QMA ELECTRIC

A750 Frequency Converter

User's Manual of

QMA ELECTRIC

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CHAPTER 1 Product introduction

1.1 Product Introduction

Thank you for choosing the A750 current torque vector control, high-performance, ultra-low noise universal frequency converter developed by Qma Technology. In order to fully utilize the functional characteristics of this frequency converter and ensure user safety, please read this operation manual carefully. When you find any problems in use and the operation manual can't provide you with answers, please contact the dealers in various regions or the technical staff of our engineering department. Our professionals are happy to serve you. And please continue to use this product.

Instructions for use

The frequency converter is developed by Qma Electromechanical. For your safety, symbols such as danger attention in the manual remind you of safety precautions when handling, installing, operating and inspecting the frequency converter.

[Danger]: Wrong use may cause casualties. Please do not disassemble and assemble by yourself to change the internal connection or wiring or parts of the frequency converter.

[Note]: Wrong use may cause damage to the frequency converter or mechanical system.

[Danger]:

- After turning off the power, do not touch the circuit board and components until the (CHAREG) charging indicator light goes out.
- Do not disassemble and assemble by yourself to change the internal connection or wiring or parts of the frequency converter.
- Do not implement this line during power transmission, and do not check the zero components and signals on the circuit board during operation.
- Please be sure to properly ground the ground terminal of the frequency converter. Three types of grounding for 220V, 440V: special grounding.

[Note]:

- Do not test the components inside the frequency converter for withstand voltage. These semiconductor parts are susceptible to high voltage damage.
- Never connect the output terminals U, V, and W of the frequency converter to the correct input terminals AC power supply (R, S, T).
- Components on inverter circuit board CMOSIC It is easily affected by static electricity and damaged, please do not touch the main circuit board.

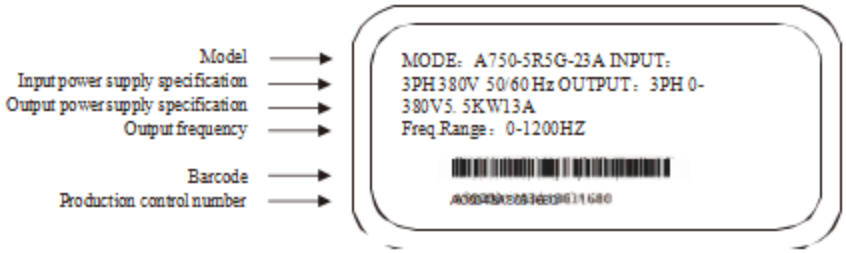
[Safety precautions for operation]:

Danger
· Please do not remove the front cover during power transmission of the frequency converter to prevent people from being injured by electric shock. · When the automatic restart function is set, the motor will automatically restart after the operation is stopped. Please keep away from the machine to avoid danger. · The function of stop shape must be set to be effective, which is different from the usage of emergency stop switch. Pay attention to use.

Attention
· Please do not touch the heating elements such as heat dissipation seat and brake resistor to prevent people from being injured by electric shock. · The frequency converter can easily run from low speed to adjustment. Please enter the allowable range of the motor and machine. · When using brakes, brakes, etc., please pay attention to the relevant settings of their use. · Do not check the signal on the circuit board when the frequency converter is running.

1.2 Description of name brand

Take 2HP220V as an example



1.3 Environment of use

The installation environment of the frequency converter has a direct impact on the normal function and service life of the frequency converter. Therefore, the installation environment of the frequency converter must meet the following conditions.

· Ambient temperature: in-disk open type(-10～45℃/+14～113°F)Locking wall-mounted type(-10～40℃/+14～104°F)

· Protect against rain dripping or humidity

· Prevent oil mist and salt erosion

· Prevent the intrusion of dust, cotton wool and metal dust

· Prevent electromagnetic interference (Welding machine and power machine)

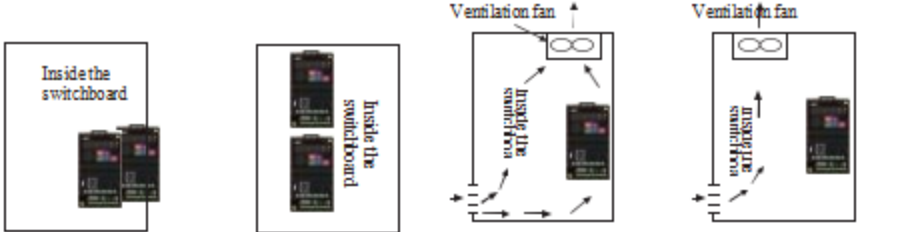
· Avoid direct sunlight

· Protects against corrosive liquids and gas

· Keep away from radioactive and combustible materials

· To prevent vibration (punch press). If unavoidable, please install shock-absorbing pads to reduce vibration.

When installing several frequency converters in the control cabinet, please pay attention to the placement for heat dissipation, and also configure a cooling fan to ensure that the temperature around the frequency converters is below 45℃ degrees Celsius.

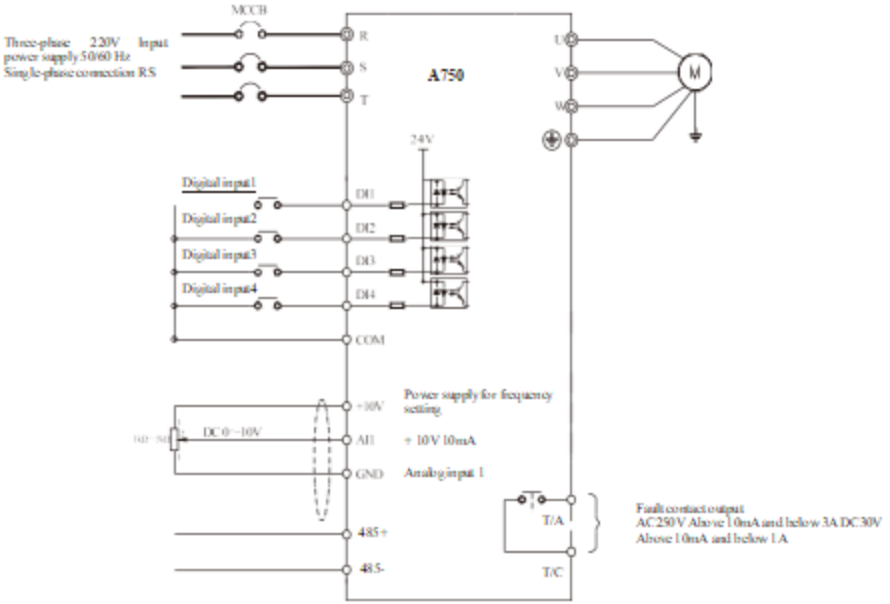


(Correct configuration method) (Incorrect configuration method) (Correct configuration method) (Incorrect configuration method)

Please install the frequency converter with the front side facing forward and the top facing up to dissipate heat.

The installation space must meet the following requirements: If it is installed in the panel or when the surrounding environment permits, the dustproof upper cover of the frequency converter can be removed to facilitate the heat dissipation and ventilation of the frequency converter.

1.4 Frequency converter wiring diagram



Standard wiring diagram of frequency converter

1.5 Main circuit terminals and wiring

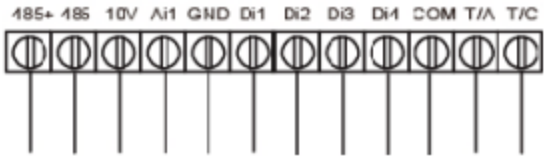
Danger

1. Confirm that the power switch is in the OFF state before proceeding with wiring operations, otherwise electric shock accidents may occur!
2. Wiring personnel must be professional trainees, otherwise it may cause injury to equipment and personnel!
3. Reliable grounding is necessary, otherwise there is a risk of electric shock or fire alarm!

Attention

1. Confirm that the input power supply is consistent with the rated value of the frequency converter, otherwise the frequency converter will be damaged!
2. Confirm that the motor and the frequency converter are compatible, otherwise the motor may be damaged or the frequency converter may be protected!
3. It is impossible to connect the power supply to the U, V, and W terminals, otherwise the frequency converter will be damaged!
4. Do not directly connect the braking resistor to the DC bus (+) 、 (-), otherwise cause a fire!

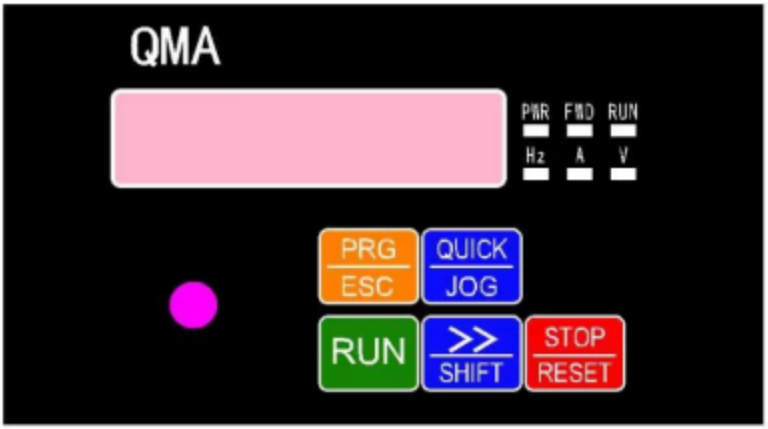
1. 1 Function description of control terminal:



Labeling description of control terminal

Terminal mark	Terminal name	Function description
DI1 DI2 DI3	Digital input1 Digital input2 Digital input3	1: Optocoupler isolation 2: Input impedance:2.4KΩ
DI4	Digital input4	
COM	Public digital input terminal	Public digital input DI1~DI4 terminal
+10V-GND	Circumscribed +10V power supply	Circumscribed+10V power supply, maximum output current:10mA, generally used as an external potentiometer power supply. Potentiometer resistance range:1K Ω~5K Ω
AI1-GND	Analog input terminal 1	1.Input voltage range:DC0~10V 2.Input impedance:22K Ω
485+	Communication 485+	Standard RS communication interface
485-	Communication 485-	
T/A-T/C	Constant blade	Contact driving capability: AC250V, 3A, COSΦ=0.4 DC 30V, 1A

CHAPTER 2 Operator button function



Keyboard button description sheet

Button name	Function
PRG/ESC	Programmatic return
QUIC/JOG	Quick settings and tap
RUN	Run
SHIFT	Shifti
STOP/RESET	Stop/reset

Indicator lamp descripti

Indicator lamp name	Indicator lamp description
RUN	Running status indicator: When the light goes out, it means that the frequency converter is in a shutdown state; When the light is on, it means that the frequency converter is running;
FWD	Forward and reverse indicators: The light is off indicating that it is in a positive transition state; The light is on to indicate that it is in the reverse state.
Hz	Frequency indicator in Hz (Hz）
A	Current indicator in amps (A）
V	Voltage indicator lamp in volts (V）

2.1 Operating Instructions of Digital Operator

Instructions on how to view and modify function codes

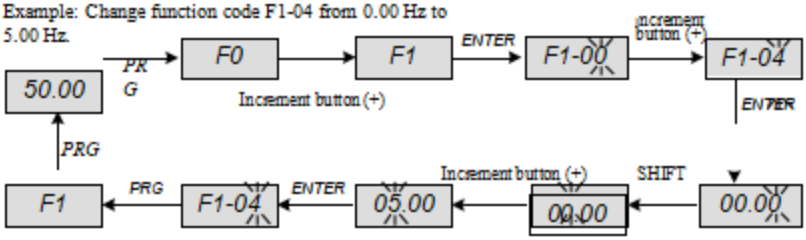
The function code parameters of A750 frequency converter adopt a three-level menu structure, and the parameters can be viewed and modified through the operation panel. The three menus are: function parameter group (level I menu) → function code (level II menu) → function code setting value (level III menu). The operation process is shown in Figure 4-2. In the status parameter interface, you can use the "" button to view different status parameters.

Note: When operating the third-level menu, you can press the PRG key or the ENTER key to return to the second-level menu.

But pressing the ENTER key will save the current parameter modification value and transfer it to the next function code;

Pressing the PRG key means abandoning the current parameter modification.

Example: Change function code F1-04 from 0.00 Hz to 5.00 Hz.



Operation flow chart of parameter setting

In the third-level menu state,it means that the parameter value of the function code cannot be modified. For specific reasons if there is no flashing bit in the parameter.Please check the function code attribute description.

CHAPTER 3 Self-learning

3.1 Parameter identification

1) Connect the motor. If there is a load, set F4-00 to 1; If it is an empty shaft, set F4-00 to 2, and the digital tube will display TUNE. In order to ensure the control effect, it is best to set the motor to no load and set F4-00 to 2.

2) Press the RUN key to perform parameter identification, and wait for TUNE to disappear, and then the parameter identification will end.

3) The identification process lasts about 1 minute, and you can exit by pressing the STOP key in the middle. During this period, current will be sent, and the motor will be run to 60% of the rated frequency of the motor at the set acceleration and deceleration time to observe whether the motor is running smoothly. If it is unstable, press STOP to exit, reach 60% of the rated frequency of the motor, and then slow down and STOP.

4) Check whether the parameters F4-17 ~ F4-20 are normal after the parameter identification.

3.2 No-load trial operation

1) Set the speed to a smaller range such as F0-11 = 20Hz.

2) Press the run key to see if the motor can accelerate to the set frequency and whether the motor current is small. If the motor can accelerate to the set frequency and the motor current is small, the frequency converter is basically normal. Set the frequency to the rated frequency of the motor and see if the motor can accelerate to the set frequency.

CHAPTER 4 Function Table

The function code symbol description is as follows:

"☆": indicates that the parameters of the frequency converter can be modified during both shutdown and operation (0)

"★": indicates that the frequency converter is in operation and cannot be modified (1)

"◦": indicates that the parameter is a manufacturer parameter and cannot be changed by the user (3)

"•": refers to the actual detection value or manufacturer fixed value of the frequency converter, which cannot be changed. (2)

The communication address in the functional parameter table is written in hexadecimal.

Enhancement code: H0 to H3 groups, L0 to L6 groups, turned on by functional parameter F7-75.

Note: The shaded function code is only available for the synchronous motor driver CM530HS, and the rest are common function codes for CM530H and CM530HS.

