USFULL®

FU9000D Series

High Performance Inverter

User Manual

ZHEJIANG FULLWILL ELECTRIC CO., LTD.

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Thank you for purchasing the FU9000D Series AC Drive developed by Fullwill Electric!

It is a general-purpose and high-performance current vector AC drive technically upgraded from the FU9000D series.

It is mainly used for controlling and adjusting the speed and torque of three-phase AC synchronous motor. Using high-performance vector control technology, the FU9000D Series AC drive features high torque output at a low speed, excellent dynamic characteristics and superior overload capability.

It provides user-programmable features and background monitoring software and communication bus functions and supports multiple PG cards, delivering rich and powerful combined functions and stable performance. It can be used to drive multiple kinds of automated production equipment.

Announcement

♦To illustrate the details of the product, the illustrations in this manual sometimes show the state of the cover or safety cover removed. When using this product, be sure to install the casing or cover according to the regulations, and operate in accordance with the contents of the manual.

♦The illustrations in this manual are for illustration only and may be different from the products you ordered.

♦The company is committed to the continuous improvement of products, and product functions will be continuously upgraded. The information provided is subject to change without notice.

♦If you have any problems during use, please contact with us.

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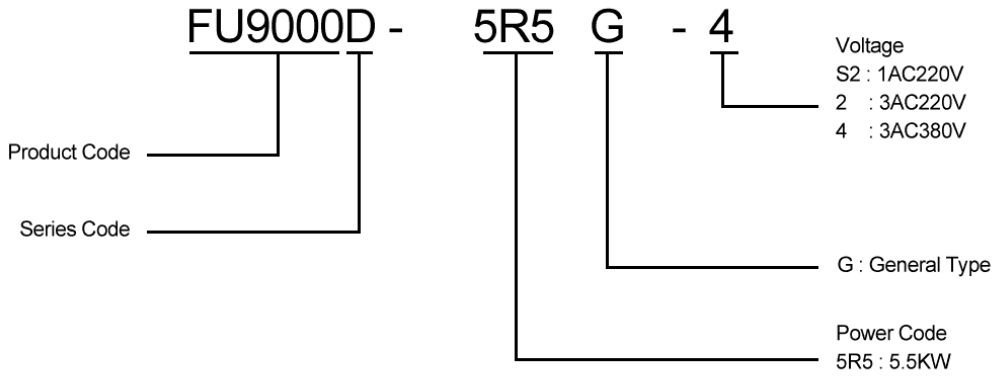
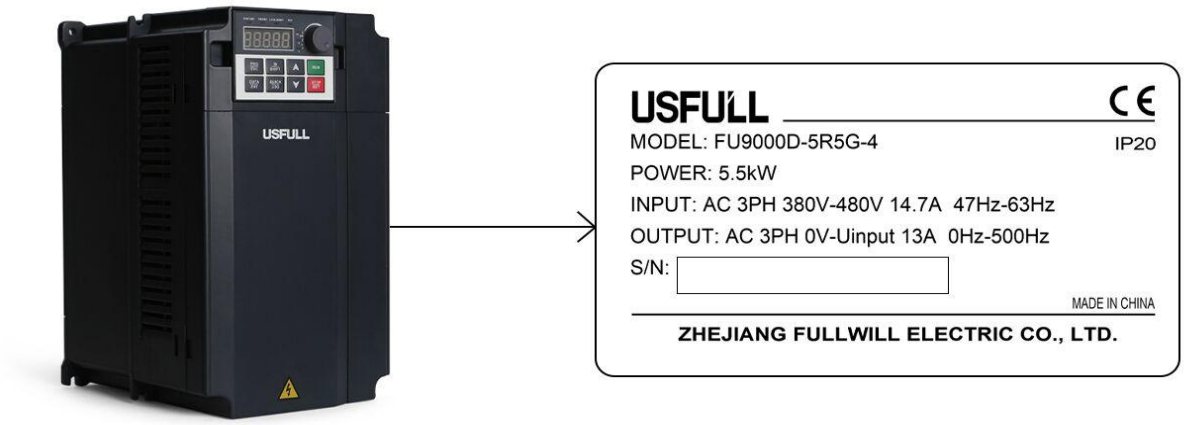
Chapter 1 Product Information

1.1 Designation Rules and Nameplate of the FU9000D

Figure 2-0 Designation Rules and Nameplate of the FU9000D





Chapter 2 Mechanical and Electrical Installation

2.1 Mechanical Installation

2.1.1 Installation Environment Requirements

Item	Requirements
Ambient temperature	-10℃ ~ 50℃
Heat dissipation	Install the AC drive on the surface of an incombustible object, and ensure that there is sufficient space around for heat dissipation. Install the AC drive vertically on the support using screws.
Mounting location	Free from direct sunlight, high humidity and condensation
	Free from corrosive, explosive and combustible gas
	Free from oil dirt, dust and metal powder
Vibration A	Less than 0.6 g Far away from the punching machine or the like
Protective enclosure	The FU9000D series AC drives of plastic housing are the whole unit built-in products operated through remote control and need to be installed in the final system.The final system must have the required fireproof cover, electrical protective cover and mechanical protective cover, and satisfy the regional laws & regulations and related IEC requirements.

2.1.2 Installation Clearance Requirements

The clearance that needs to be reserved varies with the power class of the FU9000D, as shown in the following figure.

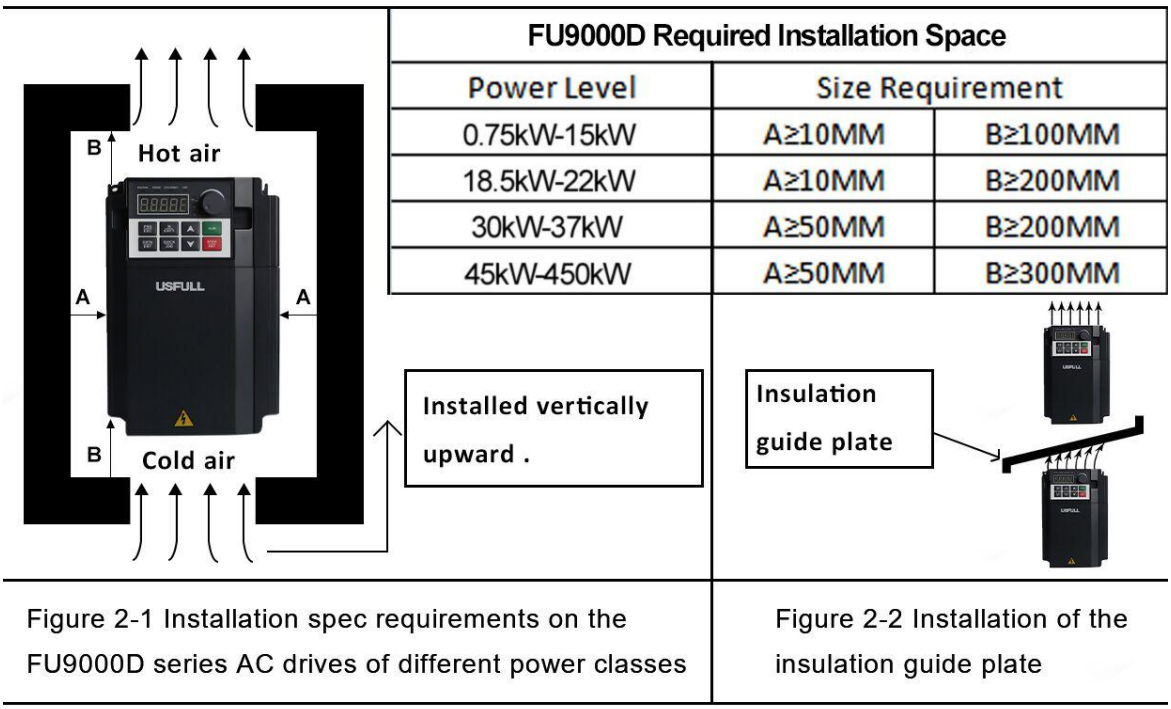


Figure 2-1 Installation spec requirements on the FU9000D series AC drives of different power classes

Figure 2-2 Installation of the insulation guide plate

If multiple AC drives are connected together, install them side by side. If one row of AC drives need to be installed above another row, install an insulation guide plate to prevent AC drives in the lower row from heating those in the upper row and causing faults.

2.2 Electrical Installation

2.2.1 Description of Main Circuit Terminals

Table 2-3 Description of main circuit terminals of AC drive

Terminal	Name	Description
R, S, T	Three-phase power supply input terminals	Connect the three-phase 380VAC power supply
R, T	Single-phase power supply input terminals	Connect the single-phase 220 VAC power supply.
(+), (-)	Positive and negative terminal of DC bus	Common DC bus input point
(+), PB	Connecting terminals of braking resistor	Connect the braking resistor for the AC drive
U, V, W	AC drive output terminals	Connect a three-phase motor.
PE	Grounding terminal	Must be grounded.

2.2.2 Wiring of AC Drive Main Circuit

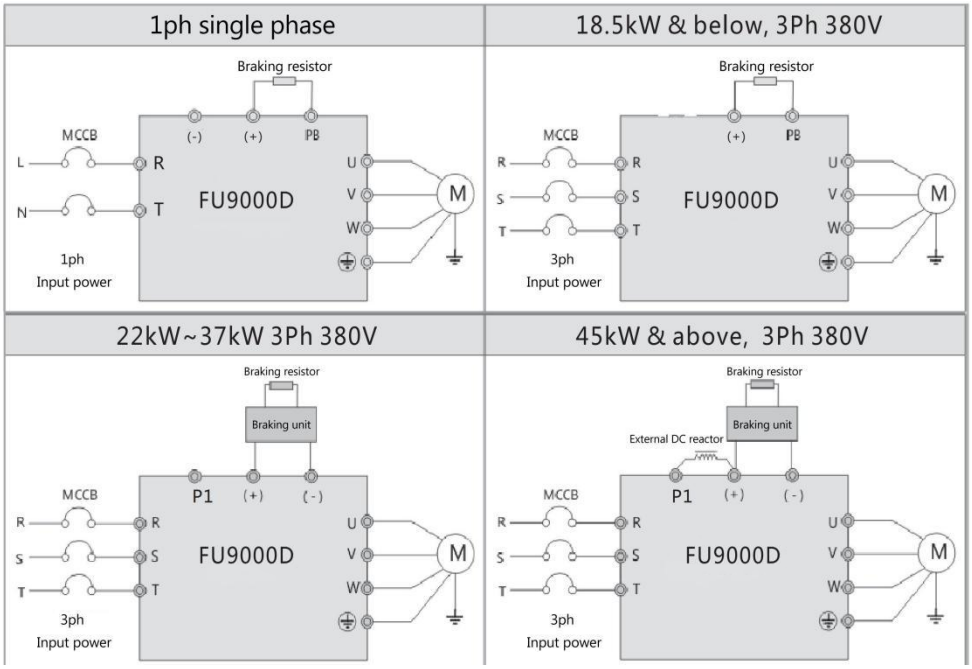


Table 2-6 Wiring of AC Drive Main Circuit

2.2.3 Description of Control Circuit Terminals

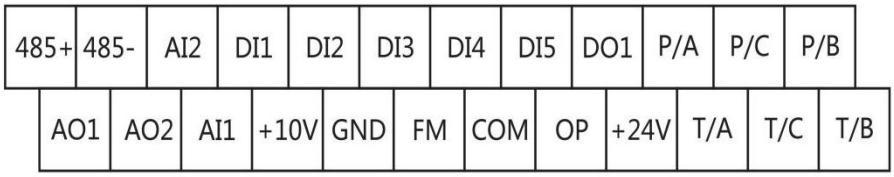


Figure 2-7 Terminal Arrangement of Control Circuit

Table 2-8 FU9000D Description of the use of control circuit terminals

Type	Terminal	Name	Function Description
Power supply	+10V-GND	External +10V power supply	Provide +10V power supply to external unit. Generally, it provides power supply to external potentiometer with resistance range of 1-5 kΩ. Max output current: 10 mA
	+24V-COM	External +24V power supply	Provide +24 V power supply to external unit Generally, it provides power supply to DI/DO terminals and external sensors. Max output current: 200 mA
	OP	External power input terminal	Factory default: connect with +24V. When using external signal to drive DI1 ~ DI5, OP need to connect with external power, disconnect with +24V terminal.
Analog input	AI1-GND AI2-GND	Analog input terminal	1, Input range: 0-10 V/4-20 mA, 2, AI1 decided by jumper J10 on the control board 3, AI2 decided by jumper J9 on the control board
Digital input	D11	Digital input 1	1, Switch input terminal, work with +24V & COM to form optical coupling isolation input 2, Input resistance: 2.4 kΩ 3, Voltage range for level input: 9-30 V
	D12	Digital input 2	
	D13	Digital input 3	
	D14	Digital input 4	
	D15	High speed pulse input	Besides the feature of DI1 ~ DI4, can be high speed pulse input channel. Max input frequency: 100kHz
Analog output	AO1-GND	Analog output1	Voltage or current output is decided by jumper J7. Output voltage range: 0-10 V Output current range: 0-20 mA
	AO2-GND	Analog output2	Output current range: 0-10 V
Digital ouput	FM- COM	High-speed pulse output	It is limited by P5-00 (FM terminal output mode selection). When used as high speed pulse output, max frequency 100kHz; can be used as integrated electric pole open circuit output as well.
Relay output	T/A-T/B	NC terminal	Contact driving capacity: 25Vac, 3A, cos ϕ = 0.4, 30Vdc, 1A
	T/A-T/C	NO terminal	
	P/A-P/B	NC terminal	Contact driving capacity: 25Vac, 3A, cos ϕ = 0.4, 30Vdc, 1A
	P/A-P/C	NO terminal	

2.2.4 Wiring of AC Drive Control Circuit

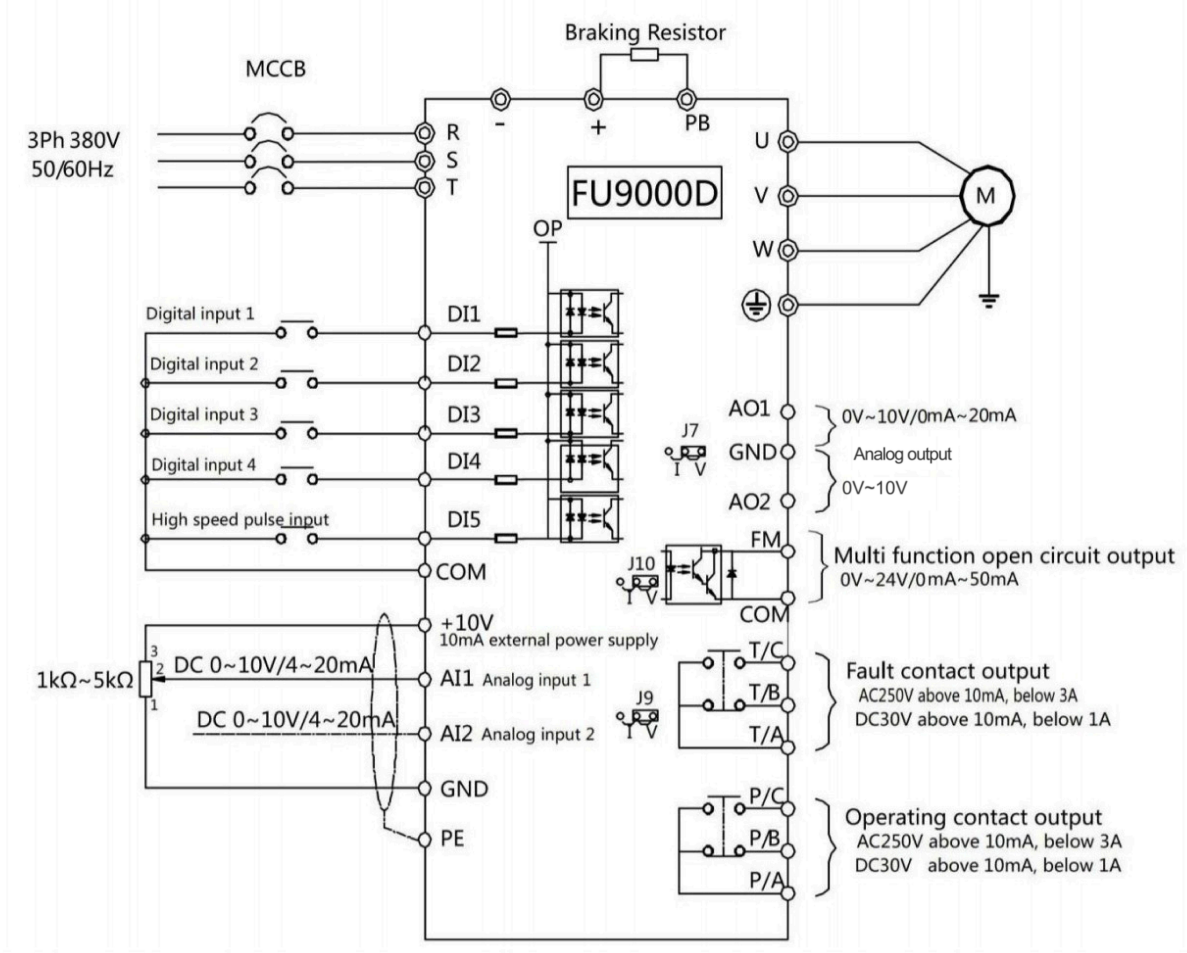


Figure 2-9 Wiring mode of the AC drive control circuit

• All FU9000D series AC drives have the same wiring mode. The figure here shows the wiring of 3 phase 380 VAC drive. ◎ indicates main circuit terminal, while ○ indicates control circuit terminal.

Description of Wiring of Signal Terminals

1) Wiring of Al terminals:

Weak analog voltage signals are easy to suffer external interference, and therefore the shielded cable must be used and the cable length must be less than 20 m, as shown in figure 2-10. In some situations where the analog signal is severely disturbed, a filter capacitor or ferrite core should be added to the analog signal source side, as shown in Figure 2-11.

