Vă mulţumim pentru achiziţionarea convertizorului de curent alternativ din seria 9000D dezvoltat de aLLindustriaL.ro !
Este un convertizor de curent alternativ cu vector de curent de uz general şi de înaltă performanţă, îmbunătăţit din punct de vedere tehnic de la seria 9000D. Este folosit în principal pentru controlul şi reglarea vitezei şi a cuplului motorului sincron trifazat AC. Folosind tehnologia de control vectorial de înaltă performanţă, convertizorul AC din seria 9000D oferă un cuplu ridicat la o viteză redusă, caracteristici dinamice excelente şi capacitate superioară de suprasarcină. Oferă funcţii programabile de utilizator şi software de monitorizare în fundal şi funcţii de magistrală de comunicaţii şi acceptă mai multe carduri PG, oferind funcţii combinate bogate şi puternice şi performanţă stabilă. Poate fi folosit pentru a conduce mai multe tipuri de echipamente automate de producţie.

Anunt
♦ Pentru a ilustra detaliile produsului, ilustraţiile din acest manual arată uneori starea capacului sau a capacului de siguranţă îndepărtat. Când utilizaţi acest produs, asiguraţi-vă că instalaţi carcasa sau capacul conform reglementărilor şi operaţi în conformitate cu conţinutul manualului. **♦ Ilustraţiile din acest manual sunt doar cu titlu ilustrativ şi pot fi diferite de produsele pe care le-aţi comandat.** **♦ Compania este angajată în îmbunătăţirea continuă a produselor, iar funcţiile produsului vor fi actualizate continuu. Informaţiile furnizate pot fi modificate fără notificare.** **♦ Dacă aveţi probleme în timpul utilizării, vă rugăm să ne contactaţi.**

CONŢINUT

Capitolul 2 Instalare mecanică și electrică

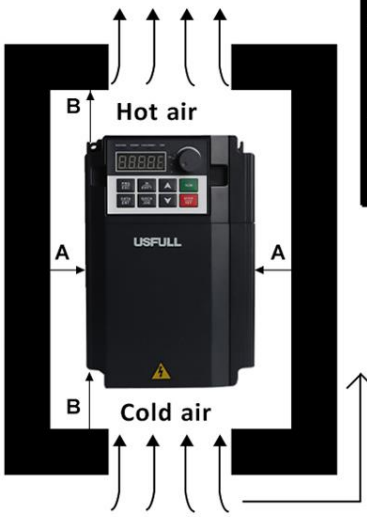
2.1 Instalare mecanică

2.1.1 Cerințe de mediu de instalare

Articol	Cerinte
Temperatura ambient	-10℃ ~ 50℃
Disiparea caldurii	Instalați unitatea de curent alternativ pe suprafața unui obiect incombustibil și asigurați-vă că există suficient spațiu în jur pentru disiparea căldurii. Instalați unitatea AC vertical pe suport folosind șuruburi.
Locatia montarii	Fără lumina directă a soarelui, umiditate ridicată și condens.
	Fără gaze corozive, explozive și combustibile.
	Fără murdărie de ulei, praf și pulbere metalică.
Vibratia A	Mai puțin de 0,6 g. Departe de mașina de perforat sau altele asemenea.
Carcasa de protective	Unitățile AC din seria 9000D din carcasă din plastic sunt produse încorporate în întreaga unitate, operate prin telecomandă și trebuie instalate în sistemul final. Sistemul final trebuie să aibă capacul ignifug necesar, capacul de protecție electric și capacul de protecție mecanic și să satisfacă legile și reglementările regionale și cerințele IEC aferente.

2.1.2 Cerințe de autorizare pentru instalare

Spațiul liber care trebuie rezervat variază în funcție de clasa de putere a 9000D, așa cum se arată în figura următoare.



FU9000D Required Installation Space

Power Level	Size Requirement	
0.75kW-18.5kW	A≥10MM	B≥100MM
22kW-37kW	A≥50MM	B≥200MM
45kW-450kW	A≥50MM	B≥300MM

Installed vertically upward

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

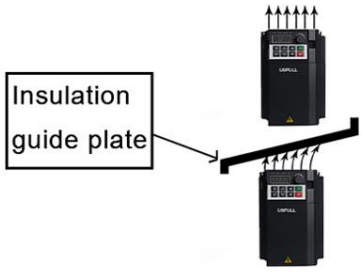


Figure 2-2 Installation of the insulation guide plate

Dacă sunt conectate mai multe unități de curent alternativ, instalați-le unul lângă altul. Dacă un rând de unități de curent alternativ trebuie instalat deasupra altui rând, instalați o placă de ghidare de izolație pentru a preveni ca unitățile de curent alternativ din rândul inferior să le încălzească pe cele din rândul superior și să provoace defecțiuni.

2.2 Instalatie electrica

2.2.1 Descrierea terminalelor circuitului principal

Tabelul 2-2 Descrierea bornelor circuitului principal ale convertizorului de curent alternativ

Terminal	Nume	Descriere
R, S, T	Borne de intrare de alimentare trifazate	Conectați sursa de alimentare trifazată
R, T	Borne de intrare monofazate de alimentare	Conectați sursa de alimentare monofazată
(+), (-)	Borna pozitivă și negativă a magistralei DC	Punct de intrare comun DC bus
(+), PB	Bornele de conectare ale rezistenței de frânare	Bornele de conectare ale rezistenței de frânare
U, V, W	Borne de ieșire ale convertizorului de ca	Conectați un motor trifazat
PE	Terminal de împământare	Trebuie să fie împământat

2.2.2 Cablajul circuitului principal al convertizorului de curent alternativ

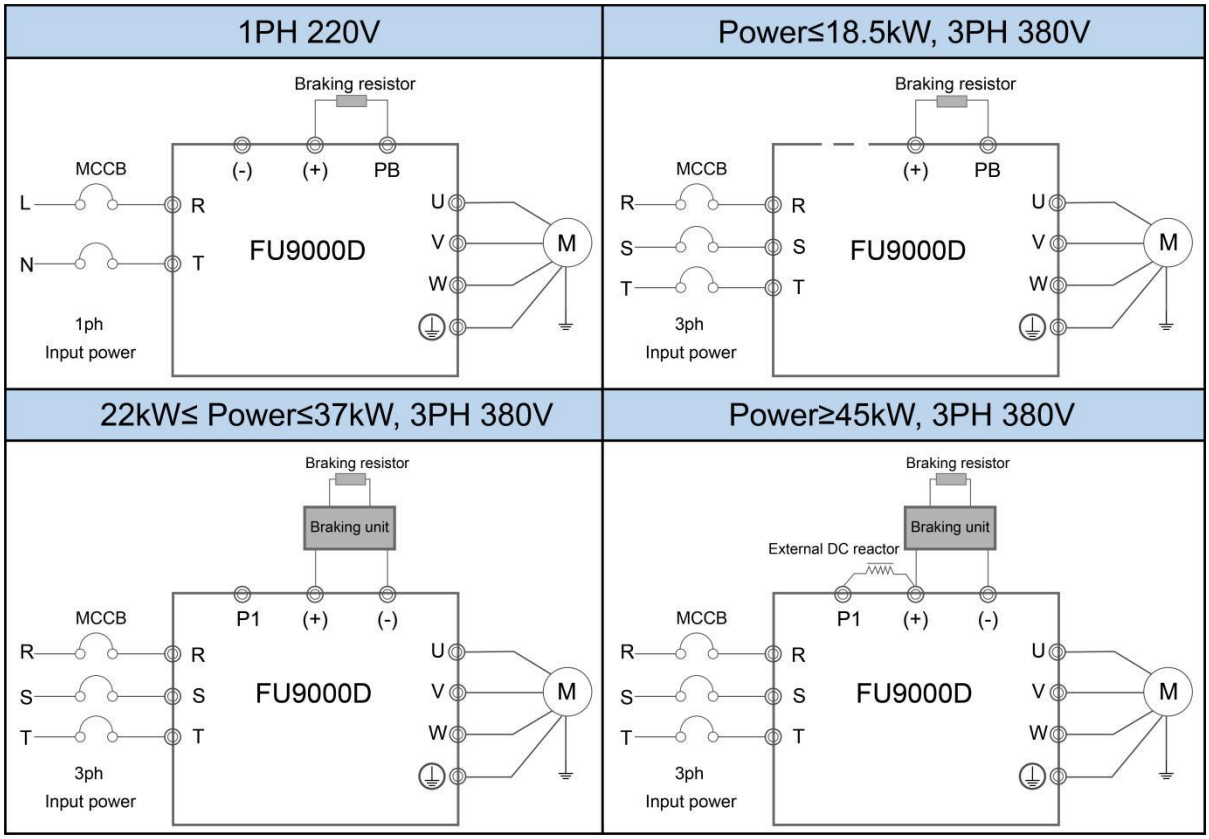
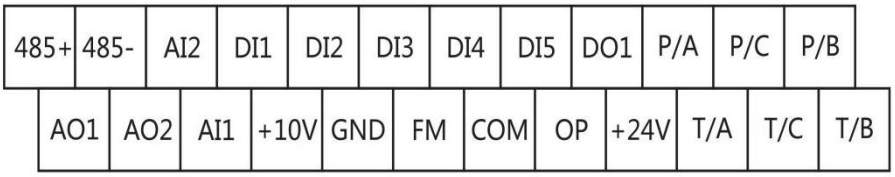


Figura 2-3 Cablajul circuitului principal al convertizorului de curent alternativ

2.2.3 Descrierea terminalelor circuitului de control

Figura 2-4 Dispunerea bornelor circuitului de control



Tabelul 2-3 9000D Descrierea terminalelor circuitului de control

Tip	Terminal	Nume	Descriere
Alimentare electrice	+10V-GND	Alimentare externă +10V	Furnizați sursă de alimentare +10V unității externe. Max. curent de ieșire: 10mA În general, oferă sursă de alimentare potențiometrului extern cu un domeniu de rezistență de 1 ~ 5kΩ.
	+24V-COM	Alimentare externă +24V	**Furnizați sursă de alimentare +24V unității externe.** **Max. curent de ieșire: 200mA** **În general, asigură alimentarea cu energie a terminalelor DI/DO și a senzorilor externi.**
	OP	Terminal extern de intrare de alimentare	**Implicit din fabrică: conectați la +24V.** **Când utilizați semnal extern pentru a conduce DI1 ~ DI5, OP trebuie să se conecteze la o sursă de alimentare externă, să se deconecteze cu borna +24V.**
Intrare analogică	AI1-GND AI2-GND	Terminal de intrare analogic	1. Interval de intrare: 0~10V/0~20mA 2. AI1 decis de jumperul J10 de pe placa de control 3. AI2 decis de jumperul J9 de pe placa de control
Intrare digitala	DI1	Intrare digitală 1	**1. Comutați borna de intrare, lucrați cu +24V și COM pentru a forma intrarea de izolare a cuplajului optic** **2. Rezistență de intrare: 2.4kΩ** **3. Gama de tensiune pentru intrarea nivelului: 9~30V**
	DI2	Intrare digitală 2	
	DI3	Intrare digitală 3	
	DI4	Intrare digitală 4	
	DI5	De mare viteză intrare puls	**Pe lângă caracteristica DI1 ~ DI4, poate fi un canal de intrare cu impulsuri de mare viteză.** **Max. frecventa de intrare: 100 kHz**