Function Code	Parameter Name	Setting Range	Default	Property	Communication
		Group F0: Standard Function Parameters			
F0-00	Product model	Product model: 5 digital display, 2 decimal point	61###.##	•	F000
F0-01	G/P type display	0: G type 1: P type	0	★	F001
F0-02	Rated driver current	0.1A to 3000.0A	Model dependent	•	F002
F0-03	Control mode	**Unit's digit:** Motor Control mode 1:Sensor-less vector control(SFVC) 2: Voltage/Frequency(V/F) **Ten's digit:** Motor type Selecting 0: Induction Motor 1: PMSM	2	★	F003
F0-04	Running command source selection	0: Operation keypad control (LED off). 1: Terminal control (LED on). 2: Communication control (LED blinking).	0	★	F004
F0-05	Base frequency for modification up/down during running	0: Running frequency. 1: Set frequency.	1	★	F005

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F0-06	Main frequency source X selection	0: UP/ DOWN setting (non-recorded after stop). 1: UP/ DOWN setting (retentive after stop). 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC 6: PID 7: Communication setting 8: Pulse setting 9: Up/Down Modify Frequency Shutdown Memory Power Down Not Memory	1	★	F006
F0-07	Auxiliary frequency source Y selection	0: UP/ DOWN setting(Non-recorded after stop). 1: UP/ DOWN setting (Retentive after stop). 2: AI1 3: AI2 4: Multi-reference 5: Simple PLC 6: PID 7: Communication setting 8: Pulse setting 9: Up/Down Modify Frequency Shutdown Memory Power Down Not Memory	0	★	F007
F0-08	Range of auxiliary frequency Y selection	0: Relative to maximum frequency. 1: Relative to main frequency X.	0	☆	F008
F0-09	Range of auxiliary frequency Y	0%~100%	100%	☆	F009
F0-10	Frequency source selection	Unit's digit: Frequency source selection 0: Main frequency source X 1: X and Y operation result 2: Switchover between X and Y (by DI terminal). 3: Switchover between X and "X and Y superposition" (by DI terminal). 4: Switchover between Y and "X and Y superposition" (by DI terminal). Ten's digit() 0:X+Y 1: X-Y 2:Max(X,Y) 3: Min(X,Y)	00	☆	F00A
F0-11	Preset frequency	0.00 to maximum frequency F0-14.	50.00Hz	☆	F00B
F0-13	Rotation direction	0: Same direction 1: Reverse direction 2: Reverse forbidden	0	☆	F00D
F0-14	Maximum output frequency	50.0Hz-1200.0 Hz(F0-20= 1) 50.0Hz-600.00 Hz(F0-20=2)	50.00Hz	★	F00E

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F0-15	Frequency source upper limit	0: Set by F0-16 1: AI1 2: AI2 3: Communication setting 4: Pulse setting	0	★	F00F
F0-16	Frequency upper limit	Frequency lower limit(F0-18) to maximum frequency (F0-14)	50.0Hz	☆	F010
F0-17	Frequency upper limit offset	0.00 Hz to maximum frequency (F0-14).	0.00Hz	☆	F011
F0-18	Frequency lower limit	0.00 Hz to frequency upper limits (F0-16).	0.00Hz	☆	F012
F0-19	command source binding select	Unit's digit: Binding operation keypad command to frequency source. 0: No Binding 1:Digital setting 2: AI1 3: AI2 4: Multi-speed 5: Simple PLC 6: PID 7: Communication setting. 8: Pulse setting (HDI5). Ten's digit: Binding operation terminal command to frequency source. Hundred's digit: Binding operation communication command to frequency source. Thousand's digit: Reserved.	000	☆	F013
F0-20	Frequency fractional selection	1: 0.1Hz 2: 0.01Hz	2	★	F014
F0-21	Acceleration/Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	★	F015
F0-22	Acceleration/Deceleration time base frequency	0: Maximum frequency (F0-14) 1: Set frequency 2: Rated motor frequency	0	★	F016
F0-23	Acceleration time 1	0s~30000s (F0-21 = 0) 0.0s~3000.0s (F0-21 = 1) 0.00s~300.00s (F0-21 = 2)	10.0s	☆	F017
F0-24	Deceleration time 1	0s~30000s (F0-21 = 0) 0.0s~3000.0s (F0-21 = 1) 0.00s~300.00s (F0-21 = 2)	10.0s	☆	F018
F0-25	Over modulation voltage boost	0% to 10%	3%	★	F019
F0-26	Carrier frequency	1.0 kHz~11.0kHz	Model dependent	☆	F01A
F0-27	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆	F01B

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F0-28	Initialization parameters	0:No operation 1:Restore factory parameters, except motor parameters, record information and F0-20. 2:Clear the record information 3:Backup the current user parameters. 4:User parameter backup recovery.	0	★	F01C
F0-29	LCD upload or download parameter selection	0:no function 1:Download parameter to LCD 2:only upload F4 function parameters 3: Upload parameters except the F4 group 4: Upload all the parameters	0	☆	F01D
		Group F1: Start/ Stop Control			
F1-00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start(asynchronous motor).	0	☆	F100
F1-01	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From maximum frequency	0	★	F101
F1-02	Max current of rotational speed tracking	30%~150%	100%	★	F102
F1-03	Rotational speed tracking speed	1~100	20	☆	F103
F1-04	Startup frequency	0.00Hz~10.00Hz	0.00Hz	☆	F104
F1-05	Startup frequency holding time	0.0s~100.0s	0.0s	★	F105
F1-06	Startup DC braking current/ Pre-excited current	0%~100%	0%	★	F106
F1-07	Startup DC braking time/ Pre-excited time	0.0s~100.0s	0.0s	★	F107
F1-08	Acceleration/Deceleration mode	0: Linear mode 1: S-curve mode A 2: S-curve mode B	0	★	F108
F1-09	Acceleration time proportion of S-curve start segment	0.00%~100.00%	20.00%	★	F109
F1-10	Deceleration time proportion of S-curve start segment	0.00%~100.00%	20.00%	★	F10A
F1-11	Acceleration time proportion of S-curve end segment	0.00%~100.00%	20.00%	★	F10B
F1-12	Deceleration time proportion of S-curve end segment	0.00%~100.00%	20.00%	★	F10C
F1-13	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆	F10D

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F1-14	Initial frequency of stop DC braking	0.00HZ~maximum frequency (F0-14)	0.00Hz	☆	F10E
F1-15	Waiting time of stop DC braking	0.0s~100.0s	0.0s	☆	F10F
F1-16	Stop DC braking current	0%~100%	0%	☆	F110
F1-17	Stop DC braking time	0.0s~36.0s	0.0s	☆	F111
F1-21	Demagnetization time	0.01s~3.00s	0.50s	★	F115
F1-23	Nonstop at instantaneous stop (when power fail) mode selection	0: Ineffective 1: Automatic start at power fluctuation 2: Decelerate to stop.	0	★	F117
F1-24	Deceleration time of nonstop at instantaneous stop	0.0s to 100.0s	10.0s	★	F118
F1-25	Effective voltage of nonstop at instantaneous stop	60% to 85%	80%	★	F119
F1-26	Recovery voltage of nonstop at instantaneous stop	85% to 100%	90%	★	F11A
F1-27	Detection time of instantaneous stop nonstop recovery voltage	0.0s to 300.0s	0.3s	★	F11B
F1-28	Auto-regulation gain of nonstop at instantaneous stop	0 to 100	40	☆	F11C
F1-29	Auto-regulation integral time of nonstop at instantaneous stop	1 to 100	20	☆	F11D
Group F2: V/F Control Parameters					
F2-00	V/F curve setting	0: Linear V/F. 1: Multi-point V/F. 2: Square V/F. 3: 1.7-power V/F. 4: 1.5-power V/F. 5: 1.3-power V/F. 6: Voltage and frequency complete separation. 7: Voltage and frequency half separation.	0	★	F200
F2-01	Torque boost	0.0%~30.0%	0.0%	☆	F201
F2-02	Cut-off frequency of torque boost	0.00 Hz to maximum output frequency (F0-14).	25.00Hz	★	F202
F2-03	Multi-point V/F frequency 1 (F1)	0.00Hz to F2-05	1.30Hz	★	F203
F2-04	Multi-point V/F voltage 1 (V1)	0.0% to 100.0%	5.2%	★	F204
F2-05	Multi-point V/F frequency 2	F0-05 to F2-07	2.50Hz	★	F205
F2-06	Multi-point V/F voltage 2 (V2)	0.0% to 100.0%	8.8%	★	F206

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F2-07	Multi-point V/F frequency 3 (F3)	0.00Hz to 50.00Hz	15.00Hz	★	F207
F2-08	Multi-point V/F voltage 3 (V3)	0.0% to 100.0%	35.0%	★	F208
F2-09	Slip compensation ratio	0.0% to 200.0%	50.0%	☆	F209
F2-10	V/F Magnetic flux brake Gain	0 to 200	100	☆	F20A
F2-11	Oscillation suppression gain	0 to 100	Model dependent	☆	F20B
F2-13	Slip compensation time	0.02s to 1.00s	0.30s	☆	F20D
F2-15	Output voltage source for voltage and frequency separation	0: Digital setting (F2-16). 1: AI1 2: AI2 3: Multi-reference 4: Simple PLC 5: PID 6: Communication setting. 7: Pulse setting (DI5). 100.0% corresponds to the rated.	0	☆	F20F
F2-16	Voltage digital setting for V/F separation	0 V to rated motor voltage	0V	☆	F210
F2-17	Voltage rise time of V/F separation	0.0s to 3000.0s	1.0s	☆	F211
F2-18	Voltage decline time ofV/F separation	0.0s to 3000.0s	1.0s	☆	F212
F2-19	Stop mode selection upon V/F separation	0: Frequency and voltage declining independently. 1: Frequency declining after voltage declines to 0.	0	☆	F213
Group F3: Vector Control Parameters					
F3-00	Switchover frequency 1	1.00Hz to F3-02	5.00Hz	☆	F300
F3-02	Switchover frequency 2	F3-00 to F0-14	10.00Hz	☆	F302
F3-04	Speed loop proportional gain at low frequency	1.0 to 10.0	4.0	☆	F304
F3-05	Speed loop integral time at low frequency	0.01s to 10.00s	0.50s	☆	F305
F3-06	Speed loop proportional gain at high frequency	1.0 to 10.0	2.0	☆	F306
F3-07	Speed loop integral time at high frequency	0.01s to 10.00s	1.00s	☆	F307
F3-08	Speed loop integral property	0:Integral take effect 1:Integral separation	0	★	F308
F3-11	Torque adjustment proportional gain Kp	0 to 30000	2200	☆	F30B
F3-12	Torque adjustment integral gain Ki	0 to 30000	1500	☆	F30C
F3-13	Excitation adjustment proportional gain Kp	0 to 30000	2200	☆	F30D

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F3-14	Excitation adjustment integral gain Ki	0 to 30000	1500	☆	F30E
F3-15	Flux braking gain	0 to 200	0	☆	F30F
F3-16	Field weakening torque correction ratio	50% to 200%	100%	☆	F310
F3-17	Slip compensation gain	50% to 200%	100%	☆	F311
F3-18	Speed loop feedback filter time	0.000s to 1.000s	0.015s	☆	F312
F3-19	Speed loop output filter time	0.000s to 1.000s	0.000s	☆	F313
F3-20	Source of power-driven torque upper limit	0: F3-21 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) (Analog range corresponds to F3-21)	0	☆	F314
F3-21	Power-driven torque upper limit	0.0% to 200.0%	150.0%	☆	F315
F3-22	Upper limit source of braking torque	0: F3-23 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) (Analog range corresponds to F3-23)	0	☆	F316
F3-23	Braking torque upper limit	0.0% to 200.0%	150.0%	☆	F317
		Group F4: Motor 1 Parameters			
F4-00	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	0	★	F400
F4-01	Rated motor 1 power	0.1kW to 1000.0kW	Model dependent	★	F401
F4-02	Rated motor 1 voltage	0V to 1500V	380	★	F402
F4-04	Rated motor 1 current	0.01A to 600.00 A (motor rated power ≤30 kW). 0.1A to 6000.0 A (motor rated power>30kW).	F4-01 dependent	★	F403
F4-05	Rated motor frequency	0.01Hz to F0-14	50.00Hz	★	F405
F4-06	Rated motor 1 rotational speed	0rpm to 60000rpm	F4-01 dependent	★	F406
F4-07	Motor 1 no-load current	0.01A to F4-04 A (motor rated power ≤30 kW). 0.1A to F4-04 A (motor rated power>30kW).	Model dependent	★	F407
F4-08	Motor 1 stator resistance	0.001Ω to 65.535Ω	Model dependent	★	F408
F4-09	Motor 1 rotor resistance	0.001Ω to 65.535Ω	Model dependent	★	F409
F4-10	Motor 1 mutual inductive	0.1mH to 6553.5mH	Model dependent	★	F40A
F4-11	Motor 1 leakage inductive	0.01mH to 655.35mH	Model dependent	★	F40B
F4-12	Acceleration time of complete auto-tuning	1.0s to 6000.0s	10.0s	☆	F40C

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F4-13	Deceleration time of complete auto-tuning	1.0s to 6000.0s	10.0s	☆	F40D
		Group F5: Input Terminals			
F5-00	DI1 function selection	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Three-wire control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Speed increase 7: Speed Decrease 8: Coast to stop 9: Fault reset (RESET) 10: RUN pause 11: External fault normally open (NO) input 12: Constant speed 1 13: Constant speed 2 14: Constant speed 3 15: Constant speed 4 16: Terminal 1 for acceleration/ deceleration time selection 17: DI for acceleration/ deceleration time selection 18: Frequency source switchover 19: MOTPOT setting clear (terminal, keypad) 20: Command source switchover terminal 1 21: Acceleration/Deceleration prohibited 22: PID pause 23: PLC status reset 24: Swing pause	1	★	F500
F5-01	DI2 function selection		2	★	F501
F5-02	DI3function selection		9	★	F502
F5-03	DI4 function selection		12	★	F503
F5-04	DI5 function selection		13	★	F504

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F5-05	DI6 function selection	25: Timer trigger input 26: Immediate DC injection braking 27: External fault normally closed (NC) input 28: Counter input 29: Counter reset 30: Length count input 31: Length reset 32: Torque control prohibited. 33: Pulse input (enabled only for DI5). 34: Frequency modification forbidden. 35: PID action direction reverses. 36: External STOP terminal1. 37:Command source switchover terminal 2	0		F505
F5-06	DI7 function selection	38: PID integral disabled 39: Switchover between main frequency source X and preset frequency 40: Switchover between Auxiliary frequency source Y and preset frequency 41: Switchover between motor 1 and motor 2 42: Reserved 43: PID parameter switchover 44: Speed control/Torque control switchover 45: Emergency stop 46: External STOP terminal 2 47: Deceleration DC injection braking 48:Clear the current running time 49: Switchover between two-line mode and three-line mode 50: Reverse run prohibited 51: User- defined fault 1 52: User-defined fault2 53: Dormant input	0		F506
F5-10	DI filter time	0.000 to 1.000s	0.010s	☆	F50A
F5-11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	★	F50B
F5-12	Terminal UP/DOWN rate	0.01Hz/s to 100.00Hz/s	1.00Hz/s	☆	F50C
F5-13	Terminal effective mode 1	0: High level 1: Low level Unit's:DI1; Ten's:DI2; Hundred's: DI3; Kilobit:DI4; Myriabit:DI5	00000	★	F50D
F5-15	AI1 minimum input	0.00V to 10.00V	0.00V	☆	F50F

