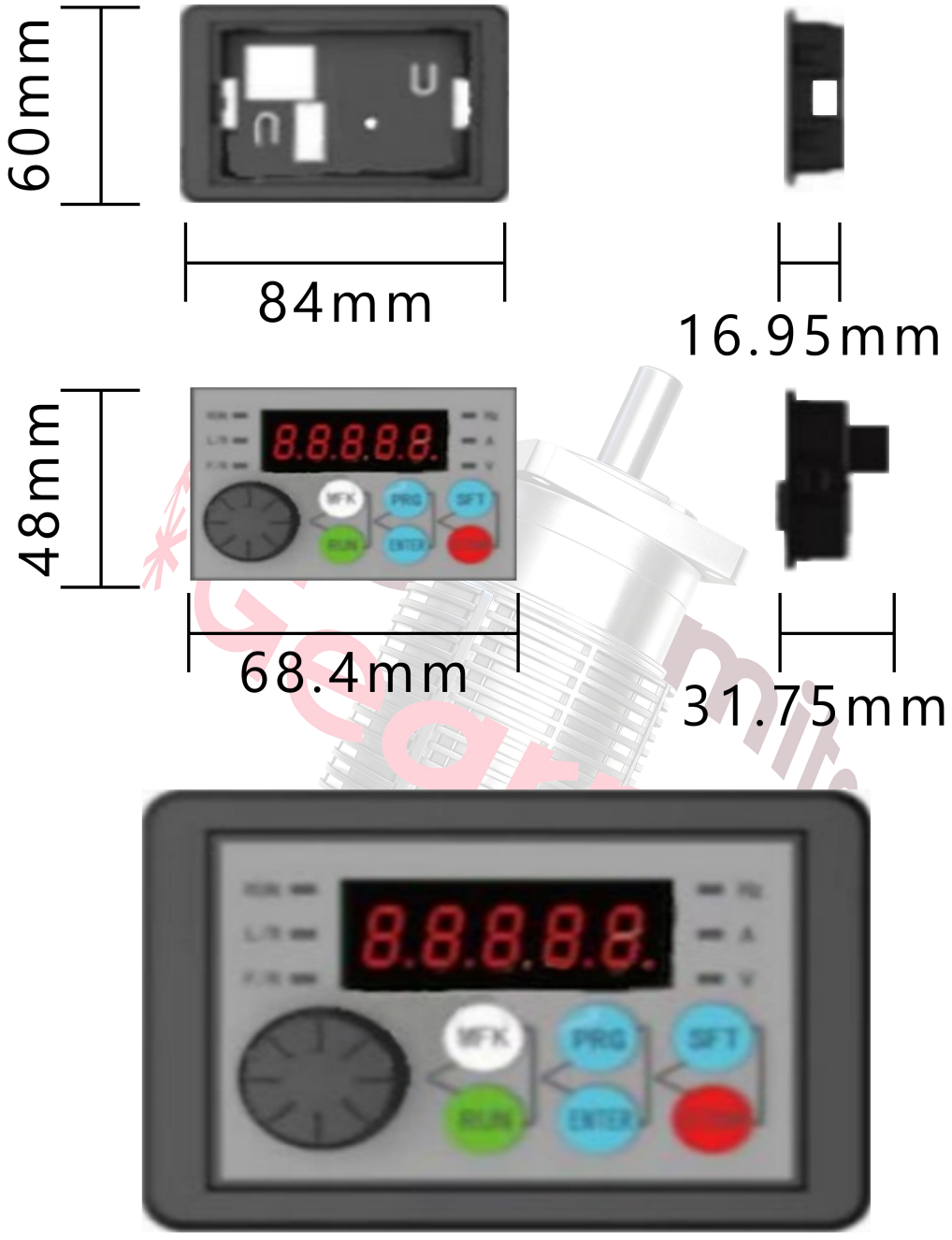


Figure 1-4 Outline Dimensions of the External Keyboard

1.6 Warranty Instructions for the Inverter

Free warranty only covers the inverter itself. Under normal usage conditions, if a malfunction or damage occurs, our company provides a 12-month warranty.

(Starting from the date of manufacture, subject to the barcode on the machine). For periods exceeding 12 months, reasonable fees will be charged.

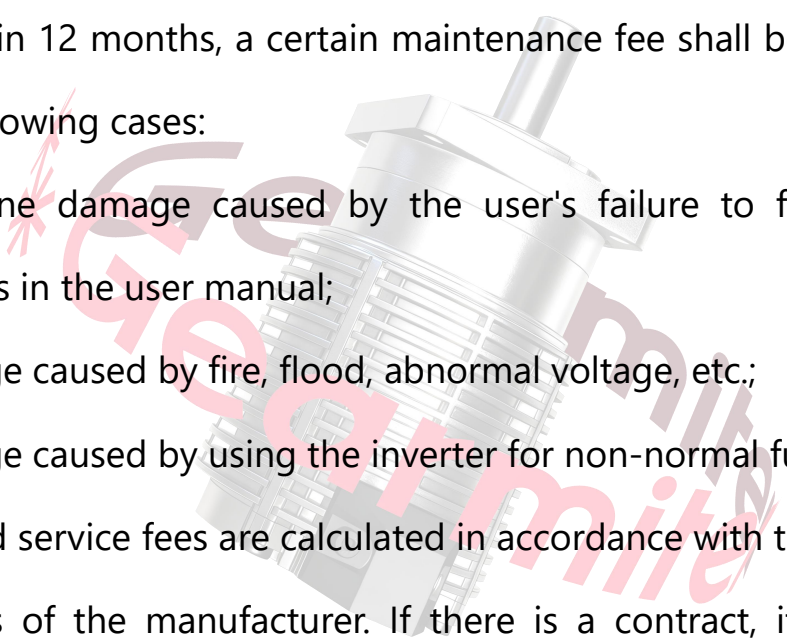
Within 12 months, a certain maintenance fee shall be charged in the following cases:

1) Machine damage caused by the user's failure to follow the provisions in the user manual;

2) Damage caused by fire, flood, abnormal voltage, etc.;

3) Damage caused by using the inverter for non-normal functions;

4) Related service fees are calculated in accordance with the unified standards of the manufacturer. If there is a contract, it shall be handled in accordance with the principle that the contract takes precedence.



Chapter 2 Electrical Installation

2.1.1 Main Circuit Terminals and Wiring

1) Description of inverter main circuit terminals:

Terminal Marking	Name	Description
R、S、T	Power Input Terminals	Connection points for single-phase 220V AC power supply
P+,PB	Brake Resistor Connection Terminals	Used to connect the brake resistor
U、V、W	Inverter Output Terminals	Used to connect the three-phase motor
⏚	Grounding Terminal	For equipment grounding

2.1.2 Wiring Method of Inverter Control Circuit

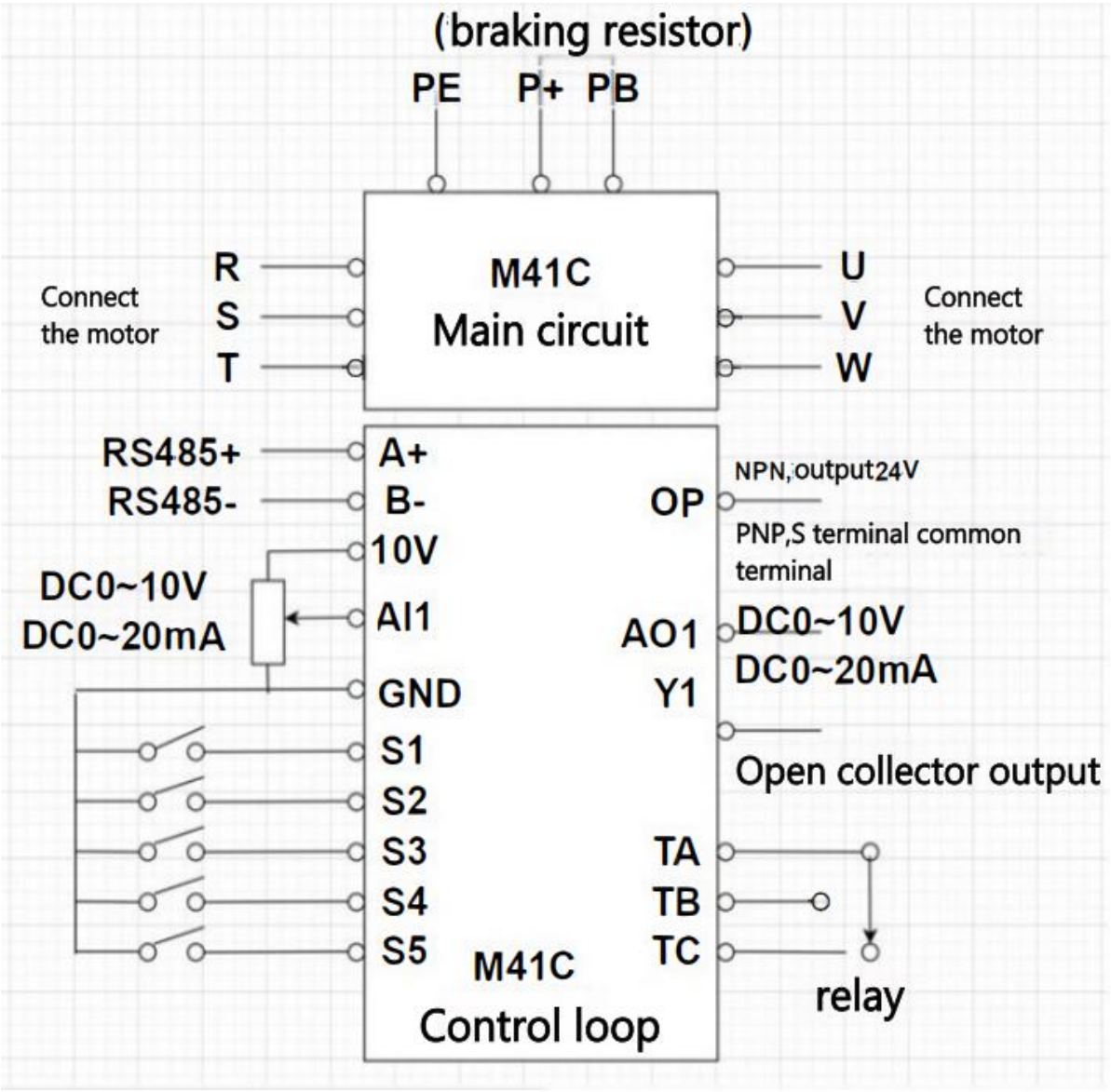
Figure 2-2 Wiring Method of Inverter Control Circuit

Note 1: All inverters in the GC7K5 series use the same wiring method for their control circuits. The diagram above is a wiring schematic of the three-phase 380V inverter, where" ◎ "indicates power circuit terminals, and "o" indicates control circuit terminals.

Note 2: The maximum number of X terminals on the DJ28038 motherboard is X5; AO2 only provides voltage output (no current output), and it shares a terminal with Y1, with switching controlled by J1.