Iesire analogica	**AO1-GND** **AO2-GND**	**Ieșire analogică terminal**	1. Interval de ieșire: 0~10V/0~20mA 2. AO1 decis de jumperul J7 de pe placa de control 3. AO2 decis de jumperul J4 de pe placa de control
Ieșire digitală	**FM-COM**	**De mare viteză ieșire de impuls**	**Este limitat de P5-00 (selectarea modului de ieșire a terminalului FM).** **Când este utilizat ca ieșire de impuls de mare viteză, max. frecventa 100kHz; poate fi folosit și ca ieșire în circuit deschis integrată a stâlpului electric.**
Ieșire releu	**T/A-T/B**	**NC terminal**	**Capacitate de conducere de contact:** **250VAC, 3A, cosφ= 0,4** **30VDC, 1A**
	T/A-T/C	**NO terminal**	
	P/A-P/B	**NC terminal**	
	P/A-P/C	**NO terminal**	

2.2.4 Cablajul circuitului de control al convertizorului de curent alternativ

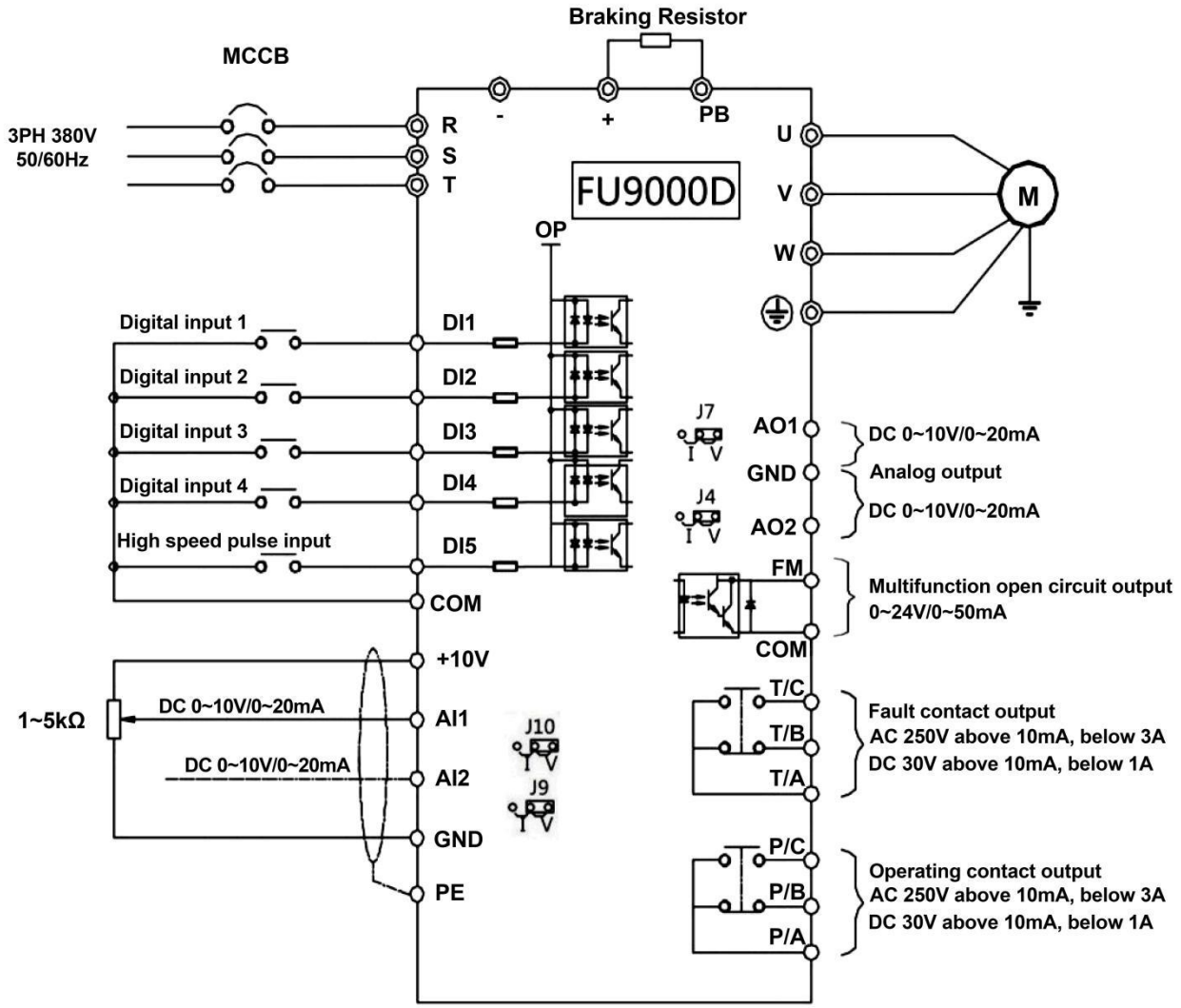


Figura 2-5 Modul de cablare al circuitului de control al convertizorului de curent alternativ

1. Toate unitățile AC din seria FU9000D au același mod de cablare.

2. Figura de aici arată cablarea unității AC trifazate de 380 VCA.

◎ indică borna circuitului principal. ○ indică borna circuitului de control.

2.2.5 Descrierea cablajului terminalelor de semnal

1) Cablajul terminalelor AI:

Semnalele slabe de tensiune analogică sunt ușor de suferit interferențe externe și, prin urmare, trebuie utilizat cablul ecranat, iar lungimea cablului trebuie să fie mai mică de 20 m, așa cum se arată în figura 2-6.

În unele situații în care semnalul analogic este grav perturbat, un condensator de filtru sau un miez de ferită trebuie adăugat la partea sursei de semnal analogic, așa cum se arată în figură.

2-7.

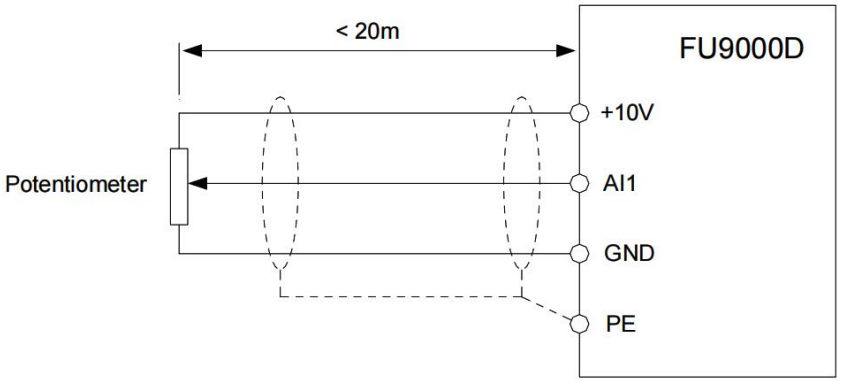
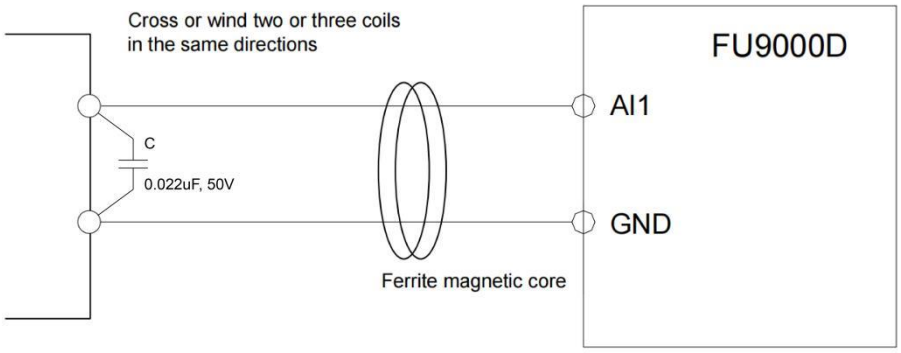


Figure 2-6 Wiring Mode of AI Terminals



2) Figura 2-7 Instalarea condensatorului filtrului sau a miezului magnetic de ferită

3) 3) Cablajul terminalelor DI:

În general, selectați cablul ecranat de cel mult 20 m. Atunci când se adoptă conducerea activă, trebuie luate măsurile de filtrare necesare pentru a preveni interferențele la sursa de alimentare. Se recomandă utilizarea modulului de control contact.

· A SINK wiring

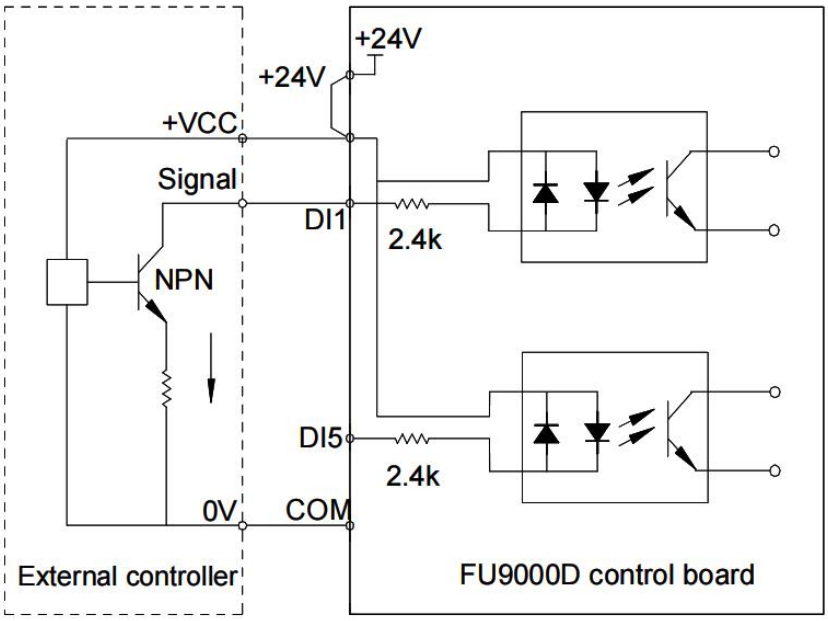


Figura 2-8 Cablare în modul SINK

Capitolul 3 Operare Afișare și exemple de aplicații

3.1 Panou de operare

Puteți modifica parametrii, puteți monitoriza starea de lucru și puteți porni sau opri 9000D prin operarea panoului de operare, așa cum se arată în următoarea figura 3-1.