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F5-16	Corresponding setting of AI1 minimum input	-100.0% to 100.00%	0.0%	☆	F510
F5-17	AI1 maximum input	0.00V to 10.00V	10.00V	☆	F511
F5-18	Corresponding setting of AI1 maximum	-100.0% to 100.00%	100.0%	☆	F512
F5-19	AI1 filter time	0.00s to 10.00s	0.10s	☆	F513
F5-20	AI2 minimum input	0.00V to 10.00V	0.00V	☆	F514
F5-21	Corresponding setting of AI2 minimum input	-100.0% to 100.00%	0.0%	☆	F515
F5-22	AI2 maximum input	0.00V to 10.00V	10.00V	☆	F516
F5-23	Corresponding setting of AI2 maximum	-100.0% to 100.00%	100.0%	☆	F517
F5-24	AI2 filter time	0.00s to 10.00s	0.10s	☆	F518
F5-30	Pulse minimum input	0.00KHz to 50.00KHz	0.00KHz	☆	F51E
F5-31	Corresponding setting of pulse minimum input	-100.0% to 100.00%	0.0%	☆	F51F
F5-32	Pulse maximum input	0.00KHz to 100.00KHz	50.00KHz	☆	F520
F5-33	Corresponding setting of pulse maximum input	-100.0% to 100.00%	0.0%	☆	F521
F5-34	Pulse filter time	0.00s to 10.00s	0.10s	☆	F522
F5-35	DI1 On delay time	0.0s to 3600.0s	0.0s	☆	F523
F5-36	DI1 Off delay time	0.0s to 3600.0s	0.0s	☆	F524
F5-37	DI2 On delay time	0.0s to 3600.0s	0.0s	☆	F525
F5-38	DI2 Off delay time	0.0s to 3600.0s	0.0s	☆	F526
F5-39	DI3 On delay time	0.0s to 3600.0s	0.0s	☆	F527
F5-40	DI3 Off delay time	0.0s to 3600.0s	0.0s	☆	F528
F5-41	AI1 function selection as DI terminal	0 to 53 as DI terminal function	0	★	F529

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F5-42	AI2 function selection as DI terminal	0 to 53 as DI terminal function	0	★	F52A
F5-44	AI effective mode selection as DI terminal	Unit's digit(AI1). 0: High level effective 1: Low level effective. Ten's digit(AI2). 0: High level effective 1: Low level effective Hundred's digit: reserved	0X00	☆	F52C
F5-45	AI curve selection	Unit's digit (AI1 curve selection) 0: 2 points curve. 1: Multi-point curve 1. 2: Multi-point curve 2. Ten's digit (AI2 curve selection). 0: 2 points curve 1: Multi-point curve 1 2: Multi-point curve 2 Hundred's digit: reserved	00	☆	F52D
Group F6: Output Terminals					
F6-00	Relay 1 function	0:No output 1:AC drive running 2:Fault output 3:Frequency-level detection FDT1 reached 4:Frequency reached 5:Zero-speed running (no output at stop) 6:Motor overload pre-warning 7:AC drive overload pre-warning 8:PLC cycle completed 9:Accumulative running time reached 10：Frequency limited 11：Ready for RUN 12：AI1>AI2 13：Frequency upper limit reached 14：Frequency lower limit reached 15：Undervoltage state output 16：Communication setting 17：Timer output 18：Reverse running 19：Reserved 20：Length reached 21：Torque limited 22：Current 1 reached 23：Frequency 1 reached 24：Module temperature reached 25：Load lost	2	☆	F600
F6-01	Relay 2 function		1	☆	F601

F6-02	Y1 function	26：Accumulative power-on time reached 27：Clocking reached output 28：Current running time reached 29：Set count value reached 30：Designated count value reached 31: Motor 1 and motor 2 indication 32: Brake control output 33：Zero-speed running 2 (having output at stop) 34：Frequency level detection FDT2 output 35：Zero current state 36：Software over current 37：Frequency lower limit reached (having output at stop) 38：Alarm output 39：Reserved 40：AI1 input overrun 41：Reserved 42：Reserved 43：Frequency 2 reached 44：Current 2 reached 45：Fault output	1	☆	F602
F6-04	FM terminal output selection	0: pulse output (FMP) 1：open loop collector switch value output (FMR)	0	☆	F604
F6-05	FMR output selection	Same as Y1 output selection	0	☆	F605
F6-09	AO1 output function selection	0: Running frequency 1: Set frequency 2: Output current 3: Output power 4: Output voltage 5: Analog AI1 input 6: Analog AI2 input 7: Communication setting 8: Output torque 9: Length 10: Count value 11: Motor rotational speed 12: Output bus voltage(0 to 3 times of driver rated) 13: Pulse input 14: Output current 15: Output voltage(100.0% corresponds to 1000.0V) 16: Output torque (Actual value: -2 to +2 times of the rated value	0	☆	F609
F6-10	AO2 output function selection		0	☆	F60A
F6-11	FMP output function selection		0	☆	F60B
F6-12	FMP output max-frequency	0.01KHz-100.00KHz	50.00	☆	F60C
F6-13	AO1 minimum output	-100.0% to F6-15	0.0%	☆	F60D
F6-14	Minimum corresponds to AO1 output	0.00V to 10.00V	0.00v	☆	F60E
F6-15	AO1 maximum output	F6-13 to 100.0%	100.0%	☆	F60F

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F6-16	Maximum corresponds to AO1 output	0.00V to 10.00V	10.00V	☆	F610
F6-17	AO2 minimum output	-100.0% to F6-19	0.0%	☆	F611
F6-18	Minimum corresponds to AO2 output	0.00V to 10.00V	0.00v	☆	F612
F6-19	AO2 maximum output	F6-17 to 100.0%	100.0%	☆	F613
F6-20	Maximum corresponds to AO2 output	0.00V to 10.00V	10.00V	☆	F614
F6-21	Main relay T pull-in delay	0.0s~3600.0s	0.0s	☆	F615
F6-22	Main relay R pull-in delay	0.0s~3600.0s	0.0s	☆	F616
F6-23	Y1 high level output delay time	0.0s to 3600.0s	0.0s	☆	F617
F6-26	Relay 1 output delay time	0.0s to 3600.0s	0.0s	☆	F61A
F6-27	Relay 2 output delay time	0.0s to 3600.0s	0.0s	☆	F61B
F6-28	Y1 low level output delay	0.0s to 3600.0s	0.0s	☆	F61C
Group F7: Auxiliary Functions and Keypad Display					
F7-00	JOG running frequency	0.00 Hz to maximum frequency	6.00Hz	☆	F700
F7-01	JOG acceleration time	0.0s to 3000.0s	10.0s	☆	F701
F7-02	JOG deceleration time	0.0s to 3000.0s	10.0s	☆	F702
F7-03	Acceleration time 2	0.0s to 3000.0s	10.0s	☆	F703
F7-04	Deceleration time 2	0.0s to 3000.0s	10.0s	☆	F704
F7-05	Acceleration time 3	0.0s to 3000.0s	10.0s	☆	F705
F7-06	Deceleration time 3	0.0s to 3000.0s	10.0s	☆	F706
F7-07	Acceleration time 4	0.0s to 3000.0s	10.0s	☆	F707
F7-08	Deceleration time 4	0.0s to 3000.0s	10.0s	☆	F708
F7-09	Jump frequency 1	0.00 Hz to maximum frequency	0.00Hz	☆	F709
F7-10	Jump frequency 1 amplitude	0.00 Hz to maximum frequency	0.00Hz	☆	F70A
F7-11	Jump frequency 2	0.00 Hz to maximum frequency	0.00Hz	☆	F70B
F7-12	Jump frequency 2 amplitude	0.00 Hz to maximum frequency	0.00Hz	☆	F70C
F7-15	Forward/Reverse rotation dead-zone time	0.0s to 3000.0s	0.0s	☆	F70F

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F7-16	Keypad knob accuracy	0: Default mode 1: 0.1Hz 2: 0.5Hz 3: 1Hz 4: 2Hz 5: 4Hz 6: 5Hz 7: 8Hz 8: 10Hz 9: 0.01 Hz 10: 0.05Hz	0	☆	F710
F7-17	Running mode when set frequency lower than frequency lower limit.	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	☆	F711
F7-18	Droop ration	0.0% to 100.0%	0.0%	☆	F712
F7-19	Delay time of stopping mode when set frequency lower than frequency lower limit.	0.0s to 600.0s	0.0s	☆	F713
F7-20	Setting accumulative running time.	0h to 65000h	0h	☆	F714
F7-21	JOG prefered Mode	0: invalid 1: JOG preferred Mode 1 2: JOG preferred Mode 2	1	☆	F715
F7-22	Frequency detection value (FDT1)	0.00 Hz to maximum frequency	50.00Hz	☆	F716
F7-23	Frequency detection hysteresis (FDT hysteresis 1)	0.0% to 100.0%	5.0%	☆	F717
F7-24	Detection range of frequency reached	0.0% to 100.0%	0.0%	☆	F718
F7-25	Reserved		0	•	F719
F7-26	Cooling fan control	0: Fan working continuously. 1: Fan working during running (Fan working after stopping when temperature is higher than 40℃).	0	★	F71A
F7-27	STOP/RESET key function	0: STOP/RESET key enabled only in operation keypad control. 1: STOP/RESET key enabled in any operation mode.	1	☆	F71B
F7-28	Quick JOG function selection	0: Forward JOG. 1: Switchover between forward rotation and reverse rotation. 2: Reverse JOG. 3: Switchover between operation keypad control and remote command control.	0	★	F71C

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F7-29	LED display running parameters	0000 to 0xffff Bit00: Running frequency 0001 Bit01: Set frequency 0002 Bit02: Bus voltage (V) 0004 Bit03: Output voltage 0008 Bit04: Output current 0010 Bit05: Output power (kW) 0020 Bit06: DI input status 0040 Bit07: DO output status 0080 Bit08: AI1 voltage (V) 0100 Bit09: AI2 voltage (V) 0200 Bit10: PID setting 0400 Bit11: PID feedback 0800 Bit12: Count value 1000 Bit13: Length value 2000 Bit14: load speed display 4000 Bit15: PLC stage 8000	H.441F	☆	F71D
F7-30	LED display stop parameters	1 to 0xffff Bit00: Set frequency 0001 Bit01: Bus voltage (V) 0002 Bit02: DI input status 0004 Bit03: DO output status 0008 Bit04: AI1 voltage (V) 0010 Bit05: AI2 voltage (V) 0020 Bit06: PID setting 0040 Bit07: PID feedback 0080 Bit08: Count value 0100 Bit09: Length value 0200 Bit10:Load speed display 0400 Bit11:PLC stage 0800 Bit12: Pulse input frequency1000 Bit13~Bit15: Reserved	H.0043	☆	F71E
F7-31	Load speed display coefficient	0.001 to 65.500	1.000	☆	F71F
F7-32	Temperature of inverter module	12°C to 100°C	Measured value	•	F720
F7-33	Accumulative power-on time	0h to 65535h	Measured value	•	F721
F7-34	Accumulative running time	0h to 65535h	Measured value	•	F722

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F7-36	Current running time function	0: Disable 1: Enable	0	★	F724
F7-37	Current running time source	0: Digital setting F7-38 1: AI1 2: AI2 (100% of analog input corresponds to F8-44)	0	★	F725
F7-38	Setting of current running time	0.0min to 6500.0min	0.0min	☆	F726
F7-39	High level timing	0.0s to 6000.0s	2.0s	☆	F727
F7-40	Low level timing	0.0s to 6000.0s	2.0s	☆	F728
F7-41	Startup protection	0: No 1: Yes	1	☆	F729
F7-43	Frequency reached detection value 1	0.00Hz to F0-14	50.00Hz	☆	F72B
F7-44	Frequency reached detection duration 1	0% to 100%	0%	☆	F72C
F7-45	Current detection level 1	0% to 300%	100%	☆	F72D
F7-46	Current reached detection duration 1	0% to 300%	0%	☆	F72E
F7-49	User code	0 to 65535	0	☆	F731
F7-50	Jump frequency during acceleration and deceleration	0:Disable 1:Enable	0	☆	F732
F7-51	Setting power-on reached time	0h to 65530h	0h	☆	F733
F7-53	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00Hz to maximum frequency(F0-14)	0.00Hz	☆	F735
F7-54	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00Hz to maximum frequency(F0-14)	0.00Hz	☆	F736
F7-55	Frequency detection value (FDT2)	0.00 Hz to maximum frequency	50.00Hz	☆	F737
F7-56	Frequency detect FDT2 hysteresis value	0.0% to 100.0%	5.0%	☆	F738
F7-57	Frequency reached detection value 2	0.00Hz to F0-14	50.00Hz	☆	F739
F7-58	Frequency reached detection duration 2	0% to 100%	0%	☆	F73A
F7-59	Zero current detection level	0% to 300%	10.0%	☆	F73B
F7-60	Zero current detection delay time	0% to 300%	1.0s	☆	F73C
F7-61	Current output detection amplitude	20.0% to 400.0%	200.0%	☆	F73D

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F7-62	Maximum allowable time of software overcurrent	0.00s to 3600.00s	0.00s	☆	F73E
F7-63	Current detection level 2	20% to 300%	100%	☆	F73F
F7-64	Current reached detection duration 2	0.0% to 300.0%	0.0%	☆	F740
F7-65	LED display running parameters 2	0x0~0x1FF Bit00: target torque 0001 Bit01: output torque 0002 Bit02: pulse input frequency (KHz) 0004 Bit03: HDI input liner speed(m/min) 0008 Bit04: motor rotation speed0010 Bit05: AC line current 0020 Bit06: Accumulative running time(h) Bit07: The current running time(min) Bit08: Accumulative power consumption (kW/h) Bit09~Bit15: reserved	0x00	☆	F741
F7-67	AII input voltage lower limit	0.00V to F7-68	2.00V	☆	F743
F7-68	AII input voltage upper limit	F7-67 to 11.00V	8.00V	☆	F744
F7-69	Module temperature threshold	0°C to 90°C	70°C	☆	F745
F7-70	Output power correction coefficient	0.001 to 3.000	1.000	☆	F746
F7-71	Linear speed display coefficient	Linear speed = F-71 * HDI1 pulse number per second /Fb-07	1.000	☆	F747
F7-72	Accumulative power consumption	0kWto 65535kW	Measured value	•	F748
F7-73	Performance software version		#.#	•	F749
F7-74	Function software version		#.#	•	F74A
F7-75	Improve function parameter display selecting	0:Hide improvement function parameter:H0~H3,L0~L5 1:Display improvement function parameter:H0~H3,L0~L5	0	☆	F74B
F7-76	Motor rotational display correction coefficient	0.0010~3.0000	1.0000	☆	F74C
F7-77	LCD software version	LCD software version	#.#	•	F74D

