

Vector Frequency Inverter

User Manual – V1.0

Preface

Thank you for purchasing the AC drive developed by our company.

The AC drive is a general-purpose high-performance current vector control AC drive. It increases the user programmable function, background monitoring software and communication bus function. It is used to drive various automation production equipment involving textile, paper-making, wiredrawing, machine tool, packing, food, fan and pump.

This manual describes the correct use of the SP800 series AC drive, including selection, parameter setting, commissioning, maintenance & inspection. Read and understand the manual before use and forward the manual to the end user.

Notes:

The drawings in the manual are sometimes shown without covers or protective guards. Remember to install the covers or protective guards as specified first, and then perform operations in accordance with the instructions.

The drawings in the manual are shown for description only and may not match the product you purchased.

The instructions are subject to change, without notice, due to product upgrade, specification modification as well as efforts to increase the accuracy and convenience of the manual.

Contact our agents or customer service center if you have problems during the use.

Product Checking

Upon unpacking, check:

Whether the nameplate model and AC drive ratings are consistent with your order. The box contains the AC drive, certificate of conformity, user manual and warranty card.

Whether the AC drive is damaged during transportation. If you find any omission or damage, contact our company or your supplier immediately.

First-time Use:

For the users who use this product for the first time, read the manual carefully. If in doubt concerning some functions or performances, contact the technical support personnel of our company to ensure correct use.

1. Designation Rules and Nameplate of the Inverter

XXX - 4 T 2.2 G B

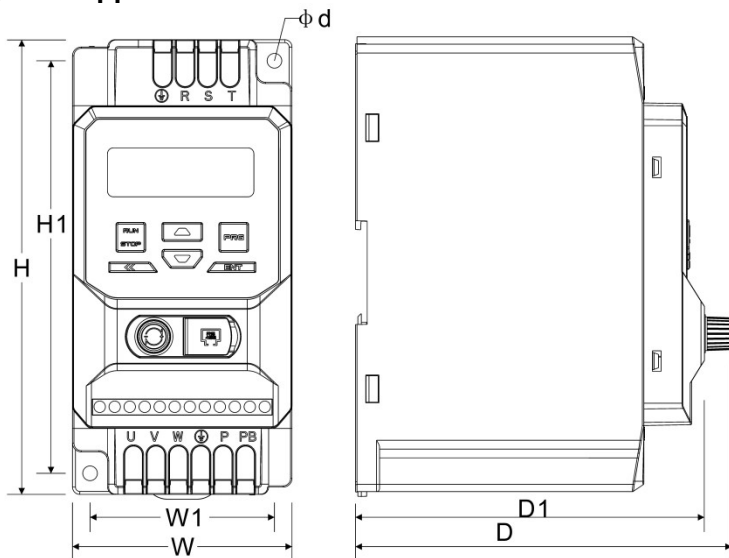
① ② ③ ④ ⑤ ⑥

①	XXX	AC Driver Series	
②	4	Voltage class	2:220V/4:380V
③	T	Number of power phase	S:Single/T:Three
④	2.2	Adaptable motor	Unit: KW
⑤	G	model	G: General Model
⑥	B	Braking unit	B: with braking unit no letter: without braking unit