2.1.3 Description of control terminal functions:

Table 2-1 Description of inverter control terminal functions

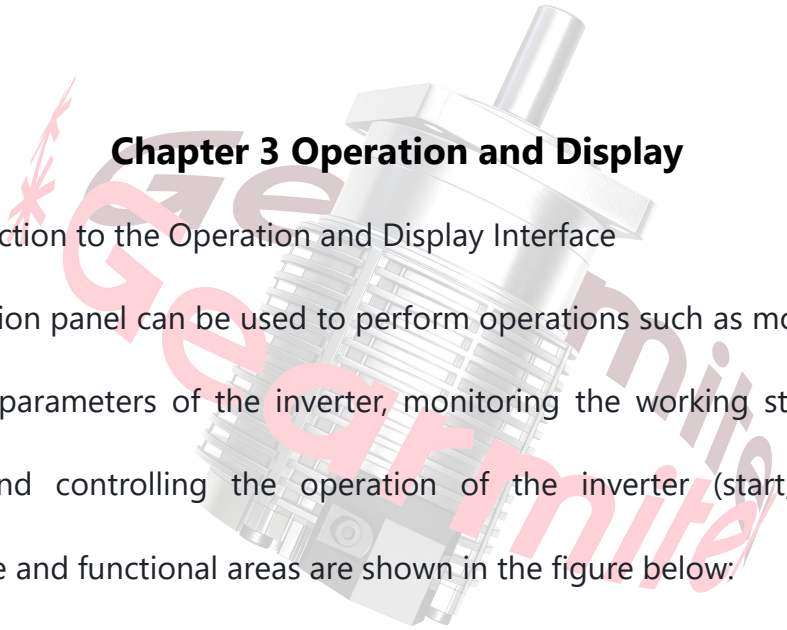


Category	Terminal Symbol	Terminal Name	Function Description
Power Supply	+10V-GND	External +10V Power Supply	Provides +10V power externally. Maximum output current: 150mA (with short-circuit protection). Generally used as the operating power supply for external potentiometer. Potentiometer resistance range: 1kQ~5kQ
	PC	External +24V Power Supply	Provides +24V power externally. Generally used as the operating power supply for digital input/output terminals and the power supply for external sensors. Maximum output current: 200mA.

	PN jumper to NPN position	Input Terminal (NPN)	1. The GND terminal and the input terminals S1, S2, S3, S4, S5 can realize the NPN mode; 2. In NPN mode, the PC terminal can output a current of 24V and 0.3A for external power supply.
	PN jumper to PNP position	Input Terminal (PNP)	The PC terminal and the input terminals S1, S2, S3, S4, S5 can implement the PNP mode.
Simulation Terminal	AI1	Analog Input Terminal 1	1. Input range: DC 0V~10V / 0mA~20mA (determined by P4-37). 2. Input impedance: 22kΩ for voltage input, 500Ω for current input.
	AO1	Analog Output Terminal 1	Output voltage range: 0V~10V; Output current range: 0mA~20mA, 4~20mA (select via P5-23). The selection of AO1 output voltage and current is determined by the AO jumper cap on the housing.
Digital Input	S1(or X1)	Digital Input 1	In addition to the characteristics of S1-S4, it can also serve as a high-speed pulse input channel. Maximum input frequency: 50kHz; 1. Input impedance: 1kΩ; 2. 2. Voltage range for level input: 5V~30V.
	S2(or X2)	Digital Input 2	
	S3(or X3)	Digital Input 3	
	S4(or X4)	Digital Input 4	
	S5(or X5) (HDI)	Digital Input 5 (High-Speed Pulse Input Terminal)	
	A+,B-	RS485 Communication	A+ is the positive input for 485 communication differential signal; B- is the negative input for differential signal.
Digital Output	Y3 (HDO)	Open Collector Output	When used as an open collector output
		High-Speed Pulse Output	When used as a high-speed pulse output: Constrained by function code PS-00 "HDO Terminal Output Mode Selection", maximum frequency up to 50kHz.
	K1A-K1B-K1C	Relay 1 Terminal	Contact drive capacity: AC 250V, 3A, cosØ=0.4 DC 30V, 1A A.Common point B.Normally closed point C.Normally open point

2.1.5 Wiring Instructions for Signal Input Terminals:

Since weak analog voltage signals are particularly susceptible to external interference, shielded cables are generally required, and the wiring distance should be as short as possible, not exceeding 20 meters. In some occasions where analog signals are subject to severe interference, filter capacitors or ferrite beads need to be added on the analog signal source side.



Chapter 3 Operation and Display

3.1 Introduction to the Operation and Display Interface

The operation panel can be used to perform operations such as modifying the functional parameters of the inverter, monitoring the working status of the inverter, and controlling the operation of the inverter (start, stop). Its appearance and functional areas are shown in the figure below:

Figure 3-1 Schematic Diagram of the Operation Panel

1) Description of Function Indicators:

- RUN: The light being off indicates that the inverter is in a stopped state, and the light being on indicates that the inverter is in an operating state.
- LOCAL/REMOT: Indicator for keyboard operation, terminal operation and remote operation (communication control)

◯ LOCAL/REMOTE light off Panel start-stop control

● LOCAL/REMOTE stays on Terminal start-stop control

◒ LOCAL/REMOTE flashes Terminal start-stop control

- FWD/REV: Forward/reverse indicator, on means forward rotation state.
- TUNE/TC: Tuning/torque control/fault indicator, on means torque control mode，slow flashing means tuning state, fast flashing means fault state.

2) Unit Indicators:

Hz	Frequency Unit
A	Current Unit
V	Voltage Unit
RPM(Hz+A)	Speed Unit
%(A+V)	Percentage Unit

3) Digital Display Area:

Upper digital tube: It is a 5-digit LED main display that can show the set frequency, output frequency, various monitoring data and alarm codes, etc.

Lower digital tube: Used for monitoring function. The monitoring parameters can be set via P7-17 and P7-18. The set parameter numbers correspond to the U0 group menu numbers, and you can refer to the U0 group function menu table.

4) Keyboard Buttons Description Table

Table 3-1 Keyboard Functions Table

Key	Key Name	Function
PRG	Program Key	Enter or exit the level menu
ENTER	Confirm Key	Enter the menu screen step by step and confirm the set parameters
△	Increment Key	Increment of data or function code (or rotate the knob clockwise)
▽	Decrement Key	Decrement of data or function code (or rotate the knob counterclockwise)
▷	Shift Key	In the stop display interface and run display interface, you can cyclically select display parameters; when modifying parameters, you can select the modification bit of the parameter
RUN	Run Key	Used for run operation in keyboard control mode
STOP/RES	Stop/Reset Key	In the running state, pressing this key can stop the operation; in the fault alarm state, it can be used for reset operation. The characteristics of this key are restricted by function code P7-02.
MF.K	Multi-function Select Key	Perform function switching selection according to P7-01

Chapter 4 Function Parameter Table

4.1 Summary Table of Basic Function Parameters

"☆":Indicates the parameter setting can be modified both when the inverter is stopped and running.

"★":Indicates the parameter setting cannot be modified when the inverter is running.

"●":Indicates the parameter value is an actual detected and recorded value, cannot be modified.

Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P0 Group Basic Parameters					
PO-00	G/P Model & Electrical Control Mode	1: G Type 2: P Type	1	★	61440
P0-01	Motor Control Mode & Motor Type Selection	Units digit: Electrical Control Mode 0: Open-loop Vector Control 2: Open-loop V/F Control Tens digit: Motor Type 0: Three-phase Asynchronous Motor 1:Three-phase Permanent Magnet Synchronous Motor	02	★	61441
PO-02	Command Source Selection	0: Panel Command Channel (LED off) 1: Terminal Command Channel (LED on) 2: Communication Command Channel (LED flashing)	0	★	61442
P0-03	Main Frequency Source X Selection	0: Digital Setting (Preset Frequency P0-08,UP/DOWN modifiable, power-off memory) 1: Digital Setting (Preset Frequency P0-08, UP/DOWN modifiable,no power-off memory) 2: AI1 3: AI2 4: AI3 Keyboard Potentiometer 5: HDI Pulse Setting (X5) 6: Multi-step Command 7: Simple PLC	4	★	61443

		8: PID **9: Communication Given** *Note 1: When using an encoder keyboard, AI3 is invalid and automatically switches to 1 (Digital Setting)*			
PO-04	**Auxiliary Frequency Source Y Selection**	**Same as P0-03 (Main Frequency Source X Selection)**	**0**	★	**61444**
PO-05	**Range Selection of Frequency Source Y for Superposition**	**0: Relative to Maximum Frequency** **1: Relative to Frequency Source X**	**0**	☆	**61445**
P0-06	**Range of Frequency Source Y for Superposition**	**0%～150%**	**100%**	☆	**61446**
PO-07	**Frequency Source Superposition Mode Selection**	**Units digit: Frequency Source Selection** **0: Main Frequency Source X** **1: Main & Auxiliary Operation (Operation mode determined by tens digit)** **2: Switch between Main X and Auxiliary Y** **3: Switch between Main X and Main-Auxiliary Operation Result** **4: Switch between Auxiliary Y and Main-Auxiliary Operation Result** **Tens digit: Main-Auxiliary Operation Relationship** **0: Main + Auxiliary** **1: Main - Auxiliary** **2: Maximum of Both** **3: Minimum of Both** **4: Main × Auxiliary** **5: Main ÷ Auxiliary** *Note: When using main-auxiliary superposition, set the main frequency to the minimum first and the auxiliary frequency to the maximum.*	**00**	☆	**61447**

PO-08	**Preset Frequency**	**0.00Hz~Maximum Frequency (P0-10)**	**50.00Hz**	☆	**61448**
PO-09	**Running Direction**	**0: Same direction** **1: Opposite direction**	**0**	☆	**61449**

P0-10	Maximum Frequency	50.00Hz～320.00Hz(P0-22=2) 50.0Hz～3200.0Hz(P0-22=1)	50.00Hz 50.0Hz	★	61450
P0-11	Upper Limit Frequency Source	0:P0-12 Setting 1:AI1 2:AI2 3:AI3 External Keyboard Potentiometer 4:HDI Pulse Setting 5:Communication Given	0	★	61451
Function Code	**Name**	**Setting Range**	**Factory Settings**	**Attribute**	**Address (DEC)**
P0-12	Upper Limit Frequency	Lower Limit Frequency (P0-14) ~ Maximum Frequency (P0-10)	50.00Hz	☆	61452
P0-13	Upper Limit Frequency Offset	0.00Hz~Maximum Frequency (P0-10)	0.00Hz	☆	61453
P0-14	Lower Limit Frequency	0.00Hz ~ Upper Limit Frequency (P0-12)	0.00Hz	☆	61454
P0-15	Carrier Frequency	0.5kHz～16.0kHz	Determined by Model	☆	61455
PO-16	Carrier Frequency Adjustment with Temperature	0:No 1:Yes	0	☆	61456
PO-17	Acceleration Time 1	0s～65000s(P0-19=0) 0.0s～6500.0s(P0-19=1) 0.00s～650.00s(P0-19=2)	Determined by Model	☆	61457
P0-18	Deceleration Time 1				61458
P0-19	Acceleration/Deceleration Time Unit	0: 1 second 1: 0.1 second 2: 0.01 second	1	★	61459
P0-21	Auxiliary Frequency Source Offset Frequency in Superposition	0.00Hz～Maximum Frequency (P0-10)	0.00Hz	☆	61461
PO-22	Frequency Command Resolution	1: 0.1Hz 2: 0.01Hz *Note: Changing to 1 enables high-frequency output*	2	★	61462
P0-23	Digital Setting Frequency Shutdown Memory	0: No memory 1: Memory	1	☆	61463
P0-24	Reserved		0	★	61464

P0-25	Acceleration/Deceleration Time Reference Frequency	0: Maximum Frequency (P0-10) 1: Set Frequency	0	★	61465
P0-26	UP/DOWN Reference of Frequency Command During Operation	0: Running Frequency 1: Set Frequency	0	★	61466
P0-27	Command Source-bound Frequency Source	Units digit: Operation Panel Command-bound Frequency Source Selection 0: No binding 2: AI1 3: AI2 4:AI3 External Keyboard Potentiometer 5: HDI Pulse Setting (X5) 6: Multi-speed 7: Simple PLC 8: PID 9: Communication Given Tens digit: Terminal Command-bound Frequency Source Selection Hundreds digit: Communication Command-bound Frequency Source Selection; Thousands digit: Auto-run Bound Frequency Source Selection	0000	☆	61467
P0-29	Application Macro	Setting Range: 0~65535	0	★	61469
P1 Group: Motor Parameters					
P1-00	Motor Type Query	0: Ordinary Asynchronous Motor 1: Variable Frequency Asynchronous Motor 2: Permanent Magnet Synchronous Motor (GK2802 Motherboard	0	★	61696
P1-01	Motor Rated Power	0.1～1000KW	Determined by Model	★	61697