Function Code	Parameter Name	Setting Range	Default	Property	Communication
		Group F8: Communication Parameters			
F8-00	Baud rate	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS	5	☆	F800
F8-01	Data format	0: No check <8,N,2> 1: Even parity check 2 <8,E,1> 2: Odd Parity check <8,O,1> 3: No check1 <8,N,1>	0	☆	F801
F8-02	Local address	0 to 247 (0 is Broadcast address)	1	☆	F802
F8-03	Response delay	0ms to 30ms	2ms	☆	F803
F8-04	Communication timeout	0.0s to 30.0s	0.0s	☆	F804
F8-05	Communication data format selection	0: Standard MODBUS-RTU protocol 1: Nonstandard MODBUS-RTU protocol	0	☆	F805
F8-06	Background software monitoring function	0:Prohibit, the default 485 communication function. 1:open the Background software monitoring function , the 485communication function be used at this time.	0	☆	F806
		Group F9: Fault and Protection			
F9-00	Motor overload protection selection.	0: Disable 1: Enable	1	☆	F900
F9-01	Motor overload protection gain.	0.10 to 10.00	1.00	☆	F901
F9-02	Motor overload warning coefficient.	50% to 100%	80%	☆	F902
F9-03	Overvoltage stall gain	0 to 100	30	☆	F903
F9-04	Overvoltage stall protective voltage	200.0～1250.0V	380.0V 760.0V 1150.0V	★ ★ ★	F904
F9-05	V/F overcurrent stall gain	0 to 100	20	☆	F905
F9-06	V/F overcurrent stall protective current	50% to 200%	150%	★	F906
F9-07	VF weak magnetic current stall protection coefficient.	50% to 200%	100%	★	F907

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F9-08	Overvoltage stalling allowed to rise limit value	0% to 100%	10%	☆	F908
F9-11	Fault auto reset times	0 to 20	0	☆	F90B
F9-12	Fault relay action selection during fault auto reset	0: Not act 1: Act	0	☆	F90C
F9-13	Time interval of fault auto reset	0.1s to 100.0s	1.0s	☆	F90D
F9-14	Input phase loss protection selection	0: Disable 1: Enable	1	☆	F90E
F9-15	Output phase loss protection selection	0: Disable 1: Enable	1	☆	F90F
F9-16	Short-circuit to ground upon power-on	0: Disable 1: Enable	1	☆	F910
F9-17	Undervoltage fault auto reset selection	0: Manual reset fault after the under voltage fault. 1: Auto reset fault according to the bus voltage after the fault.	0	☆	F911
F9-18	Overvoltage inhibition mode selection	0: Ineffective 1: Overvoltage inhibition mode 1 2: Overvoltage inhibition mode 2	1	★	F912
F9-19	Over excitation force state selection	0: Ineffective 1: Effective during running at constant speed or deceleration 2: Effective during running at deceleration	2	★	F913
F9-20	Threshold of over-voltage inhibition mode 2	1.0% to 150.0%	100.0%	★	F914
F9-22	Fault protection action selection 1	0 to 22202 Unit's digit: Motor over load – Err14 0: Coast to stop 1: Stop according to stop mode 2:Continue to run Ten's digit: Reserved Hundred's digit: Input phase loss - Err23 Thousand's digit: Output phase loss - Err24 Ten thousand's digit: Parameter read-write fault – Err25	00000	☆	F916

Function Code	Parameter Name	Setting Range	Default	Property	Communication
F9-23	Fault protection action selection 2	0 to 22222 Unit's digit: Communication fault – Err27 0: Coast to stop 1: Stop according to stop mode 2:Continue to run Ten's digit: External equipment fault – Err28 Hundred's digit: Too large speed deviation – Err29 Thousand's digit: User-definedfault1 – Err30 Ten thousand's digit: User-definedfault1 – Err31	00000	☆	F917
F9-24	Fault protection action selection 3	0 to 22022 Unit's digit: PID feedback lost during running – Err32 0: Coast to stop 1: Stop according to stop mode 2:Continue to run Ten's digit: Load becoming 0 – Err34 Hundreds place: reserved Thousands place: Current running time reached – Err39 Ten thousand's digit: Accumulative running time reached – Err40	00000	☆	F918
F9-26	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency(F9-27)	1	☆	F91A
F9-27	Backup frequency upon abnormality	0.0% to 100.0%	100.0%	☆	F91B
F9-28	Protection upon load becoming 0	0: Disable 1: Enable	0	☆	F91C
F9-29	Detection level of load becoming 0	0.0% to 80.0%	20.0%	★	F91D
F9-30	Detection time of load becoming 0	0.0s to 100.0s	5.0%	☆	F91E
F9-31	Detection value of too large speed deviation	0.0% to 100.0%	20.0%	☆	F91F
F9-32	Detection time of too large speed deviation	0.0s to 100.0s	0.0s	☆	F920
F9-33	Over-speed detection value	0.0% to 100.0%	20.0%	☆	F921
F9-34	Over-speed detection time	0.0s to 100.0s	2.0s	☆	F922
F9-35	Motor overload protection current coefficient	100% to 200%	100%	☆	F923

Function Code	Parameter Name	Setting Range	Default	Property	Communication
		Group FA: PID Function			
FA-00	PID setting source	0: Keypad 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) 5: Multi-reference 6: UP/DOWN of keypad, valid when F0-06 = 6	0	☆	FA00
FA-01	PID digital setting	0.0% to 100.0%	50.0%	☆	FA01
FA-02	PID setting change time	Response time 0.00s to 650.00s	0.00s	☆	FA02
FA-03	PID feedback source	0: AI1 1: AI2 2: AI1 - AI2 3: Communication setting 4: Pulse setting (DI5) 5: AI1 + AI2 6: MAX(|AI1|,|AI2|) 7: MIN(|AI1|,|AI2|)	0	☆	FA03
FA-04	PID action direction	0: Forward action 1: Reverse action	0	☆	FA04
FA-05	PID feedback range setting	0 to 65535	1000	☆	FA05
FA-06	Proportional gain Kp	0.0 to 100.0	20.0	☆	FA06
FA-07	Integral time Ti1	0.01s to 10.00s	2.00s	☆	FA07
FA-08	Differential time Td1	0.000s to 10.000s	0.000s	☆	FA08
FA-09	Cut-off frequency of PID reverse rotation	0.00 Hz to maximum frequency(F0-14)	0.00Hz	☆	FA09
FA-10	Deviation limit	0.0% to 100.0%	0.0%	☆	FA0A
FA-11	Differential limit	0.00% to 100.00%	0.10%	☆	FA0B
FA-12	PID feedback filter time	0.00s to 60.00s	0.00s	☆	FA0C
FA-13	Detection value of PID feedback loss	0.0% to 100.0%	0.0%	☆	FA0D
FA-14	Detection time of PID feedback loss	0.0s to 3600.0s	3600.0s	☆	FA0E
FA-18	Proportional gain Kip2	0.0 to 100.0	20.0	☆	FA12
FA-19	Integral time Ti2	0.01s to 10.00s	2.00s	☆	FA13
FA-20	Differential time Td2	0.000s to 10.000s	0.000s	☆	FA14
FA-21	PID parameter switchover condition	0: No switchover 1: Switchover via DI 2: Automatic switchover based on deviation	0	☆	FA15
FA-22	PID parameter switchover deviation 1	0.0% to FA-23	20.0%	☆	FA16

Function Code	Parameter Name	Setting Range	Default	Property	Communication
FA-23	PID parameter switchover deviation 2	FA-22 to 100.0%	80.0%	☆	FA17
FA-24	PID initial value	0.0% to 100.0%	0.0%	☆	FA18
FA-25	PID initial value holding time	0.00s to 650.00s	0.00s	☆	FA19
FA-26	Maximum deviation between two PID outputs in forward direction	0.00% to 100.00%	1.00%	☆	FA1A
FA-27	Maximum deviation between two PID outputs in reverse direction	0.00% to 100.00%	1.00%	☆	FA1B
FA-28	PID integral property	Unit's digit: Integral separated 0: Effective 1: Ineffective Ten's digit: integral selection when output reached limit 0:Continue 1:Stop	00	☆	FA1C
FA-29	PID operation at stop	0: No PID operation at stop 1: PID operation at stop	0	☆	FA1D
Group Fb: Swing Frequency, Fixed Length and Count					
Fb-00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	☆	FB00
Fb-01	Swing frequency amplitude	0.0% to 100.0%	0.0%	☆	FB01
Fb-02	Jump frequency amplitude	0.0% to 50.0%	0.0%	☆	FB02
Fb-03	Swing frequency cycle	0.1s to 3000.0s	10.0s	☆	FB03
Fb-04	Triangular wave rising time coefficient	0.1% to 100.0%	50.0%	☆	FB04
Fb-05	Set length	0m to 65535m	1000m	☆	FB05
Fb-06	Actual length	0m to 65535m	0m	☆	FB06
Fb-07	Number of pulses per meter	0.1 to 6553.5	100.0	☆	FB07
Fb-08	Set count value	1 to 65535	1000	☆	FB08
Fb-09	Designated count value	1 to 65535	1000	☆	FB09
Group FC: Multi-Reference and Simple PLC Function					
FC-00	Multi-segment frequency0	-100.0% to 100.0%	0.0%	☆	FC00
FC-01	Multi-segment frequency1	-100.0% to 100.0%	0.0%	☆	FC01
FC-02	Multi-segment frequency2	-100.0% to 100.0%	0.0%	☆	FC02
FC-03	Multi-segment frequency3	-100.0% to 100.0%	0.0%	☆	FC03

Function Code	Parameter Name	Setting Range	Default	Property	Communication
FC-04	Multi-segment frequency4	-100.0% to 100.0%	0.0%	☆	FC04
FC-05	Multi-segment frequency5	-100.0% to 100.0%	0.0%	☆	FC05
FC-06	Multi-segment frequency6	-100.0% to 100.0%	0.0%	☆	FC06
FC-07	Multi-segment frequency7	-100.0% to 100.0%	0.0%	☆	FC07
FC-08	Multi-segment frequency8	-100.0% to 100.0%	0.0%	☆	FC08
FC-09	Multi-segment frequency9	-100.0% to 100.0%	0.0%	☆	FC09
FC-10	Multi-segment frequency10	-100.0% to 100.0%	0.0%	☆	FC0A
FC-11	Multi-segment frequency11	-100.0% to 100.0%	0.0%	☆	FC0B
FC-12	Multi-segment frequency12	-100.0% to 100.0%	0.0%	☆	FC0C
FC-13	Multi-segment frequency13	-100.0% to 100.0%	0.0%	☆	FC0D
FC-14	Multi-segment frequency14	-100.0% to 100.0%	0.0%	☆	FC0E
FC-15	Multi-segment frequency15	-100.0% to 100.0%	0.0%	☆	FC0F
FC-16	Simple PLC running mode	0: Stop after the AC drive runs one cycle 1: Keep final values after the AC drive runs one cycle 2: Repeat after the AC drive runs one cycle	0	☆	FC10
FC-17	Simple PLC retentive selection	0: Non-retentive neither at power off nor after stop. 1: Retentive at power off but non-retentive after stop. 2: Non-retentive at power off but retentive after stop. 3: Retentive at power off and after stop.	0	☆	FC11
FC-18	Running time of simple PLC reference 0	0.0~6500.0	0.0	☆	FC12
FC-19	Acceleration/deceleration time of simple PLC reference 0	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC13
FC-20	Running time of simple PLC reference 1	0.0~6500.0	0.0	☆	FC14
FC-21	Acceleration/deceleration time of simple PLC reference 1	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC15
FC-22	Running time of simple PLC reference 2	0.0~6500.0	0.0	☆	FC16
FC-23	Acceleration/deceleration time of simple PLC reference 2	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC17
FC-24	Running time of simple PLC reference 3	0.0~6500.0	0.0	☆	FC18

Function Code	Parameter Name	Setting Range	Default	Property	Communication
FC-25	Acceleration/deceleration time of simple PLC reference 3	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC19
FC-26	Running time of simple PLC reference 4	0.0~6500.0	0.0	☆	FC1A
FC-27	Acceleration/deceleration time of simple PLC reference 4	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC1B
FC-28	Running time of simple PLC reference 5	0.0~6500.0	0.0	☆	FC1C
FC-29	Acceleration/deceleration time of simple PLC reference 5	0 to 3(Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC1D
FC-30	Running time of simple PLC reference 6	0.0~6500.0	0.0	☆	FC1E
FC-31	Acceleration/deceleration time of simple PLC reference 6	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC1F
FC-32	Running time of simple PLC reference 7	0.0~6500.0	0.0	☆	FC20
FC-33	Acceleration/deceleration time of simple PLC reference 7	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC21
FC-34	Running time of simple PLC reference 8	0.0~6500.0	0.0	☆	FC22
FC-35	Acceleration/deceleration time of simple PLC reference 8	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC23
FC-36	Running time of simple PLC reference 9	0.0~6500.0	0.0	☆	FC24
FC-37	Acceleration/deceleration time of simple PLC reference 9	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC25
FC-38	Running time of simple PLC reference 10	0.0~6500.0	0.0	☆	FC26
FC-39	Acceleration/deceleration time of simple PLC reference 10	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC27
FC-40	Running time of simple PLC reference 11	0.0~6500.0	0.0	☆	FC28
FC-41	Acceleration/deceleration time of simple PLC reference 11	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC29
FC-42	Running time of simple PLC reference 12	0.0~6500.0	0.0	☆	FC2A
FC-43	Acceleration/deceleration time of simple PLC reference 12	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC2B
FC-44	Running time of simple PLC reference 13	0.0~6500.0	0.0	☆	FC2C
FC-45	Acceleration/deceleration time of simple PLC reference 13	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC2D

Function Code	Parameter Name	Setting Range	Default	Property	Communication
FC-46	Running time of simple PLC reference 14	0.0~6500.0	0.0	☆	FC2E
FC-47	Acceleration/deceleration time of simple PLC reference 14	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC2F
FC-48	Running time of simple PLC reference 15	0.0~6500.0	0.0	☆	FC30
FC-49	Acceleration/deceleration time of simple PLC reference 15	0 to 3 (Means acceleration/deceleration time 1 to 4 respectively)	0	☆	FC31
FC-50	Time unit of simple PLC	0:s 1:h	0	☆	FC32
FC-51	Multi-Reference priority selection	0: No 1: Yes	1	☆	FC33
FC-52	Acceleration/deceleration time of multi-Reference	0: Acceleration/deceleration time 1 1: Acceleration/deceleration time 2 2: Acceleration/deceleration time 3 3: Acceleration/deceleration time 4	0	☆	FC34
FC-53	FC - 00 - FC - 15 units selection of multi-segment speed	0:% 1:Hz	0	☆	FC35
FC-55	Reference 0 source	0: Keypad 1: AI1 2: AI2 3: Pulse setting 4: PID 5: Set by preset frequency (F0-11, modified via terminal UP/ DOWN	0	☆	FC37
Group Fd : Torque Control					
Fd-00	Torque setting source in torque control	0: Keypad 1: AI1 2: AI2 3: Pulse setting 4: Communication setting 5: MAX(|AI1|,|AI2|) 6: MIN(|AI1|,|AI2|) (Full range of 1 to 6 corresponds to Fd-01)	0	★	FD00
Fd-01	Torque digital setting	-200.0% to 200.0%	150.0%	☆	FD01
Fd-03	Forward maximum frequency in torque	0.00 Hz to maximum frequency(F0-14)	50.00Hz	☆	FD03
Fd-04	Reverse maximum frequency in torque	0.00 Hz to maximum frequency(F0-14)	50.00Hz	☆	FD04
Fd-06	Torque setting filter time	0.00s to 10.00s	0.00s	☆	FD06