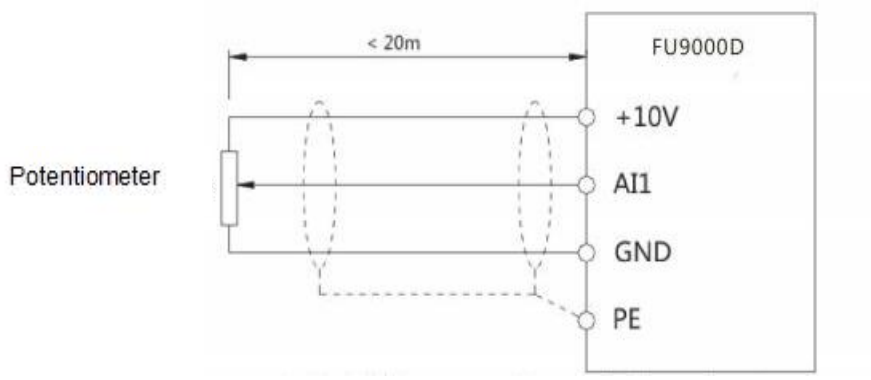


Figure 2-10 Wiring mode of AI terminals

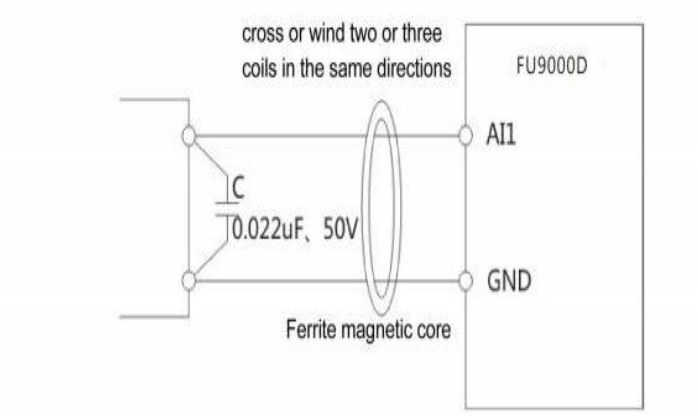


Figure 2-11 Install filter capacitor or ferrite magnetic core

2) Wiring of DI terminals:

Generally, select shielded cable no longer than 20 m. When active driving is adopted, necessary filtering measures shall be taken to prevent the interference to the power supply. It is recommended to use the contact control mode.

- A SINK wiring

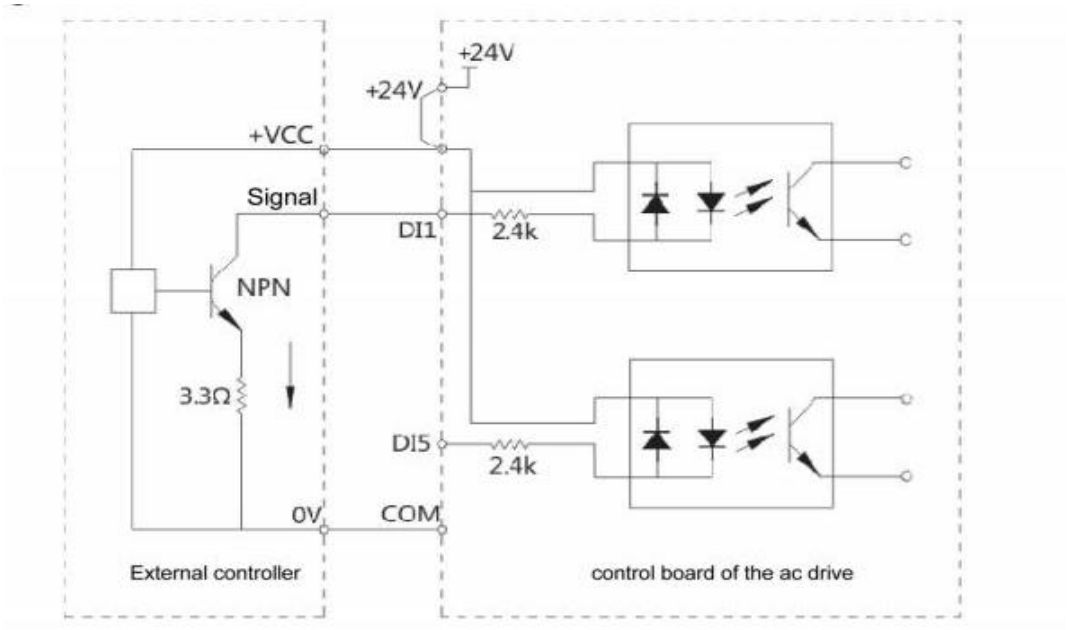


Figure 2-12 Wiring in SINK mode

Chapter 3 Operation Display and Application Examples

3.1 Operation Panel

You can modify the parameters, monitor the working status and start or stop the FU9000D by operating the operation panel, as shown in the following figure.

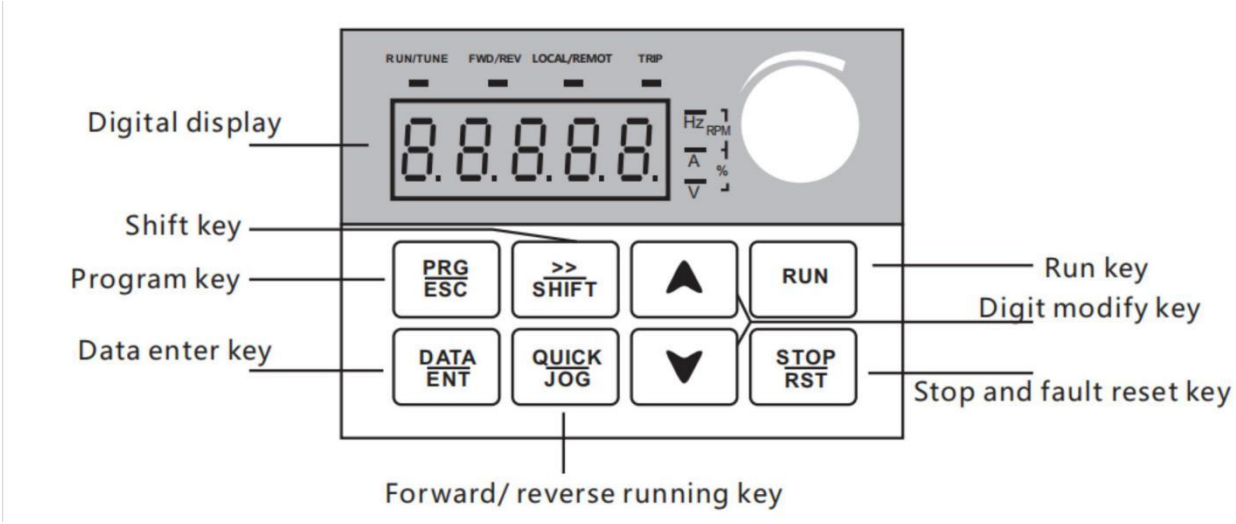


Figure 3-1 Diagram of the operation panel

Description of Indicators

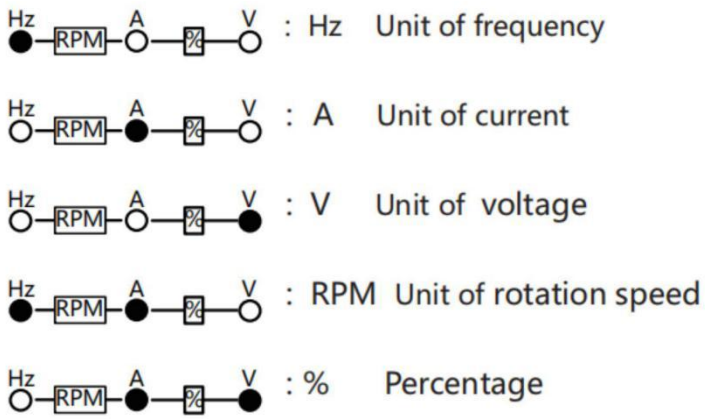
- RUN: ON indicates that the AC drive is in the running state, and OFF indicates that the AC drive is in the stop state.
- LOCAL: It indicates whether the AC drive is operated by means of operation panel, terminals or communication.

○ LOCAL : OFF	PANEL CONTROL MODE
● LOCAL : NORMAL ON	TERMINAL CONTROL MODE
◑ LOCAL : FLASH	COMMUNICATION CONTROL MODE

- REV: Indicates whether the AC drive is controlled by panel, terminal or communication.

Hz ○—RPM—A ○—%—V ○ :Unit Indicators

● means indicators on. ○ means indicators off.



Digital Display

The 5-digit LED display is able to display the set frequency, output frequency, monitoring data and fault codes.

Table 3-1 Description of keys on the operation panel

Key	Name	Function
PRG ESC	Programme	Enter or exit level 1 menu.
DATA ENT	Confirm	Enter the menu interfaces level by level, and confirm the parameter setting.
▲	Increase	Increase data or function code.
▼	Decrease	Decrease data or function code.
>> SHIFT	Shift	Select the displayed parameters in turn in the stop or running state, and select the digit to be modified when modifying parameters.
RUN	Run	Start the AC drive in the operation panel control mode.
STOP RST	Stop/ Reset	Stop the AC drive when it is in the running state; perform the reset operation when in the fault state. The functions of this key are restricted to P7-02.
QUICK JOG	Multifunction	Function selection according to P7-01, can be defined as command source or direction.
	Menu selection	Redirect among menu modes according to PP-03.

3.2 Viewing and Modifying Function Codes

The operation panel of the FU9000D adopts three-level menu.

The three-level menu consists of function code group (Level I), function code (Level II), and function code setting value (level III), as shown in the following figure.

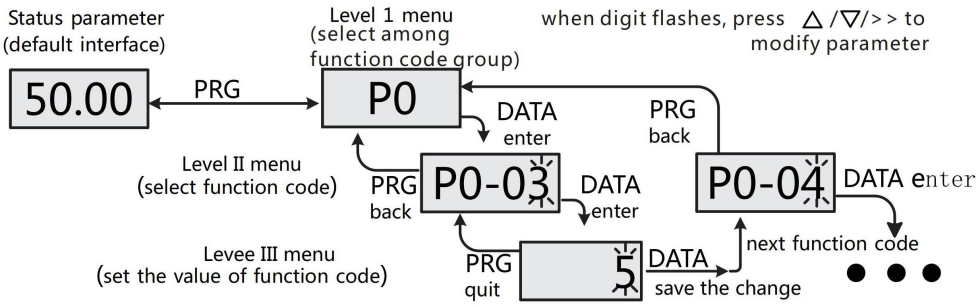


Figure 3-2 Three-level-menu operation chart

Note: You can return to Level II menu from Level III menu by pressing PRG key or DATA key.

• After press DATA key , the system saves the parameter setting, and goes back to Level II menu and shifts to the next function code.

• After press PRG key, the system directly returns to Level II menu and remains at the current function code, not save the parameter setting.

Example: change P3-02 from 10.00Hz to 15.00 Hz.

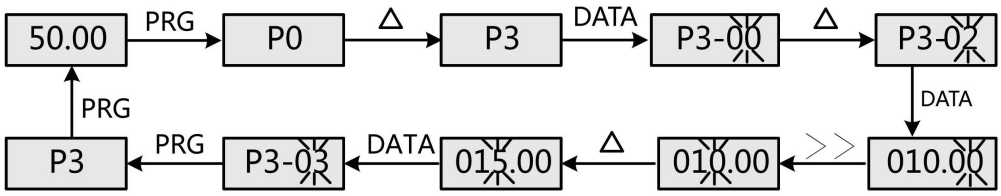


Figure 3-3 Example of changing the parameter value

In Level III menu, if the parameter has no flashing digit, the parameter cannot be modified. Maybe:

• The displayed function code is only readable, such as AC drive model, actually detected parameter and running record parameter.

• The displayed function code is only readable in running state, need to stop running and change parameter.

3.3 Structure of Function Codes

Function Code Group	Function	Description
P0-PP	Standard AC drive function code group	Compatible with FU9000D series function codes and adding some function codes.
D0 - DC	Advanced function code group	Multi-motor parameters, AI/AO correction, optimization control, PLC card extension function setting.

U0- U3	Running state function code group	Display of AC drive basic parameters

Table 3-2 Structure of Function Codes

In the function code display state, select the required function code pressing the key ▲ or ▼ , as shown in the following figure.

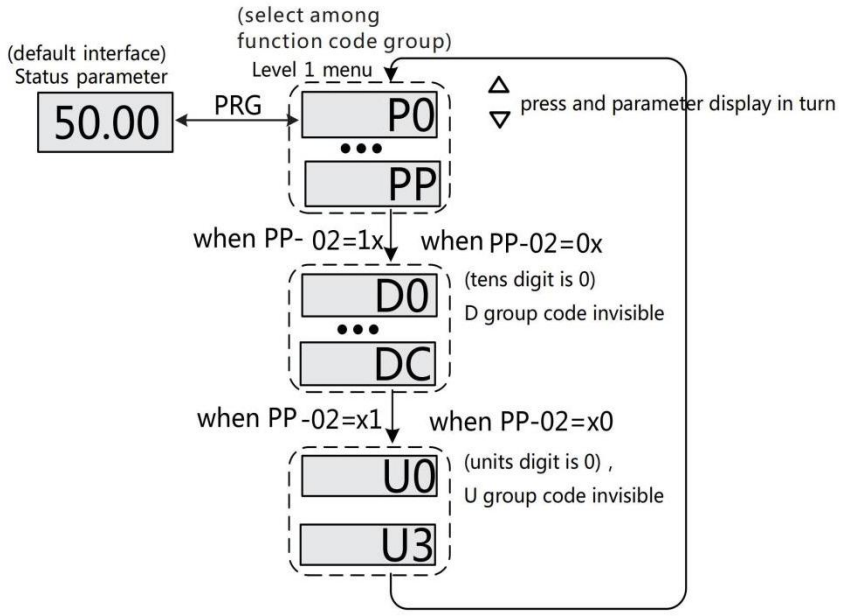


Figure 3-4 Quick View of Function Codes

PP-02 is used to determine whether group D and group U are displayed.

Function Code	Parameter Name	Parameter Name	Default
PP-02	Whether group D and group U are displayed	Unit's digit (group D display selection)	11
		0: Not display 1: Display	
		Unit's digit (group U display selection)	
		0: Not display 1: Display	

3.4 Definition and Operation of the Multifunction Key

You can define the function (command source switchover or rotation direction switchover) of the multifunction key in P7-01. For details, see the description of P7-01.

3.5 Viewing Status Parameters

In the stop or running state, you can press SHIFT key on the operation panel to display status parameters. Whether parameters are displayed is determined by the 16 bits of values converted from the values of P7-03, P7-04, and P7-05 in the binary format.

P7-05	LED display stop parameters	Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: DI input status Bit03: DO output status Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit06: AI3 voltage (V)	Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: PULSE setting frequency (kHz)	33

In running state, five running status parameters are displayed by default, and you can set whether other parameters are displayed by setting P7-03 and P7-04, as listed in the following table.

P7-03	LED display running parameters1	Bit00: Running frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (KW) Bit06: Output torque (%) Bit07: DI input status	Bit08: DO output status Bit09: AI1voltage (V) Bit10: AI2voltage (V) Bit11: AI3voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	1F
P7-04	LED display running parameters2	Bit00: PID feedback Bit01: PLC stage Bit02: Pulse setting frequency (kHz) Bit03: Running frequency 2(Hz) Bit04: Remaining running time Bit05: AI1 voltage before correction Bit06: AI2 voltage before correction Bit07: AI3 voltage before correction	Bit08: Linear speed Bit09: Current power on- time (Hour) Bit10: Current running time (Minute) Bit11: Pulse setting frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0

When the AC drive is powered on again after power failure, the parameters that are selected before power failure are displayed.

Select the required parameters by pressing. Set the values of the parameters by referring to the following example.

1. Determine the parameters to be displayed.

Running frequency, Bus voltage, Output voltage, Output current, Output frequency, Output torque, PID feedback, Encoder feedback speed

2. Set the binary data.

P7-03: 0000 0000 0111 1101B, P7-04: 0010 0000 0000 0001B

3. Convert the binary data to hexadecimal data:

P7-03: 007DH, P7-04: 2001H

The values displayed on the operation panel are respectively H.1043 and H.2001 respectively forP7-03 and P7-04.

Chapter 4 Function Parameter Table

If PP-00 is set to a non-zero number, parameter protection is enabled. You must enter the correct user password to enter the menu.

To cancel the password protection function, enter with password and set PP-00 to 0.

Group P and Group D are standard function parameters. Group U includes the monitoringfunction parameters.

The symbols in the function code table are described as follows:

"☆" : It is possible to modify the parameter with the drive in the stop and in the Run status.

"★" : It is not possible to modify the parameter with the drive in the Run status.

"●" : The parameter is the actual measured value and cannot be modified.

"*" : The parameter is a factory parameter and can be set only by the manufacturer.