P1-02	Motor Rated Voltage	1～380V	Determined by Model	★	61698
P1-03	Motor Rated Current	0.01～100.00A	Determined by Model	★	61699
P1-04	Motor Rated Frequency	0.01Hz～Maximum Frequency	Determined by Model	★	61700
P1-05	Motor Rated Speed	1～65535rpm	Determined by Model	★	61701
P1-10	No-load Current of Asynchronous Motor	0.01～P1-03	Tuning Parameter	★	61706
P1-16	Stator Resistance of Synchronous Motor	0.001~65.535Ω (≤55KW) 0.0001~6.5535Ω (>55KW)	Tuning Parameter	★	61712
P1-17	D-axis Inductance of Synchronous Motor	0.01~655.35mH (≤55KW) 0.001~65.535 mH(>55KW)	Tuning Parameter	★	61713
P1-18	Q-axis Inductance of Synchronous Motor	0.01~655.35mH (≤55KW) 0.001~65.535 mH(>55KW)	Tuning Parameter	★	61714
P1-20	Back EMF of Synchronous Motor	0.0~6553.5V	Tuning Parameter	★	61716
P1-37	Tuning Selection	00: No Operation; 01: Asynchronous Motor Static Tuning 02: Asynchronous Motor Full Tuning 11: Synchronous Motor Loaded Tuning 12: Synchronous Motor No-load Tuning	00	★	61733

P2 Group: Vector Parameters					
Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P2-00	Speed Loop Proportional Gain 1	1~100	30	☆	61952
P2-01	Speed Loop Integral Time	0.01~10.00s	0.50s	☆	61953
P2-02	Switching Frequency 1	0.00~P2-05	5.00Hz	☆	61954
P2-03	Speed Loop Proportional Gain 2	1～100	20	☆	61955
P2-04	Speed Loop Integral Time 2	0.01s～10.00s	1.00s	☆	61956
P2-05	Switching Frequency 2	P2-02～Maximum Frequency	10.00Hz	☆	61957
P2-06	Vector Control Slip Gain	50～200%	150%	☆	61958
P2-07	Speed Loop Filter Time Constant	0.000～0.100s	0.050s	☆	61959
P2-08	Vector Control Over-excitation Gain	0～200	64	☆	61960
P2-09	Torque upper limit source in speed control mode	0: Set by Function Code P2-10 2: AI2 3: Keyboard Potentiometer 4: PULSE Pulse Setting 5: Communication Given; 6: MIN (AI1,AI2) 7: MAX (AI1,AI2) Full Scale of Options 1-7 Corresponding to P2-10	0	☆	61961
P2-10	Digital setting of torque upper limit In speed control mode	0.0%～200.0%	150.0%	☆	61962
P2-13	Excitation Regulation Proportional Gain	0～60000	2000	☆	61965
P2-14	Excitation Regulation Integral Gain	0～60000	1300	☆	61966
P2-15	Torque Regulation Proportional Gain	0～60000	2000	☆	61967
P2-16	Torque Regulation Integral Gain	0～60000	1300	☆	61968

P2-17	Speed Loop Integral Attribute	Units Digit: Integral Separation 0：invalid 1：valid	0	☆	61969
P2-18	Reserved		·	★	
P2-19	Reserved			☆	
P2-20	Reserved			☆	
P2-21	Maximum Torque Coefficient in Field Weakening Region	50～200	100		
P2-22	Generation Power Limit Enable	0～1	0		
P2-23	Generation Power Upper Limit	0.0～200.0%	20.0		
P2-24	PM Field Weakening Mode	0～2	1	★	
P2-25	PM Field Weakening Coefficient	1～50	5	☆	
P2-26	PM Maximum Field Weakening Current	0～300	50	☆	
P2-27	PM Field Weakening Auto-Tuning Coefficient	10～500	100		
P2-28	PM Field Weakening Integral Multiple	0～1	0		
P2-29	PM Output Voltage Upper Limit Margin	1～50	05		
P2-30	PM Initial Position Detection Current	50～180%	80%	☆	
P2-31	PM Initial Position Detection	0～2	0	☆	
P2-32	Speed Loop Mode Selection	0～1	0	★	
P2-33	PM Salient Pole Ratio Adjustment Gain	50～500	100		
P2-34	Maximum Torque per Ampere Control	1	1	★	
P2-35	Feedforward Compensation Mode	0	0	★	
P2-36	Current Loop KP During Tuning	1～100	6	☆	
P2-37	Current Loop KI During Tuning	1～100	6	☆	
P2-38	Z-Signal Correction Enable	0～1	1	☆	
P2-39	PM SVC speed filtering level	10～1000		☆	
P2-40	PM SVC Speed Estimation Proportional Gain	5～200		☆	

P2-41	PM SVC Speed Estimation Integral Gain	5～200		☆	
P2-42	PM SVC Initial Excitation Current Limit	0～80%		☆	
P2-43	PM SVC Minimum Carrier Frequency	0.8～P0-15		☆	
P2-44	Low-Frequency Operation Mode				
P2-45	Low-Frequency Activation				
P2-46	Low-Frequency Frequency Step				
P2-47	Low-Frequency Braking Current	0～80%		☆	
P2-48	PM SVC Speed Tracking				
P2-49	Zero Servo Enable				
P2-50	Switching Frequency				
P2-51	Zero Servo Speed Loop Proportional Gain				
P2-52	Zero Servo Speed Loop Integral Time				
P2-53	Stop Inversion Prohibition				
P2-54	Stopping angle				
P2-55	Online Tuning Enable	0:Disabled 1:Tuning Before First Startup After Power-On 2:Tuning Before Startup			
P2-56	Online Back EMF Identification	0: Off 1: On			
P2-57	SVC Initial Position Compensation Angle				
P3 Group V/F Control Parameters					
P3-00	VF curve setting	0: Linear V/F 1: Multi-point V/F 2: Square V/F 3: 1.2th power V/F 4: 1.4th power V/F 6: 1.6th power V/F 8: 1.8th power V/F 9: Reserved 10: Complete separation of V and F 11: Semi-separation of V and F	0	★	62208

P3-01	Torque Boost	0.0%:(Automatic torque boost) 0.1～30.0%	Determined by Model	☆	62209
P3-02	Torque Boost Cutoff Frequency	0.00Hz～Maximum Frequency	15.00Hz	★	62210
P3-03	Multi-point VF Frequency Point 1	0.00Hz～P3-05	1.30Hz	★	62211
P3-04	Multi-point VF Voltage Point 1	0.0%～100.0%	15.0%	★	62212
P3-05	Multi-point VF Frequency Point 2	P3-03～P3-07	5.00Hz	★	62213
P3-06	Multi-point VF Voltage Point 2	0.0%～100.0%	20.0%	★	62214
P3-07	Multi-point VF Frequency Point 3	P3-05～Motor Rated Frequency(P1-04)	70.00Hz	★	62215
P3-08	Multi-point VF Voltage Point 3	0.0%～100.0%	100.0%	★	62216
P3-09	V/F Slip Compensation Gain	0.0%～200.0%	0.0%	☆	62217
P3-10	V/F Over-Excitation Gain	0～200	64	☆	62218
P3-11	V/F Oscillation Suppression Gain	0～100	Determined by Model	☆	62219
P3-34	AVR Function Selection	0: Turn off AVR 1: AVR enable	1	☆	62242

P4 Group Input Terminals

Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P4-00	X1 Terminal Function Selection	0:No Function 1:Forward Run(FWD) 2:Reverse Run(REV) 3:Three-line operation control 4:Forward Jog(FJOG) 5:Reverse Jog(RJOG) 6:Terminal UP 7:Terminal DOWN 8:Free Stop 9:Fault Reset(RESET) 10:Run Pause 11:External Fault Normally Open Input 12:Multi-step Command Terminal 1 13:Multi-step Command Terminal 2 14:Multi-step Command Terminal 3 15:Multi-step Command Terminal 4 16:Acceleration/Deceleration Time Selection Terminal 1	01	★	62464
P4-01	X2 Terminal Function Selection		02	★	62465
P4-02	X3 Terminal Function Selection		04	★	62466

		17:Acceleration/Deceleration Time Selection Terminal 2 18:Frequency Source Switching 19:UP/DOWN Setting Clear(Terminal/Keyboard) 20:Run Command Switching Terminal 1 21:Acceleration and deceleration prohibited			
P4-03	X4 Terminal Function Selection	22:PID Pause 23:PLC Status Reset 24:Swing Frequency Pause 25:Counter Input 26:Counter Reset 27:Length Count Input 28:Length Reset 29:Torque Control Inhibition 30:HDI Pulse Frequency Input(X5) 31:Reserved 32: Immediate DC braking 33:External Fault Normally Closed Input 34:Frequency Modification Enable 35:PID Action Direction Inversion 36:External Stop Terminal 1 37:Run Command Switching Terminal 2 38:PID Integral Pause 39:Frequency Source X and Preset Frequency Switching 40:Frequency Source Y and Preset Frequency Switching 43:PID Parameter Switching 44:User-defined Fault 1 45:User-defined Fault 2 46:Speed Control/Torque Control Switching 47:Emergency Stop 48:External Stop Terminal 2 49:Deceleration DC Braking 50:Current Run Time Clear 51:Two-wire and Three-wire Switching 52: Inversion prohibited 53:Single terminal UP/DOWN	09	★	62467
P4-04	X5 Terminal Function Selection		12	★	62468
P4-05	X6 Terminal Function Selection		00	★	62469
P4-06	X6 Terminal Function Selection		00	★	62470

		enable, frequency source switching (same function as 18) 54:Terminal activates UP, inactivity is DOWN			
Function Code	**Name**	**Setting Range**	**Factory Settings**	**Attribute**	**Address (DEC)**
P4-10	X terminal filtering time	0.000s~1.000s	0.010s	☆	62474
P4-11	Terminal command mode	Units digit: selection between two-wire type and three-wire type 0: Two-wire type 1 1: Two-wire type 2 2: Three-wire type 1 3: Three-wire type 2 Tens digit: Enable for multi-speed terminal start 0: Invalid 1: Enable	00	★	62475
P4-12	Terminal UP/DOWN Change Rate	0.001Hz/s~65.535Hz/s	1.00Hz/s	☆	62476
P4-13	AI Curve 1 Minimum Input	0.00V~P4-15	0.00V	☆	62477
P4-14	AI Curve 1 Minimum Input Corresponding Setting	-100.0%~+100.0%	0.0%	☆	62478
P4-15	AI Curve 1 Maximum Input	P4-13~+10.00V	10.00V	☆	62479
P4-16	AI Curve 1 Maximum Input Corresponding Setting	-100.0%~+100.0%	100.0%	☆	62480
P4-17	AI1 Filter Time	0.00s~10.00s	0.10s	☆	62481
P4-18	AI Curve 2 Minimum Input	0.00V~P4-20	0.00V	☆	62482
P4-19	AI Curve 2 Minimum Input Corresponding Setting	-100.0%~+100.0%	0.0%	☆	62483
P4-20	AI Curve 2 Maximum Input	P4-18~+10.00V	10.00V	☆	62484
P4-21	AI Curve 2 Maximum Input Corresponding Setting	-100.0%~+100.0%	100.0%	☆	62485
P4-22	AI2 Filter Time	0.00s～10.00s	0.10s	☆	62486
P4-23	AI Curve 3 Minimum Input	0.00V～P4-25	0.50V	☆	62482
P4-24	AI Curve 3 Minimum Input Corresponding Setting	-100.0%~+100.0%	0.0%	☆	62483
P4-25	AI Curve 3 Maximum Input	P4-23～+10.00V	9.70V	☆	62484
P4-26	AI Curve 3 Maximum Input Corresponding Setting	-100.0%～+100.0%	100.0%	☆	62485