Function Code	Parameter Name	Setting Range	Default	Property	Communication
Fd-07	Acceleration time in torque control	0.0s to 1000.0s	10.0s	☆	FD07
Fd-08	Deceleration time in torque control	0.0s to 1000.0s	10.0s	☆	FD08
Fd-10	Speed/Torque control	0: Speed control 1: Torque control	0	★	FD0A
		Group FE: AI Curve Setting			
FE-00	AI curve 1 minimum input	-10.00V to FE-02	0.00	☆	FE00
FE-01	Corresponding setting of AI curve 1 minimum input	-100.0% to 100.0%	0.0%	☆	FE01
FE-02	AI curve 1 inflexion 1 input	FE-00 to FE-04	3.00	☆	FE02
FE-03	Corresponding setting of AI curve 1 inflexion 1 input	-100.0% to 100.0%	30.0%	☆	FE03
FE-04	AI curve 1 inflexion 2 input	FE-02 to FE-06	6.00	☆	FE04
FE-05	Corresponding setting of AI curve 1 inflexion 2 input	-100.0% to 100.0%	60.0%	☆	FE05
FE-06	AI curve 1 maximum input	FE-06 to 10.00V	10.00	☆	FE06
FE-07	Corresponding setting of AI curve 1 maximum input	-100.0% to 100.0%	100.0%	☆	FE07
FE-08	AI curve 2 minimum input	-10.00V to FE-02	0.00V	☆	FE08
FE-09	Corresponding setting of AI curve 2 minimum input	-100.0% to 100.0%	0.0%	☆	FE09
FE-10	AI curve 2 inflexion 1 input	FE-00 to FE-04	3.00	☆	FE0A
FE-11	Corresponding setting of AI curve 2 inflexion 1 input	-100.0% to 100.0%	30.0%	☆	FE0B
FE-12	AI curve 2 inflexion 2 input	FE-02 to FE-06	6.00	☆	FE0C
FE-13	Corresponding setting of AI curve 2 inflexion 2 input	-100.0% to 100.0%	60.0%	☆	FE0D
FE-14	AI curve 2 maximum input	FE-06 to 10.00V	10.00V	☆	FE0E
FE-15	Corresponding setting of AI curve 2 maximum input	-100.0% to 100.0%	100.0%	☆	FE0F

Function Code	Parameter Name	Setting Range	Default	Property	Communication
FE-24	Jump point of AI1 input corresponding setting	-100.0% to 100.0%	0.0%	☆	FE18
FE-25	Jump amplitude of AI1 input corresponding setting	0.0% to 100.0%	0.5%	☆	FE19
FE-26	Jump point of AI2 input corresponding setting	-100.0% to 100.0%	0.0%	☆	FE1A
FE-27	Jump amplitude of AI2 input corresponding setting	0.0% to 100.0%	0.5%	☆	FE1B
Group FF: Factory Parameters					
FF-00	User code	0 to 65535	*****	☆	FF00
Group H0: Motor 2 Parameters Setting					
H0-00	Motor selection	1: Motor 1 2: Motor 2	1	★	A000
H0-01	Motor 2 control mode	1: Open loop flux vector control (Speed-sensorless vector control) 2: Voltage/Frequency (V/F) control	2	★	A001
H0-02	Motor 2 acceleration/deceleration time	0: Same as motor 1 1: Acceleration/deceleration time 1 2: Acceleration/deceleration time 2 3: Acceleration/deceleration time 3 4: Acceleration/deceleration time 4	0	☆	A002
Group H1: Motor 2 Parameters					
H1-00	Auto-tuning selection	0: No auto-tuning 1: Static auto-tuning 2: Complete auto-tuning	0	★	A100
H1-01	Rated motor 2 power	0.4kW to 1000.0kW	Model dependent	★	A101
H1-02	Rated motor 3 voltage	0V to 1500V	380V	★	A102
H1-04	Rated motor 2 current	0.01A to 600.00 A (motor rated power ≤30 kW) 0.1A to 6000.0 A (motor rated power >30kW)	H1-01 dependent	★	A104
H1-05	Rated motor 2 frequency	0.00Hz to F0-14	50.00Hz	★	A105
H1-06	Rated motor 2 rotational speed	0rpm to 30000rpm	H1-01 dependent	★	A106
H1-07	Motor 2 no-load current	0.01A to H1-04 A (motor rated power ≤30 kW) 0.1A to H1-04 A (motor rated power >30kW)	H1-01 dependent	★	A107
H1-08	Motor 2 stator resistance	0.001Ω to 65.535Ω	Model dependent	★	A108
H1-09	Motor 2 rotor resistance	0.001Ω to 65.535Ω	Model dependent	★	A109
H1-10	Motor 2 mutual inductive	0.1mH to 6553.5mH	Model dependent	★	A10A
H1-11	Motor 2 leakage inductive	0.01mH to 655.35mH	Model dependent	★	A10B

Function Code	Parameter Name	Setting Range	Default	Property	Communication
H1-12	Acceleration time of complete auto-tuning	1.0s to 600.0s	10.0s	☆	A10C
H1-13	Deceleration time of complete auto-tuning	1.0s to 600.0s	10.0s	☆	A10D
Group H2: Motor 2 V/F Control Parameters					
H2-00	Torque boost	0.0%~30.0%	0.0%	☆	A200
H2-02	Oscillation suppression gain	0 to 100	Model dependent	☆	A202
Group H3: Motor 2 Vector Control Parameters					
H3-00	Switchover frequency 1	1.00Hz to H3-02	5.00Hz	☆	A300
H3-02	Switchover frequency 2	H3-00 to F0-14	10.00Hz	☆	A302
H3-04	Speed loop proportional gain at low frequency	1.0 to 10.0	4.0	☆	A304
H3-05	Speed loop integral time at low frequency	0.01s to 10.00s	0.50s	☆	A305
H3-06	Speed loop proportional gain at high frequency	1.0 to 10.0	2.0	☆	A306
H3-07	Speed loop integral time at high frequency	0.01s to 10.00s	1.00s	☆	A307
H3-08	Speed loop integral property	0: integral effect 1: integral separation	0	★	A308
H3-11	Torque adjustment proportional gain Kp	0 to 30000	2000	☆	A30B
H3-12	Torque adjustment integral gain Ki	0 to 30000	1300	☆	A30C
H3-13	Excitation adjustment proportional gain Kp	0 to 30000	2000	☆	A30D
H3-14	Excitation adjustment integral gain Ki	0 to 30000	1300	☆	A30E
H3-15	Flux braking gain	100 to 200	110	☆	A30F
H3-16	Field weakening torque correction ratio	50% to 200%	100%	☆	A310
H3-17	Slip compensation gain	50% to 200%	100%	☆	A311
H3-18	Speed loop feedback filter time	0.000s to 1.000s	0.015s	☆	A312

Function Code	Parameter Name	Setting Range	Default	Property	Communication
H3-19	Speed loop output filter time	0.000s to 1.000s	0.000s	☆	A313
H3-20	Source of power-driven torque upper limit	0: F3-21 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) (Analog range corresponds to H3-21)	0	☆	A314
H3-21	Power-driven torque upper limit	0.0% to 200.0%	150.0%	☆	A315
H3-22	Source of braking torque upper limit	0: F3-23 1: AI1 2: AI2 3: Communication setting 4: Pulse setting (DI5) (Analog range corresponds to H3-23)	0	☆	A316
H3-23	Braking torque upper limit	0.0% to 200.0%	150.0%	☆	A317
Group L0: System Parameters					
L0-00	Parameters only for reading	0: Disable 1: Enable	0	☆	B000
L0-01	LCD top menu display	0: output current 1: motor rotation speed 2:load speed 3: output voltage 4:PID giving 5: PID feedback	0	☆	B001
L0-02	LCD language selection	0: Chinese 1: English	0	☆	B002
L0-03	LED menu switching selection	0: prohibition 1: enable	0	☆	B003

Function Code	Parameter Name	Setting Range	Default	Property	Communication
L0-04	Vector running frequency display selection	0: Real-time frequency 1: setting frequency	0	☆	B004
L0-05	UP/Down regulation display selection	0: Display the setting value 1:Display the current variable value	0	☆	B005
Group L1: User - defined Parameters					
L1-00	Clear user-defined parameters	0: Disable 1: Enable	0	☆	B100
L1-01	User-defined parameters 1	uF0-00 to uU1-xx	uF0-03	☆	B101
L1-02	User-defined parameters 2	uF0-00 to uU1-xx	uF0-04	☆	B102
L1-03	User-defined parameters 3	uF0-00 to uU1-xx	uF0-06	☆	B103
L1-04	User-defined parameters 4	uF0-00 to uU1-xx	uF0-23	☆	B104
L1-05	User-defined parameters 5	uF0-00 to uU1-xx	uF0-24	☆	B105
L1-06	User-defined parameters 6	uF0-00 to uU1-xx	uF4-00	☆	B106
L1-07	User-defined parameters 7	uF0-00 to uU1-xx	uF4-01	☆	B107
L1-08	User-defined parameters 8	uF0-00 to uU1-xx	uF4-02	☆	B108
L1-09	User-defined parameters 9	uF0-00 to uU1-xx	uF4-04	☆	B109
L1-10	User-defined parameters 10	uF0-00 to uU1-xx	uF4-05	☆	B10A
L1-11	User-defined parameters 11	uF0-00 to uU1-xx	uF4-06	☆	B10B
L1-12	User-defined parameters 12	uF0-00 to uU1-xx	uF4-12	☆	B10C
L1-13	User-defined parameters 13	uF0-00 to uU1-xx	uF4-13	☆	B10D
L1-14	User-defined parameters 14	uF0-00 to uU1-xx	uF5-00	☆	B10E
L1-15	User-defined parameters 15	uF0-00 to uU1-xx	uF5-01	☆	B10F
L1-16	User-defined parameters 16	uF0-00 to uU1-xx	uF5-02	☆	B110
L1-17	User-defined parameters 17	uF0-00 to uU1-xx	uF6-00	☆	B111
L1-18	User-defined parameters 18	uF0-00 to uU1-xx	uF6-01	☆	B112
L1-19	User-defined parameters 19	uF0-00 to uU1-xx	uF0-00	☆	B113
L1-20	User-defined parameters 20	uF0-00 to uU1-xx	uF0-00	☆	B114
L1-21	User-defined parameters 21	uF0-00 to uU1-xx	uF0-00	☆	B115

Function Code	Parameter Name	Setting Range	Default	Property	Communication
L1-22	User-defined parameters 22	uF0-00 to uU1-xx	uF0-00	☆	B116
L1-23	User-defined parameters 23	uF0-00 to uU1-xx	uF0-00	☆	B117
L1-24	User-defined parameters 24	uF0-00 to uU1-xx	uF0-00	☆	B118
L1-25	User-defined parameters 25	uF0-00 to uU1-xx	uF0-00	☆	B119
L1-26	User-defined parameters 26	uF0-00 to uU1-xx	uF0-00	☆	B11A
L1-27	User-defined parameters 27	uF0-00 to uU1-xx	uF0-00	☆	B11B
L1-28	User-defined parameters 28	uF0-00 to uU1-xx	uF0-00	☆	B11C
L1-29	User-defined parameters 29	uF0-00 to uU1-xx	uF0-00	☆	B11D
L1-30	User-defined parameters 30	uF0-00 to uU1-xx	uF0-00	☆	B11E
L1-31	User-defined parameters 31	uF0-00 to uU1-xx	uF0-00	☆	B11F
Group L2: Optimization Parameters					
L2-00	Dead zone compensation selection	0: No compensation 1: Compensation	1	☆	B200
L2-01	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	☆	B201
L2-02	PWM seven phase/five phase selection	0: Seven phase in whole course 1: Seven phase/five phase auto switchover	0	☆	B202
L2-03	CBC current limit	0: Disable 1: Enable	1	☆	B203
L2-04	Braking threshold	330.0V to 2000.0V	360.0V 690.0V 1160.0V	☆	B204
L2-05	Under voltage threshold	150.0V to 900.0V	170.0V 350.0V 350.0V	☆	B205
L2-06	Random PWM depth	0 to 6	0	☆	B206
L2-07	0Hz running way	0: No current output 1: Normal operation 2: Output with DC braking current F1-16	0	☆	B207
L2-08	Limitation of low frequency carrier	0: Limitation mode 0 1: Limitation mode 1 2: Unlimited (the carrier waves are in accordance in every frequency ranges)	0	☆	B208

Function Code	Parameter Name	Setting Range	Default	Property	Communication
Group L3: AI/AO Correction					
L3-00	AI1 displayed voltage 1	-9.999V to 10.000V	3.000V	☆	B300
L3-01	AI1 measured voltage 1	-9.999V to 10.000V	3.000V	☆	B301
L3-02	AI1 displayed voltage 2	-9.999V to 10.000V	8.000V	☆	B302
L3-03	AI1 measured voltage 2	-9.999V to 10.000V	8.000V	☆	B303
L3-04	AI2 displayed voltage 1	-9.999V to 10.000V	3.000V	☆	B304
L3-05	AI2 measured voltage 1	-9.999V to 10.000V	3.000V	☆	B305
L3-06	AI2 displayed voltage 2	-9.999V to 10.000V	8.000V	☆	B306
L3-07	AI2 measured voltage 2	-9.999V to 10.000V	8.000V	☆	B307
L3-12	AO1 target voltage 1	-9.999V to 10.000V	3.000V	☆	B30C
L3-13	AO1 measured voltage 1	-9.999V to 10.000V	3.000V	☆	B30D
L3-14	AO1 target voltage 2	-9.999V to 10.000V	8.000V	☆	B30E
L3-15	AO1 measured voltage 2	-9.999V to 10.000V	8.000V	☆	B30F
L3-16	AO2 target voltage 1	-9.999V to 10.000V	3.000V	☆	B310
L3-17	AO2 measured voltage 1	-9.999V to 10.000V	3.000V	☆	B311
L3-18	AO2 target voltage 2	-9.999V to 10.000V	8.000V	☆	B312
L3-19	AO2 measured voltage 2	-9.999V to 10.000V	8.000V	☆	B313
Group L4: Master-slave Control Parameters					
L4-00	Master-slave control selection	0: Disable 1: Enable	0	★	B400
L4-01	Master-slave selection	0: Master 1: Slave	0	★	B401
L4-02	Master sending frequency selection	0: Running frequency 1: Target frequency	0	★	B402
L4-03	Command source selection of slave followed the master	0: Non-follow 1: Follow	0	★	B403