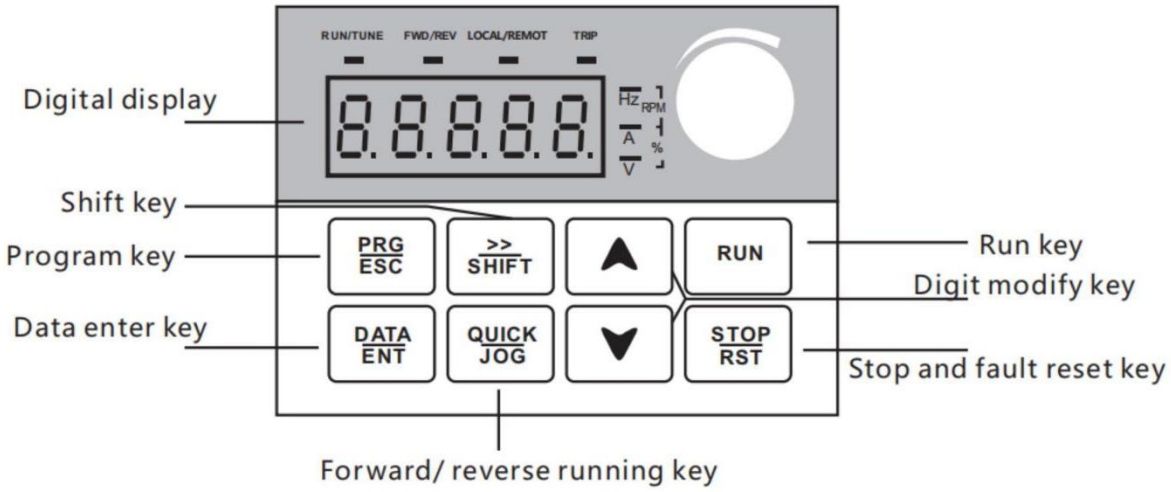
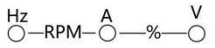


Figura 3-1 Detalii ale panoului de operare

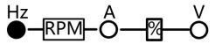
Tabelul 3-1 Descrierea indicatorului de stare

Indicator	Indicatie
RUN/TUNE	Indicator ON: stare RUNNING
	Indicator OFF: stare STOP
	Indicatorul clipește lent: starea de reglare automată
FWD/REV	Indicator PORNIT: Rotirea motorului înainte
	Indicator OPRIT: Rotația inversă a motorului
LOCAL/REMOT	Indicator ON: Sub control terminal
	Indicator OPRIT: Sub controlul panoului de operare
	Indicatorul clipește: sub controlul comunicației seriale
TRIP	Indicatorul clipește rapid: o stare de eroare

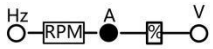


: Unit Indicators

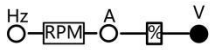
● : Indicators on ○ : Indicators off



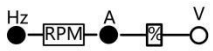
Hz: Unit of frequency



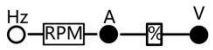
A: Unit of current



V: Unit of voltage



RPM: Unit of rotation speed



%: Unit of perentage

Display Digital

Afișajul LED din 5 cifre poate afișa următorul interval de informații:

- **Setarea frecvenței**
- **Frecvenţa de ieşire**
- **Date de monitorizare**
- **Coduri de eroare**

Tabelul 3-2 Descrierea tastelor de pe panoul de operare

Key	Nume	Functie
PRG ESC	**Program**	**Intrați sau ieșiți din meniul Nivelul I.**
DATA ENT	**Confirmare**	**Introduceți interfețele de meniu nivel cu nivel și confirmați setarea parametrilor.**
▲	**Crestere**	**Măriți codul de date sau de funcție.**
▼	**Descreste**	**Reduceți codul de date sau de funcție.**
>> SHIFT	**Schimb**	**Selectați pe rând parametrii afișați în starea de oprire sau de funcționare și selectați cifra de modificat la modificarea parametrilor.**
RUN	**Run**	**Porniți convertizorul de curent alternativ în modul de control al panoului de operare.**

STOP RST	Stop/Reset	- Opriți convertizorul de curent alternativ când este în stare de funcționare - Efectuați operația de resetare când se află în starea de defecțiune. Funcțiile acestei taste sunt limitate la P7-02.
QUICK JOG	Multifuncțional	Selectarea funcției conform P7-01, poate fi definită ca sursă de comandă sau direcție.
	Selectarea meniului	Redirecționare între modurile de meniu conform 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 3-2.

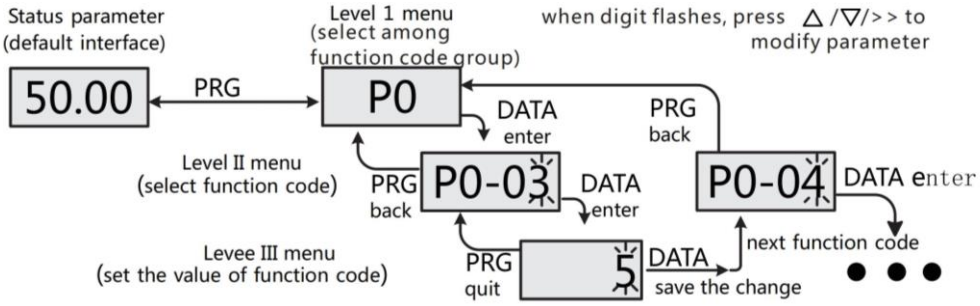


Figure 3-2 Three-level-menu Operation Chart

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: Changing P3-02 from 10.00Hz to 15.00Hz.

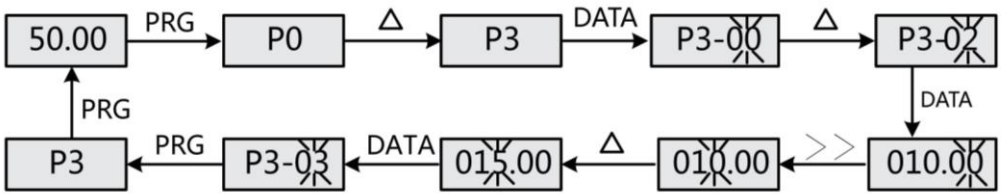


Figure 3-3 Example of Changing the Parameter Value

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 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 3-3 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 3-4.

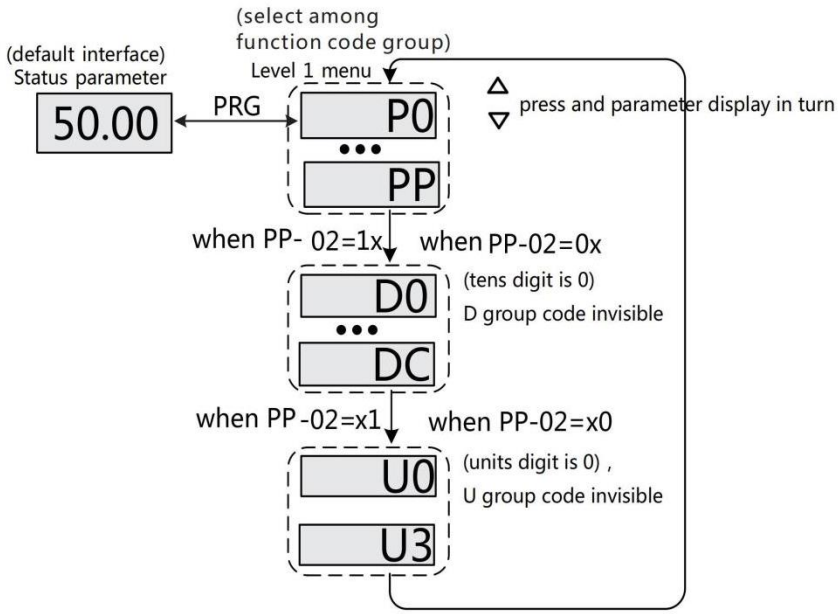


Figure 3-4 Quick View of Function Codes

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

Function Code	Name	Setting Range	Default
PP-02	Parameter display property	Units digit: Group U display selection 0: Not display 1: Display	11
		Tens digit: Group D display selection 0: Not display 1: Display	

3.4 Definition and Operation of the Multi-function Key

You can define the function (command source switchover or rotation direction switchover) of the multi-function 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.

Function Code	Name	Setting Range	Default

P7-05	LED display stop parameters	0000 ~ FFFF 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 reference Bit12: Pulse reference 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.

Function Code	Name	Setting Range	Default
P7-03	LED display running parameters 1	0000 ~ FFFF Bit00: Running frequency 1 (Hz) Bit01: Set frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: Output current (A) Bit05: Output power (kW) Bit06: Output torque (%) Bit07: DI input status Bit08: DO output status Bit09: AI1 voltage (V) Bit10: AI2 voltage (V) Bit11: AI3 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 reference 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: Motor speed Bit09: Current power on-time (Hour) Bit10: Current running time (Minute) Bit11: Pulse reference 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 for P7-03 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 monitoring function 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

Table 4-1 Standard Parameters

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 and pump)	Model dependent	●
P0-01	Motor 1 control mode	0: SVC 1: FVC 2: V/F	0	★
P0-02	Command source selection	0: Operation 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 reference (DI5)	10	★

		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		
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 superposition	0: Relative to max. frequency 1: Relative to main frequency reference	0	☆
P0-06	Range of auxiliary frequency reference for main and auxiliary superposition	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. (main, auxiliary) 3: Min. (main, auxiliary)	00	☆
P0-08	Preset frequency	0.00Hz ~ Max. frequency (P0-10)	50.00Hz	☆
P0-09	Running direction	0: Run in the default direction 1: Run in direction reverse to the default direction	0	☆
P0-10	Max. frequency	50.00Hz ~ 500.00Hz	50.00Hz	★
P0-11	Setting channel of frequency upper limit	0: Set by P0-12 1: AI1 2: AI2 3: AI3 4: Pulse reference (DI5) 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	0.00Hz ~ Max. frequency (P0-10)	0.00Hz	☆

P0-14	Frequency reference lower limit	0.00Hz ~ 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/ Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	★
P0-21	Frequency offset of auxiliary frequency source for X and Y operation	0.00Hz ~ Max. frequency (P0-10)	0.00Hz	☆
P0-22	Frequency reference resolution	1: 0.1Hz 2: 0.01Hz	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: Setting frequency 2: 100Hz	0	★
P0-26	Base frequency for UP/DOWN modification during running	0: Running frequency 1: Setting 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 reference (DI5) 6: Multi-reference 7: Simple PLC 8: PID reference 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 1: Profibus-DP protocol/CANopen protocol	0	☆
Group P1: Motor 1 Parameters				
P1-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	0	☆

P1-01	Rated motor power	0.1kW ~ 1000.0kW	Model dependent	☆
P1-02	Rated motor voltage	1V ~ 2000V	Model dependent	☆
P1-03	Rated motor current	0.01A ~ 655.35A (VFD power ≤ 55kW) 0.1A ~ 6553.5A (VFD power > 55kW)	Model dependent	☆
P1-04	Rated motor frequency	0.01Hz ~ Max. frequency	Model dependent	☆
P1-05	Rated motor rotational speed	1RPM ~ 65535RPM	Model dependent	☆
P1-06	Stator resistance (asynchronous motor)	0.001Ω ~ 65.535Ω (VFD power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (VFD power > 55kW)	Tuning parameter	☆
Function Code	**Name**	**Setting Range**	**Default**	**Change**
P1-07	Rotor resistance (asynchronous motor)	0.001Ω ~ 65.535Ω (VFD power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (VFD power > 55kW)	Tuning parameter	☆
P1-08	Leakage inductive reactance (asynchronous motor)	0.01mH ~ 655.35mH (VFD power ≤ 55kW) 0.001mH ~ 65.535mH (VFD power > 55kW)	Tuning parameter	☆
P1-09	Mutual inductive reactance (asynchronous motor)	0.1mH ~ 6553.5mH (VFD power ≤ 55kW) 0.01mH ~ 655.35mH (VFD power > 55kW)	Tuning parameter	☆

P1-10	No-load current (asynchronous motor)	0.01A ~ P1-03 (VFD power ≤ 55kW) 0.1A ~ P1-03 (VFD power > 55kW)	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	0.01s ~ 10.00s	0.50s	☆
P2-02	Switchover frequency 1	0.00Hz ~ P2-05	5.00Hz	☆
P2-03	Speed loop proportional gain 2	1 ~ 100	20	☆
P2-04	Speed loop integral time 2	0.01s ~ 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 reference (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%	150.0%	☆
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 reference (DI5) 5: Set by communication 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) 8: Set by P2-12 Full scale of 1-7 corresponds to P2-12.	0	☆
P2-12	Digital setting of torque upper limit in speed	0.0% ~ 200.0%	150.0%	☆

	control (generation)			
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%	Model dependent	☆
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	0.00Hz ~ Max. output frequency (P0-10)	50.00Hz	★
P3-03	Multi-point V/F frequency 1	0.00Hz ~ 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 reference (DI5) 5: Multi-reference 6: Simple PLC 7: PID reference	0	☆