4.1 Standard Parameter Table

Table4-1 Standard Parameter Table

Function Code	Name	Setting Range	Default	Change
Group P0: Standard Parameters				
P0-00	G/P type display	1: G (constant torque load) 2: P (fan an pump)	Model dependent	●
P0-01	Motor 1 control mode	0: SVC 1: FVC 2: V/F	0	★
P0-02	Command source selection	0: Operating panel 1: Terminal 2. Serial communication	0	☆
P0-03	Main frequency source X selection	0: Digital setting (power off, value deleted) 1: Digital setting (power off, value remained) 2: AI1 3: AI2 4: AI3(optional) 5: Pulse setting (DI5) 6: Multi-reference 7: Simple PLC 8: PID reference 9: Communication setting 10: keyboard with potentiometer (power off, value remained) 11: keyboard with potentiometer (power off, value deleted) 12: keyboard with potentiometer, change rate 1Hz	10	★
P0-04	Auxiliary frequency source Y selection	Same to P0-03	0	★
P0-05	Base value of range of auxiliary frequency reference for Main and auxiliary calculation	0: Relative to max frequency 1: Relative to main frequency reference	0	☆
P0-06	Range of auxiliary frequency reference for main and auxiliary calculation	0% ~ 150%	100%	☆

Function Code	Name	Setting Range	Default	Change
P0-07	Frequency source superposition selection	Units digit: Frequency reference selection 0: Main frequency reference 1: Main and auxiliary calculation (based on tens digit) 2: Switchover between main and auxiliary 3: Switchover between main and "main & auxiliary calculation" 4: Switchover between auxiliary and "main & auxiliary calculation" Tens digit: Main and auxiliary calculation formula 0: Main + auxiliary 1: Main - auxiliary 2: Max of (main, auxiliary) 3: Min of (main, auxiliary)	00	☆
P0-08	Preset frequency	0.00~max frequency (P0-10)	50.00Hz	☆
P0-09	Running direction	0: Run in the default direction 1: Run in the direction reverse to the default direction	0	☆
P0-10	Max. frequency	50.00 Hz to 500.00 Hz	50.00Hz	★
P0-11	Setting channel of frequency upper limit	0: Set by P0-12 1: AI1 2: AI2 3: AI3 4: Pulse reference 5: Communication reference	0	★
P0-12	Frequency reference upper limit	Frequency lower limit (P0-14) to max. frequency (P0-10)	50.00Hz	☆
P0-13	Frequency reference upper limit offset	0.00 Hz to max. frequency (P0-10)	0.00Hz	☆
P0-14	Frequency reference lower limit	0.00 Hz to frequency upper limit (P0-12)	0.00Hz	☆
P0-15	Carrier frequency	Model dependent	Model dependent	☆
P0-16	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆
P0-17	Acceleration time 1	0.00s-650.00s (P0-19 = 2) 0.0s-6500.0s (P0-19 = 1) 0s-65000s(P0-19 = 0)	Model dependent	☆
P0-18	Deceleration time 1	0.00s-650.00s (P0-19 = 2) 0.0s-6500.0s (P0-19 = 1) 0s-65000s(P0-19 = 0)	Model dependent	☆
P0-19	Acceleration/Decel-eration time unit	0: 1s 1: 0.1s 2: 0.01s	1	★
P0-21	Frequency offset of auxiliary frequency source for X and Y operation	0.00 Hz ~ max frequency (P0-10)	0.00Hz	☆
P0-22	Frequency reference resolution	1: 0.1 Hz 2: 0.01 Hz	2	★
P0-23	Retentive of digital setting frequency upon power failure	0: Not retentive 1: Retentive	0	☆

Function Code	Name	Setting Range	Default	Change
P0-24	Motor parameter group selection	0: Motor parameter group 1	0	★
P0-25	Acceleration/Deceleration time base frequency	0: Max frequency (P0-10) 1: Set frequency 2:100 Hz	0	★
P0-26	Base frequency for UP/ DOWN modification during running	0: Running frequency 1: Set frequency	0	★
P0-27	Binding command source to frequency source	Units digit: Binding operation panel command to frequency source 0: No binding 1: Frequency source by digital setting 2: AI1 3: AI2 4: AI3 5: Pulse setting (DI5) 6: Multi-reference 7: Simple PLC 8: PID 9: Communication setting Tens digit: Binding terminal command to frequency source Hundreds digit: Binding communication command to frequency source	0000	☆
P0-28	Communication protocol	0: MODBUS protocol	0	☆
Group P1: Motor 1 Parameters				
P1-00	Motor type selection	1: Common asynchronous motor 2: Permanent magnetic synchronous motor	0	☆
P1-01	Rated motor power	0.1 ~ 1000.0kW	Model dependent	☆
P1-02	Rated motor voltage	1 ~ 2000V	Model dependent	☆
P1-03	Rated motor current	0.01A ~ 655.35A (AC drive power ≤ 55 kW) 0.1A ~ 6553.5A (AC drive power > 55 kW)	Model dependent	☆
P1-04	Rated motor frequency	0.01Hz ~ max frequency	Model dependent	☆
P1-05	Rated motor rotational speed	1 ~ 65535RPM	Model dependent	☆
P1-06	Stator resistance (asynchronous motor)	0.001 ~ 65.535 Ω (AC drive power ≤ 55 kW) 0.0001 ~ 6.5535 Ω (AC drive power > 55 kW)	tuning parameter	☆

Function Code	Name	Setting Range	Default	Change
P1-07	Rotor resistance (asynchronous motor)	0.001 ~ 65.535 Ω (AC drive power ≤ 55 kW) 0.0001 ~ 6.5535 Ω (AC drive power > 55 kW)	tuning parameter	☆
P1-08	Leakage inductive reactance (asynchronous motor)	0.01 ~ 655.35mH (AC drive power ≤ 55 kW) 0.001 ~ 65.535mH (AC drive power > 55 kW)	tuning parameter	☆
P1-09	Mutual inductive reactance (asynchronous motor)	0.1 ~ 6553.5mH (AC drive power ≤ 55 kW) 0.01 ~ 655.35mH (AC drive power > 55 kW)	tuning parameter	☆
P1-10	No-load current (asynchronous motor)	0.01A ~ P1-03 (AC drive power ≤ 55 kW) 0.1A ~ P1-03(AC drive power > 55 kW)	tuning parameter	☆
P1-27	Encoder line number	1 ~ 65535	1024	☆
P1-28	Encoder type	0: ABZ encoder 2: Rotational encoder	0	☆
P1-30	AB sequence of ABZ encoder	0: Forward 1: Reverse	0	☆
P1-34	Rotational encoder pole number	1 ~ 65535	1	☆
P1-36	Speed feedback PG offline detect time	0.0s: No action 0.1s ~ 10.0s	0.0s	☆
P1-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning	0	☆
Group P2: Motor 1 Vector Control Parameters				
P2-00	Speed loop proportional gain 1	1 ~ 100	30	☆
P2-01	Speed loop integral time 1	0.01 ~ 10.00s	0.50s	☆
P2-02	Switchover frequency 1	0.00 ~ P2-05	5.00Hz	☆
P2-03	Speed loop proportional gain 2	1 ~ 100	20	☆
P2-04	Speed loop integral time 2	0.01 ~ 10.00S	1.00s	☆
P2-05	Switchover frequency 2	P2-02 ~ max output frequency	10.00Hz	☆
P2-06	Vector control slip gain	50% ~ 200%	100%	☆
P2-07	SVC speed feedback filter time	0.000s ~ 0.100s	0.015s	☆

Function Code	Name	Setting Range	Default	Change
P2-09	Torque limit source in speed control	0: Set by P2-10 1: AI1 2: AI2 3: AI3 4: Pulse (DI5) 5: Set by communication 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) Full scale of 1-7 corresponds to P2-10.	0	☆
P2-10	Digital setting of torque upper limit in speed control	0.0% ~ 200.0%	150%	☆
P2-11	Torque limit source in speed control (generation)	0: Set by P2-10 (same for generating and electric driving) 1: AI1 2: AI2 3: AI3 4: Pulse (DI5) 5: Set by communication 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) Full scale of 1-7 corresponds to P2-12.	0	☆
P2-12	Digital setting of torque upper limit in speed control (generation)	0.0% ~ 200.0%	150.0%	☆
P2-13	Excitation adjustment proportional gain	0 ~ 60000	2000	☆
P2-14	Excitation adjustment integral gain	0 ~ 60000	1300	☆
P2-15	Torque adjustment proportional gain	0 ~ 60000	2000	☆
P2-16	Torque adjustment integral gain	0 ~ 60000	1300	☆
P2-17	Speed loop integral property	Units digit: integral separation 0: Disabled 1: Enabled	0	☆
P2-21	Weak magnetic field max torque coefficients	50 ~ 200%	0	☆
P2-22	Power generation limit enable	0: Invalid 1: Effect all the time 2: Effect during constant speed 3: Effect during deceleration	0	☆
P2-23	Upper limit of power generation	0.0% ~ 200.0%	0	☆

Function Code	Name	Setting Range	Default	Change
Group P3: V/F Control Parameters				
P3-00	V/F curve setting	0: Linear V/F 1: Multi-point V/F 2 ~ 9: Reserved 10: V/F complete separation 11: V/F half separation	0	★
P3-01	Torque boost	0.0%: (fixed torque boost) 0.1% ~ 30.0%	Model dependent	☆
P3-02	Cut-off frequency of torque boost	0.00 Hz ~ max output frequency(P0-10)	50.00Hz	★
P3-03	Multi-point V/F frequency 1	0.00 Hz ~ P3-05	0.00Hz	★
P3-04	Multi-point V/F voltage 1	0.0% ~ 100.0%	0.0%	★
P3-05	Multi-point V/F frequency 2 (F2)	P3-03 ~ P3-07	0.00Hz	★
P3-06	Multi-point V/F voltage 2 (V2)	0.0% ~ 100.0%	0.0%	★
P3-07	Multi-point V/F frequency 3 (F3)	P3-05 ~ rated motor frequency (P1-04)	0.00Hz	★
P3-08	Multi-point V/F voltage 3 (V3)	0.0% ~ 100.0%	0.0%	★
P3-10	V/F over-excitation gain	0 ~ 200	64	☆
P3-11	V/F oscillation suppression gain	0 ~ 100	40	☆
P3-13	Voltage source for V/F separation	0: Set by P3-14 1: AI1 2: AI2 3: AI3 4: Pulse setting (DI5) 5: Multi-reference 6: Simple PLC 7: PID reference 8: Set by communication Note: 100.0% corresponds to the rated motor voltage	0	☆
P3-14	Digital setting of voltage for V/F separation	0V ~ rated motor voltage	0V	☆
P3-15	Voltage rise time of V/F separation	0.0s ~ 1000.0s Note: It is the time used for the voltage increases from 0 V ~ motor rated voltage.	0.0s	☆

Function Code	Name	Setting Range	Default	Change
P3-16	Voltage decrease time of V/F separation	0.0s ~ 1000.0s Note: It is the time used for the voltage increases from 0 V ~ motor rated voltage.	0.0s	☆
P3-17	V/F separation stop mode selection	0: Frequency/ voltage separately decrease to 0 1: Voltage decrease to 0, then frequency decrease	0	☆
P3-18	Over-current stall action current	50 ~ 200%	150%	★
P3-19	Enable over-current stall	0: Invalid 1: Valid	1	★
P3-20	Over-current stall suppression gain	0 ~ 100	20	☆
P3-21	Current compensation coefficient for double-speed over-current stall action	50 ~ 200%	50%	★
P3-22	Over-voltage stall action voltage	200.0 ~ 2000.0	380V: 760V 220V: 380V	☆
P3-23	Enable over-voltage stall	0: Invalid 1: Valid	1	★
P3-24	Over-voltage stall suppression frequency gain	0 ~ 100	30	☆
P3-25	Over-voltage stall suppression voltage gain	0 ~ 100	30	☆
P3-26	Max rise frequency limit of over-voltage stall	0 ~ 50Hz	5Hz	☆

Function Code	Name	Setting Range	Default	Change
Group P4: Input Terminals				
P4-00	DI1 function selection	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) (Note: P4-11 shall be set when P4-00 is set to 1 or 2.) 3: Three-wire control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG) 6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET) 10: RUN pause 11: External fault normally open (NO) input 12: Multi-reference terminal 1 14: Multi-reference terminal 3 13: Multi-reference terminal 2 15: Multi-reference terminal 4 16: Terminal 1 for acceleration/deceleration time selection 17: Terminal 2 for acceleration/deceleration time selection 18: Frequency command switchover 19: UP and DOWN setting clear (terminal, keypad) 20: Running command switchover terminal 1 21: Acceleration/Deceleration prohibited 22: PID pause 23: PLC status reset 25: Counter input 24: Swing pause 27: Length count input 26: Counter reset 29: Torque control prohibited 28: Length reset 30: Pulse input (enabled only for DI5) 31: Reserved 32: Immediate DC injection braking 33: External fault normally closed (NC) input 34: Frequency modification enabled 35: PID action direction reverse 37: Running command switchover terminal 2 36: External STOP terminal 1 38: PID integral disabled 39: Switchover between main frequency source and preset frequency 40: Switchover between auxiliary frequency source and preset frequency 41: Motor terminal selection 42: Reserved 43: PID parameter switchover 44: User-defined fault 1 45: User-defined fault 2 46: Speed control/Torque control switchover 47: Emergency stop 48: External STOP terminal 2 49: Deceleration DC injection braking 50: Clear the current running time 51: Two-wire/Three-wire mode switchover 52: Reverse frequency forbidden 53-59: Reserved	1	☆
P4-01	DI2 function selection		4	☆
P4-02	DI3 function selection		9	☆
P4-03	DI4 function selection		12	☆
P4-04	DI5 function selection		13	☆

Function Code	Name	Setting Range	Default	Change
P4-10	DI filter time	0.000 ~ 1.000s	0.010s	☆
P4-11	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	★
P4-12	Terminal UP/DOWN rate	0.001 ~ 65.535 Hz/s	1.00Hz/s	☆
P4-13	Al curve 1 mini. input	0.00V ~ P4-15	0.00V	☆
P4-14	Corresponding setting of Al curve 1 mini. input	-100.0% ~ +100.0%	0	☆
P4-15	Al curve 1 max input	P4-13 ~ +10.00V	10.00V	☆
P4-16	Corresponding setting of Al curve 1 max input	-100.0% ~ +100.0%	100.0%	☆
P4-17	AI1 filter time	0.00 ~ 10.00S	0.10s	☆
P4-18	Al curve 2 mini. input	0.00V ~ P4-15	0.00V	☆
P4-19	Corresponding setting of Al curve 2 mini. input	-100.0% ~ +100.0%	0.0%	☆
P4-20	Al curve 2 max input	P4-18 ~ +10.00 V	10.00V	☆
P4-21	Corresponding setting of Al curve 2 max input	-100% ~ 100%	100.0%	☆
P4-22	AI2 filter time	0.00s ~ 10.00s	0.10s	☆
P4-23	Al curve 3 mini. input	-10.00V ~ P4-25	-10.00V	☆
P4-24	Corresponding setting of Al curve 3 mini. input	-100.0% ~ +100.0%	-100.0%	☆
P4-25	Al curve 3 max input	P4-23 ~ +10.00 V	10.00V	☆
P4-26	Corresponding setting of Al curve 3 max input	-100.0% ~ +100.0%	100.0%	☆
P4-27	AI3 filter time	0.00 ~ 10.00S	0.10s	☆
P4-28	Pulse mini. input	0.00kHz ~ P4-30	0.00kHz	☆
P4-29	Corresponding setting of pulse mini. input	-100% ~ 100%	0.0%	☆
P4-30	Pulse max input	P4-28 ~ 100kHz	50.00kHz	☆
P4-31	Corresponding setting of pulse max input	-100% ~ 100%	100.0%	☆
P4-32	Pulse filter time	0.00 ~ 10.00S	0.10s	☆
P4-33	Al curve selection	Units digit: AI1 curve selection 1: Curve 1(2 points, see P4-13~P4-16) 2: Curve 2(2 points, see P4-18~P4-21) 3: Curve 3(2 points, see P4-23~P4-26) 4: Curve 4(4 points, see D6-00~D6-07) 5: Curve 5(4 points, see D6-08~D6-15) Tens digit: AI2 curve selection Hundreds digit: AI3 curve selection	321	☆

Function Code	Name	Setting Range	Default	Change
P4-34	Setting for Al less than min. input	Units digit: AI1 lower than min. input setting 0: Corresponding percentage of min. input 1: 0.0% Tens digit: AI2 lower than min. input setting Hundreds digit: AI3 lower than min. input setting	000	☆
P4-35	DI1 delay	0.0s ~ 3600.0s	0.0s	☆
P4-36	DI2 delay	0.0s ~ 3600.0s	0.0s	☆
P4-37	DI3 delay	0.0s ~ 3600.0s	0.0s	☆
P4-38	DI active mode selection	0: High level active 1: Low level active Units digit: DI1 active mode Tens digit: DI2 active mode Hundreds digit: DI3 active mode Thousand digit: DI4 active mode Ten thousands digit: DI5 active mode	00000	☆
Group P5: Output Terminals				
P5-00	FM terminal output mode	0: Pulse output (FMP) 1: Switch signal output (FMR)	0	☆
P5-01	FMR function selection (Terminal command mode)	0: No output 1: AC Drive running 2: Fault output (coast to stop) 3: Frequency-level detection FDT1 output 4: Frequency reached 5: Zero-speed running (no output at stop) 6: Motor overload pre-warning 7: AC drive overload pre-warning 8: Set count value reached 9: Designated count value reached 10: Length reached 11: PLC cycle complete 12: Accumulative running time reached 13: Frequency limited 14: Torque limited	0	☆
P5-02	Relay 1 function selection (T/A-T/B-T/C)		2	☆

P5-03	Relay 2 function selection (P/A-P/B-P/C)	15: Ready for RUN 16: AI1>AI2 17: Frequency upper limit reached 18: Frequency lower limit reached (no output at stop) 19: Under-voltage status output 20: Communication setting 21: Reserved 22: Reserved 23: Zero-speed running 2 (having output at stop) 24: Accumulative power-on time reached 25: Frequency level detection FDT2 output 26: Frequency 1 reached 27: Frequency 2 reached 28: Current 1 reached 29: Current 2 reached	0	☆
P5-04	DO1 output function selection	30: Timing reached 31: AI1 input limit exceeded 32: Load becoming 0 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Software current limit exceeded 37: Frequency lower limit reached (having output at stop) 38: Alarm output 39: Motor overheat warning 40: Current running time reached 41: Fault output (There is no output if it is the coast to stop fault and under-voltage occurs.) 42: Reserved 43: Auxiliary pump	1	☆
P5-06	FMP output function selection	0: Running frequency 1: Set frequency 2: Output current 3: Output torque (absolute value) 4: Output power 5: Output voltage 6: Pulse input(100.0%=100.0kHz) 7: AI1 10: Length 11: Count value 12: Communication setting 13: Motor rotational speed 14: Output current(100.0%=1000.0A) 15: Output voltage(100.0%=1000.0V) 16: Output torque (actual value)	0	☆
P5-07	AO1 function selection		0	☆
P5-08	AO2 function selection		1	☆
P5-09	FMP max output frequency	0.01kHz ~ 100.00kHz	50.00 kHz	☆

Function Code	Name	Setting Range	Default	Change
P5-10	AO1 offset coefficient	-100.0% ~ +100.0%	0.0%	☆
P5-11	AO1 gain	-10.00 ~ +10.00	1.00	☆
P5-12	AO2 offset coefficient	-100.0% ~ +100.0%	0.0%	☆
P5-13	AO2 gain	-10.00 ~ +10.00	1.00	☆
P5-17	FMR output delay time	0.0s ~ 3600.0s	0.0s	☆
P5-18	Relay1 output delay time	0.0s ~ 3600.0s	0.0s	☆
P5-19	Relay2 output delay time	0.0s ~ 3600.0s	0.0s	☆
P5-20	Relay3 output delay time	0.0s ~ 3600.0s	0.0s	☆
P5-22	Active mode selection of DO output terminals	0: Positive logic active 1: Negative logic active Units digit: FMR active mode Tens digit: Relay1 active mode Hundreds digit: Relay2 Thousands digit: DO1	00000	☆
Group P6: Start/Stop Control				
P6-00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start (asynchronous motor)	0	☆
P6-01	Rotational speed tracking mode	0: From frequency at stop 1: From zero speed 2: From max frequency	0	★
P6-02	Rotational speed tracking speed	1 ~ 100	20	☆
P6-03	Startup frequency	0.00 ~ 10.00 Hz	0.00Hz	☆
P6-04	Startup frequency holding time	0.0 ~ 100.0s	0.0s	★
P6-05	Startup DC braking current/ pre-excited current	0% ~ 100%	0%	★
P6-06	Startup DC braking time/ pre-excited time	0.0 ~ 100.0s	0.0s	★
P6-07	Acceleration/Deceleration mode	0: Linear acceleration/ deceleration 1, 2: S-curve acceleration/ deceleration A	0	★
P6-08	Time proportion of S-curve start segment	0.0% ~ (100.0% to P6-09)	30.00%	★
P6-09	Time proportion of S-curve end segment	0.0% ~ (100.0% to P6-08)	30.00%	★
P6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
P6-11	Initial frequency of stop DC braking	0.00 Hz to max frequency	0.00Hz	☆
P6-12	Waiting time of stop DC braking	0.0 ~ 100.0s	0.0s	☆
P6-13	Stop DC braking current	0% ~ 100%	0%	☆
P6-14	Stop DC braking time	0.0 ~ 100.0s	0.0s	☆