P4-27	AI3 Filter Time	0.00s～10.00s	0.10s	☆	62486
P4-28	HDI Pulse Minimum Input	0.00kHz～P4-30	0.00kHz	☆	62492
P4-29	HDI Pulse Minimum Input Corresponding Setting	-100.0%～100.0%	0.0%	☆	62493
P4-30	HDI Pulse Maximum Input	P4-28～50.00kHz	50.00kHz	☆	62494
P4-31	HDI Pulse Maximum Input Setting	-100.0%～100.0%	100.0%	☆	62495
P4-32	HDI pulse filtering time	0.00s～10.00s	0.10s	☆	62496
P4-33	AI Curve Selection	Units digit: A11 curve selection 1: Curve 1 (2 points, P4-13~P4-16) 2: Curve 2 (2 points, P4-18~P4-21) 3: Curve 3 (2 points, P4-23~P4-26) Tens digit: A12 curve selection, same as above Hundreds digit: A13 curve selection, same as above	H.321	☆	62497
P4-34	AI is below the minimum input setting selection	Units digit: A11 is lower than the minimum input setting selection 0: Corresponding to the minimum input setting 1: 0.0% Tens digit: A12 is lower than the minimum input setting selection, same as above Hundreds digit: A13 is lower than the minimum input setting selection, same as above	H.000	☆	62498
P4-35	X Terminal Valid Mode Selection 1	0: Active high 1: Active low Units digit: x1 Tens digit: X2 Hundreds digit: X3 Thousands digit: X4 Ten thousands digit: X5	00000	★	62499
P4-36	X Terminal Valid Mode Selection 2	0: Active high 1: Active low Units digit: x1 Tens digit: X2	00000	★	62499

		Hundreds digit: X3 Thousands digit: X4 Ten thousands digit: X5			
Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P4-37	AI Input Voltage/Current Selection	Units digit: A11 Tens digit: A12 0: Voltage input 1: Current input	10	★	62501
P4-38	X1 Turn-On Delay Time	0.0s～6553.5s	0.0S	★	62502
P4-39	X2 Turn-On Delay Time	0.0s～6553.5s	0.0S	★	62503
P4-40	X3 Turn-On Delay Time	0.0s～6553.5s	0.0S	★	62504
P4-41	X4 Turn-On Delay Time	0.0s～6553.5s	0.05	★	62505
P4-42	X5 Turn-On Delay Time	0.0s～6553.5s	0.0S	★	62506
P4-43	X6 Turn-On Delay Time	0.0s～6553.5s	0.0S	★	62507
P4-44	X7 Turn-On Delay Time	0.0s～6553.5s	0.0S	★	62508
P4-48	X1 Turn-Off Delay Time	0.0s~6553.5s	0.0S	★	62512
P4-49	X2 Turn-Off Delay Time	0.0s～6553.5s	0.0S	★	62513
P4-50	X3 Turn-Off Delay Time	0.0s～6553.5s	0.0S	★	62514
P4-51	X4 Turn-Off Delay Time	0.0s～6553.5s	0.0S	★	62515
P4-52	X5 Turn-Off Delay Time	0.0s～6553.5s	0.0S	★	62516
P4-53	X6 Turn-Off Delay Time	0.0s～6553.5s	0.0S	★	62517
P4-54	X7 Turn-Off Delay Time	0.0s~6553.5s	0.0S	★	62518
P4-58	Frequency UP/DOWN Auto Clear Mode	0: No auto clear function 1: Clear during jogging 2: Clear when fault occurs 3: Clear during reverse rotation	0	★	62522
P5 Group Output Terminals					
P5-00	HDO terminal output mode selection	0: High-speed Pulse Output (HDO) 1: Terminal Switch Output (Y3)	0	☆	62720

P5-01	HDO terminal switching value Output function selection (Y3)	0: No output 1: Inverter running 2: Fault output (fault shutdown) 3: Frequency level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output when stopped) 6: Motor overload pre-alarm 7: Inverter overload pre-alarm 8: Set count value reached 9: Specified count value reached	00	☆	62721
P5-02	Relay RY1 Function Selection (K1A-K1B-K1C)	11: PLC cycle completed 12:Cumulative running time reached 13: Frequency limiting in progress 14: Torque limiting in progress 15: Ready to run 16: A11 > A12 17: Upper limit frequency reached 18: Lower limit frequency reached (related to operation) 19: Undervoltage status output 20: Communication setting	02	☆	62722
P5-03	Relay RY2 Function Selection (K2A-K2B-K2C)	23: Running at zero speed 2 (output also when stopped) 24: Cumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached output 27: Frequency 2 reached output 28: Current 1 reached output 29: Current 2 reached output 30: Timing reached output 31: A11 input overrun 32: Unloading in progress	00	☆	62723
P5-04	Y1 Output Function Selection	33: Running in reverse 34: Zero current state 35: Module temperature reached 36: Output current exceeded the limit 37: Lower limit frequency reached	01	☆	62724

		(output even when stopped) 38: Alarm output (continue running) 40: Current running time reached 41: Fault output (for faults with free stop and no undervoltage output) 42: Frequency 1 <= operating frequency <= Frequency 2			
		43: Frequency 1 >= Running Frequency >= Frequency 2 44: Frequency 1 <= Set Frequency <= Frequency 2 45: Frequency 1 >= Set Frequency >= Frequency 2 *(Note: Frequency 1，2 refer to P8-30 and P8-32)* 46: Linked X1 Terminal Output 47: Linked X2 Terminal Output 48: Linked X3 Terminal Output 49: Linked X4 Terminal Output 50: Auxiliary Motor Water Pump 1 51: Auxiliary Motor Water Pump 2 52: Auxiliary Motor Water Pump 3 53: Auxiliary Motor Water Pump 4 54: In Sleep Mode			
P5-06	HDO High-Speed Pulse Output Function Selection	0: Running Frequency 1: Set Frequency 2: Output Current 3: Output Torque 4: Output Power 5: Output Voltage 6:HDI 脉冲输入	00	☆	62726
P5-07	AO1 Output Function Selection		00	☆	62727

P5-08	AO2 Output Function Selection	(100.%对应 100.0kHz) 7: AI1; 8: AI2; 9: AI3; 11: Count Value 12: Communication Setting; 13: Motor Speed; 14: Output Current (100.0% corresponds to 1000.0 A); 15: Output Voltage (100.0% corresponds to 1000.0 V); 16: Reserved; 17: Inverter Output Torque	01	☆	62728
P5-09	HDO Output Maximum Frequency	0.01kHz~50.00kHz	50.00kHz	☆	62729
P5-10	AO1 Zero Offset Coefficient	-100.0%~+100.0%	0.0%	☆	62730
P5-11	AO1 gain	-10.00~+10.00	1.00	☆	62731
P5-12	AO2 Zero Offset Coefficient	-100.0%～+100.0%	0.0%	☆	62732
P5-13	AO2 Gain	-10.00～+10.00	1.00	☆	62733
P5-17	Y3 Delay Closing Time	0.0s～6553.5s	0.0s	☆	62737
P5-18	RY1 Delay Closing Time	0.0s～6553.5s	0.0s	☆	62738
P5-19	RY2 Delay Closing Time	0.0s～6553.5s	0.0s	☆	62739
P5-20	Y1 Delay Closing Time	0.0s～6553.5s	0.0s	☆	62740
P5-21	Reserved	-	-	-	62741
P5-22	Y Terminal Output Valid State Selection	0: Positive Logic 1: Negative Logic Units digit:HDO Terminal Tens digit:RY1 Hundreds digit: RY2 Thousands digit: Y1 Ten-thousands digit: Reserved	00000	☆	62742
P5-23	AO Current Output Selection	Units digit: AO1 Tens digit:AO2 0:0~20mA 1:4~20mA	00	☆	62743
P5-24	Y3 Delay Opening Time	0.0s~6553.5s	0.0s	☆	62744
P5-25	RY1 Delay Opening Time	0.0s～6553.5s	0.0s	☆	62745
P5-26	RY1 Delay Opening Time	0.0s～6553.5s	0.0s	☆	62746
P5-27	RY1 Delay Opening Time	0.0s～6553.5s	0.0s	☆	62747

Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P6 Group Start/Stop Control					
P6-00	Startup method	0: Direct Start 1: Speed Tracking Restart 2: Pre-excitation Start (AC Asynchronous Motor)	0	☆	62976
P6-01	Speed tracking method	0: Start from Stop Frequency 1: Start from Zero Speed 2: Start from Maximum Frequency	0	★	62977
P6-02	Speed tracking speed	1～100	20	☆	62978
P6-03	Start Frequency	0～PO-08	0.00Hz	☆	62979
P6-04	Start Frequency Hold Time	0.0s~100.0s	0.0s	★	62980
P6-05	Start DC braking current / pre-excitation current	0%～100%	0%	★	62981
P6-06	Start DC braking current / pre-excitation current	0.0s～100.0s	0.0s	★	62982
P6-07	Acceleration/Deceleration Mode	0: Linear Acceleration/Deceleration 1: S-curve Acceleration/Deceleration A 2: S-curve Acceleration/Deceleration B Note: Lite mainboard does not support option 1 and 2	0	★	62983
P6-08	S-curve End Segment Time Ratio	0.0%～(100.0%-P6-09)	30.0%	★	62984
P6-09	S-curve End Segment Time Ratio	0.0%～(100.0%-P6-08)	30.0%	☆	62985
P6-10	Stop Mode	0: Deceleration Stop = 1: Free Stop	0	☆	62986
P6-11	Stop DC Braking Starting frequency	0.00Hz～Maximum Frequency	0.00Hz	☆	62987
P6-12	Stop DC Braking Delay Time	0.0s～100.0s	0.0s	☆	62988
P6-13	Stop DC Braking Current	0%～100%	0%	☆	62989
P6-14	Stop DC Braking Time	0.0s～100.0s	0.0s	☆	62990
P6-15	Braking Utilization Rate	0%～100%	100%	☆	62991
P7 Group Keyboard and Display					

Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P7-00	Display Function Extension 1	Units digit: Power Voltage Monitoring Mode 0: DC Bus Voltage 1: Input AC Voltage (prefixed with letter U)	00000	☆	63232
P7-01	MF.K Key Function Selection	0: MF.K Invalid 1: Operation panel command channel and remote command channel (Switch between terminal command channel or communication command channel) 2: Forward/Reverse Switch 3: Forward Jog 4: Reverse Jog 5: Free Stop 6: Reverse operation	0	☆	63233
P7-02	STOP/RESET Key Function	0: STOP/RES key stop function is only valid in keyboard operation mode 1: STOP/RES key stop function is valid in all operation modes	1	☆	63234
P7-03	LED Operation Display Parameter 1	0000~FFFF Bit00: Running Frequency 1 (Hz) Bit01: Set Frequency (Hz) Bit02: Bus Voltage (V) Bit03: Output Voltage (V) Bit04: Output Current (A) Bit05: Output Power (kW) Bit06: Output Torque (%) Bit07: X Input Status Bit08: Y Output Status Bit09: AI1 Voltage (V) Bit10: AI2 Voltage (V) Bit11:AI3 Panel Potentiometer Voltage(V) Bit12: Count Value Bit13: Reserved Bit14: Load Speed Display Bit15: PID Setting (Pressure Value Displayed by	H.001F	☆	63235

		Water Supply Macro)			
P7-04	LED Operation Display Parameter 2	0000~FFFF Bit00: PID Feedback (Pressure Value Displayed by Water Supply Macro) Bit01: PLC Stage Bit02: HDI Input Pulse Frequency (kHz) Bit03: Running Frequency 2 (Hz) Bit04: Remaining Running Time Bit05: AI1 Voltage Before Correction (V) Bit06: AI2 Voltage Before Correction (V) Bit07: AI3 Panel Potentiometer Voltage Before Correction (V) Bit08: Linear Speed Bit09: Current Power-On Time (Hour) Bit10: Current Running Time (Min) Bit11: HDI Input Pulse Frequency (Hz) Bit12: Communication Set Value Bit13: Encoder Feedback Speed (Hz) Bit14: Main Frequency X Display (Hz) Bit15: Auxiliary Frequency Y Display (Hz)	H.0000	☆	63236
P7-05	LED Stop Display Parameter	0000~FFFF Bit00: Set Frequency (Hz) Bit01: Bus Voltage (V) Bit02: X Input Status Bit03: Y Output Status Bit04: AI1 Voltage (V) Bit05: AI2 Voltage (V) Bit06: AI3 Panel Potentiometer Voltage (V) Bit07: Count Value Bit08: Length Value Bit09: PLC Stage Bit10: Load Speed Bit11: PID Setting (Pressure) Bit12: HDI Input Pulse Frequency (kHz) Bit13: PID Feedback (Pressure)	H.0033	☆	63237