		8: Set by communication Note: 100.0% corresponds to rated motor voltage.		
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 0V to rated motor 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 0V to rated motor 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	0Hz ~ 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 13: Multi-reference terminal 2 14: Multi-reference terminal 3 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	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	☆

		24: Swing pause 25: Counter input 26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 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 36: External STOP terminal 1 37: Running command switchover terminal 2 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		
Function Code	**Name**	**Setting Range**	**Default**	**Change**
P4-10	DI filter time	0.000s ~ 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	0.001Hz/s ~ 65.535Hz/s	1.000Hz/s	☆
P4-13	AI curve 1 min. input	0.00V ~ P4-15	0.00V	☆
P4-14	Corresponding setting of AI curve 1 min. input	-100.0% ~ 100.0%	0.0%	☆
P4-15	AI curve 1 max. input	P4-13 ~ 10.00V	10.00V	☆
P4-16	Corresponding setting of AI curve 1 max. input	-100.0% ~ 100.0%	100.0%	☆
P4-17	AI1 filter time	0.00s ~ 10.00s	0.10s	☆
P4-18	AI curve 2 min. input	0.00V ~ P4-20	0.00V	☆
P4-19	Corresponding setting of AI curve 2 min. input	-100.0% ~ 100.0%	0.0%	☆

P4-20	AI curve 2 max. input	P4-18 ~ 10.00V	10.00V	☆
P4-21	Corresponding setting of AI curve 2 max. input	-100.0% ~ 100.0%	100.0%	☆
P4-22	AI2 filter time	0.00s ~ 10.00s	0.10s	☆
P4-23	AI curve 3 min. input	-10.00V ~ P4-25	-10.00V	☆
P4-24	Corresponding setting of AI curve 3 min. input	-100.0% ~ 100.0%	-100.0%	☆
P4-25	AI curve 3 max. input	P4-23 ~ 10.00 V	10.00V	☆
P4-26	Corresponding setting of AI curve 3 max. input	-100.0% ~ 100.0%	100.0%	☆
P4-27	AI3 filter time	0.00s ~ 10.00s	0.10s	☆
P4-28	Pulse min. input	0.00kHz ~ P4-30	0.00kHz	☆
P4-29	Corresponding setting of pulse min. input	-100.0% ~ 100.0%	0.0%	☆
P4-30	Pulse max. input	P4-28 ~ 100.00kHz	50.00kHz	☆
P4-31	Corresponding setting of pulse max. input	-100.0% ~ 100.0%	100.0%	☆
P4-32	Pulse filter time	0.00s ~ 10.00s	0.10s	☆
P4-33	AI curve selection	Units digit: AI1 curve selection 1: Curve 1 (2 points, see P4-13 ~ P4-16)	321	☆

		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		
Function Code	**Name**	**Setting Range**	**Default**	**Change**
P4-34	Setting for AI 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 Thousands digit: DI4 active mode Ten thousands digit: DI5 active mode	00000	☆

Function Code	Name	Setting Range	Default	Change
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 15: Ready for RUN 16: AI1>AI2 17: Frequency upper limit reached	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)		0	☆

P5-04	DO1 output function selection	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 30: Timing reached 31: AI1 input limit exceeded 32: Load loss 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.)	1	☆

		42: Reserved 43: Auxiliary pump		
Function Code	**Name**	**Setting Range**	**Default**	**Change**
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 8: AI2 9: AI3 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	50.00kHz	☆
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	Relay 1 output delay time	0.0s ~ 3600.0s	0.0s	☆
P5-19	Relay 2 output delay time	0.0s ~ 3600.0s	0.0s	☆
P5-20	Relay 3 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: Relay 1 active mode Hundreds digit: Relay 2 active mode Thousands digit: DO1 active mode	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	0	★
P6-02	Rotational speed tracking speed	1 ~ 100	20	☆
P6-03	Startup frequency	0.00Hz ~ 10.00Hz	0.00Hz	☆
P6-04	Startup frequency holding time	0.0s ~ 100.0s	0.0s	★

P6-05	Startup DC braking current/ pre-excited current	0% ~ 100%	0%	★
Function Code	Name	Setting Range	Default	Change
P6-06	Startup DC braking time/ pre-excited time	0.0s ~ 100.0s	0.0s	★
P6-07	Acceleration/ Deceleration mode	0: Linear acceleration/deceleration 1, 2: S-curve acceleration/deceleration	0	★
P6-08	Time proportion of S-curve start segment	0.0% ~ (100.0% to P6-09)	30.0%	★
P6-09	Time proportion of S-curve end segment	0.0% ~ (100.0% to P6-08)	30.0%	★
P6-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
P6-11	Initial frequency of stop DC braking	0.00Hz ~ Max. frequency	0.00Hz	☆
P6-12	Waiting time of stop DC braking	0.0s ~ 100.0s	0.0s	☆
P6-13	Stop DC braking current	0% ~ 100%	0%	☆
P6-14	Stop DC braking time	0.0s ~ 100.0s	0.0s	☆
P6-15	Braking 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	1	☆
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	☆
Function Code	Name	Setting Range	Default	Change

P7-04	LED display running parameters 2	0000 ~ FFFF Bit00: PID feedback Bit01: PLC stage Bit02: Pulse reference frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 voltage before correction (V) Bit06: AI2 voltage before correction (V) Bit08: Motor speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: Pulse reference frequency (Hz) Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	33	☆
P7-05	LED display stop parameters	0000 ~ FFFF Bit00: Frequency reference (Hz) Bit01: Bus voltage (V) Bit02: DI input state Bit03: DO output state Bit04: AI1 voltage (V) Bit05: AI2 voltage (V) Bit07: Count value	33	☆

		Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID reference Bit12: Pulse reference (kHz)		
P7-06	Load speed display coefficient	0.0001 ~ 6.5000	1.0000	☆
P7-07	Heat sink temperature of inverter module	-20°C ~ 120°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	0h ~ 65535h	-	●
P7-14	Accumulative power consumption	0kWh ~ 65535kWh	-	●
Function Code	Name	Setting Range	Default	Change

Group P8: Auxiliary Function				
P8-00	JOG running frequency	0.00Hz ~ Max. frequency	2.00Hz	☆
P8-01	JOG acceleration time	0.0s ~ 6500.0s	20.0s	☆
P8-02	JOG deceleration time	0.0s ~ 6500.0s	20.0s	☆
P8-03	Acceleration time 2	0.00s ~ 650.00s (P0-19=2) 0.0s ~ 6500.0s (P0-19=1) 0s ~ 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		20.0s	☆
P8-08	Deceleration time 4			
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	0.0s ~ 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	0h ~ 65000h	0h	☆
P8-17	Accumulative running time threshold	0h ~ 65000h	0h	☆
P8-18	Startup protection selection	0: Disabled 1: Enabled	0	☆

P8-19	Frequency detection value (FDT1)	0.00Hz ~ Max. frequency	50.00Hz	☆
P8-20	Frequency detection hysteresis (FDT1)	0.0% ~ 100.0% (FDT1 level)	5.0%	☆
P8-21	Detection range of frequency reached	0.0% ~ 100.0% (max. frequency)	0.0%	☆
P8-22	Jump frequency during acceleration/deceleration	0: Disabled 1: Enabled	0	☆
P8-25	Frequency switchover point between acceleration time 1 and 2	0.00Hz ~ Max. frequency	0.00Hz	☆
P8-26	Frequency switchover point between deceleration time 1 and 2	0.00Hz ~ Max. frequency	0.00Hz	☆
Function Code	**Name**	**Setting Range**	**Default**	**Change**
P8-27	Terminal JOG preferred	0: Disabled 1: Enabled	0	☆
P8-28	Frequency detection value (FDT2)	0.00Hz ~ Max. frequency	50.00Hz	☆
P8-29	Frequency detection hysteresis (FDT2)	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	☆
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% 100.0% (rated motor current)	5.0%	☆
P8-35	Zero current detection delay time	0.01s ~ 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	0.00s ~ 600.00s	0.00s	☆
P8-38	Any current reaching 1	0.0% ~ 300.0% (rated motor current)	100.0%	☆
P8-39	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	0.0Min ~ 6500.0Min	0.0Min	★

P8-45	AI1 input voltage lower limit	0.00V ~ P8-46	3.10V	☆
P8-46	AI1 input voltage upper limit	P8-45 ~ 10.00V	6.80V	☆
P8-47	IGBT temperature threshold	0°C ~ 100°C	75℃	☆
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	☆
Function Code	**Name**	**Setting Range**	**Default**	**Change**
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	0.0Min ~ 6500.0Min	0.0Min	☆
P8-54	Output power correction coefficient	0.0% ~ 200.0%	100.0%	☆
P8-55	Wake-up level	1% ~ 150%	80%	☆
P8-56	High speed frequency	0.00Hz ~ P0-10	25.00Hz	☆
P8-57	High speed frequency delay time	0.0s ~ 600.0s	60.0s	☆
P8-58	Low speed frequency	0.00Hz ~ P0-10	0.00Hz	☆
P8-59	Low speed frequency delay time	0.0s ~ 600.0s	60.0s	☆

Group P9: Fault and Protection				
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	Braking 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	☆

Function Code	Name	Setting Range	Default	Change
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: Over-voltage during acceleration 6: Over-voltage during deceleration 7: Over-voltage at constant speed 8: Pre-charge resistor overload 9: Under-voltage 10: AC drive overload 11: Motor overload 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	-	●
P9-15	2nd fault type		-	●
P9-16	3rd (latest) fault type		-	●

		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		
P9-17	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	0.0V ~ 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	0.0s ~ 6553.5s	0.0s	●

Function Code	Name	Setting Range	Default	Change
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	0.0V ~ 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	●
P9-34	Running time upon 2nd fault	0.0s ~ 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	0.0V ~ 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	0.0s ~ 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	☆
Function Code	Name	Setting Range	Default	Change

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 Thousands digit: Load lost (Err30) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run at 7% of rated motor frequency and restore to the frequency reference if the load recovers Ten thousands digit: PID feedback lost during drive running (Err31) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run	00000	☆

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°C	☆
P9-58	Motor overheat pre-warning threshold	0°C ~ 200°C	90°C	☆
Function Code	**Name**	**Setting Range**	**Default**	**Change**
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	0.0s ~ 60.0s	1.0s	☆
P9-67	Over-speed detection level	0.0% ~ 50.0% (max. frequency)	20.0%	☆
P9-68	Over-speed detection time	0.0s: Not detected 0.1s ~ 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 0.1s ~ 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	0.0s ~ 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 reference (DI5) 5: Communication setting	0	☆

		6: Multi-reference		
PA-01	PID digital setting	0.0% ~ 100.0%	50.0%	☆
PA-02	PID feedback setting channel	0: AI1 1: AI2 2: AI3 3: AI1 - AI2 4: Pulse reference (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	☆
Function Code	**Name**	**Setting Range**	**Default**	**Change**
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	0.00s ~ 650.00s	0.00s	☆
PA-12	PID feedback filter time	0.00s ~ 60.00s	0.00s	☆
PA-13	PID output filter time	0.00s ~ 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	0.00s ~ 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%	☆
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	☆