Function Code	Name	Setting Range	Default	Change
P6-15	Brake use ratio	0% ~ 100%	100%	☆
Group P7: Operation Panel and Display				
P7-00	Digital tube lack of picture inspection enable	0	0	☆
P7-01	QUICK/JQG Key function selection	0: QUICK/JQG key disabled 1: Switchover between operation panel control and remote command control (terminal or communication) 2: Switchover between forward rotation and reverse rotation 3: Forward JOG 4: Reverse JOG	0	★
P7-02	STOP/RESET key function	0: STOP/RESET key enabled only in operation panel control 1: STOP/RESET key enabled in any operation mode	1F	☆
P7-03	LED display running parameters 1	0000 ~ FFFF Bit00: Running frequency 1 (Hz) Bit01: Frequency reference (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI input state Bit08: DO output state Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID reference	1F	☆
P7-04	LED display running parameters 2	0000 ~ FFFF Bit00: PID feedback Bit01: PLC stage Bit02: Pulse setting frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 voltage before correction (V) Bit06: AI2 voltage before correction (V) Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: Pulse setting frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	33	☆

Function Code	Name	Setting Range	Default	Change
P7-05	LED display stop parameters	0000 ~ FFFF Bit00: Frequency reference (Hz) Bit01: Bus voltage (V) Bit02: DI state Bit03: DO state Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID reference Bit12: Pulse reference (kHz)	33	☆
P7-06	Load speed display coefficient	0.0001 ~ 6.5000	1.0000	☆
P7-07	Heat sink temperature of inverter module	0.0 ~ 100.0°C	-	●
P7-08	Product number	-	-	●
P7-09	Accumulative running time	0h ~ 65535h	-	●
P7-10	Performance software version	-	-	●
P7-11	Function software version	-	-	●
P7-12	Number of decimal places for load speed display	Units digit: Number of decimal places for U0-14 0: No decimal place 1: One decimal places 2: Two decimal places Tens digit: Number of decimal places of U0-19/U0-29 1: One decimal places 2: Two decimal places	20	☆
P7-13	Accumulative power-on time	0 ~ 65535h	-	●
P7-14	Accumulative power consumption	0 ~ 65535kWh	-	●
Group P8: Auxiliary Function				
P8-00	JOG running frequency	0.00Hz ~ max frequency	2.00Hz	☆
P8-01	JOG acceleration time	0.0 ~ 6500.0s	20.0s	☆
P8-02	JOG deceleration time	0.0 ~ 6500.0s	20.0s	☆
P8-03	Acceleration time 2	0.00 ~ 650.00s (P0-19=2) 0.0 ~ 6500.0s (P0-19=1) 0 ~ 65000s (P0-19=0)	Model dependent	☆
P8-04	Deceleration time 2			
P8-05	Acceleration time 3			
P8-06	Deceleration time 3			
P8-07	Acceleration time 4			
P8-08	Deceleration time 4			

Function Code	Name	Setting Range	Default	Change
P8-09	Jump frequency 1	0.00Hz ~ max frequency	0.00Hz	☆
P8-10	Jump frequency 2			
P8-11	Frequency jump amplitude	0.00Hz ~ max frequency	0.00Hz	☆
P8-12	Forward/Reverse rotation dead-zone time	0.0 ~ 3000.0s	0.0s	☆
P8-13	Reverse control	0: Enabled 1: Disabled	0	☆
P8-14	Running mode when set frequency lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	☆
P8-15	Drop control	0.00% ~ 100.00%	0.00%	☆
P8-16	Accumulative power-on time threshold	0 ~ 65000h	0h	☆
P8-17	Accumulative running time threshold	0 ~ 65000h	0h	☆
P8-18	Startup protection selection	0: Disabled 1: Enabled	0	☆
P8-19	Frequency detection value (FDT1)	0.00 Hz to max frequency	50.00Hz	☆
P8-20	Frequency detection hysteresis (FDT 1)	0.0% ~ 100.0% (FdT1 level)	5%	☆
P8-21	Detection range of frequency reached	0.00 ~ 100% (max frequency)	0.00%	☆
P8-22	Jump frequency during acceleration/deceleration	0: Disabled 1: Enabled	0	☆
P8-25	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00Hz ~ max frequency	0.00Hz	☆
P8-26	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00 ~ max frequency	0.00Hz	☆
P8-27	Terminal JOG preferred	0: Disabled 1: Enabled	0	☆
P8-28	Frequency detection value (FDT2)	0.00 ~ max frequency	50.00Hz	☆
P8-29	Frequency detection hysteresis (FDT hysteresis 2)	0.0% ~ 100.0% (FdT2 level)	5.0%	☆
P8-30	Any frequency reaching detection value 1	0.00Hz ~ max frequency	50.00Hz	☆
P8-31	Any frequency reaching detection amplitude 1	0.0% ~ 100.0% (max frequency)	0.0%	☆
P8-32	Any frequency reaching detection value 2	0.00Hz ~ max frequency	50.00Hz	☆

Function Code	Name	Setting Range	Default	Change
P8-33	Any frequency reaching detection amplitude 2	0.0% ~ 100.0% (max frequency)	0.0%	☆
P8-34	Zero current detection level	0.0% ~ 300.0% (rated motor current)	5.0%	☆
P8-35	Zero current detection delay time	0.01 ~ 600.00s	0.10s	☆
P8-36	Output over-current threshold	0.0% (no detection) 0.1% ~ 300.0% (rated motor current)	200.0%	☆
P8-37	Output over-current detection delay time	0.00 ~ 600.00s	0.00s	☆
P8-38	Any current reaching 1	0.0% ~ 300.0% (rated motor current)	100.0%	☆
F8-39	Any current reaching 1 amplitude	0.0% ~ 300.0% (rated motor current)	0.0%	☆
P8-40	Any current reaching 2	0.0% ~ 300.0% (rated motor current)	100.0%	☆
P8-41	Any current reaching 2 amplitude	0.0% ~ 300.0% (rated motor current)	0.0%	☆
P8-42	Timing function	0: Disabled 1: Enabled	0	★
P8-43	Timing duration source	0: Set by P8-44 1: AI1 2: AI2 3: AI3 100% of analog input corresponds to the value of P8-44	0	★
P8-44	Timing duration	0.0 ~ 6500.0 min	0.0Min	★
P8-45	AI1 input voltage lower limit	0.00V ~ P8-46	3.10 V	☆
P8-46	AI1 input voltage upper limit	P8-45 ~ 10.00 V	6.80V	☆
P8-47	IGBT temperature threshold	0°C ~ 100°C	75°C	☆
P8-48	Cooling fan working mode	0: Working during drive running 1: Working continuously	0	☆
P8-49	Wake-up frequency	Hibernating frequency (P8-51) to max frequency (P0-10)	0.00Hz	☆
P8-50	Wake-up delay time	0.0s ~ 6500.0s	0.0s	☆
P8-51	Hibernating frequency	0.00Hz ~ wake up frequency (P8-49)	0.00Hz	☆
P8-52	Hibernating delay time	0.0s ~ 6500.0s	0.0s	☆
P8-53	Running time threshold this time	0.0 ~ 6500.0min	0.0Min	☆
P8-54	Output power correction cofficient	0.00% ~ 200.0%	100.0%	☆
P8-55	Wake-up level	1% ~ 150%	80.0%	☆
P8-56	High speed frequency	0.00Hz ~ P0-10	25.00	☆
P8-57	High speed frequency delay time	0.0s ~ 600.0s	60s	☆

Function Code	Name	Setting Range	Default	Change
P8-58	Low speed frequency	0.00Hz ~ P0-10	0.00	☆
P8-59	Low speed frequency delay time	0.0s ~ 600.0s	60s	☆
Group P9: Keypad and Display				
P9-00	Motor overload protection	0: Disabled 1: Enabled	1	☆
P9-01	Motor overload protection gain	0.20 ~ 10.00	1.00	☆
P9-02	Motor overload pre-warning coefficient	50% ~ 100%	80%	☆
P9-03	Over-voltage protection gain	0 ~ 100	30	☆
P9-04	Over-voltage protection voltage	200V ~ 2000V	380V: 760V 220V: 380V	☆
P9-07	Detection of short-circuit to ground upon power-on	0: Disabled 1: Enabled	1	☆
P9-08	Brake unit action voltage	200V ~ 2000V	380V: 690V 220V: 360V	★
P9-09	Auto reset times	0 ~ 20	0	☆
P9-10	Selection of DO action during auto reset	0: Not action 1: Action	0	☆
P9-11	Delay of auto reset	0.1s ~ 100.0s	1.0s	☆
P9-12	Input phase loss/pre-charge relay protection	Units digit: Input phase loss protection Tens digit: Pre-charge relay protection 0: Disabled 1: Enabled	11	☆
P9-13	Output phase loss protection	0: Disabled 1: Enabled	1	☆
P9-14	1st fault type	0: No fault 1: Reserved 2: over-current during acceleration 3: over-current during deceleration 4: over-current at constant speed 5: Overvoltage during acceleration 6: Overvoltage during deceleration 7: Overvoltage at constant speed 8: Buffer resistor overload 9: Undervoltage 10: AC drive overload 11: Motor overload	-	●

P9-15	2nd fault type	12: Power input phase loss 13: Power output phase loss 14: IGBT overheat 15: External fault 16: Communication fault 17: Contactor fault 18: Current detection fault 19: Motor auto-tuning fault 20: Encoder/PG card fault 21: Parameter read and write fault 22: AC drive hardware fault 23: Motor short circuited to ground 24: Reserved 25: Reserved 26: Accumulative running time reached 27: User-defined fault 1 28: User-defined fault 2 29: Accumulative power-on time reached 30: Load lost 31: PID feedback lost during running 40: Fast current limit timeout 41: Motor switchover error during running 42: Too large speed deviation 43: Motor over-speed 45: Motor overheat 51: Initial position error 55: Slave error in master-slave control	-	●
P9-16	3rd (latest) fault type		-	●
P9-17	Frequency upon 3rd fault	0.00Hz ~ 655.35Hz	0.00Hz	●
P9-18	Current upon 3rd fault	0.00A ~ 655.35A	0.00A	●
P9-19	Bus voltage upon 3rd fault	0.00V ~ 6553.5V	0.0V	●
P9-20	DI state upon 3rd fault	0 ~ 9999	0	●
P9-21	DO state upon 3rd fault	0 ~ 9999	0	●
P9-22	AC drive state upon 3rd fault	0 ~ 65535	0	●
P9-23	Power-on time upon 3rd fault	0s ~ 65535s	0s	●
P9-24	Running time upon 3rd fault	0s ~ 6553.5s	0.0s	●
P9-27	Frequency upon 2nd fault	0.00Hz ~ 655.35Hz	0.00Hz	●
P9-28	Current upon 2nd fault	0.00A ~ 655.35A	0.00A	●
P9-29	Bus voltage upon 2nd fault	0.00V ~ 6553.5V	0.0V	●
P9-30	DI status upon 2nd fault	0 ~ 9999	0	●
P9-31	DO status upon 2nd fault	0 ~ 9999	0	●
P9-32	AC drive status upon 2nd fault	0 ~ 65535	0	●
P9-33	Power-on time upon 2nd fault	0s ~ 65535s	0s	●

Function Code	Name	Setting Range	Default	Change
P9-34	Running time upon 2nd fault	0s ~ 6553.5s	0.0s	●
P9-37	Frequency upon 1st fault	0.00Hz ~ 655.35Hz	0.00Hz	●
P9-38	Current upon 1st fault	0.00A ~ 655.35A	0.00A	●
P9-39	Bus voltage upon 1st fault	0.00V ~ 6553.5V	0.0V	●
P9-40	DI status upon 1st fault	0 ~ 9999	0	●
P9-41	DO status upon 1st fault	0 ~ 9999	0	●
P9-42	AC drive status upon 1st fault	0 ~ 65535	0	●
P9-43	Power-on time upon 1st fault	0s ~ 65535s	0s	●
P9-44	Running time upon 1st fault	0s ~ 6553.5s	0.0s	●
P9-47	Fault protection action selection 1	Units digit: Motor overload (Err11) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Tens digit: Power input phase loss (Err12) Hundreds digit: Power output phase loss (Err13) Thousands digit: External equipment fault (Err15) Ten thousands digit: Communication fault (Err16)	00000	☆
P9-48	Fault protection action selection 2	Units digit: Encoder fault (Err20) 0: Coast to stop Tens digit: EEPROM read-write fault (Err21) 0: Coast to stop 1: Stop according to the stop mode Hundreds digit: Overload fault action(Err10) Thousands digit: Motor overheat (Err45) Ten thousands digit: Accumulative running time reached (Err26)	00000	☆
P9-49	Fault protection action selection 3	Units digit: User-defined fault 1 (Err27) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Tens digit: User-defined fault 2 (Err28) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Hundreds digit: Accumulative power-on time reached (Err29) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run	00000	☆

Function Code	Name	Setting Range	Default	Change
P9-50	Fault protection action selection 4	Units digit: Too large speed deviation (Err42) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run Tens digit: Motor over-speed(Err43) Hundreds digit: Initial position fault (Err51)	00000	☆
P9-54	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Run at set frequency 2: Run at upper limit frequency 3: Run at lower limit frequency 4: Backup frequency upon abnormality	0	☆
P9-55	Backup frequency upon fault	0.0% ~ 100.0% (100.0% corresponds to max frequency (P0-10))	100.0%	☆
P9-56	Type of motor temperature sensor	0: No temperature sensor 1: PT100 2: PT1000	0	☆
P9-57	Motor overheat protection threshold	0°C ~ 200°C	110℃	☆
P9-58	Motor overheat pre-warning threshold	0°C ~ 200°C	90℃	☆
P9-59	Power dip ride-through function selection	0: Disabled 1: Bus voltage constant control 2: Decelerate to stop	0	★
P9-60	Threshold of power dip ride-through function disabled	80% ~ 100%	85%	★
P9-61	Judging time of bus voltage recovering from power dip	0.0s ~ 100.0s	0.5s	★
P9-62	Threshold of power dip ride-through function enabled	60% ~ 100%	80%	★
P9-63	Load lost protection	0: Disabled 1: Enabled	0	☆
P9-64	Load lost detection level	0.0% ~ 100.0%	10.0%	☆
P9-65	Load lost detection time	0.0 ~ 60.0s	1.0s	☆
P9-67	Overspeed detection level	0.0% ~ 50.0% (max frequency)	20.0%	☆
P9-68	Overspeed detection time	0.0s: Not detected 0.1 ~ 60.0s	5.0s	☆
P9-69	Detection level of speed error	0.0% ~ 50.0% (max frequency)	20.0%	☆
P9-70	Detection time of speed error	0.0s: Not detected 0.1 ~ 60.0s	5.0s	☆
P9-71	Gain for power dip ride-through Kp	0 ~ 100	40	☆
P9-72	Coefficient for power dip ride-through Ki	0 ~ 100	30	☆
P9-73	Deceleration for power dip ride-through	0 ~ 300.0s	20.0s	★
Group PA: PID Function				
PA-00	PID reference setting channel	0: Set by PA-01 1: AI1 2: AI2 3: AI3 4: Pulse setting (DI5) 5: Communication setting 6: Multi-reference	0	☆
PA-01	PID digital setting	0.0% ~ 100.0%	50.0%	☆

Function Code	Name	Setting Range	Default	Change
PA-02	PID feedback setting channel	0: AI1 1: AI2 2: AI3 3: AI1 - AI2 4: Pulse setting (DI5) 5: Communication setting 6: AI1 + AI2 7: Max. (|AI1|, |AI2|) 8: Min. (|AI1|, |AI2|)	0	☆
PA-03	PID operation direction	0: Forward 1: Reverse	0	☆
PA-04	PID reference and feedback range	0 ~ 65535	1000	☆
PA-05	Proportional gain Kp1	0.0 ~ 1000.0	20.0	☆
PA-06	Integral time Ti1	0.01s ~ 10.00s	2.00s	☆
PA-07	Differential time Td1	0.000s ~ 10.000s	0.000s	☆
PA-08	PID output limit in reverse direction	0.00Hz ~ max frequency	0.00Hz	☆
PA-09	PID error limit	0.0% ~ 100.0%	0.0%	☆
PA-10	PID differential limit	0.00% ~ 100.00%	0.10%	☆
PA-11	PID reference change time	0.00 ~ 650.00s	0.00s	☆
PA-12	PID feedback filter time	0.00 ~ 60.00s	0.00s	☆
PA-13	PID output filter time	0.00 ~ 60.00s	0.00s	☆
PA-14	Reserved	-	-	☆
PA-15	Proportional gain Kp2	0.0 ~ 1000.0	20.0	☆
PA-16	Integral time Ti2	0.01s ~ 10.00s	2.00s	☆
PA-17	Differential time Td2	0.000s ~ 10.000s	0.000s	☆
PA-18	PID parameter switchover condition	0: No switchover 1: Switchover via DI 2: Auto switchover based on PID error 3: Auto switchover based on running frequency	0	☆
PA-19	PID error 1 for auto switchover	0.0% ~ PA-20	20.0%	☆
PA-20	PID error 2 for auto switchover	PA-19 ~ 100.0%	80.0%	☆
PA-21	PID initial value	0.0% ~ 100.0%	0.0%	☆
PA-22	PID initial value active time	0.00 ~ 650.00s	0.00s	☆
PA-23	Reversed	-	-	☆
PA-24				
PA-25	PID integral property	Units digit: Integral separation 0: Disabled 1: Enabled Tens digit: Whether to stop integral operation when the PID output reaches the limit 0: Continue integral operation 1: Stop integral operation	00	☆
PA-26	Detection value of PID feedback loss	0.0%: No detection 0.1% ~ 100.0%	0.0%	☆