P7-06	Load Speed Display Coefficient	0.0001~6.5000	1.0000	☆	63238
P7-07	Inverter Module Heat Sink Temperature	0.0℃~100.0℃		•	63239
P7-09	Cumulative Running Time	0h～65535h	-	☆	63241
P7-12	Load Speed Display Decimal Places	0: 0 decimal places 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	☆	63244
P7-13	Cumulative Power-On Time	0～65535h	-	-	63245
P7-14	Cumulative Power Consumption	0～65535 度		-	63246
P7-17	Digital Tube 2 Stop Monitoring Selection	00～99(corresponding to U0 group parameter numbers)	02	☆	63249
P7-18	Digital Tube 2 Running Monitoring Selection	00～99(corresponding to U0 group parameter numbers)	04	☆	63250
P7-23	Parameter Copy Selection	0.No action 1.Upload inverter parameters to keypad 2.Download keypad parameters to inverter	0	★	63256
P7-24	Keypad Anti-Misoperation Lock Selection	0.No action 1.Lock all keys except RUN/STOP 2.Lock all keys *Note: Long press the ENTER key for 3 seconds to unlock*	0	★	63257
Group P8 Auxiliary Functions					
P8-00	Jog Running Frequency	0.00Hz～Maximum Frequency	6.00Hz	☆	63488
P8-01	Jog Acceleration Time	0.0s～6500.0s	20.0s	☆	63489
P8-02	Jog Deceleration Time	0.0s～6500.0s	20.0s	☆	63490
P8-03	Acceleration Time 2	0.0s～6500.0s	Determined by model	☆	63491
P8-04	Deceleration Time 2	0.0s～6500.0s	Determined by model	☆	63492
P8-05	Acceleration Time 3	0.0s～6500.0s	Determined by model	☆	63493
P8-06	Deceleration Time 3	0.0s～6500.0s	Determined by model	☆	63494
P8-07	Acceleration Time 4	0.0s～6500.0s	Determined by model	☆	63495
P8-08	Deceleration Time 4	0.0s～6500.0s	Determined	☆	63496

			by model		
P8-09	Skip Frequency 1	0.00Hz～Maximum Frequency	0.00Hz	☆	63497
P8-10	Skip Frequency 2	0.00Hz～Maximum Frequency	0.00Hz	☆	63498
P8-14	Set the frequency below the lower limit frequency Operating mode	0: Run at lower limit frequency 1: Stop 2: Zero-speed operation	0	☆	63502
P8-15	droop control	0.00Hz～10.00Hz	0.00Hz	☆	63503
P8-16	Set Cumulative Power-On Reach Time	0h～65000h	0h	☆	63504
P8-17	Set Cumulative Operation Reach Time	0h～65000h	Oh	☆	63505
Function Code	**Name**	**Setting Range**	**Factory Settings**	**Attribute**	**Address (DEC)**
P8-18	Startup Protection Selection	0: No protection 1: Protection	0	☆	63506
P8-19	Frequency Detection Value(FDT1)	0.00Hz～Maximum Frequency	50.00Hz	☆	63507
P8-20	Frequency Detection Hysteresis Value	0.0%～100.0%(FDT1 level)	5.0%	☆	63508
P8-21	Frequency Reach Detection Width	0.0%～100.0%(Maximum Frequency)	0.0%	☆	63509
P8-25	Switching frequency point between acceleration time 1 and acceleration time 2	0.00Hz～Maximum Frequency	0.00Hz	☆	63513
P8-26	Switching frequency point between deceleration time 1 and deceleration time 2	0.00Hz～Maximum Frequency	0.00Hz	☆	63514
P8-27	Terminal Jog Priority	0: Invalid 1: Valid	0	☆	63515
P8-28	Frequency Detection Value(FDT2)	0.00Hz～Maximum Frequency	50.00Hz	☆	63516
P8-29	Frequency Detection Hysteresis Value	0.0%～100.0%(FDT2 level)	5.0%	☆	63517
P8-30	Arbitrary Reach Frequency Detection Value 1	0.00Hz～Maximum Frequency	50.00Hz	☆	63518
P8-31	Arbitrary Reach Frequency Detection Width 1	0.0%～100.0%(Maximum Frequency)	0.0%	☆	63519
P8-32	Arbitrary Reach Frequency Detection Value 2	0.00Hz～Maximum Frequency	50.00Hz	☆	63520
P8-33	Arbitrary Reach Frequency Detection Width 2	0.0%～100.0%(Maximum Frequency)	0.0%	☆	63521
P8-34	Zero Current Detection Level 0	0.0%～300.0%	5.0%	☆	63522

P8-35	Zero Current Detection Delay Time	0.01s～600.00s	0.10s	☆	63523
P8-36	Output Current Overlimit Value	0.0%(No detection)	200.0%	☆	63524
P8-37	Output Current Overlimit Detection Delay Time	0.00s～600.00s	0.00s	☆	63525
P8-38	Arbitrary Reach Current 1	0.0%～300.0%(rated motor current)	100.0%	☆	63526
P8-39	Arbitrary Reach Current 1 Width	0.0%～300.0%(rated motor current)	0.0%	☆	63527
P8-40	Arbitrary Reach Current 2	0.0%～300.0%(rated motor current)	100.0%	☆	63528
P8-41	Arbitrary Reach Current 2 Width	0.0%～300.0%(rated motor current)	0.0%	☆	63529
P8-42	Timing Function Selection	0: Invalid 1: Valid	0	☆	63530
P8-43	Timing Operation Time Selection	0: Set by P8-44 1:AI1 2:AI2 3:AI3 *Note: Analog input range corresponds to P8-44*	0	☆	63531
P8-44	Timing Operation Time	0.0Min～6500.0Min	0.0Min	☆	63532
P8-45	AI1 Input Voltage Protection Lower Limit	0.00V～P8-46	3.10V	☆	63533
P8-46	AI1 Input Voltage Protection Upper Limit	P8-45～10.00V	6.80V	☆	63534
P8-47	Module Temperature Threshold	0℃~100℃	75℃	☆	63535
P8-48	Fan Control	0: Fan runs when inverter is operating 1: Fan runs continuously 2: Fan starts at temperature set by P8-54	0	☆	63536
P8-49	Wake-up Frequency	Sleep Frequency(P8-51)~Maximum Frequency(P0-10)	0.00Hz	☆	63537
P8-50	Wake-up Delay Time	0.0s~6500.0s	0.0s	☆	63538
P8-51	Sleep Frequency	0.00Hz～Wake-up Frequency(P8-49)	0.00Hz	☆	63539
P8-52	Sleep Delay Time	0.0s～6500.0s	0.0s	☆	63540
P8-53	Current Operation Reach Time Setting	0.0Min～6500.0Min	0.0Min	☆	63541

P8-57	Set Temperature for Fan Startup	0℃~120℃	30℃	☆	63542
P9 Group Fault and Protection					
P9-00	Motor Overload Protection Selection	0: Disabled 1: Enabled	1	☆	63744
P9-01	Motor Overload Protection Gain	0.20～10.00	1.00	☆	63745
P9-02	Motor Overload Early Warning Coefficient	50%～100%	80%	☆	63746
P9-03	Overvoltage Stall Gain	0～100	30	☆	63747
P9-04	Overvoltage Stall Action Voltage	200.0～2000.0V 220V:380V 380V:760V	Determined by model	☆	63748
P9-05	Overcurrent Stall Gain	0～100	20	☆	63749
P9-06	Overcurrent Stall Protection Current	100%～200%	150%	☆	63750
P9-07	Power-on Ground Short-circuit Protection Selection	0: Invalid 1: Valid	1	☆	63751
P9-08	Dynamic Braking Action Voltage	200.0～2000.0V	220V:360V 380V:700V	☆	63752
P9-09	Fault Auto-reset Times	0～65535	0	☆	63753
P9-10	Fault DO Action Selection During Fault Auto-reset	0: No action 1: Action	0	☆	63754
P9-11	Fault Auto-reset Interval Time	0.1s～100.0s	1.0s	☆	63755
P9-12	Input Phase Loss Protection Selection Note: For 2S models, this function is forcibly disabled	0: Disabled 1: Enabled	1	☆	63756
P9-13	Output Phase Loss Protection Selection	0: Disabled 1: Enabled	1	☆	63757
P9-14	First Fault Type	0: No Fault 1: Reserved 2: Acceleration Overcurrent 3: Deceleration overcurrent 4: Constant Speed Overcurrent 5: Acceleration Overvoltage	-	·	63758

P9-15	Second Fault Type	6: Deceleration Overvoltage 7: Constant Speed Overvoltage 8: Braking Resistor Overload 9: Undervoltage 10: Inverter Overload 11: Motor Overload 12: Input Phase Loss	-	·	63759
P9-16	Third (Latest) Fault Type	13: Output Phase Loss 14: Module Overheating 15: External Fault 16: Communication Abnormality 17: Contactor Abnormality 18: Current Detection Abnormality 19: Motor Tuning Abnormality 20: Reserved 21: Parameter Read/Write Abnormality 22: Inverter Hardware Abnormality 23: Motor Ground Fault 24: Reserved 25: Reserved 26: Running time reached 27: User-defined Fault 1 28: User-defined Fault 2 29: Power-on Time Reached 30: Load Loss 31: PID Feedback Loss during Operation 40: Fast Current Limiting Timeout 42: Excessive Speed Deviation 43: Motor Overspeed 45: Reserved 51: Reserved 70: Low Water Pressure Fault 71: High Water Pressure Fault	-	·	63760

Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
P9-17	Frequency at Third (Latest) Fault	-	-	·	63761
P9-18	Current at Third (Latest) Fault	-	-	·	63762

P9-19	Bus Voltage at Third (Latest) Fault	-	-	·	63763
P9-20	Input Terminal Status at Third (Latest) Fault	-	-	·	63764
P9-21	Output Terminal Status at Third (Latest) Fault	-	-	·	63765
P9-22	Inverter Status at Third (Latest) Fault	-	-	·	63766
P9-23	Power-on time at the third (Latest) Fault	-	-	·	63767
P9-24	Operating Time at Third (Latest) Fault	-	-	·	63768
P9-27	Frequency at Second Fault	-	-	·	63771
P9-28	Current at Second Fault	-	-	·	63772
P9-29	Bus Voltage at Second Fault	-	-	·	63773
P9-30	Input Terminal Status at Second Fault	-	-	·	63774
P9-31	Output Terminal Status at Second Fault	-	-	·	63775
P9-32	Inverter Status at Second Fault	-	-	·	63776
P9-33	Power-on Time at Second Fault	-	-	·	63777
P9-34	Operating Time at Second Fault	-	-	·	63778
P9-37	Frequency at First Fault	-	-	·	63781
P9-38	Current at First Fault	-	-	·	63782
P9-39	Bus Voltage at First Fault	-	-	·	63783
P9-40	Input Terminal Status at First Fault	-	-	·	63784
P9-41	Output Terminal Status at First Fault	-	-	·	63785
P9-42	Inverter Status at First Fault	-	-	·	63786
P9-43	Power-on Time at First Fault	-	-	·	63787
P9-44	Operating Time at First Fault	-	-	·	63788
P9-47	Fault protection action selection 1	Units digit: Motor overload (11) Tens digit: Input phase loss (12) Hundreds digit: Output phase loss (13) Thousands digit: External fault (15) Ten-thousands digit:	00000	☆	63791