Function Code	Name	Setting Range	Default	Change
Group Pb: Wobble Function, Fixed Length and Count				
Pb-05	Set length	0m ~ 65535m	1000m	☆
Pb-06	Actual length	0m ~ 65535m	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	Units 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	☆
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	☆
Function Code	Name	Setting Range	Default	Change
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	☆
Function Code	Name	Setting Range	Default	Change
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)	☆
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 (DI5) 5: PID reference	0	☆

		6: Set by preset frequency (P0-08), modified via UP/DOWN key 7: Keyboard with electrodeless potentiometer 8: Keyboard with electrodeless potentiometer change rate 1Hz		
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 Tens digit: Profibus-DP 0: 115200BPS 1: 208300BPS 2: 256000BPS 3: 512000BPS Hundreds digit: Reversed Thousands digit: CANlink 0: 20 1: 50 2: 100 3: 125 4: 250 5: 500 6: 1M	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>	3	☆
Pd-02	Local address	0: Broadcast address 1 ~ 247 (Modbus)	1	☆
Function Code	**Name**	**Setting Range**	**Default**	**Change**

Pd-03	Modbus response delay	0ms ~ 20ms (valid for Modbus)	2ms	☆
Pd-04	Serial port communication timeout	0.0s: Disabled 0.1s ~ 60.0s	0.0s	☆
Pd-05	Modbus protocol selection	Units digit: Modbus 0: Non-standard Modbus protocol 1: Standard Modbus protocol Tens digit: Profibus-DP 0: PPO1 1: PPO2 2: PPO3 3: PPO5	30	☆
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 1: Restore factory parameters except motor parameters 2: Clear records	0	★
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	☆

Function Code	Name	Setting Range	Default	Change
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 3: AI3 4: Pulse reference (DI5) 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 ~ 65000.00s	0.00s	☆
D0-08	Deceleration time in torque control	0.00s ~ 65000.00s	0.00s	☆
Group D1: Reserved				
Group D2: Motor 2 Parameters				
D2-00	Motor type selection	0: Common asynchronous motor 1: Variable frequency asynchronous motor	0	★

D2-01	Rated motor power	0.1kW ~ 1000.0kW	Model dependent	★
D2-02	Rated motor voltage	1V ~ 2000V	Model dependent	★
D2-03	Rated motor current	0.01A ~ 655.35A (VFD power ≤ 55kW) 0.1A ~ 6553.5A (VFD power > 55kW)	Model dependent	★
D2-04	Rated motor frequency	0.01Hz ~ Max. frequency	Model dependent	★
D2-05	Rated motor rotational speed	1RPM ~ 65535RPM (VFD power > 55kW)	Model dependent	★
D2-06	Stator resistance (asynchronous motor)	0.001Ω ~ 65.535Ω (VFD power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (VFD power > 55kW)	Tuning parameter	★
D2-07	Rotor resistance (asynchronous motor)	0.001Ω ~ 65.535Ω (VFD power ≤ 55kW) 0.0001Ω ~ 6.5535Ω (VFD power > 55kW)	Tuning parameter	★
D2-08	Leakage inductive reactance (asynchronous motor)	0.01mH ~ 655.35mH (VFD power ≤ 55kW) 0.001mH ~ 65.535mH (VFD power >55kW)	Tuning parameter	★
D2-09	Mutual inductive reactance (asynchronous motor)	0.1mH ~ 6553.5mH (VFD power ≤ 55kW) 0.01mH ~ 655.35mH (VFD power > 55kW)	Tuning parameter	★
D2-10	No-load current (asynchronous motor)	0.01A ~ D2-03 (VFD power ≤ 55kW) 0.1A ~ D2-03 (VFD power > 55kW)	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	★
Function Code	**Name**	**Setting Range**	**Default**	**Change**
D2-30	AB sequence of ABZ encoder	0: Forward 1: Reverse	0	★
D2-31	Encoder install angle	0.0° ~ 359.9°	0.0°	
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	0.01s ~ 10.00s	0.50s	☆
D2-40	Switchover frequency 1	0.00Hz ~ D2-43	5.00Hz	☆
D2-41	Speed loop proportional gain 2	1 ~ 100	20	☆
D2-42	Speed loop integral time 2	0.01s ~ 10.00s	1.00s	☆

D2-43	Switchover frequency 2	D2-40 ~ Max. output frequency	10.00Hz	☆
D2-44	Vector control slip gain	50% ~ 200%	100%	☆
D2-45	SVC torque filter time constant	0.000s ~ 0.1000s	0.015s	☆
D2-47	Torque limit source in speed control	0: Set by D2-48 1: AI1 2: AI2 3: AI3 4: Pulse reference (DI5) 5: Communication setting 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%	150.0%	☆
D2-49	Torque limit source in speed control (generation)	0: Set by D2-48 1: AI1 2: AI2 3: AI3 4: Pulse reference (DI5) 5: Communication setting 6: Min. (AI1, AI2) 7: Max. (AI1, AI2) 8: Set by D2-50 Full scale of 1-7 corresponds to D2-50.	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	☆

Function Code	Name	Setting Range	Default	Change
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: Acceleration/Deceleration time 2 3: Acceleration/Deceleration time 3 4: Acceleration/Deceleration 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	★
D5-06	Under-voltage point setting	200V ~ 2000V	380V: 350V 220V: 200V	☆
D5-08	Dead time adjustment	100% ~ 200%	150%	★
D5-09	Over-voltage point setting	200V ~ 2200V	Model dependent	★
Group D6: AI Curve Setting				
D6-00	AI curve 4 min. input	-10.00V ~ D6-02	0.00V	☆
D6-01	Corresponding setting of AI curve 4 min. input	-100.0% ~ 100.0%	0.0%	☆
D6-02	AI curve 4 turning point 1 input	D6-00 ~ D6-04	3.00V	☆
Function Code	Name	Setting Range	Default	Change

D6-03	Corresponding setting of AI curve 4 turning point 1 input	-100.0% ~ 100.0%	30.0%	☆
D6-04	AI curve 4 turning point 2 input	D6-04 ~ D6-06	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 min. input	-10.00V ~ D6-10	-10.00V	☆
D6-09	Corresponding setting of AI curve 5 min. 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	-100.0% ~ 100.0%	0.0%	☆

	corresponding setting			
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	☆
D8-01	Master/Slave selection	0: Master 1: Slave	0	☆
D8-02	Slave commands follow master-slave information 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	011	★

		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)		
Function Code	**Name**	**Setting Range**	**Default**	**Change**
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	0.0s ~ 10.0s	1.0s	☆
D8-07	Master send data cycle of point to point communication	0.001s ~ 10.000s	0.001s	☆
D8-08	Synchronous display frequency range	0.20Hz ~ 10.00Hz	0.50Hz	☆
Group DC: AI/AO Correction				
DC-00	AI1 measured voltage 1	-10.000V ~ 10.000V	Factory correction	☆
DC-01	AI1 display voltage 1	-10.000V ~ 10.000V	Factory correction	☆

DC-02	AI1 measured voltage 2	-10.000V ~ 10.000V	Factory correction	☆
DC-03	AI1 display voltage 2	-10.000V ~ 10.000V	Factory correction	☆
DC-04	AI2 measured voltage 1	-10.000V ~ 10.000V	Factory correction	☆
DC-05	AI2 display voltage 1	-10.000V ~ 10.000V	Factory correction	☆
DC-06	AI2 measured voltage 2	-10.000V ~ 10.000V	Factory correction	☆
DC-07	AI2 display voltage 2	-10.000V ~ 10.000V	Factory correction	☆
DC-08	AI3 measured voltage 1	-10.000V ~ 10.000V	Factory correction	☆
DC-09	AI3 display voltage 1	-10.000V ~ 10.000V	Factory correction	☆
DC-10	AI3 measured voltage 2	-10.000V ~ 10.000V	Factory correction	☆

DC-11	**AI3 display voltage 2**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-12	**AO1 target voltage 1**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-13	**AO1 display voltage 1**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-14	**AO1 measured voltage 2**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-15	**AO1 display voltage 2**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-16	**AO2 measured voltage 1**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-17	**AO2 display voltage 1**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-18	**AO2 measured voltage 2**	**-10.000V ~ 10.000V**	**Factory correction**	☆
DC-19	**AO2 display voltage 2**	**-10.000V ~ 10.000V**	**Factory correction**	☆

4.2 Summary Table of Monitoring Parameters

Table 4-2 Monitoring Parameters

Function Code	Name	Smallest Unit	Mailing Address
Group U0: Basic Monitoring Parameters			
U0-00	Running frequency	0.01Hz	7000H
U0-01	Setting frequency	0.01Hz	7001H
U0-02	Bus voltage	0.1V	7002H
U0-03	Output voltage	1V	7003H
U0-04	Output current	0.01A	7004H
U0-05	Output frequency	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	AI1 voltage	0.01V	7009H
U0-10	AI2 voltage	0.01V	700AH
U0-11	AI3 voltage	0.01V	700BH
U0-12	Count value	1	700CH
U0-13	Length value	1	700DH
U0-14	Load speed	1RPM	700EH
U0-15	PID reference	1	700FH
U0-16	PID feedback	1	7010H
U0-17	PLC stage	1	7011H
U0-18	Pulse input frequency	0.01kHz	7012H
U0-19	Feedback speed	0.01Hz	7013H
U0-20	Remaining running time	0.1Min	7014H
U0-21	AI1 voltage before correction	0.001V	7015H
U0-22	AI2 voltage before correction	0.001V	7016H
U0-23	AI3 voltage before correction	0.001V	7017H
U0-24	Motor speed	1RPM	7018H
U0-25	Current power-on time	1Min	7019H
U0-26	Current running time	0.1Min	701AH

U0-27	Pulse input frequency	1Hz	701BH
U0-28	Communication setting	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 temperature	1℃	7022H
Function Code	Name	Smallest Unit	Mailing Address
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	V/F separation target voltage	1V	7027H
U0-40	V/F separation output voltage	1V	7028H
U0-41	DI input status visual display	1	7029H
U0-42	DO input status visual display	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	Bit01: Running direction Bit02: AC drive fault or not Bit03: Target frequency reached Bit04 ~ Bit07: Reserved Bit08 ~ Bit15: Fault code	7043H
U0-69	Transmitting DP speed	0.00Hz ~ Max. frequency	7044H
U0-70	Transmitting DP motor speed	0RPM ~ Rated motor	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 the FU9000D Series Inverter

Model	Input Voltage	Rated Power (kW)	Horse Power (HP)	Rated Input Current (A)	Rated Output Current (A)
9000D-0R7G-S2	1PH 220V-240V	0.75	1	8.2	4
9000D-1R5G-S2		1.5	2	14	7
9000D-2R2G-S2		2.2	3	23	9.6
9000D-0R7G-2	3PH 220V-240V	0.75	1	4.5	4
9000D-1R5G-2		1.5	2	8	7
9000D-2R2G-2		2.2	3	11	10
9000D-004G-2		4	5	14.6	13
9000D-5R5G-2		5.5	7.5	26	25
9000D-7R5G-2		7.5	10	35	32
9000D-011G-2		11	15	46.5	45
9000D-015G-2		15	20	62	60
9000D-018G-2		18.5	25	76	75
9000D-022G-2		22	30	92	91
9000D-030G-2		30	40	113	112
9000D-037G-2		37	50	157	150
9000D-045G-2		45	60	180	176
9000D-055G-2		55	75	214	210
9000D-075G-2		75	100	307	304
9000D-0R7G-4	3PH 380V-480V	0.75	1	3.4	2.5
9000D-1R5G-4		1.5	2	5	3.7
9000D-2R2G-4		2.2	3	5.8	5
9000D-004G-4		4.0	5	10.5	9
9000D-5R5G-4		5.5	7.5	14.6	13
9000D-7R5G-4		7.5	10	20.5	17
9000D-011G-4		11	15	26	25