Function Code	Name	Setting Range	Default	Change
PA-27	Detection time of PID feedback loss	0.0s ~ 20.0s	0.0s	☆
PA-28	PID operation at stop	0: Disabled 1: Enabled	0	☆
Group Pb: Wobble Function, Fixed Length and Count				
Pb-05	Set length	0 ~ 65535 m	1000m	☆
Pb-06	Actual length	0 ~ 65535 m	0m	☆
Pb-07	Number of pulses per meter	0.1 ~ 6553.5	100.0	☆
Pb-08	Set count value	1 ~ 65535	1000	☆
Pb-09	Designated count value	1 ~ 65535	1000	☆
Group PC: Multi-Reference and Simple PLC Function				
PC-00	Reference 0	-100.0% ~ 100.0%	0.0%	☆
PC-01	Reference 1	-100.0% ~ 100.0%	0.0%	☆
PC-02	Reference 2	-100.0% ~ 100.0%	0.0%	☆
PC-03	Reference 3	-100.0% ~ 100.0%	0.0%	☆
PC-04	Reference 4	-100.0% ~ 100.2%	0.0%	☆
PC-05	Reference 5	-100.0% ~ 100.2%	0.0%	☆
PC-06	Reference 6	-100.0% ~ 100.0%	0.0%	☆
PC-07	Reference 7	-100.0% ~ 100.0%	0.0%	☆
PC-08	Reference 8	-100.0% ~ 100.0%	0.0%	☆
PC-09	Reference 9	-100.0% ~ 100.0%	0.0%	☆
PC-10	Reference 10	-100.0% ~ 100.0%	0.0%	☆
PC-11	Reference 11	-100.0% ~ 100.0%	0.0%	☆
PC-12	Reference 12	-100.0% ~ 100.0%	0.0%	☆
PC-13	Reference 13	-100.0% ~ 100.0%	0.0%	☆
PC-14	Reference 14	-100.0% ~ 100.0%	0.0%	☆
PC-15	Reference 15	-100.0% ~ 100.0%	0.0%	☆
PC-16	Simple PLC running mode	0: Stop after running one cycle 1: Keep final values after running one cycle 2: Repeat after running one cycle	0	☆
PC-17	Simple PLC retentive selection	Unit digit: Retentive at power down 0: Not retentive 1: Retentive Tens digit: Retentive at stop 0: Not retentive at stop 1: Retentive at stop	00	☆
PC-18	Running time of simple PLC reference 0	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-19	Acceleration/deceleration time of simple PLC reference 0	0 ~ 3	0	☆

Function Code	Name	Setting Range	Default	Change
PC-20	Running time of simple PLC reference 1	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-21	Acceleration/deceleration time of simple PLC reference 1	0 ~ 3	0	☆
PC-22	Running time of simple PLC reference 2	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-23	Acceleration/deceleration time of simple PLC reference 2	0 ~ 3	0	☆
PC-24	Running time of simple PLC reference 3	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-25	Acceleration/deceleration time of simple PLC reference 3	0 ~ 3	0	☆
PC-26	Running time of simple PLC reference 4	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-27	Acceleration/deceleration time of simple PLC reference 4	0 ~ 3	0	☆
PC-28	Running time of simple PLC reference 5	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-29	Acceleration/deceleration time of simple PLC reference 5	0 ~ 3	0	☆
PC-30	Running time of simple PLC reference 6	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-31	Acceleration/deceleration time of simple PLC reference 6	0 ~ 3	0	☆
PC-32	Running time of simple PLC reference 7	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-33	Acceleration/deceleration time of simple PLC reference 7	0 ~ 3	0	☆
PC-34	Running time of simple PLC reference 8	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-35	Acceleration/deceleration time of simple PLC reference 8	0 ~ 3	0	☆
PC-36	Running time of simple PLC reference 9	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-37	Acceleration/deceleration time of simple PLC reference 9	0 ~ 3	0	☆
PC-38	Running time of simple PLC reference 10	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-39	Acceleration/deceleration time of simple PLC reference 10	0 ~ 3	0	☆
PC-40	Running time of simple PLC reference 11	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-41	Acceleration/deceleration time of simple PLC reference 11	0 ~ 3	0	☆
PC-42	Running time of simple PLC reference 12	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-43	Acceleration/deceleration time of simple PLC reference 12	0 ~ 3	0	☆
PC-44	Running time of simple PLC reference 13	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-45	Acceleration/deceleration time of simple PLC reference 13	0 ~ 3	0	☆
PC-46	Running time of simple PLC reference 14	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆
PC-47	Acceleration/deceleration time of simple PLC reference 14	0 ~ 3	0	☆
PC-48	Running time of simple PLC reference 15	0.0s (h) ~ 6553.5s (h)	0.0s (h)	☆

Function Code	Name	Setting Range	Default	Change
PC-49	Acceleration/deceleration time of simple PLC reference 15	0 ~ 3	0	☆
PC-50	Time unit of simple PLC running	0: s (second) 1: h (hour)	0	☆
PC-51	Reference 0 source	0: Set by PC-00 1: AI1 2: AI2 3: AI3 4: Pulse reference 5: PID 6: Set by preset frequency (P0-08), modified via UP/DOWN key 7. keyboard with electrodeless potentiomter 8. keyboard with electrodeless potentiomter change rate 1 Hz	0	☆
Group Pd: Communication				
Pd-00	Baud rate	Units digit: MODBUS 0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9:115200BPS	0005	☆
Pd-01	MODBUS data format symbol	0: No check <8-N-2> 1: Even parity check <8-E-1> 2: Odd parity check <8-O-1> 3: No check, data format <8-N-1> (Valid for MODBUS)	3	☆
Pd-02	Local address	0: Broadcast address 1 ~ 247 (MODBUS)	1	☆
Pd-03	MODBUS response delay	0 ~ 20 ms (Valid for MODBUS)	2	☆
Pd-04	Serial port communication timeout	0.0: Disabled 0.1 ~ 60.0s	0.0	☆
Pd-05	MODBUS protocol selection	Units digit: MODBUS 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol	01	☆
Pd-06	Current resolution read by communication	0: 0.01A 1: 0.1A	0	☆
Group PE: Reserved				
Group PP: Function Parameter Management				
PP-00	User password	0 ~ 65535	0	☆
PP-01	Parameter initialization	0: No operation 01: Restore factory parameters except motor parameters 02: Clear records 04: Backup present parameter of user 501: Restore parameter of user	0	★

Function Code	Name	Setting Range	Default	Change
PP-02	Parameter display property	Units digit: Group U display 0: Not displayed 1: Displayed Tens digit: Group D display 0: Not displayed 1: Displayed	11	★
PP-04	Selection of parameter modification	0: Disabled 1: Enabled	0	☆
Group D0: Torque Control and Restricting Parameters				
D0-00	Speed/Torque control selection	0: Speed control 1: Torque control	0	★
D0-01	Torque reference source in torque control	0: Set by D0-03 1: AI1 2: AI2 4: Pulse reference 5: Communication reference 6: MIN. (AI1, AI2) 7: MAX. (AI1, AI2) (Full range of values 1-7 corresponds to the digital setting of D0-03)	0	★
D0-03	Torque digital setting in torque control	-200.0% ~ 200.0%	150.0%	★
D0-05	Forward max frequency in torque control	0.00Hz ~ max frequency	50.00Hz	☆
D0-06	Reverse max frequency in torque control	0.00Hz ~ max frequency	50.00Hz	☆
D0-07	Acceleration time in torque control	0.00s ~ 65000s	0.00s	☆
D0-08	Deceleration time in torque control	0.00s ~ 65000s	0.00s	☆
Group D1: Reserved				
Group D2: Motor 1 Parameters				
D2-00	Motor type selection	1: Common asynchronous motor 2: Permanent magnetic synchronous motor	0	★
D2-01	Rated motor power	0.1 ~ 1000.0kW	Model dependent	★
D2-02	Rated motor voltage	1 ~ 2000V	Model dependent	★
D2-03	Rated motor current	0.01A ~ 655.35A (AC drive power ≤ 55 kW) 0.1A ~ 6553.5A (AC drive power > 55 kW)	Model dependent	★
D2-04	Rated motor frequency	0.01Hz ~ max frequency	Model dependent	★
D2-05	Rated motor rotational speed	1 ~ 65535RPM	Model dependent	★
D2-06	Stator resistance (asynchronous motor)	0.001 ~ 65.535 Ω (AC drive power ≤ 55 kW) 0.0001 ~ 6.5535 Ω (AC drive power > 55 kW)	Tuning parameter	★
D2-07	Rotor resistance (asynchronous motor)	0.001 ~ 65.535 Ω (AC drive power ≤ 55 kW) 0.0001 ~ 6.5535 Ω (AC drive power > 55 kW)	Tuning parameter	★
D2-08	Leakage inductive reactance (asynchronous motor)	0.01 ~ 655.35mH (AC drive power ≤ 55 kW) 0.001 ~ 65.535mH (AC drive power > 55 kW)	Tuning parameter	★

Function Code	Name	Setting Range	Default	Change
D2-09	Mutual inductive reactance (asynchronous motor)	0.1 ~ 6553.5mH (AC drive power ≤ 55 kW) 0.01 ~ 655.35mH (AC drive power > 55 kW)	Tuning parameter	★
D2-10	No-load current (asynchronous motor)	0.01A ~ D2-03 (AC drive power ≤ 55 kW) 0.1A ~ D2-03(AC drive power > 55 kW)	Tuning parameter	★
D2-27	Encoder line number	1 ~ 65535	1024	★
D2-28	Encoder type	0: ABZ encoder 2: Rotational encoder	0	★
D2-29	Speed feedback PG selection	0: Local PG 1: Extensive PG 2: Pulse input (DI5)	0	★
D2-30	AB sequence of ABZ encoder	0: Forward 1: Reverse	0	★
D2-31	Encoder install angle	0.0 ~ 359.9°	0°	
D2-34	Rotational encoder pole number	1 ~ 65535	1	★
D2-36	Speed feedback PG offline detect time	0.0s: No action 0.1s ~ 10.0s	0.0s	★
D2-37	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor partly static auto-tuning 2: Asynchronous motor completely dynamic auto-tuning 3: Asynchronous motor static dynamic auto-tuning	0	★
D2-38	Speed loop proportional gain 1	1 ~ 100	30	☆
D2-39	Speed loop integral time 1	0.01 ~ 10.00s	0.50s	☆
D2-40	Switchover frequency 1	0.00 ~ D2-43	5.00Hz	☆
D2-41	Speed loop proportional gain 2	1 ~ 100	20	☆
D2-42	Speed loop integral time 2	0.01 ~ 10.00S	1.00s	☆
D2-43	Switchover frequency 2	D2-02 ~ max output frequency	10.00Hz	☆
D2-44	Vector control slip gain	50% ~ 200%	100%	☆
D2-45	SVC torque filter constant	1 ~ 31	28	☆
D2-47	Torque limit source in speed control	0: Set by D2-10 1: AI1 2: AI2 3: AI3 4: Pulse (DI5) 5: Set by communication 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) Full scale of 1-7 corresponds to D2-48.	0	☆
D2-48	Digital setting of torque upper limit in speed control	0.0% ~ 200.0%	150%	☆

Function Code	Name	Setting Range	Default	Change
D2-49	Torque limit source in speed control (generation)	0: Set by D2-10 (same for generating and electric driving) 1: AI1 2: AI2 3: AI3 4: Pulse (DI5) 5: Set by communication 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) Full scale of 1-7 corresponds to D2-12.	0	☆
D2-50	Digital setting of torque upper limit in speed control (generation)	0.0% ~ 200.0%	150.0%	☆
D2-51	Excitation adjustment proportional gain	0 ~ 60000	2000	☆
D2-52	Excitation adjustment integral gain	0 ~ 60000	1300	☆
D2-53	Torque adjustment proportional gain	0 ~ 60000	2000	☆
D2-54	Torque adjustment integral gain	0 ~ 60000	1300	☆
D2-55	Speed loop integral property	Units digit: integral separation 0: Disabled 1: Enabled	0	☆
D2-59	Weak magnetic field max torque coefficients	50 ~ 200%	100%	☆
D2-60	Power generation limit enable	0: Invalid 1: Effect all the time 2: Effect during constant speed 3: Effect during deceleration	0	☆
D2-61	Upper limit of power generation	0.0% ~ 200.0%	Model dependent	☆
D2-62	Motor 2 control mode	0: SVC 1: FVC 2: V/F	0	★
D2-63	Motor 2 acceleration/ deceleration time selection	0: Same as motor 1 2: Acc/dec time 2 3: Acc/dec time 3 4: Acc/dec time 4	0	☆
D2-64	Motor 2 torque lift	0.0%: Auto torque lift 0.1% ~ 30.0%	Model dependent	☆
D2-66	Motor 2 shock suppression gain	0 ~ 100	40	☆
Group D5: Control optimization parameters				
D5-00	DPWM switchover upper limit frequency	5.00Hz ~ max frequency	8.00Hz	☆
D5-01	PWM adjust method	0: Asynchronous modulation 1: Synchronous modulation	0	☆
D5-02	Dead zone compensation mode	0: No compensation 1: Compensation mode 1	1	☆
D5-03	Random PWM depth	0: Random PWM invalid 1~10: PWM load frequency random depth	0	☆
D5-04	Fast current limit enable	0: Disable 1: Enable	1	☆
D5-05	Current detect compensation	0 ~ 100	0	★

Function Code	Name	Setting Range	Default	Change
D5-06	Under-voltage point setting	200 ~ 2000V	380V: 350V 220V: 200V	☆
D5-08	Dead time adjustment	100% ~ 200%	150%	★
D5-09	Over-voltage point setting	200 ~ 2200V	Model dependent	★
Group D6: AI Curve Setting				
D6-00	AI curve 4 minimum input	-10.00V ~ D6-02	0.00V	☆
D6-01	Corresponding setting of AI curve 4 minimum input	-100.0% ~ 100.0%	0.0%	☆
D6-02	AI curve 4 turning point 1 input	D6-00 ~ D6-04	3.00V	☆
D6-03	Corresponding setting of AI curve 4 turning point 1 input	0.0% ~ 100.0%	30.0%	☆
D6-04	AI curve 4 turning point 2input	D6-02~ D6-04	6.00V	☆
D6-05	Corresponding setting of AI curve 4 turning point 2 input	-100.0% ~ 100.0%	60.0%	☆
D6-06	AI curve 4 max input	D6-04~ 10.00V	10.00V	☆
D6-07	Corresponding setting of AI curve 4 max input	-100.0% ~ 100.0%	100.0%	☆
D6-08	AI curve 5 minimum input	-10.00V ~ D6-10	-10.00V	☆
D6-09	Corresponding setting of AI curve 5 minimum input	-100.0% ~ 100.0%	-100.0%	☆
D6-10	AI curve 5 turning point 1 input	D6-08 ~ D6-12	-3.00V	☆
D6-11	Corresponding setting of AI curve 5 turning point 1 input	-100.0% ~ 100.0%	-30.0%	☆
D6-12	AI curve 5 turning point 2 input	D6-10 ~ D6-14	3.00V	☆
D6-13	Corresponding setting of AI curve 5 turning point 2 input	-100.0% ~ 100.0%	30.0%	☆
D6-14	AI curve 5 max input	D6-12 ~ + 10.00V	10.00V	☆
D6-15	Corresponding setting of AI curve 5 max input	-100.0% ~ 100.0%	100.0%	☆
D6-24	Jump point of AI1 input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
D6-25	Jump amplitude of AI1 input corresponding setting	0.0% ~ 100.0%	0.5%	☆
D6-26	Jump point of AI2 input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
D6-27	Jump amplitude of AI2 input corresponding setting	0.0% ~ 100.0%	0.5%	☆
D6-28	Jump point of AI3 input corresponding setting	-100.0% ~ 100.0%	0.0%	☆
D6-29	Jump amplitude of AI3 input corresponding setting	0.0% ~ 100.0%	0.5%	☆
Group D8 Point-to-point communication				
D8-00	Point to point communication function selection	0: Invalid 1: Valid	0	☆

Function Code	Name	Setting Range	Default	Change
D8-01	Selection of master/ slave	0: Master 1: Slave	0	☆
D8-02	Slave command follow master-slave info exchange	Units digit: Slave command follow 0: Slave running, not follow master command 1: Slave running, follow master command. Tens digit: Slave fault into transmit 0: Slave fault into no transmit 1: Slave fault into transmit Hundreds digit: Master report slave offline 0: Slave offline, master no report fault 1: Slave offline, master report fault (ERR16)	011	★
D8-03	Slave receive data function selection	0: Running frequency 1: Target frequency	0	☆
D8-04	Zero offset of received data	-100.00% ~ 100.00%	0.00%	★
D8-05	Gain of received data	-10.00 ~ 100.00	1.00	★
D8-06	Detect time of point-to-point communication interrupt	0.0 ~ 10.0s	1.0s	☆
D8-07	Master send data cycle of point-to-point communication	0.001 ~ 10.000s	0.001s	☆
D8-08	Synchronous display frequency range	0.20 ~ 10.00Hz	0.50Hz	☆
Group DC AIAO correction				
DC-00	AI1 measured voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-01	AI1 display voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-02	AI1 measured voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-03	AI1 display voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-04	AI2 measured voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-05	AI2 display voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-06	AI2 measured voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-07	AI2 display voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-12	AO1 target voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-13	AO1 display voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-14	AO1 measured voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-15	AO1 display voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-16	AO2 measured voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-17	AO2 display voltage 1	-10.00V ~ 10.000V	Factory calibration	☆
DC-18	AO2 measured voltage 2	-10.00V ~ 10.000V	Factory calibration	☆
DC-19	AO2 display voltage 2	-10.00V ~ 10.000V	Factory calibration	☆

4.2 Summary Table of Monitoring Parameters

Table 4-2 Summary table of monitoring parameters

Function Code	Name	Smallest unit	Mailing address
U0 group basic monitoring parameters			
U0-00	Operating frequency (Hz)	0.01Hz	7000H
U0-01	Setting frequency (Hz)	0.01Hz	7001H
U0-02	Bus voltage (V)	0.1V	7002H
U0-03	Output voltage(V)	1V	7003H
U0-04	Output current (A)	0.01A	7004H
U0-05	Output frequency (KW)	0.1kW	7005H
U0-06	Output torque (%)	0.1%	7006H
U0-07	DI input status	1	7007H
U0-08	DO Output state	1	7008H
U0-09	All voltage (V)	0.01V	7009H
U0-10	AI2 voltage (V)	0.01V	700AH
U0-12	Count value	1	700CH
U0-13	Length value	1	700DH
U0-14	Load speed display	1	700EH
U0-15	PID setting	1	700FH
U0-16	PID feedback	1	7010H
U0-17	PLC stage	1	7011H
U0-18	PULSE input pulse frequency (Hz)	0.01kHz	7012H
U0-19	Feedback speed (Hz)	0.01Hz	7013H
U0-20	Remaining running time	0.1Min	7014H
U0-21	All voltage before calibration	0.001V	7015H
U0-22	AI2 voltage before correction	0.001V	7015H
U0-24	Line speed	1m/Min	7018H
U0-25	Current power-on time	1Min	7019H
U0-26	Current running time	0.1Min	701AH
U0-27	PULSE input pulse frequency (Hz)	1Hz	701BH
U0-28	Communication settings	0.01%	701CH
U0-29	Encoder feedback speed	0.01Hz	701DH
U0-30	Main frequency X display	0.01Hz	701EH
U0-31	Auxiliary frequency Y display	0.01Hz	701FH
U0-32	View the value of any memory address	1	7020H
U0-34	Motor out of value	1℃	7022H
U0-35	Target torque (%)	0.1%	7023H
U0-36	Resolver position	1	7024H
U0-37	Power factor angle	0.1°	7025H
U0-38	ABZ position	1	7026H
U0-39	VF separation target voltage	1V	7027H
U0-40	VF separation output voltage	1V	7028H
U0-41	DI input status visual display	1	7029H