Function Code	Parameter Name	Setting Range	Default	Property	Communication
L4-04	Slave received frequency coefficient	0.00%~600.00%	100.00%<1>	☆	B404
L4-05	Slave received torque coefficient	-10.00 to 10.00	1.00	☆	B405
L4-06	Slave received torque offset	-50.00% to 50.00%	0.00%	☆	B406
L4-07	Frequency offset threshold	0.20% to 10.00%	0.50%	☆	B407
L4-08	Master-slave communication offline detection time	0.00s to 10.00s	0.10S	☆	B408
Group L5: Braking Function Parameters					
L5-00	Braking control selection	0: Disable 1: Enable	0	★	B500
L5-01	Braking loosen frequency	0.00Hz to 20.00Hz	2.50Hz	★	B501
L5-02	Braking loosen frequency holding time	0.0s to 20.0s	1.0s	★	B502
L5-03	Braking period current threshold	50.0% to 200.0%	120.0%	★	B503
L5-04	Braking actuation frequency	0.00Hz to 20.00Hz	1.50Hz	★	B504
L5-05	Braking actuation delay time	0.0s to 20.0s	0.0s	★	B505
L5-06	Braking actuation frequency holding time	0.0s to 20.0s	1.0s	★	B506
Group L6: Sleep Wake-up Function Parameters					
L6-00	Sleep selection	0: Sleep function ineffective 1:DI terminal control 2:PID setting and feedback control 3: Running frequency control	0	☆	B600
L6-01	Sleep frequency	0.00Hz~F0-14	0.00Hz	☆	B601
L6-02	Sleep delay time	0.0s~3600.0s	20.0s	☆	B602
L6-03	Wake-up deviation	0.0%~100.0%	10.0%	☆	B603
L6-04	Wake-up delay time	0.0s to 3600.0s	0.5s	☆	B604
L6-05	Dormant delay time Frequency output selection	0: PID auto-adjustment 1 : Dormant frequency L6-01	0	☆	B605

Function Code	Parameter Name		Min. Unit	Property	Communication
Group U0: Error Recording Parameters					
U0-00	3rd (latest) fault type	00:No fault Err01: Inverter unit protection Err04: Overcurrent during acceleration Err05: Overcurrent during deceleration Err06: Over current at constant speed Err08: Overvoltage during acceleration Err09: Overvoltage during deceleration Err10: Overvoltage at constant speed Err12: Under voltage Err13: Drive overload Err14: Motor overload Err15: Drive overheat Err17: Current detection fault Err20: Short circuit to ground Err23: Power input phase loss Err24: Power output phase loss Err25: EEPROM read-write fault Err27: Communication fault Err28: External equipment fault Err29: Too large speed deviation Err30: User-definedfault1 Err31: User-definedfault2 Err32: PID feedback lost during running Err33: Fast current limit fault Err34: Load becoming 0 Err35: Control power supply fault Err37: Control power supply fault Err39: Current running time reached Err40: Accumulative running time reached Err42: Motor switchover fault during running Err46: Master slave control communication disconnection	1	•	7000
U0-01	2rd (latest) fault type		1	•	7001
U0-02	1nd fault type		1	•	7002
U0-03	Frequency upon the 3rd fault		0.01Hz	•	7003
U0-04	Current upon the 3rd fault		0.01A	•	7004
U0-05	Bus voltage upon the 3rd fault		0.1V	•	7005
U0-06	DI status upon the 3rd fault		1	•	7006
U0-07	Output terminal status upon the 3rd fault		1	•	7007

Function Code	Parameter Name	Min. Unit	Property	Communication
U0-08	AC drive status upon the 3rd fault	1	•	7008
U0-09	Power-on time upon the 3rd fault	1min	•	7009
U0-10	Running time upon the 3rd fault	1min	•	700A
U0-13	Frequency upon the 2nd fault	0.01Hz	•	700D
U0-14	Current upon the 2nd fault	0.01A	•	700E
U0-15	Bus voltage upon the 2nd fault	0.1V	•	700F
U0-16	DI status upon the 2nd fault	1	•	7010
U0-17	Output terminal status upon the 2nd fault	1	•	7011
U0-18	AC drive status upon the 2nd fault	1	•	7012
U0-19	Power-on time upon the 2nd fault	1min	•	7013
U0-20	Running time upon the 2nd fault	1min	•	7014
U0-21	Reserved		•	7015
U0-22	Reserved		•	7016
U0-23	Frequency upon the 1st fault	0.01Hz	•	7017
U0-24	Current upon the 1st fault	0.01A	•	7018
U0-25	Bus voltage upon the 1st fault	0.1V	•	7019
U0-26	DI status upon the 1st fault	1	•	701A
U0-27	Output terminal status upon the 1st fault	1	•	701B
U0-28	AC drive status upon the 1st fault	1	•	701C
U0-29	Power-on time upon the 1st fault	1min	•	701D
U0-30	Running time upon the 1st fault	1min	•	701E
Group U1: Application Monitoring Parameters				
U1-00	Running frequency	0.01Hz	•	7100

Function Code	Parameter Name	Min. Unit	Property	Communication
U1-01	Setting frequency	0.01Hz	•	7101
U1-02	Bus voltage	0.1V	•	7102
U1-03	Output voltage	1v	•	7103
U1-04	Output current	0.1A	•	7104
U1-05	Output power	0.1kW	•	7105
U1-06	DI input status, hexadecimal	1	•	7106
U1-07	DO output status, hexadecimal	1	•	7107
U1-08	AI1 voltage after correction	0.01V	•	7108
U1-09	AI2 voltage after correction	0.01V	•	7109
U1-10	PID setting, PID setting (percentage)×FA-05	1	•	710A
U1-11	PID feedback, PID feedback (percentage)×FA-05	1	•	710B
U1-12	Count value	1	•	710C
U1-13	Length value	1	•	710D
U1-14	Motor speed	1rpm	•	710E
U1-15	PLC stage	1	•	710F
U1-16	Input pulse frequency	0.01kHz	•	7110
U1-17	Feedback speed	0.1Hz	•	7111
U1-18	Remaining running time ofF7-38 setting	0.1min	•	7112
U1-19	AI1 voltage before correction	0.001v	•	7113
U1-20	AI2 voltage before correction	0.001v	•	7114
U1-21	HDI5 high speed pulse sampling linear speed	1m/min	•	7115
U1-22	Load speed display	1rpm	•	7116
U1-23	Current power-on time	1min	•	7117

Function Code	Parameter Name	Min. Unit	Property	Communication
U1-24	Current running time	0.1min	•	7118
U1-25	Pulse input frequency	1Hz	•	7119
U1-26	Communication setting value	0.01%	•	711A
U1-27	Main frequency X	0.01Hz	•	711B
U1-28	Auxiliary frequency Y	0.01Hz	•	711C
U1-29	Target torque	0.1%	•	711D
U1-30	Output torque	0.1%	•	711E
U1-31	Output torque	0.1%	•	711F
U1-32	Torque upper limit	0.1%	•	7120
U1-33	Target voltage upon V/F separation	1V	•	7121
U1-34	Output voltage upon V/F separation	1V	•	7122
U1-35	Reserved		•	7123
U1-36	Current motor number	1	•	7124
U1-37	AO1 target voltage	0.01V	•	7125
U1-38	AO2 target voltage	0.01V	•	7126
U1-39	AC drive running status: 0:Stop 1: Forward 2: Reverse 3: Fault	1	•	7127
U1-40	AC drive current fault	1	•	7128
U1-41	Agent remaining limited time	1h	•	7129
U1-42	AC input current	0.1A	•	712A
U1-43	PLC current stage remaining time	0.1	•	712B
U1-47	Accumulative running time 1 (Accumulative running time=U1-47+U1-48)	1h	•	712F
U1-48	Accumulative running time 2 (Accumulative running time=U1-47+U1-48)	1min	•	7130

CHAPTER 5 Fault Diagnosis and Countermeasures

5.1 Fault alarm and countermeasure

If a fault occurs during the operation of the system, the frequency converter will immediately protect the motor to stop output, and the contact of the corresponding frequency converter fault relay will act at the same time. The frequency converter panel displays the fault code. The fault types and common solutions corresponding to the fault code are detailed in the following table. The list in the table is for reference only. Please do not repair or modify it without authorization. please seek technical support from our company or product agents If the fault cannot be eliminated.

Table 5-1 Fault alarm and countermeasures

Fault name	Panel display	Fault cause and troubleshooting	Troubleshooting countermeasures
Inverter module protection	Err01	1. Is there any short circuit between phases or to ground at the motor connection terminals U, V, and W 2. Is the module overheated? 3. Whether the internal wiring of the inverter is loose 4. Whether the main control board, driver board or module are normal	1. Contact short-circuit 2. Are the fans and air ducts normal? 3. Connect all loose wires 4. Seek technical support
Overcurrent during acceleration	Err04	1. There is grounding or short circuit in the output circuit of the frequency converter 2. Incorrect motor parameters 3. Short acceleration time 4. V/F torque increase or inappropriate curve 5. Low input voltage 6. Start the rotating motor 7. Sudden load during acceleration 8. Small frequency converter selection	1. Troubleshoot peripheral faults 2. Check parameters and identify parameters 3. Increase acceleration time 4. Adjust V/F lifting torque or curve 5. Adjust the voltage to the normal range 6. Select speed tracking to start or wait for the motor Stop and restart 7. Cancel sudden load 8. Choose an inverter with a larger power level
Overcurrent during deceleration	Err05	1. There is grounding or short circuit in the output circuit of the frequency converter 2. Incorrect motor parameters 3. Short deceleration time 4. Low input voltage 5. Sudden load during deceleration 6. No braking unit and braking resistor 7. Large flux braking gain	1. Troubleshoot peripheral faults 2. Identify motor parameters 3. Increase deceleration time 4. Adjust the voltage to the normal range 5. Cancel sudden load 6. Install braking units and resistors 7. Reduce flux braking gain
Overcurrent in constant speed operation	Err06	1. There is grounding or short circuit in the output circuit of the frequency converter 2. Incorrect motor parameters 3. Low input voltage 4. Whether there is sudden load during operation 5. Small frequency converter selection	1. Troubleshoot peripheral faults 2. Check parameters and identify parameters 3. Adjust the voltage to the normal range 4. Cancel sudden load 5. Choose an inverter with a larger power level

Fault name	Panel display	Fault cause and troubleshooting	Troubleshooting countermeasures
Overvoltage during acceleration process	Err08	1. High input voltage 2. There is an external force driving the motor to run during the acceleration process 3. Short acceleration time 4. No braking unit and braking resistor 5. Incorrect motor parameters	1. Adjust the voltage to the normal range 2. Cancel additional power or install braking resistors 3. Increase acceleration time 4. Install braking unit and resistor 5. Check parameters and identify parameters
Overvoltage during deceleration	Err09	1. High input voltage 2. There is an external force driving the motor to run during the deceleration process 3. Short deceleration time 4. No braking unit and braking resistor	1. Adjust the voltage to the normal range 2. Cancel additional power or install braking resistors 3. Increase deceleration time 4. Install braking unit and resistor
Overvoltage in constant speed operation	Err10	1. High input voltage 2. There is an external force driving the motor to run during the acceleration process	1. Adjust the voltage to the normal range 2. Cancel additional power or install braking resistors
Undervoltage fault	Err12	1. Instantaneous power outage 2. The voltage at the input terminal of the frequency converter is not within the range required by the specification 3. Abnormal bus voltage 4. Rectifier bridge and buffer resistor are abnormal 5. Abnormal driver board 6. Control board abnormality	1. Reset fault 2. Adjust the voltage to the normal range 3. Seek technical support
Drive overload failure	Err13	1. Whether the load is too large or the motor is stuck 2. Small frequency converter selection	1. Reduce the load and check the motor and mechanical conditions 2. Choose an inverter with a larger power level
Motor overload fault	Err14	1. Whether the motor protection parameter F9-01 is set appropriately 2. Whether the load is too large or the motor is stuck 3. Small frequency converter selection	1. Set this parameter correctly 2. Reduce the load and check the motor and mechanical conditions 3. Choose an inverter with a larger power level
Drive overheating	Err15	1. High ambient temperature 2. Air duct blockage 3. Fan damage 4. Damaged module thermistor 5. Damaged inverter module	1. Reduce ambient temperature 2. Clean the air duct 3. Replace the fan 4. Replace the thermistor 5. Replace the inverter module
Software overcurrent	Err16	1. Is the parameter setting of F7-61 and F7-62 reasonable? 2. Whether the load is too large or the motor is stuck 3. Small frequency converter selection	1. The fault logic can be turned off through F9-21 = 0 if software overcurrent is not required 2. The overcurrent judgment value and judgment time of F7-61 and F7-62 can be appropriately increased 3. Reduce the load and check the motor and mechanical conditions 4. Choose a frequency converter with appropriate power

Fault name	Panel display	Fault cause and troubleshooting	Troubleshooting countermeasures
Current detection fault	Err17	1. Whether the internal wiring of the inverter is loose 2. Whether the current detection device is normal 3. Whether the main control board or driver board is normal	1. Check wiring 2. Seek technical support
Short-circuit fault to ground	Err20	Motor short-circuit to ground	Replace cables or motors
Tuning timeout fault	Err21	1. Tuning time> (acceleration time + deceleration time + 90 seconds) 2. Motor parameters not set correctly	1. Enter the correct motor parameters and self-learn again 2. Replace cables or motors 3. Seek technical support
Input phase loss fault	Err23	1. Abnormal three-phase input power supply 2. Abnormal driver board 3. Abnormal lightning protection board 4. Abnormal main control board	1. Check and troubleshoot problems in peripheral lines 2. Seek technical support
Output phase loss fault	Err24	1. The lead from the frequency converter to the motor is abnormal 2. The three-phase output of the frequency converter is unbalanced when the motor is operating 3. Abnormal driver board 4. Abnormal module	1. Troubleshoot peripheral faults 2. Check whether the three-phase winding of the motor is normal and troubleshoot 3. Seek technical support
Parameter read and write failure	Err25	EEPROM chip corruption	Replace the main control board
Communication failure	Err27	1. Whether the host computer works 2. Is the communication wiring normal? 3. Is the communication parameter F8 group correct?	1. Check the wiring of upper computer, etc. 2. Check the communication wiring 3. Check the parameters of F8 group
External fault	Err28	1. Input external normally open or normally closed fault signal through multi-function DI terminal	1. Fault reset
Excessive velocity deviation	Err29	1. The load is too heavy and the set acceleration time is too short 2. Unreasonable settings of fault detection parameters F9-31 and F9-32	1. Extend the set acceleration and deceleration time Reset F9-31, F9-32
User's defined fault 1	Err30	1. User-defined fault 1 signal input through multi-function terminal DI	1. Reset
User's defined fault 2	Err31	2. User-defined fault 2 signal input through multi-function terminal DI	1. Reset
PID feedback loss at runtime	Err32	1. The PID feedback value is less than the FA-13 set value	1. Check the feedback signal or reset FA-13
Fast current limiting	Err33	1. The load is too large or blocked rotation occurs 2. The set acceleration time is too short	1. Reduce the load or replace it with a higher power inverter 2. Appropriately extend the acceleration time
Load drop failure	Err34	1. The load drop detection conditions have reached. Refer to F9-28-F9-30 for specific use.	1. Reset or reset detection conditions

Fault name	Panel display	Fault cause and troubleshooting	Troubleshooting countermeasures
Input power failure	Err35	1. The input voltage is not within the specified range 2. Power on and off too frequently	1. Adjust the input voltage . Extend the power-up and power-down cycle
Parameter storage exception	Err37	Abnormal communication between DSP and EEPROM chips	1. Replace the main control board 2. Seek service from manufacturers
This run time arrives	Err39	1. The current running time of the frequency converter> F7-38 set value	1. Reset
Cumulative runtime arrived	Err40	1. The cumulative running time reaches the set value F7-20	1. Use the parameter initialization function 2 to clear the recording time or reset the cumulative running time
Switching motor in operation	Err42	Switching motors through terminals during operation	Switch the motor after stopping the machine
Motor overspeed	Err43	1 Over-speed detection time F9-34 is not set correctly. 2.When running in open-loop vector mode Missing motor	1. The control mode is changed to VF mode when no motor is connected. 2. Reset F9-34 parameter
Pole position detection failed	Err45	1 Pole position detection failed	1. F3-27 changed to 0 2. Contact manufacturer's technical support
Master-slave control communication dropped	Err46	1. The master is not set but the slave is set 2. Abnormal communication line or incorrect communication parameters	1. Set the host and reset the fault 2. Check the communication line and communication parameter group F8

5.2 Common faults and their treatment methods

The following faults may be encountered during the use of the frequency converter. Please refer to the following methods for simple fault analysis.