		Communication abnormality (16) 0: Free stop 1: Stop according to the stop mode 2: Continue running			
Function Code	**Name**	**Setting Range**	**Factory Settings**	**Attribute**	**Address (DEC)**
P9-54	Frequency Selection for Continuous Operation During Fault	0: Operate at Current Running Frequency 1: Operate at Set Frequency; 2: Operate at Upper Limit Frequency 3: Operate at Lower Limit Frequency 4: Operate at Abnormal Standby Frequency	0	☆	63798
P9-55	Abnormal Standby Frequency	60.0%～100.0% (100.0% corresponds to Maximum Frequency P0-10)	100.0%	☆	63799
P9-59	Instantaneous Power Failure Action Selection	0: Invalid 1: Decelerate 2: Decelerate to Stop	0	☆	63803
P9-60	Voltage for Judging Pause of Instantaneous Power Failure Action	P9-62～100.0%	85.0%	☆	63804
P9-61	Voltage Recovery Judgment Time for Instantaneous Power Failure	0.00s～100.00s	0.50s	☆	63805
P9-62	Voltage for Judging Instantaneous Power Failure Action	60.0%～100.0% (Standard Bus Voltage)	80.0%	☆	63806
P9-63	Load Loss Protection Selection	0: Invalid; 1: Valid	0	☆	63807
P9-64	Load Loss Detection Level	0.0～100.0%	10.0%	☆	63808
P9-65	Load Loss Detection Time	0.0～60.0s	1.0s	☆	63809
P9-79	Overcurrent Fault Release Mode	0: Releasable 1:Locked for 5s then Releasable (If three fault records are the same, locked for 10s then releasable) 2:Always Locked (Released after Power-on Again)	1	☆	63823

PA Group PID Function					
Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
PA-00	PID Setpoint Source	0: Set by PA-01 1: AI1 2: AI2 3: AI3 External Keyboard Potentiometer 4: HDI Input Pulse Setting (X5) 5: Communication Setpoint 6: Multi-step Command Setpoint 7: Pressure Setpoint by Water Supply Group b0-01	0	☆	64000
PA-01	PID Numeric Setpoint	0.0～100.0%	50.0%	☆	64001
PA-02	PID Feedback Source	0:AI1 1:AI2 2:AI3 External Keyboard Potentiometer 3:AI1-AI2 4:HDI Input Pulse Setting(X5) 5:Communication Setpoint 6:AI1+AI2 7:MAX(|AI1|,|AI2|) 8:MIN(IAI1|,IAI2I)	0	☆	64002
PA-03	PID Action Direction	0: Direct Action; 1: Reverse Action	0	☆	64003
PA-04	PID Setpoint & Feedback Range	0～65535	1000	☆	64004
PA-05	Proportional Gain KP1	0.0～100.0	20.0	☆	64005
PA-06	Integral Time Ti1	0.01～10.00s	2.00s	☆	64006
PA-07	Derivative Time Td1	0.000～10.000s	0.000s	☆	64007
PA-08	PID Reverse Cutoff Frequency	0.00～Maximum Frequency	0.00Hz	☆	64008
PA-09	PID Deviation Limit	0.0～100.0%	0.0%	☆	64009
PA-10	PID Derivative Limit	0.00～100.00%	0.10%	☆	64010
PA-11	PID Setpoint Change Time	0.00～650.00s	0.00s	☆	64011
PA-12	PID Feedback Filter Time	0.00～60.00s	0.00s	☆	64012
PA-13	PID Output Filter Time	0.00～60.00s	0.00s	☆	64013
PA-15	Proportional Gain KP2	0.0～100.0	20.0	☆	64015
PA-16	Integral Time Ti2	0.01s～10.005	2.00s	☆	64016
PA-17	Derivative Time Td2	0.000s～10.000s	0.000s	☆	64017

PA-18	PID Parameter Switching Condition	0: No Switching 1: Switch via X Terminal 2: Automatic Switching Based on Deviation	0	☆	64018
PA-19	PID Parameter Switching Deviation 1	0.0%～PA-20	20.0%	☆	64019
PA-20	PID Parameter Switching Deviation 2	PA-19～100.0%	80.0%	☆	64020
PA-21	PID Initial Value	0.0～100.0%	0.0%	☆	64021
PA-22	PID Initial Value Hold Time	0.00～650.005	0.00s	☆	64022
PA-23	Maximum Positive Deviation Between Two Outputs	0.00～100.00%	1.00%	☆	64023
PA-24	Maximum Negative Value Of The Deviation Between The Two Outputs	0.00～100.00%	1.00%	☆	64024
PA-25	PID Integral Attribute	Units digit:Integral Separation 0: Invalid 1: Valid Tens digit: Whether to Stop Integral After Output Reaches Limit 0: Continue Integral 1: Stop Integral	00	☆	64025
PA-26	PID Feedback Loss Detection Value	0.0%:Do not judge feedback loss 0.1～100.0%	0.0%	☆	64026
PA-27	PID Feedback Loss Detection Time	0.0s~20.0s	0.0s	☆	64027
PA-28	PID Stop Calculation	0: No Calculation When Stopped 1: Calculation When Stopped	1	☆	64028
Pb Group: Swing Frequency, Fixed Length and Counting					
Pb-00	Swing Frequency Setting Mode	0: Relative to Center Frequency 1: Relative to Maximum Frequency	0	☆	64256
Pb-01	Swing Frequency Amplitude	0.0～100.0%	0.0%	☆	64257
Pb-02	Jump Frequency Amplitude	0.0～50.0%	0.0%	☆	64258
Pb-03	Swing Frequency Cycle	0.1～3000.0s	10.0s	☆	64259
Pb-04	Triangle Wave Rise Time of Swing Frequency	0.1～100.0%	50.0%	☆	64260
Pb-05	Set Length	0～65535m	1000m	☆	64261
Pb-06	Actual Length	0～65535m	0m	☆	64262
Pb-07	Pulses per Meter	0.1～6553.5	100.0	☆	64263

Pb-08	Set Count Value	1～65535	1000	☆	64264
Pb-09	Specified Count Value	1～65535	1000	☆	64265
PC Group : Multi-step Command and Simplified PLC					
PC-00	Multi-step Command 0	-100.0%～100.0%	0.0%	☆	64512
PC-01	Multi-step Command 1	-100.0%～100.0%	0.0%	☆	64513
PC-02	Multi-step Command 2	-100.0%～100.0%	0.0%	☆	64514
PC-03	Multi-step Command 3	-100.0%～100.0%	0.0%	☆	64515
PC-04	Multi-step Command 4	-100.0%～100.0%	0.0%	☆	64516
PC-05	Multi-step Command 5	-100.0%～100.0%	0.0%	☆	64517
PC-06	Multi-step Command 6	-100.0%～100.0%	0.0%	☆	64518
PC-07	Multi-step Command 7	-100.0%～100.0%	0.0%	☆	64519
PC-08	Multi-step Command 8	-100.0%～100.0%	0.0%	☆	64520
PC-09	Multi-step Command 9	-100.0%～100.0%	0.0%	☆	64521
PC-10	Multi-step Command 10	-100.0%～100.0%	0.0%	☆	64522
PC-11	Multi-step Command 11	-100.0%～100.0%	0.0%	☆	64523
PC-12	Multi-step Command 12	-100.0%～100.0%	0.0%	☆	645224
PC-13	Multi-step Command 13	-100.0%～100.0%	0.0%	☆	64525
PC-14	Multi-step Command 14	-100.0%～100.0%	0.0%	☆	64526
PC-15	Multi-step Command 15	-100.0%～100.0%	0.0%	☆	64527
PC-16	Simplified PLC Operation Mode	0:Stop after Single Operation 1:Hold Final Value after Single Operation 2:Continuous Cycle	0	☆	64528
PC-17	Simplified PLC Power-off Memory Selection	Units digit: Power-off Memory 0: No Power-off Memory 1: Power-off Memory Tens digit: Stop Memory 0: No Stop Memory 1: Stop Memory	00	☆	64529
PC-18	Simplified PLC Stage 0 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64530
PC-19	Simplified PLC Stage 0 Acceleration/Deceleration Time Selection	0～3	0	☆	64531
PC-20	Simplified PLC Stage 1 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64532
PC-21	Simplified PLC Stage 1 Acceleration/Deceleration Time Selection	0～3	0	☆	64533
PC-22	Simplified PLC Stage 2	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64534

	Operation Time				
PC-23	Simplified PLC Stage 2 Acceleration/Deceleration Time Selection	0～3	0	☆	64535
PC-24	Simplified PLC Stage 3 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64536
PC-25	Simplified PLC Stage 3 Acceleration/Deceleration Time Selection	0～3	0	☆	64537
PC-26	Simplified PLC Stage 4 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64538
PC-27	Simple PLC Segment 4 Acceleration/Deceleration Time Selection	0～3	0	☆	64539
PC-28	Simple PLC Segment 5 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64540
PC-29	Simple PLC Segment 5 Acceleration/Deceleration Time Selection	0～3	0	☆	64541
Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
PC-30	Simple PLC Segment 6 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64542
PC-31	Simple PLC Segment 6 Acceleration/Deceleration Time Selection	0～3	0	☆	64543
PC-32	Simple PLC Segment 7 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64544
PC-33	Simple PLC Segment 7 Acceleration/Deceleration Time Selection	0～3	0	☆	64545
PC-34	Simple PLC Segment 8 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64546
PC-35	Simple PLC Segment 8 Acceleration/Deceleration Time Selection	0～3	0	☆	64547
PC-36	Simple PLC Segment 9 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64548
PC-37	Simple PLC Segment 9 Acceleration/Deceleration Time Selection	0～3	0	☆	64549
PC-38	Simple PLC Segment 10 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64550

PC-39	Simple PLC Segment 10 Acceleration/Deceleration Time Selection	0～3	0	☆	64551
PC-40	Simple PLC Segment 11 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64552
PC-41	Simple PLC Segment 11 Acceleration/Deceleration Time Selection	0～3	0	☆	64553
PC-42	Simple PLC Segment 12 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64554
PC-43	Simple PLC Segment 12 Acceleration/Deceleration Time Selection	0～3	0	☆	64555
PC-44	Simple PLC Segment 13 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64556
PC-45	Simple PLC Segment 13 Acceleration/Deceleration Time Selection	0～3	0	☆	64557
PC-46	Simple PLC Segment 14 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64558
PC-47	Simple PLC Segment 14 Acceleration/Deceleration Time Selection	0～3	0	☆	64559
PC-48	Simple PLC Segment 15 Operation Time	0.0s(h)～6553.5s(h)	0.0s(h)	☆	64560
PC-49	Simple PLC Segment 15 Acceleration/Deceleration Time Selection	0～3	0	☆	64561
PC-50	Simple PLC Operation Time Unit	0: s(Second)1:h(Hour)	0	☆	64562
PC-51	Multi-Segment Command 0 Given Mode	0: Given by Function Code PC-00 1: AI1 2: AI2 3:AI3 External Keyboard Potentiometer 4: HDI Input Pulse 5:PID 6: Given by Preset Frequency (P0-08), UP/DOWN Editable	0	☆	64563
Pd Group communication parameters					

Pd-00	Baud Rate	0:300BPS 1:600BPS 2:1200BPS 3:2400BPS 4:4800BPS	5:9600BPS 6:19200BPS 7:38400BPS 8:57600BPS 9:Reserved	5	☆	64768
Pd-01	Data Format	0: No parity check (8-N-2) 1: Even parity (8-E-1) 2: Odd parity (8-O-1) 3: No parity check (8-N-1)		3	☆	64769
Pd-02	Local address	1～247		1	☆	64770
Pd-03	Response Delay	0～20ms		2	☆	64771
Pd-04	Communication Timeout	0.0(invalid),0.15～60.0s		0.0	☆	64772
Pd-05	Data Transmission Format Selection	1:Standard MODBUS Protocol		1	☆	64773
Pd-06	Communication Current Reading Resolution	0:0.01A 1:0.1A		0	☆	64774
Pd-07	Reserved			0	☆	64775
PP Group Function Code Management						
PP-00	User Password	0～65535		00000	☆	7936
PP-01	Parameter Initialization	0: No Operation 01:Restore Factory Parameters (Excluding Motor Parameters) 02: Clear record information 03: Reserved 04: Reserved 10: Switch to 60Hz Mode		000	★	7937
PP-02	Function Parameter Group Display Selection	Units digit: U Group Display Selection Tens digit: A Group Display Selection Hundreds digit: b Group Display Selection 0: Not Displayed 1: Displayed		111	★	7938
PP-04	Function Code Modification Attribute	0: Modifiable 1: Non-modifiable		0	☆	7940