2. Electrical Specifications of the Inverter

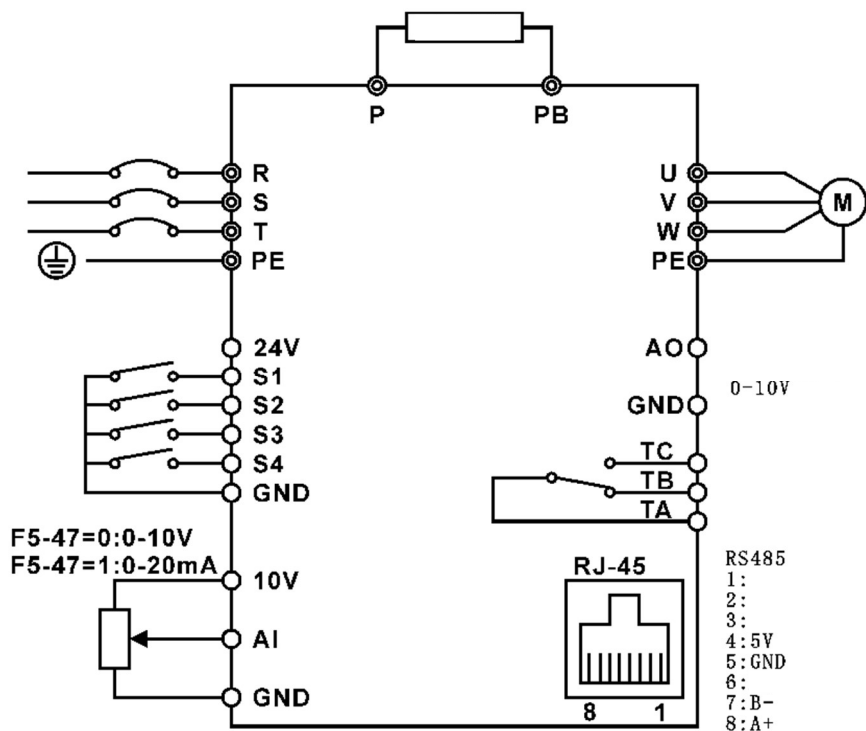
Model	Power Capacity (kVA)	Input Current (A)	Output Current (A)	Adaptable Motor (kW) (HP)	
Single-phase: 220V, 50/60Hz					
2S0.75GB	1.5	8.2	4.0	0.75	1
2S1.5GB	3.0	14.0	7.0	1.5	2
2S2.2GB	4.0	23.0	9.6	2.2	3
Three-phase: 380V, 50/60Hz					
4T0.75GB	1.5	3.4	2.1	0.75	1
4T1.5GB	3.0	5.0	3.8	1.5	2
4T2.2GB	4.0	5.8	5.1	2.2	3
4T4GB	5.9	10.5	9.0	3.7	5
4T5.5GB	8.9	14.6	13.0	5.5	7.5
4T7.5GB	11.0	20.5	17.0	7.5	10
4T11GB	17.0	26.0	25.0	11.0	15

3. Physical Appearance and Overall Dimensions



Model	Overall Dimensions (mm)				Mounting Hole (mm)		Mounting Hole Diameter (mm)
	H	W	D	D1	H1	W1	
2S0.75GB	155	75	128.5	119.2	140.5	63	4
2S1.5GB							
2S2.2GB							
4T0.75GB							
4T1.5GB							
4T2.2GB							
4T4GB	193.5	93	143.3	132.5	179.4	79	5
4T5.5GB	235.8	120	161.2	152	217.6	101.8	6
4T7.5GB							
4T11GB							

4. Electrical Installation

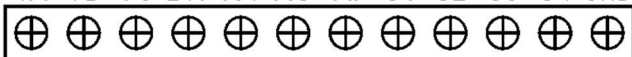


4.1 Description of Main Circuit Terminals

Terminal	Name	Description
R、S、T	Three-phase power supply input terminals	Connect to the three-phase AC power supply
P、PB	Connecting terminals of braking resistor	Connect to the braking resistor
U、V、W	AC drive output terminals	Connect to a three-phase motor.
PE	Grounding terminal	Must be grounded.

4.2 Description of Control Circuit Terminals

TA TB TC 24V 10V AO AI S1 S2 S3 S4 GND



Type	Terminal	Name	Function Description
Power supply	+10V-GND	External +10V power supply	Provide +10 V power supply to external unit. Generally, it provides power supply to external potentiometer with resistance range of 1–5 k Ω . Maximum output current: 50 mA
	+24V-GND	External +24V power supply	Provide +24 V power supply to external unit. Generally, it provides power supply to DI/DO terminals and external sensors. Maximum output current: 50 mA
Analog input	AI-GND	Analog input	1. Analog voltage input F5-47=0 Input range: 0~10V impedance: 20k Ω 2. Analog current input F5-47=1 Input range: 0~20mA impedance: 500 Ω
Digital input	S1- GND	Digital input 1	Impedance: 10 k Ω Voltage range for level input: 9–30 V
	S2- GND	Digital input 2	
	S3- GND	Digital input 3	
	S4-GND	Digital input 4	
Analog output	AO-GND	Analog output	Output voltage range: 0–10 V
Relay output	TA-TB	NC terminal	Contact driving capacity: 250 VAC, 3 A, COS ϕ = 0.4 30 VDC, 1 A Applying to Overvoltage Category II circuit
	TA-TC	NO terminal	
Communication	A+ B-	RS485	RJ-45 network port, Support Modbus communication protocol