Function Code	Name	Smallest unit	Mailing address
U0-42	Visual display of DO input status	1	702AH
U0-43	DI function status visual display 1 (function 01-40)	1	702BH
U0-44	DI function status visual display 2 (function 41-80)	1	702CH
U0-45	accident details	1	703DH
U0-58	Z signal counter	1	703AH
U0-59	Setting frequency (%)	0.01%	703BH
U0-60	Operating frequency (%)	0.01%	703CH
U0-61	AC drive status	1	703DH
U0-62	Current fault code	1	703EH
U0-63	Point-to-point communication Sending torque value	0.01%	703FH
U0-64	Number of slaves	1	7040H
U0-65	Torque upper limit	0.01%	7041H
U0-66	Type of communication extend card	100: CANOpen 200: Profibus-DP 300: CanLink	7042H
U0-67	Series number of communication extend card	Display range	-
U0-68	DP card AC drive status		7043H
U0-69	Transmit DP speed/ 0.01Hz	0.00 ~ max frequency	7044H
U0-70	Transmit DP speed/ RPM	0 ~ motor rated	7045H
U0-71	Communication card dedicated current display	Display range	-
U0-72	Communication fault status	Display range	-
U0-73	Motor serial number	0: Motor 1 1: Motor 2	7046H
U0-74	AC drive output torque	0.1%	7047H

Chapter 5 Model Type Selection and Size

5.1 FU9000D Series Inverter Electrical Specifications

Table 5.1 Model and technical data of FU9000D inverter

Model	Power capacity /KVA	Input current /A	Output current /A	Adapted motor		Heating power consumption/ kW
				kW	HP	
Single phase: 220V, 50/60Hz						
FU9000D-0R7G-S2	1.5	8.2	4	0.75	1	0.030
FU9000D-1R5G-S2	3	14	7	1.5	2	0.055
FU9000D-2R2G-S2	4	23	9.6	2.2	3	0.072
Three phase: 220V, 50/60Hz						
FU9000D-0R7G-2	3	5	3.8	0.75	1	0.030
FU9000D-1R5G-2	4	7.7	7	1.5	2	0.055
FU9000D-2R2G-2	5.9	10.5	9	2.2	3	0.072
FU9000D-004G-2	8.9	14.6	13	3.7	5	0.132
FU9000D-5R5G-2	17	26	25	5.5	7	0.214
FU9000D-7R5G-2	21	35	32	7.5	10	0.288
FU9000D-011G-2	30	46.5	45	11	15	0.489
FU9000D-015G-2	40	62	60	15	20	0.608
FU9000D-018G-2	57	76	75	18.5	25	0.716
FU9000D-022G-2	69	92	91	22	30	0.887
FU9000D-030G-2	85	113	112	30	40	1.11
FU9000D-037G-2	114	157	150	37	50	1.32
FU9000D-045G-2	134	180	176	45	60	1.66
FU9000D-055G-2	160	214	210	55	75	1.98
FU9000D-075G-2	231	307	304	75	100	2.02
Three phase: 380V, 50/60Hz						
FU9000D-0R7G-4	1.5	3.4	2.1	0.75	1	0.027
FU9000D-1R5G-4	3	5	3.8	1.5	2	0.050
FU9000D-2R2G-4	4	5.8	5.1	2.2	3	0.066
FU9000D-004G-4	5.9	10.5	9	3.7	5	0.120
FU9000D-5R5G-4	8.9	14.6	13	5.5	7	0.195
FU9000D-7R5G-4	11	20.5	17	7.5	10	0.262
FU9000D-011G-4	17	26	25	11	15	0.445
FU9000D-015G-4	21	35	32	15	20	0.553

Model	Power capacity /KVA	Input current /A	Output current /A	Adapted motor		Heating power consumption/ kW
				kW	HP	
FU9000D-018G-4	24	38.5	37	18.5	25	0.651
FU9000D-022G-4	30	46.5	45	22	30	0.807
FU9000D-030G-4	40	62	60	30	40	1.01
FU9000D-037G-4	57	76	75	37	50	1.20
FU9000D-045G-4	69	92	91	45	60	1.51
FU9000D-055G-4	85	113	112	55	75	1.80
FU9000D-075G-4	114	157	150	75	100	1.84
FU9000D-090G-4	134	180	176	90	120	2.08
FU9000D-110G-4	160	214	210	110	150	2.55
FU9000D-132G-4	192	256	253	132	180	3.06
FU9000D-160G-4	231	307	304	160	215	3.61
FU9000D-200G-4	250	385	377	200	270	4.42
FU9000D-220G-4	280	430	426	220	295	4.87
FU9000D-250G-4	355	468	465	250	335	5.06
FU9000D-0280G-4	453	525	520	280	375	5.33
FU9000D-315G-4	517	590	585	315	420	5.69
FU9000D-350G-4	565	665	650	344	485	6.31
FU9000D-400G-4	629	785	725	400	545	6.91
FU9000D-450G-4	715	820	782	450	615	7.54
FU9000D-500G-4		860	835	500	680	
FU9000D-630G-4		1080	1000	630	860	

5.2 FU9000D Series Inverter Appearance and Size

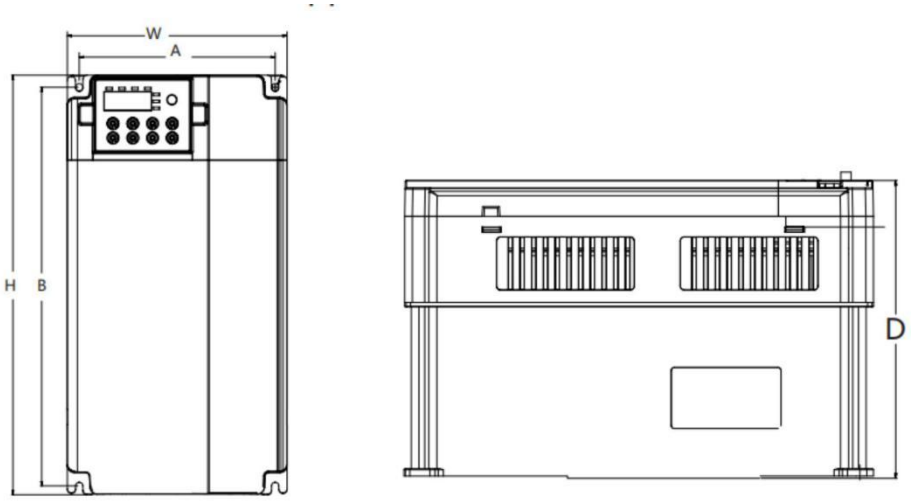


Figure 5-1 plastic structure

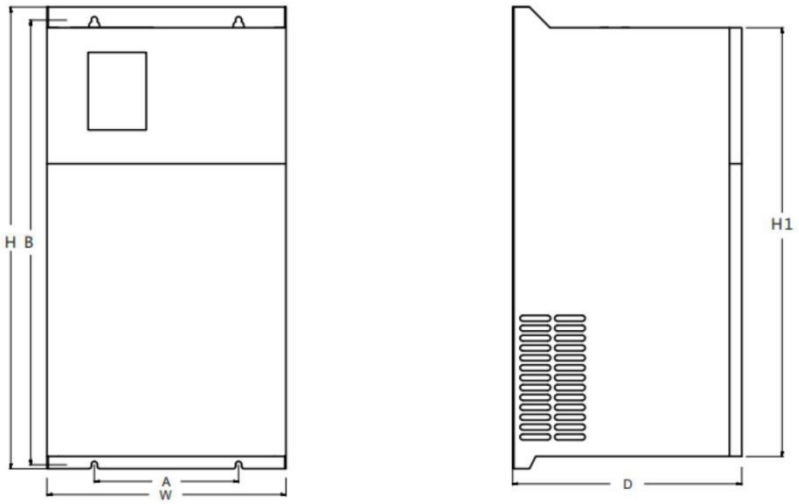


Figure 5-2 iron structure

Figure 5-1& 5-2 Schematic diagram of the external dimensions and installation dimensions of FU9000D series inverter

Model	Mounting hole /mm		Dimensions /mm				Installation aperture /mm	Weight /kg
	A	B	H	H1	W	D		
Single phase 220V								
FU9000D-0R7G-S2	115	175	185	/	125	160	Ø5	1.64
FU9000D-1R5G-S2								
FU9000D-2R2G-S2								
Three phase 220V								
FU9000D-0R7G-2	115	175	185	/	125	160	Ø5	1.64
FU9000D-1R5G-2								
FU9000D-2R2G-2								
Three phase 380V								
FU9000D-0R7G-4	115	175	186	/	125	160	Ø5	1.64
FU9000D-1R5G-4								
FU9000D-2R2G-4								
FU9000D-004G-4								
FU9000D-5R5G-4	130	242	255	/	145	170	Ø5	3.5
FU9000D-7R5G-4								
FU9000D-011G-4	150	305	320	/	170	200	Ø5.5	5.84
FU9000D-015G-4								6.1
FU9000D-018G-4								6.3
FU9000D-022G-4	235	385	400	/	255	235	Ø6.8	10.5
FU9000D-030G-4								10.8
FU9000D-037G-4								11.5
FU9000D-045G-4	175	535	/	560	290	285	Ø8	29
FU9000D-055G-4								
FU9000D-075G-4								
FU9000D-090G-4	300	620	/	650	380	285	Ø10	48
FU9000D-110G-4								49
FU9000D-132G-4	250	720	/	750	400	340	Ø10	58
FU9000D-160G-4								58
FU9000D-185G-4	400	830	/	860	550	360	Ø12	/
FU9000D-200G-4								
FU9000D-220G-4								
FU9000D-250G-4	500	870	/	900	750	360	Ø12	/
FU9000D-280G-4								
FU9000D-315G-4								
FU9000D-350G-4	650	870	/	900	900	400	Ø12	/
FU9000D-400G-4								

5.3 External Dimensions of the Keyboard

Figure 5-3-1: The size of the external keyboard

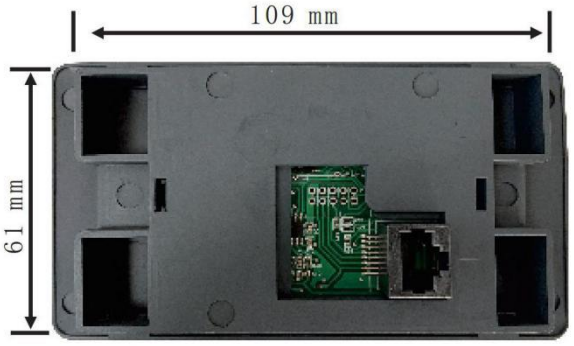


Figure 5-3-2: Opening size of external keyboard

Figure 5-3 External dimensions of the external keyboard (unit: mm)

5.4 Selection of Braking Unit and Braking1 Resistor

5.4.1 Selection of Braking Resistor Resistance

When braking, almost all the regenerative energy of the motor is consumed on the braking resistor. According to the formula: Ux U/R=Pb

U - braking voltage for stable braking of the system (different systems have different U values, generally 700V for 380Vac systems);

Pb - braking power

5.4.2 Selection of Braking Resistor Power

Theoretically, the power of the braking resistor is the same as the braking power, but the derating is considered to be 70%. According to the formula: 0.7x Pr=PbxD

Pr-resistor power; D-brake frequency, that is, the proportion of the regeneration process in the entire working process.

Common applications	Elevator	Winding and unwinding	Centrifuge	Occasional braking load	General application
Braking Frequency	20%-30%	20%-30%	50%-60%	5%	10%

You can select different resistance and power based on actual needs. However, the resistance must not be lower than the recommended value. The power may be higher than the recommended value.

The braking resistor model is dependent on the generation power of the motor in the actual system and is also related to the system inertia, deceleration time and potential energy load. For systems with high inertia, and/or rapid deceleration times, or frequent braking sequences, the braking resistor with higher power and lower resistance value should be selected.

Table 5-4 Selection table of FU9000D inverter brake components

Model	Recommended Power	Recommended Resistance	Braking Unit
Single-phase 220 V			
FU9000D-0R7G-S2	80W	≥ 150Ω	Built-in(standard)
FU9000D-1R5G-S2	100W	≥ 100Ω	
FU9000D-2R2G-S2	100W	≥ 70Ω	
Three-phase 220 V			
FU9000D-0R7G-2	150W	≥ 110Ω	Built-in(standard)
FU9000D-1R5G-2	250W	≥ 100Ω	
FU9000D-2R2G-2	300W	≥ 65Ω	
FU9000D-004G-2	400W	≥ 45Ω	
FU9000D-5R5G-2	800W	≥ 22Ω	
FU9000D-7R5G-2	1000W	≥ 16Ω	
FU9000D-011G-2	1500W	≥ 11Ω	
FU9000D-015G-2	2500W	≥ 8Ω	
FU9000D-018G-2	3.7kW	≥ 6.7Ω	
FU9000D-022G-2	4.5kW	≥ 6.7Ω	External
FU9000D-030G-2	5.5kW	≥ 5Ω	
FU9000D-037G-2	7.5kW	≥ 3.3Ω	
FU9000D-045G-2	4.5kW × 2	≥ 5Ω × 2	
FU9000D-055G-2	5.5kW × 2	≥ 5Ω × 2	
FU9000D-075G-2	16kW	≥ 3.3Ω × 2	
Three-phase 380 V			
FU9000D-0R7G-4	150W	≥ 300Ω	Built-in(standard)
FU9000D-1R5G-4	150W	≥ 220Ω	
FU9000D-2R2G-4	250W	≥ 200Ω	
FU9000D-004G-4	300W	≥ 130Ω	
FU9000D-5R5G-4	400W	≥ 90Ω	
FU9000D-7R5G-4	500W	≥ 65Ω	
FU9000D-011G-4	800W	≥ 43Ω	
FU9000D-015G-4	1000W	≥ 32Ω	
FU9000D-018G-4	1300W	≥ 25Ω	
FU9000D-022G-4	1500W	≥ 22Ω	External
FU9000D-030G-4	2500W	≥ 16Ω	

Model	Recommended Power	Recommended Resistance	Braking Unit
FU9000D-037G-4	3.7kW	≥ 12.6Ω	
FU9000D-045G-4	4.5kW	≥ 9.4Ω	
FU9000D-055G-4	5.5kW	≥ 9.4Ω	
FU9000D-075G-4	7.5kW	≥ 6.3Ω	
FU9000D-090G-4	4.5kW x 2	≥ 9.4Ω x 2	
FU9000D-110G-4	5.5kW x 2	≥ 9.4Ω x 2	
FU9000D-132G-4	6.5kW x 2	≥ 6.3Ω x 2	
FU9000D-160G-4	16kW	≥ 6.3Ω x 2	
FU9000D-200G-4	20kW	≥ 2.5Ω	
FU9000D-220G-4	22kW	≥ 2.5Ω	
FU9000D-250G-4	12.5kW x 2	≥ 2.5Ω x 2	
FU9000D-280G-4	14kW x 2	≥ 2.5Ω x 2	
FU9000D-315G-4	16kW x 2	≥ 2.5Ω x 2	
FU9000D-350G-4	17kW x 2	≥ 2.5Ω x 2	
FU9000D-400G-4	14kW x 3	≥ 2.5Ω x 3	
FU9000D-450P-4	15kW x 3	≥ 2.5Ω x 3	

Chapter 6 Maintenance and Fault Diagnosis

6.1 Daily Maintenance and Maintenance of the Inverter

6.1.1 Daily Maintenance

The influence of the ambient temperature, humidity, dust and vibration will cause the aging of the devices in the AC drive, which may cause potential faults or reduce the service life of the AC drive. Therefore, it is necessary to carry out routine and periodic maintenance.

Daily inspection items:

1) Whether the sound changes abnormally during motor operation.

2) Whether there is vibration during motor operation.

3) Whether the installation environment of the inverter has changed.

4) Whether the cooling fan of the inverter works normally.

5) Whether the inverter is overheated.

6) Daily cleaning.

7) Always keep the inverter in a clean state.

8) Effectively remove dust on the surface of the inverter to prevent dust from entering the inverter. Especially metal dust.

9) Effectively remove oil stains on the cooling fan of the inverter.

6.1.2 Regular Inspection

Please regularly check the places that are difficult to check during operation.

Regular inspection items:

1) Check the air duct and clean it regularly.

2) Check whether the screws are loose.

3) Check that the inverter is corroded.

4) Check whether there are arc traces on the wiring terminals.

5) Main circuit insulation test.

Reminder: When measuring insulation resistance with a megger (please use a DC 500V megger), disconnect the main circuit line from the inverter. Do not use an insulation resistance meter to test the insulation of the control circuit. No need for high voltage test (completed at the factory).

6.1.3 Replacement of Vulnerable Parts of the Inverter

The vulnerable parts of the frequency converter are mainly cooling fans and electrolytic capacitors for filtering, and their service life is closely related to the environment and maintenance conditions. Normally, the life span is:

Component	Service Life
Fan	2 to 3 years
Electrolytic capacitor	4 to 5 years

Note: The standard replacement time is the time when used under the following conditions. The user can determine the replacement period according to the operating time.

- Ambient temperature: The annual average temperature is about 30°C
- Load factor: 80% or less
- Operation rate: Less than 20 hours/day

1) Cooling fan

Possible causes of damage: bearing wear, blade aging.

Judgment criteria: whether there are cracks in fan blades, etc., and whether there are abnormal vibrations when starting the machine.

2) Filter electrolytic capacitor

Possible causes of damage: poor input power quality, high ambient temperature, frequent load jumps, and electrolyte aging.

Judgment criteria: whether there is liquid leakage, whether the safety valve has protruded, the measurement of electrostatic capacitance, and the measurement of insulation resistance.

6.1.4 Storage of AC Drive

After purchasing the inverter, users must pay attention to the following points for temporary storage and long-term storage:

1) When storing, try to put it in the company's packaging box according to the original packaging.

2) Long-term storage will cause the deterioration of the electrolytic capacitor. It must be energized once within 2 years for at least 5 hours.

The input voltage must be slowly raised to the rated value with a voltage regulator.

6.2 Warranty Instructions for the AC Drive

1) The free warranty only refers to the inverter itself.