PP-05	Reserved			-	·
A0 Group Torque Control Parameters					
A0-00	Speed/Torque Selection	0: Speed Control 1: Torque Control	0	☆	40960
A0-01	Torque Setting Source	0: Set by A0-03 1: Set by AI1 2: Set by AI2 3: Set by AI3 Keyboard Potentiometer 4: Set by HDI High-Speed Pulse 5: Communication Setting 6:MIN(AI1,AI2) 7:MAX(AI1,AI2) *Note: 1-7 full scales correspond to A0-03 digital settings*	0	★	40961
A0-02	Reserved	-	-	-	-
A0-03	Torque digital setting	-200.0%～200.0%	150.0%	☆	40963
A0-04	Reserved	-	-	-	-
A0-05	Maximum Positive Torque Frequency	0.00Hz～Maximum Frequency(P0-10)	50.00Hz	☆	40965
A0-06	Maximum Negative Torque Frequency	0.00Hz～Maximum Frequency(P0-10)	50.00Hz	☆	40966
A0-07	Torque Acceleration Time	0～655.35s	0.00s	☆	40967
A0-08	Torque Deceleration Time	0～655.35s	0.00s	☆	40968
A5 Group Control Optimization Parameters					
A5-00	DPWM Switching Upper Limit Frequency	0.00Hz～15.00Hz	12.00Hz	☆	42240
A5-01	PWM Modulation Mode	0: Asynchronous Modulation 1: Synchronous Modulation	0	☆	42241
A5-02	Dead-Time Compensation Mode Selection	0: No Compensation 1: Compensation Mode 1 2: Compensation Mode 2	1	☆	42242
A5-03	Random PWM Depth	0: Random PWM is invalid 1~10: PWM carrier frequency random depth	0	☆	42243

A5-04	Fast Current Limit Enable	0: Disabled 1: Enabled	1	☆	42244
A5-05	Current Detection Compensation	0～100	5	☆	42245
A5-06	Undervoltage Point Setting	100.0～2000.0V	Determined by Model	☆	42246
A5-07	SVC Optimization Mode Selection	0: No Optimization 1: Optimization Mode 1 2: Optimization Mode 2	1	☆	42247
A5-08	Dead Time Adjustment	100～200%	150%	☆	42248
A5-09	Overvoltage Point Setting	200.0-2500.0V	Determined by Model	★	42249

b0 Group: Intelligent Constant Pressure Water Supply Parameter Table

(Applicable for Constant Temperature Control) (Exclusive for GK2802)

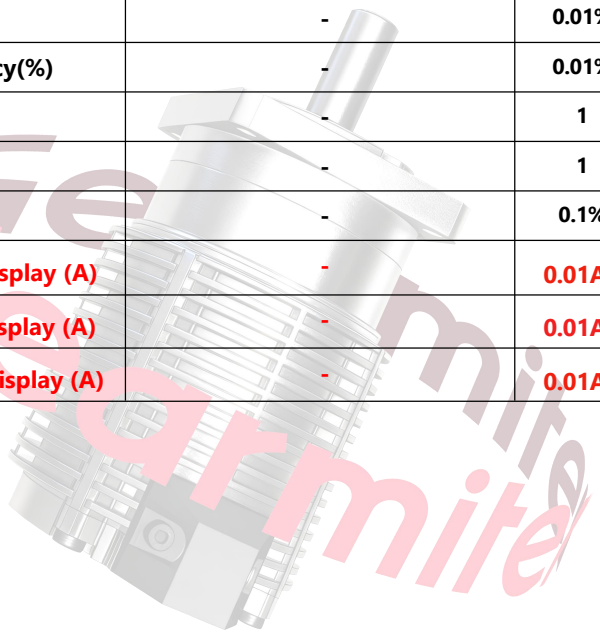
Function Code	Name	Setting Range	Factory Settings	Attribute	Address (DEC)
b0-00	Pressure Sensor Range	0～99.99Bar(kg)	10.00	☆	45056
b0-01	Digital Setting of Target Pressure *Note:The target pressure is selected by PA-01*	0～99.99Bar(kg)	5.00	☆	45057
b0-02	Sleep Pressure	0～150.0%(Linked to target pressure ratio) *Note:Maximum value is limited by (b0-00/b0-01)*100%*	100.0%	☆	45058
b0-03	Wake-up Pressure	0～100.0%(Linked to target pressure ratio)	95.0%	☆	45059
b0-04	Pressure Deviation	0～100.0%(Linked to target pressure ratio)	2.0%	☆	45060
b0-05	Sleep Delay	0～6553.5s(0:Disable Sleep)	20.0s	☆	45061
b0-06	Wake-up Delay	0～6553.5s	0.0s	☆	45062
b0-07	Pressure Upper Limit Protection Value	0～200.0%(Linked to target pressure ratio)	120.0%	☆	45063
b0-08	Pressure Upper Limit Protection Stop Delay	0～6553.55(0: Disable Detection)	0.0s	☆	45064
b0-09	Constant Pressure Forced Sleep Delay	0～6553.5s(0: Disable Detection)	0.0s	☆	45065
b0-10	Auxiliary Pump Quantity Setting	0～4 (0: Disable One-to-Many Control)	0	☆	45066
b0-11	Pressure Tolerance for Adding Auxiliary Pump	0～100.0%(Linked to target pressure ratio)	5.0%	☆	45067

b0-12	Delay for Adding Auxiliary Pump	0～6553.5s	30.0s	☆	45068
b0-13	Pressure Tolerance for Removing Auxiliary Pump	0～100.0%(Linked to target pressure ratio)	5.0%	☆	45069
b0-14	Delay for Removing Auxiliary Pump	0～6553.5s	30.0s	☆	45070
b0-15	Emergency Delay for Removing Auxiliary Pump at Pressure Upper Limit (Preempts normal pump removal time of b0-14)	0～6553.5s	3.0s	☆	45071
b0-16	Water Shortage Protection Pressure	0～100.0%(Linked to target pressure ratio) *Note: Detection starts when exceeding the upper limit frequency*	20.0%	☆	45072
b0-17	Water Shortage Protection Delay	0～6553.5s(0:Turn off detection)	0.0s	☆	45073
b0-18	Sleep Mode Selection	0: Disable Sleep 1: Pressure Sleep (Feedback Pressure ⩾ b0-02) 2: Frequency Sleep (Output Frequency ⩽ b0-19) 3: Pressure Sleep (b0-02) + Frequency Sleep (b0-19)	1	★	45074
b0-19	Sleep Detection Frequency	0.00Hz～Maximum Frequency(P0-10) Note: Only valid for b0-18=2	20.00Hz	☆	45075
b0-20	Pressure Protection Fault Selection	00～11 Units digit: Overpressure Upper Limit Protection (b0-07) Tens digit: Water Shortage & Undervoltage Protection (b0-16) 0: No Fault Alarm 1: Fault Alarm Note:Undervoltage Fault Err70, Overpressure Fault Err71	00	★	45076
b0-21	Sleep Stop Mode	0: Deceleration Stop 1: Free Stop	0	★	45077

UO Group Parameter Monitoring Group					
Function Code	**Name**	**Setting Range**	**Factory Settings**	**Attribute**	**Address (DEC)**
U0-00	Operating Frequency(Hz)	-	0.01Hz	•	28672
U0-01	Set Frequency(Hz)	-	0.01Hz	•	28673

U0-02	DC Bus Voltage(V)	-	0.1V	•	28674
U0-03	Output Voltage(V)	-	1V	•	28675
U0-04	Output Current(A)	-	0.01A	•	28676
U0-05	Output Power(kw)	-	0.1kW	•	28677
U0-06	Output Torque(%)	-	0.1%	•	28678
U0-07	X Input Status	-	1	•	28679
U0-08	Y Output Status	-	1	•	28680
U0-09	AI1 Voltage(V)	-	0.01V	•	28681
U0-10	AI2 Voltage(V)	-	0.01V	•	28682
U0-11	AI3 Panel Potentiometer Voltage	-	0.01V	•	28683
U0-12	Count Value	-	1	•	28684
U0-13	Length Value	-	1	•	28685
U0-14	Load Speed Display	-	1	•	28686
U0-15	PID Setting (Dimensionless) PID Setting Pressure Value (Water Supply Activated)	-	1 0.01kg	•	28687
U0-16	PID Feedback (Dimensionless) PID Feedback Pressure Value (Water Supply Activated)	-	1 0.01kg	•	28688
U0-17	PLC Stage	-	1	•	28689
U0-18	HDI Input Pulse Frequency(Hz)	-	0.01kHz	•	28690
U0-19	Feedback Speed(Unit: 0.1Hz)	-	0.1Hz	•	28691
U0-20	Remaining Operating Time	-	0.1Min	•	28692
U0-21	AI1 Voltage Before Calibration	-	0.001V	•	28693
U0-22	AI2 Voltage Before Calibration	-	0.001V	•	28694
U0-23	Panel Potentiometer Voltage Before Calibration	-	0.001V	•	28695
U0-24	Linear Speed	-	1m/Min	•	28696
U0-25	Current Power-On Time	-	1Min	•	28697
U0-26	Current Operating Time	-	0.1Min	•	28698
U0-27	HDI Input Pulse Frequency	-	1Hz	•	28699
U0-28	Communication Set Value	-	0.01%	•	28700
U0-30	Main Frequency X Display	-	0.01Hz	•	28702
U0-31	Auxiliary Frequency Y Display	-	0.01Hz	•	28703
U0-32	View Arbitrary Memory Address Value	-	1	•	28704
U0-35	Target Torque(%)	-	0.1%	•	28707
U0-36	Number of Currently	-	0	•	28708

	Operating Auxiliary Pumps				
U0-37	Power Factor Angle	-	0.1°	•	28709
U0-39	Reserved	-	1V	•	28711
U0-40	Reserved	-	1V	•	28712
U0-41	Intuitive Display of X Input Status	-	1	•	28713
U0-42	Intuitive Display of Y Input Status	-	1	•	28714
U0-43	Intuitive display of X function status 1	-	1	•	28715
U0-44	Intuitive display of X function status 2	-	1	•	28716
U0-45	Fault Information	-	1	•	28717
U0-59	Set Frequency(%)	-	0.01%	•	28731
U0-60	Operating Frequency(%)	-	0.01%	•	28732
U0-61	Inverter Status	-	1	•	28733
U0-62	Current Fault Code	-	1	•	28734
U0-65	Torque Upper Limit	-	0.1%	•	28737
U0-66	U-Phase Current Display (A)	-	0.01A	•	28738
U0-67	V-Phase Current Display (A)	-	0.01A	•	28739
U0-68	W-Phase Current Display (A)	-	0.01A	•	28740



Chapter 5: Fault Diagnosis and Countermeasures

5.1 Fault Alarms and Countermeasures

The GC7K5 inverter is equipped with complete warning messages and

protection functions. Once a fault occurs, the protection function is activated, the inverter stops outputting power, the fault relay contacts of the inverter act, and the fault code is displayed on the inverter's display panel. Before seeking service, the user can first conduct self-inspection according to the prompts in this section, analyze the cause of the fault, and find a solution. If the cause falls within the scope described in the dashed box, please seek service and contact the agent of the inverter you purchased or our company directly.

Among the warning messages, Err22 indicates a hardware overcurrent or overvoltage signal. In most cases, the Err22 alarm is triggered by a hardware overvoltage fault.

Fault codes can still be recorded in P9-14, P9-15, and P9-16 even after a power-off. They can be used in conjunction with P9-17 to P9-44 for detailed records, facilitating fault troubleshooting.