9000D-015G-4		15	20	35	32
9000D-018G-4		18.5	25	38.5	37
9000D-022G-4		22	30	46.5	45
9000D-030G-4		30	40	62	60
9000D-037G-4		37	50	76	75
9000D-045G-4		45	60	92	91
9000D-055G-4		55	75	113	112
9000D-075G-4		75	100	157	150
9000D-090G-4		90	120	180	176
9000D-110G-4		110	150	214	210
9000D-132G-4		132	180	256	253
9000D-160G-4		160	220	307	304
9000D-185G-4		185	250	340	330
Model	**Input Voltage**	**Rated Power (kW)**	**Horse Power (HP)**	**Rated Input Current (A)**	**Rated Output Current (A)**
9000D-200G-4	3PH 380V-480V	200	280	385	377
9000D-220G-4		220	300	430	426
9000D-250G-4		250	330	468	465
9000D-280G-4		280	370	525	520
9000D-315G-4		315	420	590	585
9000D-350G-4		350	469	665	650
9000D-400G-4		400	530	785	725
9000D-450G-4		450	600	820	782
9000D-500G-4		500	670	883	820
9000D-630G-4		630	850	1080	1000

5.2 External Dimensions of the Keyboard

Figure 5-1-1 The Size of the External Keyboard

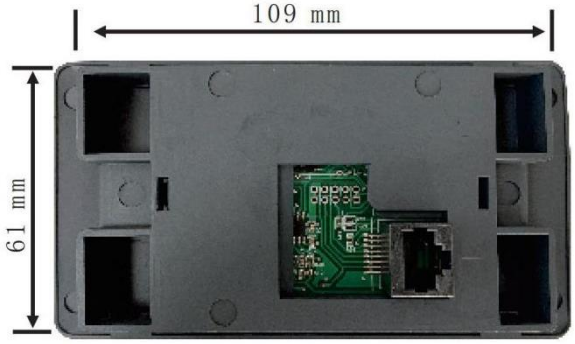


Figure 5-1-2 Opening Size of External Keyboard

Figure 5-1 External Dimensions of the External Keyboard (unit: mm)

5.3 FU9000D Series Inverter Appearance and Size

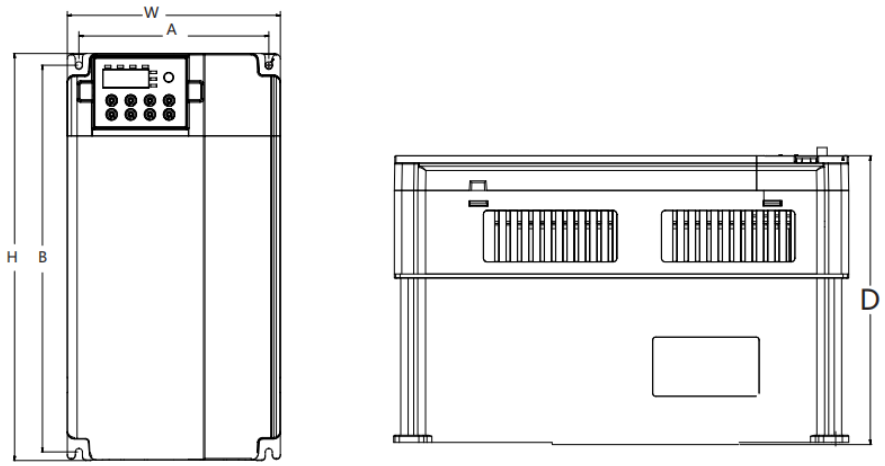


Figure 5-2 Plactic Structure

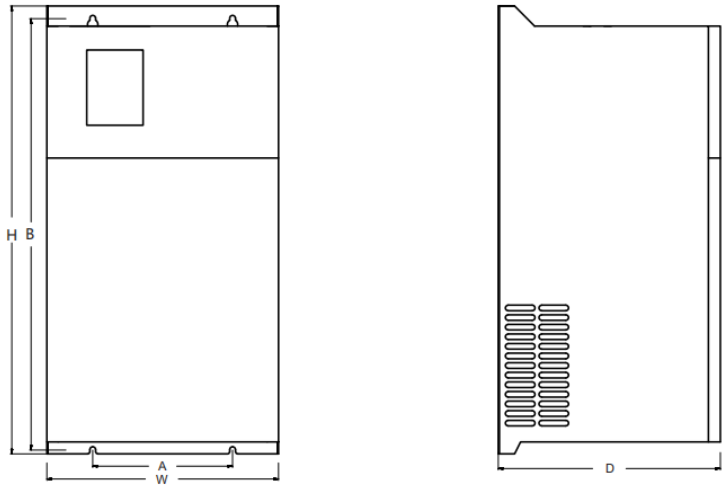


Figure 5-3 Iron Structure

Figure 5-2 & 5-3 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	W	D		
Single Phase 220V-240V							
9000D-0R7G-S2	115	175	185	125	160	Ø5	1.64
9000D-1R5G-S2							
9000D-2R2G-S2							
Three Phase 220V-240V							
9000D-0R7G-2	115	175	185	125	160	Ø5	1.64
9000D-1R5G-2							
9000D-2R2G-2							
Three Phase 380V-480V							
9000D-0R7G-4	115	175	185	125	160	Ø5	1.64
9000D-1R5G-4							
9000D-2R2G-4							
9000D-004G-4							
9000D-5R5G-4	130	242	255	145	170	Ø5	3.2
9000D-7R5G-4							
9000D-011G-4	150	305	320	170	200	Ø5.5	5.3
9000D-015G-4							
9000D-018G-4							
9000D-022G-4	235	385	400	255	235	Ø6.8	11.5
9000D-030G-4							
9000D-037G-4							
9000D-045G-4	175	535	560	290	285	Ø8	29
9000D-055G-4							
9000D-075G-4							
9000D-090G-4	300	620	650	380	285	Ø10	49
9000D-110G-4							
9000D-132G-4	250	720	750	400	340	Ø10	58
9000D-160G-4							
9000D-185G-4	400	830	860	550	360	Ø12	/
9000D-200G-4							
9000D-220G-4							

9000D-250G-4	500	870	900	750	360	Ø12	/
9000D-280G-4							
9000D-315G-4							
9000D-350G-4	650	870	900	900	400	Ø12	/
9000D-400G-4							

5.4 Selection of Braking Unit and Braking 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: U*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: 0.7*Pr = Pb*D

Pr: Resistor power

D: Braking frequency

(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, and/or frequent braking sequences, the braking resistor with higher power and lower resistance value should be selected.

Table 5-4 Selection of FU9000D Inverter Braking Components

Model	Recommended Power	Recommended Resistance	Braking Unit

Single Phase 220V-240V			
9000D-0R7G-S2	80W	≥ 150Ω	Built-in (Standard)
9000D-1R5G-S2	100W	≥ 100Ω	
9000D-2R2G-S2	100W	≥ 70Ω	
Three Phase 220V-240V			
9000D-0R7G-2	150W	≥ 110Ω	Built-in (Standard)
9000D-1R5G-2	250W	≥ 100Ω	
9000D-2R2G-2	300W	≥ 65Ω	
9000D-004G-2	400W	≥ 45Ω	
9000D-5R5G-2	800W	≥ 22Ω	
9000D-7R5G-2	1kW	≥ 16Ω	
Model	**Recommended Power**	**Recommended Resistance**	**Braking Unit**
9000D-011G-2	1.5kW	≥ 11Ω	Built-in (Standard)
9000D-015G-2	2.5kW	≥ 8Ω	
9000D-018G-2	3.7kW	≥ 6.7Ω	
9000D-022G-2	4.5kW	≥ 6.7Ω	External
9000D-030G-2	5.5kW	≥ 5Ω	
9000D-037G-2	7.5kW	≥ 3.3Ω	
9000D-045G-2	4.5kW*2	≥ 5Ω*2	
9000D-055G-2	5.5kW*2	≥ 5Ω*2	
9000D-075G-2	16kW	≥ 3.3Ω*2	
Three Phase 380V-480V			
9000D-0R7G-4	150W	≥ 300Ω	Built-in (Standard)
9000D-1R5G-4	150W	≥ 220Ω	
9000D-2R2G-4	250W	≥ 200Ω	
9000D-004G-4	300W	≥ 130Ω	
9000D-5R5G-4	400W	≥ 90Ω	
9000D-7R5G-4	500W	≥ 65Ω	
9000D-011G-4	800W	≥ 43Ω	
9000D-015G-4	1kW	≥ 32Ω	
9000D-018G-4	1.3kW	≥ 25Ω	
9000D-022G-4	1.5kW	≥ 22Ω	External
9000D-030G-4	2.5kW	≥ 16Ω	
9000D-037G-4	3.7kW	≥ 12.6Ω	
9000D-045G-4	4.5kW	≥ 9.4Ω	

9000D-055G-4	5.5kW	≥ 9.4Ω
9000D-075G-4	7.5kW	≥ 6.3Ω
9000D-090G-4	4.5kW*2	≥ 9.4Ω*2
9000D-110G-4	5.5kW*2	≥ 9.4Ω*2
9000D-132G-4	6.5kW*2	≥ 6.3Ω*2
9000D-160G-4	16kW	≥ 6.3Ω*2
9000D-200G-4	20kW	≥ 2.5Ω
9000D-220G-4	22kW	≥ 2.5Ω
9000D-250G-4	12.5kW*2	≥ 2.5Ω*2
9000D-280G-4	14kW*2	≥ 2.5Ω*2
9000D-315G-4	16kW*2	≥ 2.5Ω*2
9000D-355G-4	17kW*2	≥ 2.5Ω*2
9000D-400G-4	14kW*3	≥ 2.5Ω*3
9000D-450P-4	15kW*3	≥ 2.5Ω*3

hapter 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 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 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 months 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.

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

- Damage caused by fire, flood, abnormal voltage, etc.
- Damage caused when the inverter is used for abnormal functions.

4) 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.