4.3 Selection of Electrical Devices

Model	Braking Resistor	MCCB (A)	Contactor (A)	Cable of Output Side Main Circuit (mm ²)	Cable of Control Circuit (mm ²)
2S0.75GB	≥150Ω 80W	16A	10A	2.5 mm ²	1.0mm ²
2S1.5GB	≥100Ω 100W	20A	16A	2.5 mm ²	1.0mm ²
2S2.2GB	≥70Ω 100W	32A	20A	4.0 mm ²	1.0mm ²
4T0.75GB	≥300Ω 150W	10A	10A	2.5 mm ²	1.0mm ²
4T1.5GB	≥200Ω 150W	16A	10A	2.5 mm ²	1.0mm ²
4T2.2GB	≥200Ω 250W	16A	10A	2.5 mm ²	1.0mm ²
4T4GB	≥130Ω 300W	25A	16A	4.0 mm ²	1.0mm ²
4T5.5GB	≥90Ω 400W	32A	25A	4.0 mm ²	1.0mm ²
4T7.5GB	≥65Ω 500W	40A	32A	4.0 mm ²	1.0mm ²
4T11GB	≥43Ω 800W	63A	40A	4.0 mm ²	1.0mm ²

5. Operation and display

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

	1)Description of Indicators RUN: ON indicates that the AC drive is in the running state, and OFF indicates that the AC drive is in the stop state. LOC: It indicates whether the AC drive is operated by means of operation panel, terminals or communication. REV: ON indicates reverse rotation, and OFF indicates forward rotation. 2) Unit Indicators: Hz unit of frequency A unit of current V unit of voltage
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Description of Keys on the Operation Panel

Key	Name	Function
	Programming	Enter or exit Level 1 menu
	Up	Increment of data or function code
	Down	Decrement of data or function code
	Shift	1. Select the displayed parameters in turn in the stop or running state. 2. Select the digit to be modified when modifying parameters
	Enter	Enter the menu screen step by step, confirm the setting parameters
	Run Stop Reset	1. The stop state is used for running operation 2. In the running state, press this key to stop the running operation 3. In the state of fault alarm, it can be used to reset the operation

6.Function Code Table

If FP-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 FP-00 to 0.

Group F and Group A are standard function parameters. Group U includes the monitoring function parameters.

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

"☆": The parameter can be modified when the AC drive is in either stop or running state.

"★": The parameter cannot be modified when the AC drive is in the running state.

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

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

Function Code	Parameter Name	Setting Range	Default	Property
Group F0: Standard Function Parameters				
F0-00	Motor control mode	0: Sensorless flux vector control (SVC) 1: Voltage/Frequency (V/F) control	1	★
F0-01	Command source selection	0: Operation panel control (LED off) 1: Terminal control (LED on) 2: Communication control (LED blinking)	0	☆
F0-02	Main frequency source X selection	0: Digital setting (non-retentive at power failure) 1: Digital setting (retentive at power failure) 2: AI 3: Reserved 4: Keyboard potentiometer 5: Reserved6: Multi-reference 7: Simple PLC 8: PID	4	★