2) Under normal conditions of use, if there is a fault or damage, our company is responsible for a 12-month warranty (from the date of leaving the factory, the barcode on the nameplate shall prevail, and the contract agreement shall be executed in accordance with the agreement). Charge reasonable maintenance fees if warranty expired.

3) Within 18 months, if the following situations occur, a certain maintenance fee shall be charged.

4) Damage to the machine caused by the user's failure to follow the regulations in the manual.

5) Damage caused by fire, flood, abnormal voltage, etc.

6) Damage caused when the inverter is used for abnormal functions.

7) The relevant service fees are calculated in accordance with the manufacturer’s unified standards. If there is a contract, the contract shall be treated as a priority.

6.3 Fault Alarm and Countermeasures

If a fault occurs during the operation of the FU9000D inverter system, the inverter will immediately protect the motor and stop output, the inverter fault relay contact will act simultaneously. The inverter panel will display the fault code. The fault types and common solutions corresponding to the fault code are shown in the table below. The list in the table is for reference only. Please do not repair or modify without authorization. If the fault cannot be eliminated, please seek technical support from our company or the product agent.

Figure 6-1 Solutions to the faults of the FU9000D

Fault Name	Display	Possible Causes	Solutions
Over-current during acceleration	Err02	1: The output circuit is grounded or short circuited. 2: Control mode is FVC or SVC, no parameter identify. 3: Acceleration time too short 4: Inappropriate setting of over-current stall suppression 5: Manual torque boost or V/F curve is not appropriate. 6: The startup operation is performed on the rotating motor. 7: External disruption.	1: Eliminate external faults, check whether short circuit or open circuit happen in motor 2: Set motor parameter according to motor nameplate. 3: Increase the acceleration time. 4: Confirm over-current stall suppression (P3-19) has enabled; • P3-18 too high, recommend 120% -150% • P3-20 too high, recommend 20-40 5: Adjust the manual torque boost or V/F curve. 6: Select rotational speed tracking restart or start the motor after it stops. 7: Check fault records. If the current is far lower than over-current value, find interference source. If no interference source, problem may from drive board or hall element.
Over-current during deceleration	Err03	1: The output circuit is grounded or short circuited. 2: Control mode is FVC or SVC, no parameter identify. 3: Deceleration time too short 4: Inappropriate setting of over-current stall suppression 5: No brake unit & brake resistor. 6: External disruption	1: Eliminate external faults, check whether short circuit or open circuit happen in motor. 2: Set motor parameter according to motor nameplate. 3: Increase the deceleration time. 4: Confirm over-current stall suppression (P3-19) has enabled; • P3-18 too high, recommend 120% -150% • P3-20 too high, recommend 20-40 5: Add brake unit and brake resistor. 6: Check fault records. If the current is far lower than over-current value, find interference source. If no interference source, problem may from drive board or hall element.

Fault Name	Display	Possible Causes	Solutions
Over-current at constant speed	Err04	1: The output circuit is grounded or short circuited. 2: Control mode is FVC or SVC, no parameter identify. 3: Inappropriate setting of over-current stall suppression 4: The AC drive model is of too small power class. 5: External disruption.	1: Eliminate external faults, check whether short circuit or open circuit happen in motor 2: Set motor parameter according to motor nameplate. 3: Confirm over-current stall suppression (P3-19) has enabled; • P3-18 too high, recommend 120% -150% • P3-20 too high, recommend 20-40 4: In stable operation, if the running current has exceeded the rated current of the motor or the rated output current of the inverter, please select a higher power inverter. 5: Check fault records. If the current is far lower than over-current value, find interference source. If no interference source, problem may from drive board or hall element.
Over-voltage during acceleration	Err05	1: The input voltage is too high. 2: An external force drives the motor during acceleration. 3: Inappropriate setting of over-voltage stall suppression. 4: No brake unit & brake resistor. 5: Acceleration time too short.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor. 3: Confirm over-voltage stall suppression (P3-23) has enabled; • P3-22 too high, recommend 770V ~ 700V • P3-24 too low, recommend 30-50 4: Install the braking unit and braking resistor. 5: Increase accelerate time.
Over-voltage during deceleration	Err06	1: Inappropriate setting of over-voltage stall suppression. 2: An external force drives the motor during decelerat ion. 3: The deceleration time is too short. 4: No brake unit & brake resistor.	1: Confirm over-voltage stall suppression (P3-23) has enabled; • P3-22 too high, recommend 770V ~ 700V • P3-24 too low, recommend 30-50 2: Cancel the external force or install the braking resistor. 3: Increase the acceleration time. 4: Cancel the external power or add brake resistor.
Overvoltage at constant speed	Err07	1: Inappropriate setting of over-voltage stall suppression. 2: An external force drives the motor during decelerat ion.	1, Confirm over-voltage stall suppression (P3-23) has enabled; • P3-22 too high, recommend 770V ~ 700V • P3-24 too low, recommend 30-50 • P3-26 too low, recommend 5~20Hz 2, Cancel the external power or add brake resistor.
Buffer power fault	Err08	1: The input voltage is not within the allowable range.	1: Contact us for technical support.

Fault Name	Display	Possible Causes	Solutions
Undervoltage	Err09	1: Instantaneous power failure occurs on the input power supply. 2: The AC drive's input voltage is not within the allowable range. 3: The bus voltage is abnormal. 4: The rectifier bridge and buffer resistor are faulty.	1: P9-59 can prevent under-voltage of instantaneous power failure 2: Adjust the voltage to normal range. 3 ~ 4: Contact the agent or I novance.
AC drive overload	Err10	1: The load is too heavy or locked-rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.
Motor overload	Err11	1: P9-01 is set improperly. 2: The load is too heavy or locked-rotor occurs on the motor. 3: The AC drive model is of too small power class.	1: Set P9-01 correctly. 2: Reduce the load and check the motor and the mechanical condition. 3: Select an AC drive of higher power class.
Power input phase loss	Err12	1: The three-phase power input is abnormal. 2: The drive board is faulty. 3: The lightening board is faulty. 4: The main control board is faulty.	1: Eliminate external faults. 2 ~ 4: Contact the agent or USFULL .
Power output phase loss	Err13	1: Motor faulty. 2: The cable connecting between the AC drive and the motor is faulty. 2: The AC drive's three-phase outputs are unbalanced when the motor is running. 3: Drive board faulty. 4: Module faulty.	1: Eliminate external teults. 2: Check whether the motor three-phase winding is normal. 3 ~ 4: Contact the agent or USFULL.
Module overheat	Err14	1: The ambient temperature is too high. 2: The air filter is blocked. 3: The fan is damaged. 4: The thermally sensitive resistor of the module is damaged. 5: IGBT is damaged.	1: Lower the ambient temperature. 2: Clean the air filter. 3: Replace the damaged fan. 4 ~5: Contact the agent or USFULL.
External equipment fault	Err15	1: External fault signal is input via DI. 2: External fault signal is input via virtual I/O.	1: Check external fault, confirm the restart is allowed (P8-18). Reset. 2: Confirm Group A1, Group IO setting is correct. Reset.
Communication fault	Err16	1: The host computer is in abnormal state. 2: The communication cable is faulty. 3: P0-28 is set improperly. 4: The communication parameters in group PD are set improperty.	1: Check the cabling of host computer. 2: Check the communication cabling. 3: Set P0-28 correctiy. 4: Set the communication parameters properly.
		After all check above, ERR still exist, try factory recover.	

Fault Name	Display	Possible Causes	Solutions
Contactor fault	Err17	1: The drive board and power supply are faulty. 2: The contactor is faulty.	Contact the agent or USFULL.
Current detection fault	Err18	1: The HALL device is faulty. 2: The drive board is faulty.	Contact the agent or USFULL.
Motor auto-tuning fault	Err19	1: The motor parameters are not set according to the nameplate. 2: The motor auto-tuning times out.	1: Set the motor parameters according to the nameplate properly. 2: Check the cable connecting the AC drive and the motor. 3: Check parameter D1-27, check encoder signal cable connection is correct, stable.
Enccoder fault	Err20	1: The encoder type is incorrect. 2: The cable connection of the encoder is incorrect 3: The encoder is damaged. 4: The PG card is feutty.	1: Set the encoder type correctly based on the actual situation. 2: Check PG card power and phase sequence. 3: Replace the damaged encoder. 4: Replace the faulty PG card.
EEPROM readwrite fault	Err21	1: The EEPROM chip is damaged.	1: Replace the main control board.
Short circuit to ground	Err23	1: The motor is short circuited to the ground.	1: Replace the cable or motor.
Accumulative running time reached	Err26	1: The accumulative running time reaches the setting value.	1: Clear the record through the parameter initialization function.
User-defined fault 1	Err27	1: The user-defined fault 1 signal is input via DI. 2: User-defined fault 1 signal is input via virtual I/O.	Reset.
User-defined fault2	Err28	1: The user-defined fault 2 signal is input via DI. 2: The user-defined fault 2 signal is input via virtual I/O.	Reset.
Accumulative power-on time reached	Err29	1: The accumulative power-on time reaches the setting value.	1: Clear the record through the parameter initialization function.
Load becoming 0	Err30	1: The AC drive running current is lower than P9-64.	1: Check that the load is disconnected or the setting of P9-64 and P9-65 is correct.
PID feedback lost during running	Err31	1: The PID feedback is lower than the setting of PA-26.	1: Check the PID feedback signal or set PA-26 to a proper value.
Pulse-by-pulse current limit fault	Err40	1: The load is too heavy or locked-rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.

Fault Name	Display	Possible Causes	Solutions
Motor switchover fault during running	Err41	1: Change the selection of the motor via terminal during running of the AC drive.	1: Perform motor switchover after the AC drive stops.
Too large speed deviation	Err42	1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not performed. 3: P9-69 and P9-70 are set incorrectly.	1: Set the encoder parameters properly. 2: Perform the motor autotuning. 3: Set P9-69 and P9-70 correctly based on the actual situation.
Motor over-speed	Err43	1: The encoder parameters are set incorrectly. 2: The motor auto-tuning is not performed. 3: P9-69 and P9-70 are set incorrectly.	1: Set the encoder parameters properly. 2: Perform the motor autotuning. 3: Set P9-69 and P9-70 correctly based on the actual situation.
Motor overheat	Err45	1: The cabling of the temperature sensor becomes loose. 2: The motor temperature is too high.	1: Check the temperature sensor cabling and eliminate the cabling fau lt. 2: Lower the carrier frequency or adopt other heat radiation measures.
Host control slave fault	Err55	1: Slave fault, check slave	1: Check according to slave ERR code.
Brake unit overload	Err61	1: Brake resistor too small	1: Please refer to table 5-4
Brake circuit short circuit	Err62	1: Brake unit fault	1: Contact us for technical support.

6.4 Common Faults and Solutions

You may come across the following faults during the use of the AC drive. Refer to the following table for simple fault analysis:

Table 7-2 Troubleshooting to common faults of the AC drive

No.	Fault	Possible Causes	Solutions
1	There is no display at power-on.	1: There is no power supply to the AC drive or the power input to the AC drive is too low. 2: The power supply of the switch on the drive board of the AC drive is faulty. 3: The rectifier bridge is damaged. 4: The control board or the operation panel is faulty. 5: The cable connecting the control board and the drive board and the operation panel breaks.	1: Check the power supply. 2: Check the bus voltage. 3: Re-connect the 8-core and 34-core cables. 4-6: Contact the agent or USFULL for technical support.
2	"000000" is displayed at power-on.	1: The cable between the drive board and the control board is in poor contact. 2: Related cxamponents on the control board are damaged. 3: The motor or the motor cable is short circuited to the ground. 4: The HALL device is faulty. 5: The power input to the AC drive is too low.	1: Re-connect the 8-core and 34-core cables. 2-5: Contact the agent or USFULL for technical support.

No.	Fault	Possible Causes	Solutions
3	"Err23" is displayed at power-on.	1: The motor or the motor output cable is short-circuited to the ground. 2: The AC drive is damaged.	1: Measure the insulation of the motor and the output cable with a megger. 2: Contact the agent or USFULL for technical support.
4	The AC drive display is normal upon power-on. But "00000" is displayed after running and stops immediately.	1:The cooling fen is damaged or locked-rotor occurs. 2: The external control terminal cable is short circuited.	1: Replace the damaged fan. 2: Eliminate external fault.
5	Err14 (module overheat) fault is reported frequently.	1: The setting of carrier frequency is too high. 2: The cooling fen is damaged, or the air filter is blocked. 3: Components inside the AC drive are damaged (thermal coupler or others).	1: Reduce the carrier frequency (P0-15). 2: Replace the fan and dean the air filter. 3: Contact the agent or USFULL for technical support.
6	The motor does not rotate after the AC drive runs.	1: Check the motor and the motor cables. 2: The AC drive parameters are set improperly (motor parameters). 3: The cable between the drive board and the control board is in poor contact 4: The drive board is faulty.	1: Ensure the cable between the AC drive and the motor is normal. 2: Replace the motor or dear mechanical faults. 3: Check and re-set motor parameters. 4: Contact the agent or USFULL for technical support.
7	The DI terminals are disabled.	1: The parameters are set incorrectly. 2: The external signal is incorrect. 3: The control board is faulty.	1: Check and reset the parameters in group P4. 2: Re-connect the external signal cables. 3: Contact the agent or USFULL for technical support.
8	The AC drive reports over-current and overvoltage frequently.	1: The motor parameters are set improperly. 2: The acceleration/deceleration time is improper. 3: The load fluctuates.	1: Re-set motor parameters or re-perform the motor autotuning. 2: Set proper acceleration/ deceleration time. 3: Contact the agent or USFULL for technical support.
9	Err17 is reported upon power-on or running.	The soft startup contactor is not picked up.	1: Check whether the contactor cable is loose. 2: Check whether the contactor is faulty. 3: Check whether 24 V power supply of the contactor is faulty. 4: Contact the agent or USFULL for technical support.
10	 is displayed upon power-on.	1: Related component on the control board is damaged.	1: Replace the control board.

Appendix A: Defubution of Communication Data Address

FU9000D supports four communication protocols (MODBUS-RTU, CANopen, CANlink, and Profibus-DP). The user programmable card and point-to-point communication are derivation of CANlink protocol. Host computer can implement control such as monitoring and parameter viewing and modification on the AC drive through communication protocols.

FU9000D communication data is classified into parameter data and non-parameter data. The non-parameter data includes running commands, running status, running parameters and alarm information.

A.1 FU9000D Parameter Data

The parameter data provides important parameters of the AC drive. The parameter data isdescribed as below:

Parameter Data	Group P (read-write)	P0, P1, P2, P3, P4, P5, P6, P7, P8, P9, PA, PB, PC, PD, PE, PF
	Group D (read-write)	D0, D1, D2, D3, D4, D5, D6, D7, D8, D9, DA, DB, DC, DD, DE, DF

Communication addresses of parameter data are defined as follows:

1. When parameter data is read by means of communication

For groups P0 ~ PF and D0 ~ DF, the high 16 bits of the communication address indicate the group number and the low 16 bists indicate the parameter number in the group.

Example:

Communication address of P0-16 is F010H, where F0H represents group P0 and 10H is the hexadecimal data format of serial number 16 in the group.

Communication address of DC-08 is AC08, where ACH represents group DC and 08H is the hexadecimal data format of serial number 8 in the group.

2. When parameter data is written by means of communication

For groups P0 ~ PF, where the high 16 bits in communication address are 00 ~ 0F or P0 ~ PF is decided by whether the high 16 bits are written to EEPROM. The low 16 bits indicate parameter number in the group.

Example:

P0-16: If it need not be written to EEPROM, communication address is 0010H. If it needs to be written to EEPROM, communication address is F010H.

For groups D0 ~ DF, where the high 16 bits incommunication address are 40 ~ 4F or D0 ~ DF is decided by whether the high 16 bits are written to EEPROM. The low 16 bits indicate parameter number in the group.

DC-08: If it need not be written to EEPROM, communication address is 4C08H. If it needs to be written to EEPROM, communication address is AC08H.

A.2 Non-Parameter Data

Non-parameter data	Status data (read-only)	Group U (monitoring parameters), AC drive fault information and AC drive running status
	Control parameters (write-only)	Control commands, communication setting values, DO control, AO1 control, AO2 control, high-speed pulse (FMP) output cpmtrol and parameter initialization

1, Status Data

Status data includes group U (monitoning parameters), AC drive fault description and AC drive running status.

Group U (monitoring parameters)

The high 16 bits in communication address of U0 ~ UF is 70 to 7F and the low 16 bits indicate the function code number in the group. For example, the communication address of U0-11 is 700BH.

AC drive fault description

When fault description is read via communication, the communication address is 8000H. You can obtain current fault code of the AC drive by reading the address. (See P9-14)

AC drive running status

When the drive running status is read via communication, the communication address is 3000H. You can obtain current running status information of the AC drive by reading the address. The running status is definged in the following table.

Communication Address of AC Drive's Running Status	Status Definition
3000H	1: Forward run
	2: Reverse run
	3: Stop

2, Control Parameters

The control parameters include control command, DO control, AO1 control, AO2 control, high-speed pulse (FMP) output control.

• Control commands

When P0-02 (command source selection) is set to 2 (communication control), you can implement control such as start/stop of the AC drive by using communication address. The control commands are defined in the following table.

Communication Address of AC Drive's Running Status	Status Definition	
2000H	1: Forward run	4: Reverse jog
	2: Reverse run	5: Coast to stop
	3: Forward iog	6: Decelerate to stop
	7: Fault reset	

• Communication reference

Communication setting values include data set via communication such as frequency reference, torque limit, V/F separation voltage, PID reference and PID feedback.

Communication address is 1000H. The range is -10000 to 10000 and corresponding value range is -100.00% ~ 100.00%.

• DO control

When DO terminal is set for function 20 (Communication control), host computer can implement control on DO terminals of the drive through communication address 2001H. Control on DO terminals of the drive is defined in the following table.

Communication Address of Drive Running Status	Status Definition
2001H	BIT0: DO1 output control
	BIT1: DO2 output control
	BIT2: Relay1 output control
	BIT3: Relay2 output control
	BIT4: FMR output control
	BIT5: VDO1
	BIT6: VDO2
	BIT7: VDO3
	BIT8: VDO4
	BIT9: VDO5

• AO1 control, AO2 control, high-speed pulse (FMP) output control

When AO1, AO2 and FMP are set to function 12 (Communication setting), host computer can implement control on AO and high-speed pulse outputs by means of communication addresses. The definition is provided in the following table.

Communication Address of AO1, AO2 and FMP Output		Command Definition
AO1	2002H	0 to 7FFF indicates 0% to 100%
FMP	2004H	

• Parameter initialization

This function is required when you need to perform parameter initialization on the drive by using host computer.

If FP-00 (User password) is set to a non-zero value, pass password verification first. Host computer performs parameter initialization within 30s after password verificationis successful.