Table 5-2 Common faults and their treatment methods

No.	Fault phenomenon	Possible cause	Solutions
1	No display when power-on	1. Grid voltage is absent or too low 2. Switching power supply failure on the inverter drive board 3. Rectifier bridge damage 4. The inverter buffer resistor is damaged 5. Control panel and keyboard failure 6. The connection between the control board, the driver board and the keyboard is disconnected	1. Check the input power 2. Check the bus voltage 3. Reseat the keyboard and 30-core cable 4. Seek service from manufacturers
2	"Err20" alarm displayed after power-on	1. Short circuit of motor or output line to ground 2. The frequency converter is damaged	1. Use a shake meter to measure the insulation of the motor and output line 2. Seek service from manufacturers

3	Frequent reports of Err15 (module overheating) faults	1. High carrier frequency setting . Damaged fan or blocked air duct 3. Damage to internal components of the frequency converter (thermocouple or others)	1. Reduce carrier frequency (F0-26) 2. Replace fans and clean air ducts 3. Seek service from manufacturers
4	The motor does not rotate after the inverter is running	1. Motor and motor wire 2. The frequency converter parameter setting is wrong (motor parameters) 3. The wiring contact between the drive board and the control board is poor 4. Driver board failure	1. Reconfirm the connection between the inverter and the motor 2. Replace the motor or remove mechanical faults 3. Check and reset motor parameters
5	DI terminal failure	1. Parameter setting error 2. External signal error 3. The position of the DI dial switch is wrong 4. Control board failure	1. Check and reset the related parameters of F5 group 2. Reconnect the external signal line 3. Reconfirm whether the position of the DI dial switch is consistent with the wiring method 4. Seek service from manufacturers
6	Frequency converter frequently reports overcurrent and overvoltage faults	1. The motor parameter setting is incorrect 2. Inappropriate acceleration and deceleration time 3. Load fluctuation	1. Reset motor parameters or perform motor tuning 2. Set appropriate acceleration and deceleration time 3. Seek service from manufacturers

5.3 Common Faults of Synchronous Motor and Their Treatment Methods

5.3.1 Motor with heavy-load start

If the motor cannot start normally under load, you can try the following operations:

1) Increase the upper limit of torque current (F3-21)

When the load is larger than the torque output of the inverter, the inverter will be in the blocking state, and then F3-21 can be increased appropriately. 2) Increase the speed PI adjustment parameter, modify the resistance value or static identification to correct the motor resistance.

Motor resistance parameters (F4-17) will significantly affect the load capacity of the motor at low speeds. A resistance parameter (F4-17) that exceeds the actual value of the resistance by too much (e.g. 200% of the actual value of the resistance) may cause the motor to reverse at a low speed at the upper torque limit current.. When the resistance parameter (F4-17) is too far below the actual value of the resistance (e.g. 50% of the actual value of the resistance), it may cause the motor to run in a stepping mode or to stop for a certain period of time. Increasing the speed P value F3-04 at low speeds and decreasing the speed loop integration time F3-05 may ameliorate the problem of too small a resistance parameter.

5.3.2 Adjustment of the speed ring PI parameters (normally not necessary)

1) In general, speed PI Adjusting the proportional coefficient too much will cause high-frequency oscillation

of speed, and mechanical vibration or electromagnetic noise will be significantly increased; If the proportional factor is too small, the integration time is too small or the load inertia is too large, the speed will oscillate at low frequency, and the speed overshoot will be obvious. Overvoltage may occur if there are no discharge measures.

2) If the speed PI parameter has to be adjusted, first increase the integration time, increase the ratio if the speed does not oscillate, and then decrease the integration time if the effect is not satisfactory. Generally, the larger the inertia of the system, the smaller the integration time and the larger the proportional coefficient. If the velocity filter coefficient is increased, the integration time should be increased, and the proportion can be appropriately increased.

Note: Transmission system inertia is equal to motor inertia plus load inertia. The inertia of a motor is proportional to the mass of the motor and the square of the motor diameter; The transmission load inertia is proportional to the load mass and the square of the diameter of the transmission wheel; If there is a deceleration or speed-up device, the inertia is proportional to the speed-up ratio and inversely proportional to the reduction ratio.

For large inertia loads, if you need a fast speed response, you need to reduce the integration time, but it is easy to cause speed overshooting, resulting in overvoltage of the frequency converter, and you need to have a discharge device to discharge.The integration time can be increased if there is no discharge device.

5.3.3 Adjustment of the current loop PI parameters (not normally required)

Under normal circumstances, increasing the proportional coefficient and integral coefficient will speed up the current response speed, but if it is too large, it will cause speed oscillation (specifically, the motor does not rotate, or rotates forward and backward, and emits high-frequency electromagnetic noise at the same time). If it needs to be adjusted, Adjust the proportional coefficient first, and then adjust the integral coefficient if the effect is not satisfactory. The current loop PI parameters are related to the motor stator resistance, inductance, carrier frequency of the system and the current sampling filtering time. In the case of a constant carrier frequency of the system, the proportionality coefficient is proportional to the inductance and the integration coefficient is proportional to the resistance, so the direction of the adjustment of this parameter can be roughly determined by the identified parameters.

5.3.4 Small inductor motor

For servo motors or other low inductance motors, it is recommended that the inductance of each phase of the stator should meet the following condition

[H]> : $L > \frac{5*10^{-3}*V_{dc}}{I_N}$, V_{dc} nverter bus voltage; I_N Motor rated current.If the motor inductance is too small the motor current ripple will be large.When the current is high, the frequency converter will enter a wave by wave current limiting state due to ripple current. The maximum value limit for F3-21 in the program is $\frac{150*I_{in}}{I_{MN}}$, I_{IN} is the rated current of the frequency converter, I_{MN} is the set motor current rating.needs to be reduced according to the actual situation.

The torque upper limit is set to the value of F3-21. The larger the current ripple, the smaller F3-21 should be, which may reach 110 * I IN.

When running at low current and high speed, the current regulation may be too slow (specifically manifested as the current of the motor running at high speed being significantly larger than the actual required current, and the current fluctuating significantly). It is necessary to increase the current PI ratio parameter.Adding too much will sometimes cause the current to lose control, and the frequency converter may also enter a wave-by-wave current limiting state (it will happen at low speeds, which is manifested in the fact that the motor does not rotate, or rotates forward and backward, and emits high-frequency electromagnetic noise at the same time).

Appendix A Modbus communication protocol

The frequency converter provides RS232/RS485 communication interface and supports Modbus communication protocol. Users can realize centralized control through computer or PLC, set the inverter running command, modify or read the function code parameters, and read the working status and fault information of the inverter through this communication protocol.

1. Content of the agreement

The serial communication protocol defines the content and format of information transmitted in serial communication. These include: host polling (or broadcast) formats; The coding method of the host computer includes: the function code of the required action, transmission data and error check, etc. The response of the slave machine also adopts the same structure, including: action confirmation, return data and error check, etc. If the slave makes an error when receiving the information, or fails to complete the action required by the master, it will organize a fault message to be fed back to the master as a response.

2. Application method

The frequency converter is connected to a "single master and multi-slave" PC/PLC control network with RS232/RS485 bus.

3. Bus structure

(1) Interface mode with RS232/RS485 hardware interface

(2) Transmission mode

Asynchronous serial and half-duplex transmission mode. At the same time, only one of the master and slave can send data and the other can only receive data. In the process of serial asynchronous communication, data is sent frame by frame in the form of messages.

(3) Topological structure

Single master multi-slave system. The setting range of the slave address is 1 to 247, and 0 is the broadcast communication address. Slave addresses in the network must be unique.

4. Agreement description

The frequency converter communication protocol is an asynchronous serial master-slave Modbus communication protocol. Only one device (host) in the network can establish the protocol (called "query/command"), and other devices (slaves) can only respond to the host's "query/command" by providing data, or make corresponding actions according to the host's "query/command". The master here refers to a personal computer (PC), industrial control equipment or programmable logic controller (PLC), etc., and the slave refers to a frequency converter. The master can communicate with a certain slave alone, or publish broadcast information to all lower slaves. For the "query/command" of the host accessed separately, the slave must return a message (called a response). For the broadcast information sent by the host, the slave does not need to feed back and respond to the host.

5. Communication frame structure

The Modbus protocol communication data format of the frequency converter is as follows.

Using RTU mode, message transmission should start with a pause interval of at least 3.5 characters. This is the easiest to achieve with various character times at network baud rates (as shown in T1-T2-T3-T4 in the figure below). The first domain transferred is the device address. The available transmission characters are hexadecimal 0... 9, A...F。

The network device continuously detects the network bus, including during pause intervals. When the first field (address field) is received, each device decodes to determine whether to send it to its own. A pause of at least 3.5 characters marks the end of the message after the last transmitted character. A new message can start after this pause.

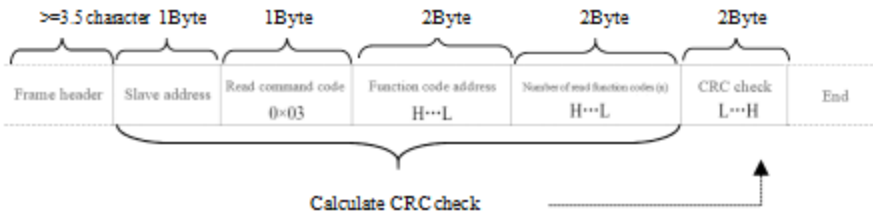
The entire message frame must be transmitted as a continuous stream. If there is a pause of more than 1.5 characters before the frame is completed, the receiving device will refresh the incomplete message and assume that the next byte is the address field of a new message. Likewise, if a new message starts after the previous message in less than 3.5 characters, the receiving device will consider it a continuation of the previous message. This will lead to an error because the value in the last CRC field cannot be correct.

RTU frame format:

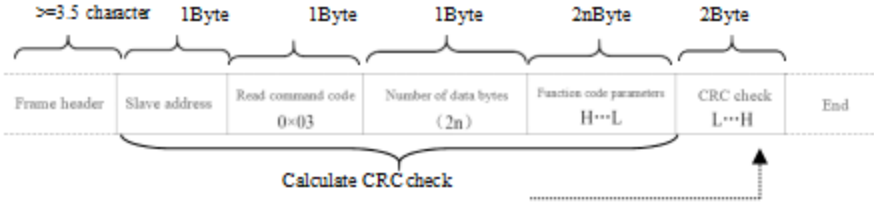
<table>
<tr><td>Frame header START</td><td>3.5 character time</td></tr>
<tr><td>Slave Address ADR</td><td>Mailing address: 1 ~ 247 (set by F8-02)</td></tr>
<tr><td>Command code CMD</td><td>03: Read slave parameters 06: Write slave parameter</td></tr>
<tr><td>DATA Content DATA (N-1)</td><td rowspan="4">Contents of information:
Function code parameter address, number of function code parameters, function code parameter value, etc.</td></tr>
<tr><td>DATA Content DATA (N-2)</td></tr>
<tr><td>……</td></tr>
<tr><td>Data content DATA0</td></tr>
<tr><td>CRC CHK Low position</td><td rowspan="2">Test value: CRC16 check value. When transmitting, the low byte comes first and the high byte comes last. The calculation method is detailed in the description of CRC verification in this section.</td></tr>
<tr><td>CRC CHK High position</td></tr>
<tr><td>END</td><td>3.5 character time</td></tr>
</table>

Command instruction (CMD) and data description (DATA)

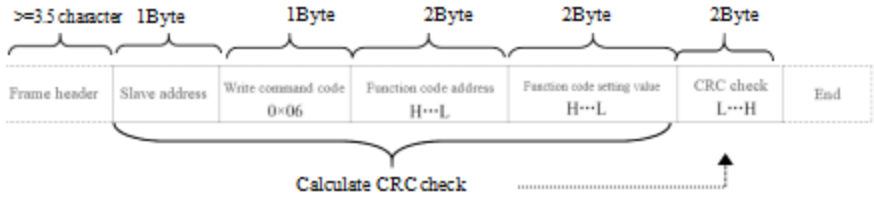
Command code: 03H, read N characters (Word), and it can read up to 12 characters and N=1-12. The specific format is as follows: The host reads the command frame



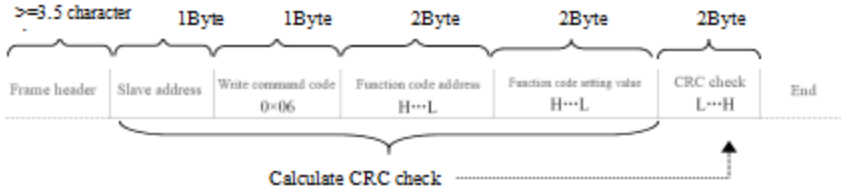
Machine-readable response frame



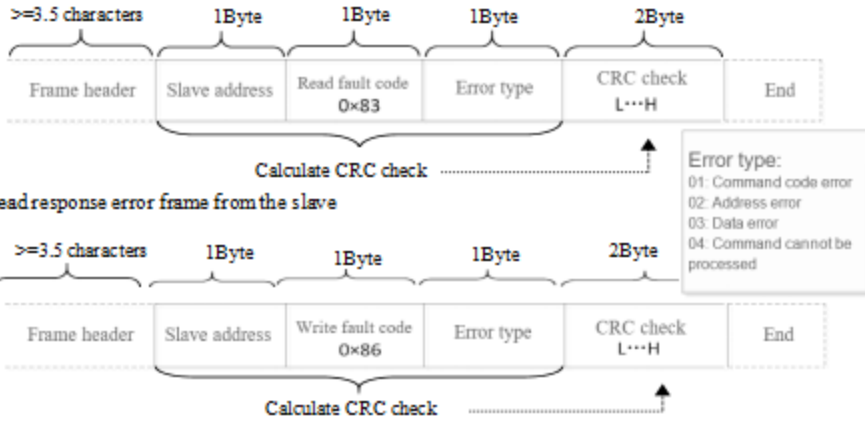
Host writing command frame



Slave writing and response frame



It will reply with an error frame if the slave detects an error in the communication frame, or the read and write are unsuccessful due to other reasons. Read response error frame from the slave:



Example: Read the contents of 2 consecutive parameters starting from F0-03 of the inverter whose slave address F8-02 is 01. The host sends the frame as shown in the figure:

Frame header >= 3.5 characters	Slave address	Read command code	Function code address	Number of read function codes	CRC check	End
	0x01	0x03	0xF0 0x03	0x00 0x02	0x07 0x0B	

The slave reply frame is shown in the figure:

Frame header >= 3.5 characters	Slave address	Read command code	Number of data bytes	F0_03 Parameter values	F0_04 Parameter values	CRC check	End
	0x01	0x03	0x04	0x00 0x00	0x00 0x00	0xFA 0x33	

Note: The reason for the failure will be replied if the write command fails.