Table 6-2 Solutions to the Faults of the FU9000D Series Inverter

Fault Name	Display	Cause	Solution
Over-current during acceleration	Err02	1: Output circuit is grounded or short circuited.	1: Eliminate external faults, check whether short circuit or open circuit happen in motor.
		2: Control mode is FVC or SVC, no parameter identify.	2: Set motor parameters according to motor nameplate.
		3: Acceleration time is too short.	3: Increase the acceleration time.
		4: Over-current stall prevention parameters are set improperly.	4: • Confirm over-current stall prevention (P3-19) has enabled. • P3-18 too high, recommend 120% ~ 150% • P3-20 too low, recommend 20 ~ 40

		5: Manual torque boost or V/F curve is improper.	5: Adjust the manual torque boost or V/F curve.
		6: Rotating motor is started.	6: Select rotational speed tracking restart or start the motor after it stops.
		7: External disruption.	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: Output circuit is grounded or short circuited.	1: Eliminate external faults, check whether short circuit or open circuit happen in motor.
		2: Control mode is FVC or SVC, no parameter identify.	2: Set motor parameters according to motor nameplate.
		3: Deceleration time is too short.	3: Increase the deceleration time.
		4: Over-current stall prevention parameters are set improperly.	4: • Confirm over-current stall prevention (P3-19) has enabled. • P3-18 too high, recommend 120% ~ 150% • P3-20 too low, recommend 20 ~ 40
		5: No braking unit or braking resistor.	5: Install braking unit or braking resistor.
		6: External disruption.	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.
Over-current at	Err04	1: Output circuit is grounded or short circuited.	1: Eliminate external faults, check whether short circuit or open circuit happen in motor.

constant speed		2: Control mode is FVC or SVC, no parameter identify.	2: Set motor parameters according to motor nameplate.
		3: Over-current stall prevention parameters are set improperly.	3: • Confirm over-current stall prevention (P3-19) has enabled. • P3-18 too high, recommend 120% ~ 150% • P3-20 too low, recommend 20 ~ 40
		4: AC drive power class is too small.	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: External disruption.	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.
Fault Name	**Display**	**Cause**	**Solution**
Over-voltage during acceleration	Err05	1: Input voltage is too high.	1: Adjust the voltage to normal range.
		2: An external force drives the motor during acceleration.	2: Cancel the external force or install a braking resistor.
		3: Over-voltage stall prevention parameters are set improperly.	3: • Confirm over-voltage stall prevention (P3-23) has enabled. • P3-22 too high, recommend 700V ~ 770V • P3-24 too low, recommend 30 ~ 50

		4: No braking unit or braking resistor.	4: Install braking unit or braking resistor.
		5: Acceleration time is too short.	5: Increase the accelerate time.
Over-voltage during deceleration	Err06	1: Over-voltage stall prevention parameters are set improperly.	1: • Confirm over-voltage stall prevention (P3-23) has enabled. • P3-22 too high, recommend 700V ~ 770V • P3-24 too low, recommend 30 ~ 50
		2: An external force drives the motor during deceleration.	2: Cancel the external force or install a braking resistor.
		3: Deceleration time is too short.	3: Increase the deceleration time.
		4: No braking unit or braking resistor.	4: Install braking unit or braking resistor.
Over-voltage at constant speed	Err07	1: Over-voltage stall prevention parameters are set improperly.	1: • Confirm over-voltage stall prevention (P3-23) has enabled: • P3-22 too high, recommend 700V ~ 770V • P3-24 too low, recommend 30 ~ 50 • P3-26 too low, recommend 5Hz ~ 20Hz
		2: An external force drives the motor during deceleration.	2: Cancel the external force or install a braking resistor.
Pre-charge power fault	Err08	1: Bus voltage fluctuates around under-voltage threshold continuously.	1: Contact the agent.
Under-voltage	Err09	1: Instantaneous power failure occurs.	1: Set P9-59 to enable the instantaneous power-off function.

		2: AC drive's input voltage is not within the allowable range.	2: Adjust the voltage to normal range.
		3: Bus voltage is abnormal.	3 ~ 4: Contact the agent.
		4: Rectifier bridge, pre-charge resistor, drive board or control board is abnormal.	
AC drive overload	Err10	1: Load is too heavy or locked-rotor occurs on the motor.	1: Reduce the load and check the motor and mechanical condition.
		2: AC drive power class is too small.	2: Select an AC drive of higher power class.
Fault Name	**Display**	**Cause**	**Solution**
Motor overload	Err11	1: P9-01 is set incorrectly.	1: Set P9-01 correctly.
		2: Load is too heavy or locked-rotor occurs on the motor.	2: Reduce the load and check the motor and the mechanical condition.
		3: AC drive power class is too small.	3: Select an AC drive of higher power class.
Power input phase loss	Err12	1: Three-phase input is abnormal.	1: Eliminate external faults.
		2: Rectifier bridge, drive board, lightening protection board or control board is abnormal.	2: Contact the agen.
Power output phase loss	Err13	1: Motor faulty.	1: Replace motor.
		2: Cable connection of AC drive and motor is abnormal.	2: Check output cable is connected correctly.
		3: AC drive's three-phase outputs are unbalanced when the motor is running.	3: Check whether the motor three-phase winding is normal.
		4: Drive board or IGBT is abnormal.	4: Contact the agent.

IGBT overheat	Err14	1: Ambient temperature is too high.	1: Lower the ambient temperature.
		2: Ventilation duct is blocked.	2: Clean the ventilation duct.
		3: Fan is damaged.	3: Replace the fan.
		4: Thermally sensitive resistor of the IGBT is damaged.	4 ~5: Contact the agent.
		5: IGBT is damaged.	
External equipment fault	Err15	1: External fault signal is input via DI.	1: Check external fault, confirm the restart is allowed (P8-18) and reset the operation.
		2: External fault signal is input via virtual I/O.	2: Confirm group D1, group I/O setting are correct and reset the operation.
Communication fault	Err16	1: Host computer is in abnormal state.	1: Check the cable of host computer.
		2: Communication cable is abnormal.	2: Check the communication cable.
		3: P0-28 is set incorrectly.	3: Set P0-28 correctly.
		4: Communication parameters in group Pd are set incorrectly.	4: Set the communication parameters in group Pd correctly.
		5: After all check above, Err still exist, try factory recover.	
Contactor fault	Err17	1: Drive board, lightening protection board or power supply is abnormal.	1 ~ 2: Contact the agent.
		2: Contactor is abnormal.	
Current detection fault	Err18	1: Hall device is abnormal.	1 ~ 2: Contact the agent.
		2: Drive board is abnormal.	
Motor auto-tuning fault	Err19	1: Motor parameters are not set according to the nameplate.	1: Set the motor parameters according to the nameplate.
		2: Motor auto-tuning times out.	2: Check the cable connection of the AC drive and the motor.

Encoder fault	Err20	1: Encoder type is not matched.	1: Set the encoder type correctly based on the actual situation.
		2: Encoder wiring is incorrect.	2: Check PG card power supply and phase sequence.
		3: Encoder is damaged.	3: Replace the encoder.
		4: PG card is abnormal.	4: Replace the PG card.
Fault Name	**Display**	**Cause**	**Solution**
EEPROM read-write fault	Err21	1: EEPROM chip is damaged.	1: Replace the main control board.
Short circuit to ground	Err23	1: Motor is short circuited to ground.	1: Replace the cable or motor.
Accumulative running time reached	Err26	1: Accumulative running time reaches the setting value.	1: Clear the record through the parameter initialization function.
User-defined fault 1	Err27	1: User-defined fault 1 signal is input via DI.	1 ~ 2: Reset the operation.
		2: User-defined fault 1 signal is input via virtual I/O.	
User-defined fault 2	Err28	1: User-defined fault 2 signal is input via DI.	1 ~ 2: Reset the operation.
		2: User-defined fault 2 signal is input via virtual I/O.	
Accumulative power-on time reached	Err29	1: Accumulative power-on time reaches the setting value.	1: Clear the record through the parameter initialization function.
Load loss	Err30	1: 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 are correct.
PID feedback	Err31	1: PID feedback is lower than the setting of PA-26.	1: Check the PID feedback signal or set PA-26 to a proper value.

lost during running			
Pulse-by-pulse current limit fault	Err40	1: Load is too heavy or locked-rotor occurs on the motor.	1: Reduce the load and check the motor and mechanical condition.
		2: AC drive power class is too small.	2: Select an AC drive of higher power class.
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: Encoder parameters are set incorrectly.	1: Set the encoder parameters correctly.
		2: Motor auto-tuning is not performed.	2: Perform the motor auto-tuning.
		3: P9-69 and P9-70 are set improperly.	3: Set P9-69 and P9-70 properly based on the actual situation.
Motor over-speed	Err43	1: Encoder parameters are set incorrectly.	1: Set the encoder parameters correctly.
		2: Motor auto-tuning is not performed.	2: Perform the motor auto-tuning.
		3: P9-67 and P9-68 are set improperly.	3: Set P9-67 and P9-68 properly based on the actual situation.
Motor overheat	Err45	1: Cable connection of temperature sensor becomes loose.	1: Check cable connection of temperature sensor.
		2: Motor temperature is too high.	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.
Braking unit overload	Err61	1: Braking resistor resistance is too small.	1: Please refer to table 5-4.

Braking circuit Short-circuit	Err62	1: Braking IGBT is abnormal.	1: Contact the agen.

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 6-3 Troubleshooting to Common Faults of the AC Drive

No.	Fault	Cause	Solution
1	There is no display at power-on.	1: Power supply is not input or too low.	1: Check the power supply.
		2: Switching power supply on the drive board of the AC drive is faulty.	2: Check the bus voltage.
		3: Cable between control board and drive board, and between control board and operation panel breaks.	3: Re-connect the 8-core and 34-core cable.
		4: Pre-charge resistor of the AC drive is damaged.	4~6: Contact the agent.
		5: Control board or operation panel is faulty.	
		6: Rectifier bridge is damaged.	
2	"000000" is displayed at power-on.	1: Cable between drive board and control board is in poor contact.	1: Re-connect the 8-core and 34-core cable.
		2: Related components on the control board are damaged.	2~5: Contact the agent.
		3: Motor or motor cable is short circuited to ground.	
		4: Hall device is faulty.	
		5: Power supply is too low.	
3	"Err23" is displayed at power-on.	1: Motor or motor output cable is short circuited to ground.	1: Measure the insulation of motor and output cable with a megger.
		2: AC drive is damaged.	2: Contact the agent.
4	The AC drive display is	1: Cooling fan is damaged or locked-rotor occurs.	1: Replace the fan.

	normal upon power-on. But "00000" is displayed after running and stops immediately.	2: Control terminal wiring is short circuited.	2: Eliminate short circuit fault.
5	Err14 (IGBT overheat) fault is reported frequently.	1: Setting of carrier frequency is too high.	1: Reduce the carrier frequency (P0-15).
		2: Cooling fan is damaged or ventilation duct is blocked.	2: Replace the fan or clean the ventilation duct.
		3: Components inside the AC drive are damaged (thermocouple or others).	3: Contact the agent.
6	The motor does not rotate after the AC drive runs.	1: Check the motor and the motor cables.	1: Ensure the cable between the AC drive and the motor is normal.
		2: AC drive parameters are set incorrectly (motor parameters).	2: Restore the factory parameters and reset parameters correctly.
		3: Cable between drive board and control board is in poor contact.	3: Re-connect the 8-core and 34-core cable.
		4: Drive board is faulty.	4: Contact the agent.
No.	Fault	Cause	Solution
7	The DI terminals are disabled.	1: Parameters are set incorrectly.	1: Check and reset the parameters in group P4.
		2: External signal is incorrect.	2: Re-connect the external signal cable.
		3: Control board is faulty.	3: Contact the agent.
8	The AC drive reports over-current and over-voltage frequently.	1: Motor parameters are set incorrectly.	1: Reset motor parameters or re-perform the motor auto-tuning.
		2: Acceleration/Deceleration time is improper.	2: Set proper acceleration/ deceleration time.

		3: Load fluctuates.	3: Contact the agent.
9	Err17 is reported upon power-on or running.	1: 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 24V power supply of the contactor is faulty. 4: Contact the agent
10	 is displayed upon power-on.	1: Operation panel is damaged.	1: Replace the operation panel.

Appendix A Definition 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 Parameter Data

The parameter data provides important parameters of the AC drive. The parameter data is described 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:

• 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 bits 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 AC08H, where ACH represents group DC and 08H is the hexadecimal data format of serial number 8 in the group.