Communication address of password verification via communication is 1F00H. Directly write correct user password to this address to perform password verification.

Communication address of parameter initialization by means of communication is 1F01H, defined in the following table.

Communication Address of Parameter Initialization	Command Definition
1F01H	1: Restore default settings
	2: Clear records
	4: Restore user backup parameters
	501: Back up current user parameters

Appendix B: FU9000D MODBUS Communication Protocol

The drive provides RS485 communication interface and supports MODBUS-RTU communication protocol. The user can implement centralized control, such as setting running commands and function codes, and reading running status and fault information of the AC drive, by using a PC or PLC.

B.1 Protocol Content

This protocol defines content and format of transmitted messages during serial communication, including master polling (or broadcasting) format and master coding method (function code for the action, transmission data, and error check). The slave uses the same structure in response, including action confirmation, data returning and error check. If an error occurs when the slave receives a message, or the slave cannot complete the action required by the master, the slave returns a fault message as a response to the master.

B.1.1 Application

The AC drive is connected to a "single-master multi-slave" PC/PLC control network with RS485 bus.

B.1.2 Bus Structure

• Interface mode

The RS485 extension card FU38TX1 must be inserted into the AC drive.

• Topological structure

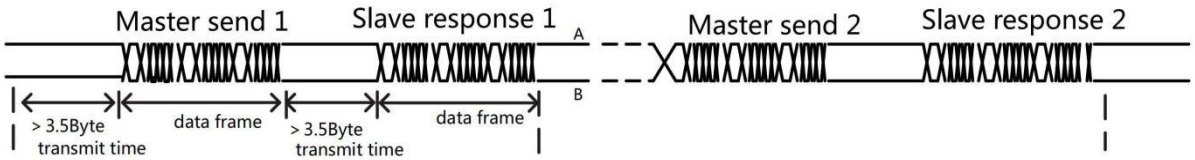
The system consists of a single master and multiple slaves. In the network, each communication device has a unique slave address. A device is the master (can be a PC, PLC or HMI) and initiates communication to perform parameter read or write operations on slaves. The other devices (slaves) provide data to respond to query or operations from the master. At the same moment, either the master or the slave transmits data and the other can only receives data.

The address range of the slaves is 1 to 247, and 0 is broadcast address. Slave address must be unique in the network.

• Transmission mode of communication

The asynchronous serial and half-duplex transmission mode is used. During asynchronous serial communication, data is sent frame by frame in the form of message.

In MODBUS-RTU protocol, an interval of at least 3.5-byte time marks the end of the previous message. A new message starts to be sent after this interval.

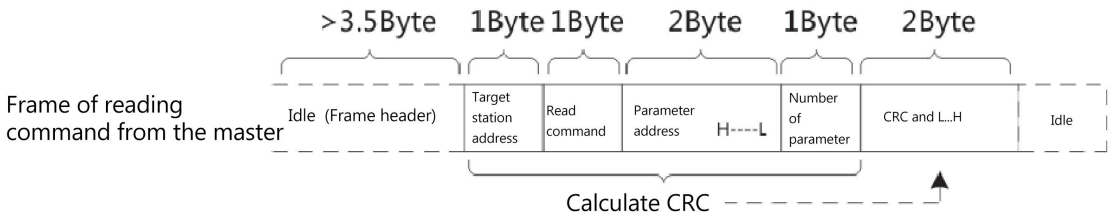


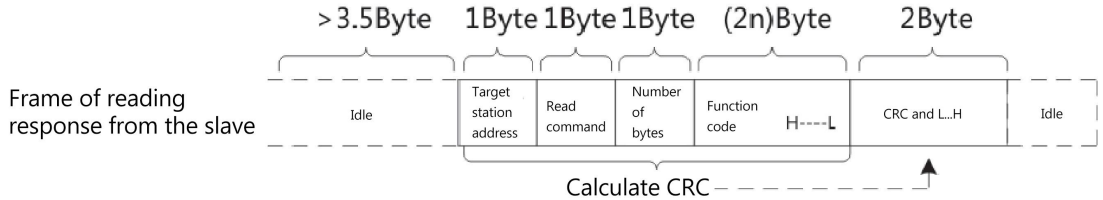
In theory, host computer can read several consecutive parameters (can reach up to 12) but the last parameter it reads must not jump to the next parameter group. Otherwise, an error occurs on response.

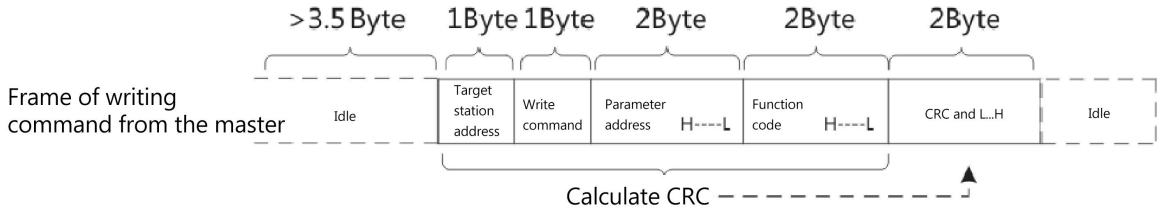
B.2 Data Format

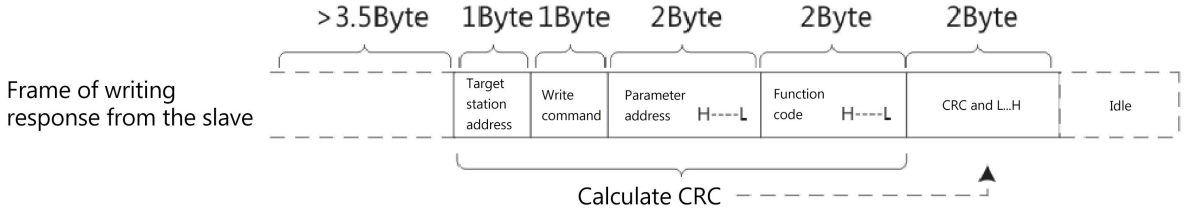
The drive supports reading and writing of word-type parameters only. Reading command is 0x03 and writiong command is 0x06. It does not support reading and writing of bytes or bits.

The Modbu-RTU protcol communication data format of the drive is as follows:

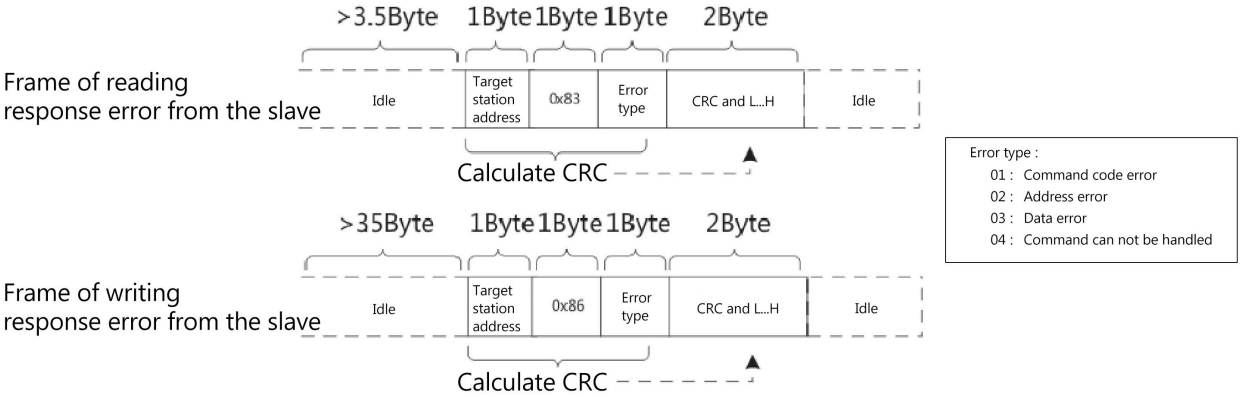








If the slave detects a communication frame error or reading/ writing failure is caused by other reasons, an error frame will be returned as follows:



The frame format is described in the following table:

Frame header (START)	Greater than the 3.5-byte transmission idle time
Slave address (ADR)	Communication address: 1 ~ 247 0: Broadcast address

Command code (CMD)	03: Read slave parameters 06: Write slave parameters
Function code address (H)	It is the intermal parameter address of the AC drive, expressed in hexadecimal format. The parameters include functional parameters and non-functional parameters (running status and running command). During transmission, low-order bytes follow the high -order bytes.
Function code address (L)	
Number of function codes (H)	It is the number of function codes read by this frame. If it is 1, it indicates that one function code is read. During transmission, low bytes follow high bytes. In the present protocol, only one function code is read once, and this field is unavailable.
Number of function codes (L)	
Data (H)	It is response data or data to be written. During transmission, low-order bytes follow the high-order bytes.
Data (L)	
CRC CHK high bytes	It is the detection value (CRC16 verification value). During transmission, low-order bytes follow the high-order bytes.
CRC CHK low bytes	
END	3.5-byte transmission time.

• CRC Check

In MODBUS-RTU mode, a message includes a CRC-based error-check field. The CRC field checks content of entire message. The CRC field is two bytes, containing a 16-bit binary value. The CRC field is calculated by transsmitting device, and then added to message. The receiving device recalculates a CRC value after receiving message, and compares the calculated value with the CRC value in the received CRC field.

The CRC is first stored to OxFFFF. Then a procedure is invoked to process the successive 8-bit byte in the message and the value in the register. Only the eight bits in each character are used for the CRC. The start bit, stop bit and the parity bit do not apply to the CRC.

During generation of the CRC, each eight-bit character is in exclusive-OR (XOR) with the content in the register. Then the result is shifted in the direction of the least significant bit (LSB), with a zero filled into the most significant bit (MSB) position. The LSB is extracted and examined. If the LSB was a 1, the register then perfoms XOR with a preset value. If the LSB was a 0, no XOR is performed . This process is repeated until eight shifts hava been performed. After the last (eighth) shift, the next eight-bit byte is in XOR with the register's current value, and the process repeats for eight more shifts as described above. The final value of the register, after all the bytes of the message have been applied, is the CRC value.

The CRC is added to the essage from the low-order byte followed by the high-order byte. The CRC simple function is as follows:

```
unsigned int crc_cJL_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)  ;
    }
```

B.3 Definition of Communication Parameter Addresses

• Read and Written Parameters

Function parameter can be read and written (except those which cannot be changed because they are only for the factory use or for monitoring).

Parameter group No. and parameter identifying No. are used to express parameter address.

• High-order bytes: F0 ~ FF (groups P), AO ~ AF (groups D), 70 ~ 7F (group U)

• Low-order bytes: 00 ~ FF

For example, to read parameter P3-12, communication address is expressed as 0xF30C.

Note

• Group PF: They are factory parameters. The parameters cannot be read or changed.

• Group U: These parameters can only be read.

Some parameters cannot be modified when the AC drive is running. Some parameter cannot be modified regardless of status of the AC drive. In addition, pay attention to setting range, unit and description of parameters when modifying them.

Parameter Group	Visited Address	Parameter Address in RAM
P0 ~ PE	0xF000 ~ 0xFEFF	0x0000 ~ 0x0EFF
D0 ~ DC	0xA000 ~ 0xACFF	0x4000 ~ 0x4CFF
U0	0x7000 ~ 0x70FF	-

Frequent storage to the EEPROM reduces its service life. Therefore, in communication mode, users can change values of certain parameters in RAM rather than storing the setting.

• For groups P parameters, users only need to change high order F of the function code address to 0.

• For groups D parameters, users only need to change high order A of the function code address to 4.

The function code addresses are expressed as follows:

• High-order bytes: 00 ~ 0F (groups P), 40 ~ 4F (groups D)

• Low-order bytes: 00 ~ FF

For example, if function code P3-12 can not be stored into EEPROM, the address is expressed as 030C;

if function code D0-05 can not be stored into EEPROM, the address is expressed as 4005.

It is an invalid address when being read. It can only be used for writting RAM.

Users can also use command code 07H to implement this function.

■ Stop/RUN Parameters

Parameter Address	Description	Parameter Address	Description
1000H	Communication setting value (Decimal):-10000 ~ 10000	1010H	PID reference
1001H	Running frequency	1011H	PID feedback
1002H	Bus voltage	1012H	PLC process
1003H	Output voltage	1013H	pulse input frequency, unit: 0.01 kHz
1004H	Output current	1014H	Feedback speed, unit 0.1 Hz
1005H	Output power	1015H	Remaining running time
1006H	Output torque	1016H	AI1 voltage before correction
1007H	Running speed	1017H	AI2 voltage before correction
1008H	DI input indication	1018H	AI3 voltage before correction
1009H	DO output indication	1019H	Linear speed
100AH	AI1 voltage	101AH	Current power-on time
100BH	AI2 voltage	101BH	Current running time
100CH	AI3 voltage	101CH	Pulse input frequency, unit 1Hz
100DH	Counting value input	101DH	Communication reference
100EH	Length value input	101EH	Actual feed back speed
100FH	Load speed	101FH	Main frequency X reference display
-	-	1020H	Auxiliary frequency Yreference display
Note	• Communication setting value indicates percentage: 10000 corresponds to 100.00%, and -10000 corresponds to -100.00%. • With regard to frequency, communication reference is a percentage of P0-10 (max frequency). • With regard to torque, communication reference is a percentage of P2-10 and D2-48 (corresponding to motor 1 and motor 2, respectively).		

■ Control command input to AC drive (write-only):

Command Word Address	Command Word Function
2000H	0001: Forward run
	0002: Reverse run
	0003: Forward jog
	0004: Reverse jog
	0005: Coast to stop
	0006: Decelerate to stop
	0007: Fault reset

■ Read AC drive state (read-only):

Command Word Address	Command Word Function
3000H	0001: Forward RUN
	0002: Reverse RUN
	0003: Stop

■ Parameter lock password check: If "8888H" is returned, it indicates that password check is passed.

Password Address	Password Content
1F00H	*****

■ DO terminal control (write-only)

Command Word Address	Command Word Function
2001H	BIT0: DO1 control BIT1: DO2 control BIT2: RELAY1 control BIT3: RELAY2 control BIT4: FMR control BIT5: VDO1 BIT6: VDO2 BIT7: VDO3 BIT8: VDO4 BIT9: VDO5

■ AO1 control (write-only)

Command Address	Command Content
2002H	0 ~ 7FFF indicates 0% ~ 100%.

■ AO2 control (write-only)

Command Address	Command Content
2003H	0 ~ 7FFF indicates 0% ~ 100%.

■ Pulse output control (write-only)

Command Address	Command Content
2004H	0 ~ 7FFF indicates 0% ~ 100%.

AC Drive Fault Description:

AC Drive Fault Address	AC Drive Fault Information	
8000h	0000: No fault	0015: Parameter read and write fault
	0001: Reserved	0016: AC drive hardware fault
	0002: over-current during acceleration	0017: Motor short circuited to ground
	0003: over-current during deceleration	0018: Reserved
	0004: over-current during constant speed	0019: Reserved
	0005: Overvoltage during acceleration	001a: Accumulative running time reached
	0006: Overvoltage during deceleration	001b: User-defined fault 1
	0007: Overvoltage during constant speed	001c: User-defined fault 2
	0008: Buffer resistance overload	001d: Accumulative power-on time reached
	0009: Undervoltage fault	001e: Load lost
	001a: AC drive overload	001f: PID feedback lost during running
	001b: Motor overload	0028: Fast current limit timeout
	001c: Input lost phase	0029: Motor switchover error during running
	001d: Output lost phase	002a: Too large speed deviation
	001e: IGBT over heat	002b: Motor over-speed
	001f: External fault	002d: Motor overheat
	0010: Communication fault	005a: Incorrect setting of PPR of the encoder
	0011: Contactor fault	005b: Not connecting the encoder
	0012: Current dection fault	005c: Initial position error
	0013: Motor tuning fault	005e: Speed feedback error
	0014: Encoder/PG card fault	

B.4 Pd Group Communication Parameter Description

Pd-00	Parameter Name: Baud rate	Default	6005
	Set range	Units position (Modubs Baud rate)	
		0: 300 bps	5: 9600 bps
		1: 600 bps	6: 19200 bps
		2: 1200 bps	7: 38400 bps
		3: 2400 bps	8: 57600 bps
		4: 4800 bps	9: 115200 bps

This parameter is used to set transmission speed between host computer and AC drive.

Note that baud rate of host computer must be the same as that of AC drive. Otherwise, communication shall fail. The higher baud rate is, the faster communication will be.

Pd-01	Parameter Name: Data format	Default	3
	Set range	0: No check, data format <8,N,2> 1: Even parity check, data format <8,E,1> 2: Odd parity check , data format <8,0,1> 3: No check, data format , data format <8,N,1>	

Note that data format of host computer must be the same as that of AC drive. Otherwise, communication shall fail.

Pd-02	Parameter Name: Local address	Default	1
	Setting Range	1 ~ 249, 0: Broadcast address	

This parameter is used to set address of AC drive. This address is unique (except broadcast address), which is basis for point-to-point communication between host computer and AC drive.

When local address is set to 0 (that is, broadcast address), AC drive can only receive and execute broadcast commands of host computer, but will not respond to host computer.

Pd-03	Parameter Name: Response delay	Default	2 ms
	Setting Range	0 to 20 ms	

This parameter sets interval between AC drive completing receiving data and AC drive sending data to host computer. If response delay is shorter than system processing time, system processing time shall prevail. If response delay is longer than system processing time, system sends data to host computer only after response delay is up.

Pd-04	Parameter Name: Communication timeout	Default	0.0S
	Setting Range	0.0s (invalid), 0.1 to 60.0s	

When AC drive does not receive communication signal within time set in this parameter, it detects communication timeout fault (Err16).

Generally, this parameter is set to 0.0s. In applications with continuous communication, you can use this parameter to monitor communication status.

Pd-05	Parameter Name: MODBUS protocol selection and Profibus-DP data frame	Default	0
	Setting Range	0: Non-standard MODBUS protocol 1: Standard MODBUS protocol	

Pd-05=1: Standard Modbus protocol.

Pd-05=0: When reading command, slave return bytes is 1 more digit than standard Modbus protocol. Please refer to "5 Communication data structure".

Pd-06	Parameter Name: Current resolution read by communication	Default	0
	Setting Range	0: 0.01a 1: 0.1 a	

This parameter is used to set unit of output current read by communication.

Appendix C Further Information

C.1 Product and service inquiries

Address any inquiries about the product to your local FULLWILL offices, quoting the type designation and serial number of the unit in question. A listing of FULLWILL sales, support and service contacts can be found by navigating to www.usfull.net.

C.2 Feedback of FULLWILL Inverters Manuals

Your comments on our manuals are welcomed. Go to www.usfull.com and select online feedback of Contact Us.

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