6. Verification method (CRC verification method)

CRC (Cyclical Redundancy Check) uses an RTU frame format, and the message includes an error detection domain based on the CRC method. The CRC domain detects the content of the entire message. The CRC field is two bytes and contains a 16-bit binary value. It is calculated by the transmitting device and added to the message. The receiving device recalculates the CRC of the received message and compares it with the value in the received CRC field. If the two CRC values are not equal, it indicates that there is an error in transmission.

CRC is first stored in 0xFFFF, and then a procedure is called to process the consecutive 8-bit bytes in the message with the value in the current register. Only 8 bits of data in each character are valid for CRC, and both the start and stop bits and the parity bits are invalid.

Each 8-bit character is individually exclusively OR (XOR) with the register contents during the CRC generation process, and the result is moved towards the least significant bit, and the most significant bit is filled with 0. The LSB is extracted for detection. If the LSB is 1, the register alone is XOR with the preset value. If the LSB is 0, it is not performed. The whole process should be repeated 8 times. After the last bit (8th bit) is completed, the next 8-bit byte is separately XOR with the current value of the register. The value in the final register is the CRC value after all bytes in the message have been executed.

When a CRC is added to a message, the low byte is added first, followed by the high byte. The simple CRC function is as follows:

```
unsigned int crc_chk_value （unsigned char *data_value,unsigned char length）{ unsigned int crc_value=0xFFFF;
                int I;
                while (length--) {crc_value^=*data_value++;
                for (i=0;i<8;i++) {
                        if (crc_value&0x0001) {
                                crc_value= (crc_value>>1) ^0xa001;
                        }else{
                                crc_value=crc_value>>1;
                        }
                }
                }
                return (crc_value) ;
        }
```

7. Address definition of communication parameters

This part is the content of communication, which is used to control the operation of the frequency converter, the status of the frequency converter and the setting of related parameters. Read and write function code parameters (some function codes cannot be changed and are only used by manufacturers or monitored): Function code parameter address marking rules:

The function code group number and label number are used as parameter address representation rules:

Upper byte: F0 to FF (group F), H0 to HF (group H), L0 to LF (group L), n0 to nF (group N), P0 to PF (group P), 70 to 7F (group U) Lower bytes: 00 to FF

For example: F0-11, the address is represented as F00B; Note:

FF group: neither can read nor change parameters; Group U: it can only be read, but parameters cannot be changed.

Some parameters cannot be changed when the frequency converter is running; Some parameters cannot be changed regardless of the state of the frequency converter; When changing the function code parameters, pay attention to the range, unit and related description of the parameters.

Function code group number	Communication access address	Communication modification of function code address in RAM (write only)
F0 ~ FE group	0xF000 ~ 0xFEFF	0x0000 ~ 0x0EFF
H0 ~ HF group	0xA000 ~ 0xAFFF	0x4000 ~ 0x4FFF
L0 ~ LF group	0xB000 ~ 0xBFFF	0x5000 ~ 0x5FFF
n0 ~ nF group	0xC000 ~ 0xCFFF	0x6000 ~ 0x6FFF
U0, U1 group	0x70xx, 0x71 xx	

Note that since EEPROM is frequently stored, the service life of EEPROM will be reduced. Therefore, some function codes do not need to be stored in communication mode, as long as the value in RAM is changed.

If it is an F group of parameters, to realize this function, it can be realized by changing the high bit F of the function code address to 0. If it is an H group of parameters, to realize this function, it can be realized by changing the high A of the function code address to 4. The corresponding function code address is represented as follows:

High byte: 00 to 0F (Group F), 40 to 4F (Group A) Low byte: 00 to FF as:

The function code F0-11 is not stored in the EEPROM, and the address is denoted as 000B;

This address indicates that it can only write to RAM and cannot read. When reading, it is an invalid address.

Shutdown/operation parameters selection:

Address	Parameter description	Address	Parameter description
0x1000/ 0x9000	1000:*Communication setpoint (-10000 ~ 10000) (decimal) (unit:0.01%), readable and writable	0x1014	AI1Pre-correction voltage (Unit: 0.001 V) Read-only
	9000:Communication setting frequency:0Hz~F0-14(The unit is:0.01 Hz), readable and writable	0x1015	AI2 Pre-correction voltage (Unit:0.001 V) Read-only
0x1001	Set frequency(Unit:0.01 Hz), read-only	0x1016	Actual linear velocity(Unit:1 m/min), read-only
0x1002	Operating frequency(Unit:0.01 Hz), read-only	0x1017	Load speed(Unit: customized, refer to F7-31 for using), read-only
0x1003	Bus voltage(Unit:0.1 V), read-only	0x1018	Current power-on time(Unit:1 min), read-only
0x1004	Output voltage(Unit:0.1 V), read-only	0x1019	Current running time (unit: 0.1min) read-only
0x1005	Output current(Unit:0.1 A), read-only	0x101A	Input pulse frequency(Units: 1 Hz), read-only
0x1006	Output power(Unit:0.1 kW), read-only	0x101B	Main frequency X display (unit: 0.01Hz), read-only
0x1007	DI input flag(Unit:1), read-only	0x101C	Auxiliary frequency Y display (unit: 0.01Hz), read-only
0x1008	DO output flag(Unit:1), read-only	0x101D	Target torque(Unit:0.1%), the rated torque of the motor is 100%, read-only
0x1009	PID setting(Unit:1), read-only	0x101E	Output torque(Unit:0.1%), the rated torque of the motor is 100%, read-only
0x100A	PID feedback (unit: 1) , read-only	0x101F	Output torque(Unit:0.1%), take the rated current of the inverter as 100%, read-only
0x100B	AI1Voltage(Unit:0.01 V), read-only	0x1020	Upper torque limit(Unit:0.1%, take the rated current of the inverter as 100%, read-only
0x100C	AI2Voltage(Unit:0.01 V), read-only	0x1021	VF separation target voltage(Unit:1V), read-only
0x100D	AO1 output voltage(Unit:0.01 V)ReadOnly	0x1022	VF separate output voltage(Unit:1V), read-only
0x100E	PLC procedure(Unit:1), read-only	0x1023	Reserved and read-only
0x100F	Rotational speed(Unit:1RPM), read-only	0x1024	Motor1\2Indicate(Unit:1), read-only
0x1010	Count value input (unit: 1), read-only	0x1025	Length value input(Unit:1),read-only
0x1011	Input pulse frequency(Unit:0.01 kHz), read-only	0x1026	AO2 output voltage(Unit:0.01 V), read-only
0x1012	Feedback speed(Unit:0.1 Hz), read-only	0x1027	Frequency converter status(Unit:1), read-only
0x1013	Remaining runtime(Unit:0.1 min), read-only	0x1028	Current failure(Unit:1), read-only

Example 1: Read the running frequency of the first device: 0x01 0x03 0x10 0x02 0x00 0x01 0x21 0x0A 0x10 0x02

(1002) Operating frequency address, 0x00 0x01 (0001) for one data

0x21 0x0A (210A) CRC check value

Example 2: Read the bus voltage, output voltage, and output current of the first device at the same time: 0x01 0x03 0x10 0x03 0x00 0x03 CRC check value, the data meaning is similar to Example 1.

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

For the data of the frequency dimension, the percentage is a percentage of the relative maximum frequency (F0-14); For the data of the torque dimension, the percentages are F3-21, F3-23, H3-21, H3-23.

Note: The D0 output terminal needs to select the 16 (Communication control) function.
The AO output needs to select the 7 (communication control output) function.

Type	Command address	Command contents
Control command input (write-only)	0x2000	0001: Forward running 0002: Reverse running 0003: Forward jogging 0004: Reverse jogging 0005: free shutdown 0006: deceleration shutdown 0007: Fault reset 0008: Fault reset (fault reset can only be made in communication control mode)
Status read (Read-only)	0x3000	0001: Forward running 0002: Reverse running 0003: Shutdown
Digital output terminal control (write-only)	0x2001	BIT0: RELAY1 output control BIT1: DO1 output control BIT2: RELAY2 output control
Analog output AO1 control (write-only)	0x2002	0 to 7FFF indicates 0%to 100%.
Analog output AO2 control (write-only)	0x2003	0 to 7FFF indicates 0%to 100%.
Frequency converter fault address	0x8000	0000: No failure 0001: Reserved 0002: Reserved 0003: Reserved 0004: Accelerated overcurrent 0005: Deceleration overcurrent 0006: Constant speed overcurrent 0007: Stop overcurrent 0008: Accelerated overvoltage 0009: Deceleration overvoltage 000A: Constant speed overvoltag e000B: Stop overvoltage 000C: Undervoltage fault 000D: Inverter overload 000E: Motor overload 000F: Module overheating 0010: Reserved 0011: Current detection fault 0012: Reserved 0013: Reserved 0014: Motor to ground short circuit fault 0015: Motor tuning failure 0016: Reserved 0017: Input phase missing 0018:Output phase loss 0019: EEPROM read-write exception 001A: Password input more than number of times 001B: Communication exception 001C: External fault 001D: Excessive velocity deviation 001E: User's defined fault1 001F: User's defined fault2 0020: Loss of PID feedback at runtime 0021: Hardware current limit failure 0022: Dropload 0023: Buffer resistor overload fault 0024: Contactor abnormality 0025: Agent run time reached 0026: Motor overtemperature (reserved)0027: Current runtime reached 0028: cumulative runtime reached 0029: Power-on time reached 002A: Switching motor failure during operation 002B: Motor overspeed 002C: Reserved 002D: Reserved 002E: Reserved 002F: Point-to-slave failure

Return address when communication fails: read fault 83XX and write fault 86XX.

Frequency converter model	Input voltage	Input current (A)	Output current (A)	Adapted motor (kW)
A750-4R0G-43A		10.5	9.0	4.0
A750-5R5G-43A		14.6	13.0	5.5

Technical specifications

Items		Specifications
	DC braking	DC braking frequency: 0.0Hz~maximum frequency, braking time: 0.0~36.0 seconds, braking current value: 0.0%~100.0%
	Jog control	Jog frequency range:0.00 Hz~50.00 Hz; Jog acceleration and deceleration time:0.0 s~3000.0 s
	Simple PLC, multi-speed operation	Up to 16 speeds via built-in PLC or control terminals
	Built-in PID	Closed-loop control system of process control can be conveniently realized
	Automatic voltage regulation (AVR)	Automatically keep the output voltage constant when the grid voltage changes
	Torque limitation and control	"Digger" feature, automatic torque limiting during operation to prevent frequent overcurrent trips; closed-loop vector mode for torque control

Items		Specifications
Primary control performance	Highest frequency	Vector control:0~600Hz VF Control:0~1200Hz
	Carrier frequency	1k~11kHz; The carrier frequency can be automatically adjusted according to the load characteristics.
	Input frequency resolution	Digital settings:0.01 Hz Analog settings: highest frequency × 0.1%
	Controlling method	Open-loop vector control (SVC) , V/F control
	Start torque	G-type machine: 0.5Hz/180% (open-loop vector control) P-type machine: 0.5Hz/120% (open-loop vector control)
	Speed regulation range	1: 200 (open-loop vector control)
	Steady-speed accuracy (speed control accuracy)	Open-loop vector control:≤±0.5%(Rated synchronous speed)
	Speed control stability	Open-loop vector control:≤±0.3%(Rated synchronous speed)
	Torque response	≤ 40 ms (Open-loop vector control)
	Overload capacity	G-type machine: 150% rated current for 60 seconds; 180% rated current for 5 seconds, P-type machine: 120% rated current for 60 seconds; 150% rated current for 5 seconds
	Torque boost	Automatic torque boost; Manual torque lift 0.1%~30.0%
	V/F curve	Three ways: linear; Multi-point type; Square-type V/F curve
	Acceleration and deceleration curve	Linear or S-shaped acceleration and deceleration methods; Four types of acceleration and deceleration times; Acceleration and deceleration time range 0.0 s~3000.0 s

Personalized functions	Power-on safety self-inspection of peripheral equipment	Power-on safety detection of peripheral devices such as grounding, short-circuiting, etc. can be realized
	Common DC bus function	It can realize the function of multiple frequency converters sharing DC bus
	JOG button	Programmable button: forward and reverse operation/Jog Run Function Selection
	Textile swing frequency control	Multiple triangular wave frequency control functions
	Fast current limiting function	Built-in fast current limiting algorithm reduces the probability of overcurrent reporting by the frequency converter and improves the anti-interference ability of the whole machine
	Timing control	Timing control function: set time range of 0h~65535h
	Keyboard extension cable standardization	Customers can extend the keyboard by using standard network cable themselves.
Run	Run the command channel	Three channels: operation panel given, control terminal given, serial communication port given. Can be switched in many ways
	Frequency source	There are a total of 10 frequency sources: digital given, analog voltage given, analog current given, pulse given, and serial port given. It can be switched in many ways
	Auxiliary frequency source	10 auxiliary frequency sources. It can flexibly realize auxiliary frequency fine-tuning and frequency synthesis
	Input terminal	Standard configuration includes 4 digital input terminals and 1 analog input terminal. All can be used for voltage or current input.

External dimensions