• 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 F0 ~ FF 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 in communication address are 40 ~ 4F or A0 ~ AF 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 description 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 control and parameter initialization

A.2.1 Status Data

Status data includes group U, 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 defined in the following table:

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

A.2.2 Control Parameters

The control parameters include control commands, communication setting values, DO control, AO1 control, AO2 control, high-speed pulse (FMP) output control and parameter initialization.

• 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 Control Commands	Definition
2000H	1: Forward run
	2: Reverse run
	3: Forward jog
	4: Reverse jog
	5: Coast to stop
	6: Decelerate to stop
	7: Fault reset

• Communication setting values

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 DO Control	Definition
2001H	Bit01: DO1 output control
	Bit01: DO2 output control
	Bit02: Relay 1 output control
	Bit03: Relay 2 output control
	Bit04: FMR output control
	Bit05: VDO1
	Bit06: VDO2
	Bit07: VDO3
	Bit08: VDO4
	Bit09: VDO5

• AO1 control, AO2 control and 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		Definition
AO1	2002H	0 to 7FFF indicates 0% to 100%
AO2	2003H	
FMP	2004H	

• Parameter initialization

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

If PP-00 (user password) is set to a non-zero value, pass password verification first. Host computer performs parameter initialization within 30s after password verification is 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	Definition
1F01H	1: Restore default settings

	2: Clear records

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 FU90TX1 must be inserted into the AC drive.

• Topological structure

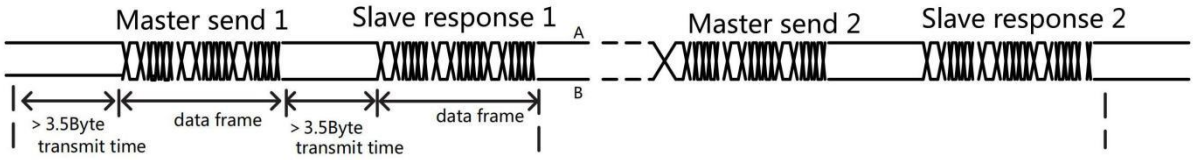
The system consists of a single master and multiple slaves. In the network, each communication device has a unique slave address. A device is the master (can be a PC, PLC or HMI) and initiates communication to perform parameter read or write operations on slaves. The other devices (slaves) provide data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

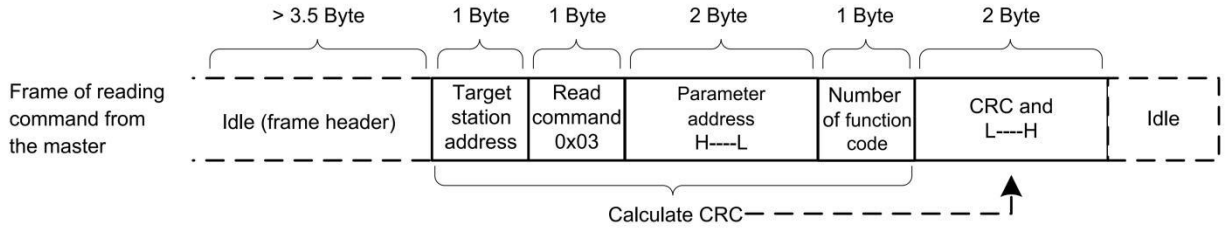
The drive supports reading and writing of word-type parameters only.

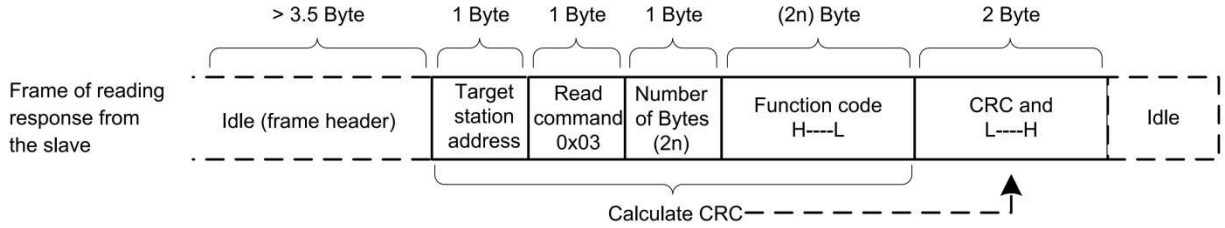
Reading command is 0x03 and writing command is 0x06.

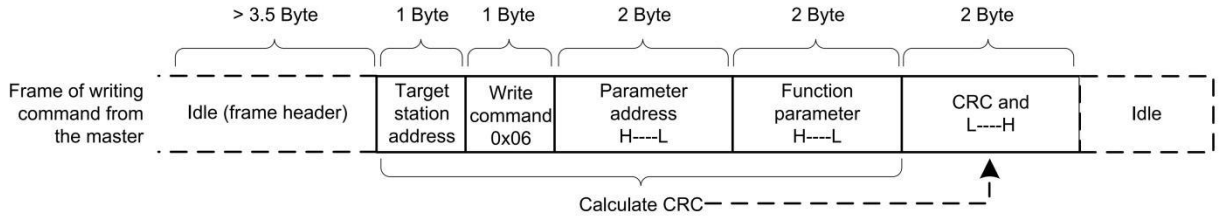
It does not support reading and writing of bytes or bits.

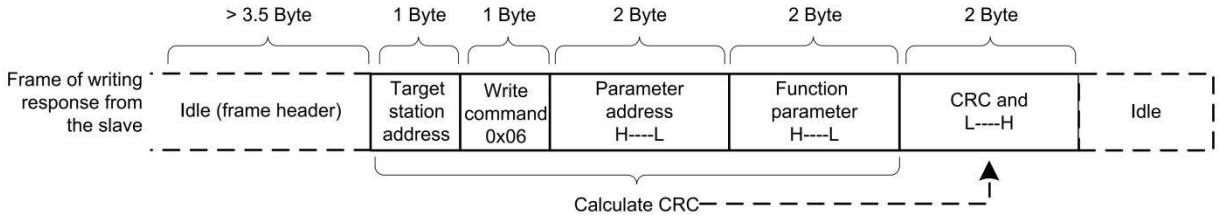
The Modbus-RTU protocol communication data format of the drive is as follows:

Appendix C: Further Information

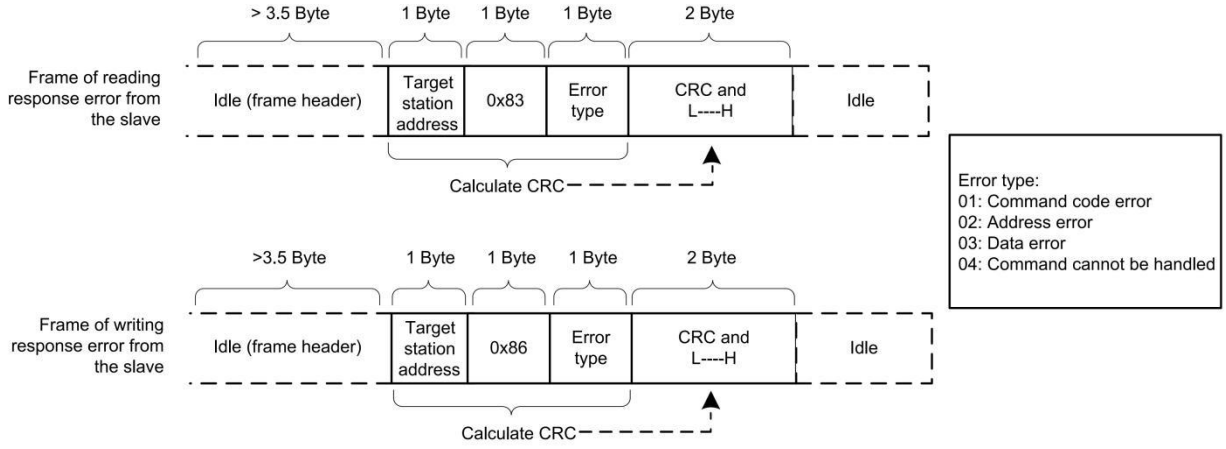








If the slave detects a communication frame error or reading/writing failure is caused by other reasons, an error frame will be returned as follows:



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:**

	0: Broadcast address 1 ~ 247
Command code (CMD)	03: Read slave parameters 06: Write slave parameters
Function code address (H)	It is the internal 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 transmitting 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 0xFFFF. 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 performs XOR with a preset value. If the LSB was a 0, no XOR is performed . This

process is repeated until eight shifts have 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 message from the low-order byte followed by the high-order byte. The CRC simple function is as follows:

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

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 number and parameter identifying number are used to express parameter address:

• High-order bytes: F0 ~ FF (Groups P), A0 ~ 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 writing 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: 0.01kHz
1004H	Output current	1014H	Feedback speed, unit: 0.1Hz
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 Y reference 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 Address	Command Content
2001H	Bit00: DO1 control

	Bit01: DO2 control
	Bit02: Relay 1 control
	Bit03: Relay 2 control
	Bit04: FMR control
	Bit05: VDO1
	Bit06: VDO2
	Bit07: VDO3
	Bit08: VDO4
	Bit09: 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:

Fault Address	AC Drive Fault Information	
8000H	0000: No fault 0001: Reserved 0002: Over-current during acceleration 0003: Over-current during deceleration 0004: Over-current during constant speed 0005: Over-voltage during acceleration 0006: Over-voltage during deceleration	0015: Parameter read and write fault 0016: AC drive hardware fault 0017: Motor short circuited to ground 0018: Reserved 0019: Reserved 001A: Accumulative running time reached 001B: User-defined fault 1 001C: User-defined fault 2 001D: Accumulative power-on time reached 001E: Load lost

	0007: Over-voltage during constant speed 0008: Pre-charge resistance overload 0009: Under-voltage fault 000A: AC drive overload 000B: Motor overload 000C: Input lost phase 000D: Output lost phase 000E: IGBT overheat 000F: External fault 0010: Communication fault 0011: Contactor fault 0012: Current detection fault 0013: Motor tuning fault 0014: Encoder/PG card fault	001F: PID feedback lost during running 0028: Fast current limit time out 0029: Motor switchover error during running 002A: Too large speed deviation 002B: Motor over-speed 002D: Motor overheat 005A: Incorrect setting of PPR of the encoder 005B: Not connecting the encoder 005C: Initial position error 005E: Speed feedback error
Note	• PPR: Pulses per revolution	

B.4 Group Pd Communication Parameter Description

Function Code	Parameter Name	Setting Range	Default

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

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.

Function Code	Parameter Name	Setting Range	Default
Pd-01	Data format	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>	3

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

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

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 (broadcast address), AC drive can only receive and execute broadcast commands of host computer, but will not respond to host computer.

Function Code	Parameter Name	Setting Range	Default
Pd-03	Response delay	0ms ~ 20ms (valid for Modbus)	2ms

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.

Function Code	Parameter Name	Setting Range	Default
Pd-04	Communication time out	0.0s: Disabled 0.1s ~ 60.0s	0.0s

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.

Function Code	Parameter Name	Setting Range	Default
Pd-05	Modbus protocol selection	Units digit: Modbus 0: Non-standard Modbus protocol 1: Standard Modbus protocol	01

Pd-05=1: Standard Modbus protocol.

Pd-05=0: When reading command, slave return byte is 1 more digit than standard Modbus protocol.

Please refer to “ B.2 Data Format ”.

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

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