Fault Name	Fault Code	Fault Cause Investigation	Fault Handling Measures
Inverter Unit Protection	**Err01**	**1. Short circuit in the inverter output circuit 2.Excessively long wiring between the motor and inverter 3. Module overheating 4. Loose internal wiring of the inverter 5. Abnormal main control board 6. Abnormal drive board 7. Abnormal inverter module**	**1. Eliminate external faults 2. Install a reactor or output filter 3. Check if the air duct is blocked and if the fan is working normally, then resolve any issues 4. Secure all connecting wires firmly 5. Seek technical support 6. Seek technical support 7. Seek technical support**
Acceleration Overcurrent	**Err02**	**1.Ground fault or short circuit in the inverter output circuit 2.Vector control mode selected without parameter identification performed 3. Excessively short acceleration time 4. Inappropriate manual torque boost or V/F curve**	**1. Eliminate external faults 2. Perform motor parameter identification 3. Extend the acceleration time 4. Adjust the manual torque boost or V/F curve 5. Regulate the voltage to the normal**

		5. Low input voltage 6. Starting a rotating motor 7. Sudden load addition during acceleration 8. Inverter undersized for the application	range 6. Select speed tracking start or wait for the motor to stop before restarting 7. Remove the sudden additional load 8. Select an inverter with a higher power rating
Deceleration Overcurrent	Err03	1.Ground fault or short circuit in the inverter output circuit 2. Vector control mode selected without parameter identification performed 3. Excessively short deceleration time 4. Low input voltage 5. Sudden load addition during deceleration 6. Brake unit and brake resistor not installed	1. Eliminate external faults 2. Perform motor parameter identification 3. Extend the deceleration time 4. Regulate the voltage to the normal range 5. Remove the sudden additional load 6. Install a brake unit and resistor
Constant Speed Overcurrent	ErrO4	1. Ground fault or short circuit in the inverter output circuit 2. Vector control mode selected without parameter identification performed 3. Low input voltage 4. Sudden load addition during operation 5. Inverter undersized for the application	1. Eliminate external faults 2.Perform motor parameter identification 3. Regulate the voltage to the normal range 4. Remove the sudden additional load 5. Select an inverter with a higher power rating
Acceleration Overvoltage	Err05	1. High input voltage 2. External force dragging the motor during acceleration 3. Excessively short acceleration time 4. Brake unit and brake resistor not installed	1. Regulate the voltage to the normal range 2. Remove the external dragging force or install a brake resistor 3. Extend the acceleration time 4. Install a brake unit and resistor
Deceleration Overvoltage	Err06	1. High input voltage 2. External force dragging the motor during deceleration 3. Excessively short deceleration time 4. Brake unit and brake resistor not installed	1. Regulate the voltage to the normal range 2. Remove the external dragging force or install a brake resistor 3. Extend the deceleration time 4. Install a brake unit and resistor
Constant Speed Overvoltage	Err07	Input voltage is too high 2. External force drags the motor during operation	1.Adjust the voltage to the normal range 2.Remove the external force or install a braking resistor
Control Power Supply Fault	Err08	1. Input voltage is not within the range specified by the specifications.	1. Adjust the voltage to meet the specification requirements.

Undervoltage Fault	Err09	Instantaneous power failure 2. Inverter input voltage is not within the specified range 3. Abnormal bus voltage 4. Abnormal rectifier bridge and buffer resistor 5. Abnormal drive board 6. Abnormal control board	1. Reset the fault 2. Adjust the voltage to the normal range 3. Seek technical support 4. Seek technical support 5. Seek technical support 6. Seek technical support.
Inverter Overload	Err10	1.Whether the load is too large or motor jamming occurs 2. The selected inverter model is undersized.	1.Reduce the load and check the motor and mechanical conditions 2.Select an inverter with a higher power rating
Motor Overload	Err11	Whether the motor protection parameter P9-01 is set appropriately Whether the load is too large or motor jamming occurs 3.The selected inverter model is undersized.	1.Set this parameter correctly 2.Reduce the load and check the motor and mechanical conditions 3.Select an inverter with a higher power rating
Input Phase Loss	Err12	Abnormal three-phase input power supply Abnormal drive board Abnormal lightning protection board 4. Abnormal main control board	1.Inspect and eliminate problems in the external lines 2. Seek technical support 3. Seek technical support 4. Seek technical support.
Output Phase Loss	Err13	Abnormal wiring from the inverter to the motor Unbalanced three-phase output of the inverter during motor operation Abnormal drive board 4. Abnormal module.	1. Eliminate external faults 2. Check whether the three-phase windings of the motor are normal and eliminate faults 3. Seek technical support 4. Seek technical support
Module Overheating	Err14	Too high ambient temperature Blocked air duct 3. Damaged fan 4. Damaged module thermistor 5. Damaged inverter module.	1. Lower the ambient temperature 2. Clean the air duct 3. Replace the fan 4. Replace the thermistor 5. Replace the inverter module.
External Equipment Fault	Err15	External fault signal input through multi-function terminal X 2. External fault signal input through virtual IO function.	1. Reset and run 2. Reset and run
Communication Fault	Err16	Abnormal operation of the upper computer Abnormal communication line Reserved 4. Incorrect setting of communication parameter group Pd	1.Check the wiring of the upper computer 2.Check the communication connection line 3.Correctly set the communication expansion card type 4.Correctly set the communication

			parameters
Contactor Fault	Err17	1. Abnormal drive board and power supply 2. Abnormal contactor	1.Replace the drive board or power board 2. Replace the contactor
Current Detection Fault	Err18	Abnormal Hall device 2. Abnormal drive board.	1. Replace the Hall device 2. Replace the drive board
Motor Tuning Fault	Err19	Motor parameters not set according to the nameplate 2. Timeout during parameter identification	1.Correctly set the motor parameters according to the nameplate 2.Check the wiring from the inverter to the motor
EEPROM Read/Write Fault	Err21	1. Damaged EEPROM chip	1. Replace the main control board.
Inverter Hardware Fault	Err22	1.Overvoltage exists 2. Overcurrent exists.	1. Handle as per overvoltage fault 2. Handle as per overcurrent fault
Ground Short Circuit Fault	Err23	1. Motor is short-circuited to ground	1. Replace the cable or motor
Cumulative Operating Time Reached Fault	Err26	1. Cumulative operating time reaches the set value	1.Use the parameter initialization function to clear the recorded information
User-Defined Fault 1	Err27	1.Input the signal of user-defined fault 1 through the multi-functional terminal X. 2.Input the signal of user-defined fault 1 through the virtual 10 function.	1. Reset and run 2. Reset and run
User-Defined Fault 2	Err28	1.Input the signal of user-defined fault 2 through the multi-functional terminal X. 2.Input the signal of user-defined fault 2 through the virtual 10 function.	1. Reset and run 2. Reset and run
Cumulative Power-On Time Reached Fault	Err29	1. Cumulative power-on time reaches the set value	1.Use the parameter initialization function to clear the recorded information
Load Loss Fault	Err30	1.Inverter operating current is less than P9-64	1.Confirm whether the load is disconnected or if the settings of P9-64 and P9-65 are in line with actual operating conditions
PID Feedback Loss During Operation Fault	Err31	1.PID feedback is less than the set value of PA-26	1. Check the PID feedback signal or set PA-26 to an appropriate value

Dual-Core Communication Fault	Err39	1. Check if the motherboard power supply is normal, and whether the LED on the motherboard is on or flashing 2. Check if the driver board power supply is normal, and whether the LED next to the driver board's PU is on or flashing 3. Check if the dual-core isolation chip on the driver board is damaged	1.Check the 5V power supply of the motherboard, 2. Check the 3.3V power supply at the CPU end of the driver board 3.Check whether the dual-core isolation chip on the driver board is damaged
Cycle-by-Cycle Current Limiting Fault	Err40	1. Whether the load is too large or the motor is locked-rotor 2. The selected inverter is too small in capacity	1. Reduce the load and check the motor and mechanical conditions 2. Select a frequency converter with a higher power rating
Motor Switching Fault During Operation	Err41	3. Change the current motor selection through the terminal during the operation of the frequency converter	1. Perform the motor switching operation after the frequency converter stops
Motor Overheating Fault	Err45	1. Loose wiring of the temperature sensor 2. Excessively high motor temperature	1. Check the wiring of the temperature sensor and troubleshoot faults 2. Reduce the carrier frequency or take other heat dissipation measures to dissipate heat from the motor
Initial Position Error	Err51	1.The parameters of the permanent magnet motor deviate too much from the actual ones 2.The motor line is phase-deficient or the motor is not connected	1.Reconfirm whether the motor parameters are correct.Pay attention to whether the rated current is set too low. 2.Check the motor wiring.
Water Shortage Protection	Err70	1. The on-site water pressure is lower than the water shortage protection pressure set at b0-16	1. Check whether the set values of b0-16 are reasonable 2. Check whether the water pipe is burst 3. Check whether the water pump is damaged
Overwater Pressure Protection	Err71	1. On-site water pressure is higher than the pressure value set by b0-07	1. Check if the set value of b0-07 is reasonable 2. Check if the water outlet valve is closed 3. Check if the pressure sensor is damaged

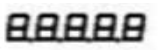
System Motor Type Switching Reset	Reset	1. Executing the tens digit value of P0-01 to switch the motor type (selection between asynchronous motor and permanent magnet synchronous motor) will display "Reset" for about 2 seconds to indicate motor type reset, and the display will return to the normal interface after the switch is completed.	If "Reset" is displayed continuously and does not disappear, generally, the motor type can be switched normally by powering off the entire machine and then powering it on again.
Parameter Self-Learning	Tune		

5.2 Common Faults and Handling Methods

The following fault conditions may be encountered during the use of the inverter. Please refer to the following methods for simple fault analysis

Table 4-1 Common Faults and Their Handling Methods

No.	Fault Phenomenon	Possible Causes	Solutions
1	No display when powered on	The grid voltage is absent or too low; The switching power supply on the inverter drive board is faulty; the rectifier bridge is damaged; The inverter buffer resistor is damaged; Faults in the control board, keyboard, or keyboard cable; Disconnection of the wires between the control board and the drive board, or between the control board and the keyboard;	Check the input power supply; Seek manufacturer's service; Check the bus voltage; Seek manufacturer's service; Replace the keyboard cable or contact the manufacturer; Seek manufacturer's service;
2	Display repeatedly after power-on [ ]	Poor contact in the connection between the driver board and the control board; Damage to components related to the control board; Low grid voltage; Problems with the switching power supply of the driver board;	Replug the motherboard pin header; Seek manufacturer service: Check the grid voltage; Seek manufacturer service;
3	Power-on display "Err23" alarm	The motor or output line is short-circuited to the ground; The frequency converter is	Measure the insulation of the motor and output line with a megohmmeter; Seek manufacturer's service;

		damaged;	
4	The power-on display is normal. After operation, it shows "[ ]" and shuts down immediately.	The fan is damaged or locked-rotor; There is a short circuit in the wiring of the peripheral control terminal;	Replace the fan; Eliminate external short-circuit faults; Seek manufacturer's service;
5	Frequent Err14 (Module overheating) fault	The carrier frequency is set too high. The fan is damaged or the air duct is blocked. Internal components of the frequency converter are damaged (thermocouple or others)	Reduce the carrier frequency (P0-15). Replace the fan and clean the air duct. Seek manufacturer's service.
6	After the frequency converter operates The motor does not rotate	The motor wires are not connected properly;Incorrect inverter parameter settings (motor parameters);Poor contact in the connection between the drive board and the control board;Drive board failure;	Reconfirm the connection between the frequency converter and the motor;Replace the motor or eliminate mechanical faults;Check and reset the motor parameters:
7	The frequency converter frequently reports overcurrent and overvoltage faults.	The motor parameter settings are incorrect; The acceleration and deceleration time is inappropriate; Load fluctuation;	Reset motor parameters or perform motor tuning: Set appropriate acceleration and deceleration times; Seek manufacturer's service:
8	Power-on display 	Relevant components on the control panel are damaged:	Replace the control board;