Function Code	Parameter Name	Setting Range	Default	Property
		9: Communication setting		
F0-03	Auxiliary frequency source Y selection	The same as F0-02 (Main frequency source X selection)	0	★
F0-04	Range of auxiliary frequency Y for X and Y operation	0: Relative to maximum frequency 1: Relative to main frequency X	0	☆
F0-05	Range of auxiliary frequency Y for X and Y operation	0%–150%	100%	☆
F0-06	Frequency source selection	Unit's digit (Frequency source selection) 0: Main frequency source X 1: X and Y operation (operation relationship determined by ten's digit) 2: Switchover between X and Y 3: Switchover between X and "X and Y operation" 4: Switchover between Y and "X and Y operation" Ten's digit (X and Y operation relationship) 0: X+Y 1: X-Y 2: Maximum 3: Minimum	00	☆
F0-07	Preset frequency	0.00 to maximum frequency (valid when frequency source is digital setting)	50.00Hz	☆
F0-08	Rotation direction	0: Same direction 1: Reverse direction	0	☆
F0-09	Maximum frequency	50.00Hz~320.00Hz (F0-22=2) 50.0Hz~1000.0Hz (F0-22=1)	50.00Hz	★
F0-10	Source of frequency upper limit	0: Set by F0-12 1: AI 2: Reserved 3: Keyboard potentiometer 4: Reserved 5: Communication setting	0	★
F0-11	Frequency upper limit	Frequency lower limit (F0-13 to maximum frequency (F0-09))	50.00Hz	☆
F0-12	Frequency upper limit offset	0.00 Hz to maximum frequency (F0-09)	0.00Hz	☆
F0-13	Frequency lower limit	0.00 Hz to frequency upper limit (F0-11)	0.00Hz	☆
F0-14	Running mode when set frequency lower than frequency lower limit	0: Run at frequency lower limit 1: Stop 2: Run at zero speed	0	☆
F0-15	Base frequency for UP/DOWN modification during running	0: Running frequency 1: Set frequency	0	★
F0-16	Retentive of digital setting frequency upon power failure	0: Not retentive 1: Retentive	1	☆
F0-17	Acceleration time 1	0.00–650.00s (F0-19 = 2) 0.0–6500.0s (F0-19 = 1) 0–65000s (F0-19 = 0)	Model dependent	☆
F0-18	Deceleration time 1	0.00–650.00s (F0-19 = 2) 0.0–6500.0s (F0-19 = 1)	Model dependent	☆

Function Code	Parameter Name	Setting Range	Default	Property
		0–65000s (F0-19 = 0)		
F0-19	Acceleration/Deceleration time unit	0: 1s 1: 0.1s 2: 0.01s	1	★
F0-20	Carrier frequency	0.5–16.0 kHz	Model dependent	☆
F0-21	Carrier frequency adjustment with temperature	0: No 1: Yes	1	☆
F0-22	Frequency reference resolution	1: 0.1 Hz 2: 0.01 Hz	2	★
F0-23	Up and down buttons to adjust frequency accuracy	0.00Hz~maximum frequency F0-09	0.1HZ	☆
Group F1: Start/Stop Control				
F1-00	Start mode	0: Direct start 1: Rotational speed tracking restart 2: Pre-excited start (asynchronous motor)	0	☆
F1-01	Rotational speed tracking mode	0: From frequency at stop 1: From power frequency 2: From maximum frequency	0	★
F1-02	Rotational speed tracking speed	1–100	20	☆
F1-03	Startup frequency	0.00–10.00 Hz	0.00Hz	☆
F1-04	Startup frequency holding time	0.0–100.0s	0.0s	★
F1-05	Startup DC braking current/ Pre-excited current	0%–100%	0%	★
F1-06	Startup DC braking time/ Pre-excited time	0.0–100.0s	0.0s	★
F1-07	Acceleration/Deceleration mode	0: Linear acceleration / deceleration 1: S-curve acceleration / deceleration A 2: S-curve acceleration / deceleration B	0	★
F1-08	Time proportion of S-curve start segment	0.0% to (100.0% – F1-09)	30.0%	★
F1-09	Time proportion of S-curve end segment	0.0% to (100.0% – F1-08)	30.0%	★
F1-10	Stop mode	0: Decelerate to stop 1: Coast to stop	0	☆
F1-11	Initial frequency of stop DC braking	0.00 Hz to maximum frequency	0.00Hz	☆
F1-12	Waiting time of stop DC braking	0.0–36.0s	0.0s	☆
F1-13	Stop DC braking current	0%–100%	0%	☆
F1-14	Stop DC braking time	0.0–36.0s	0.0s	☆
F1-15	Brake use ratio	0%–100%	100%	☆
F1-16	Brake Threshold Voltage	310.0V–800.0V	S: 368V T: 720V	☆
Group F2: Motor parameters				
F2-02	Rated motor power	0.1–1000.0 kW	Model dependent	★
F2-03	Rated motor voltage	1–2000 V	Model dependent	★
F2-04	Rated motor current	0.01–655.35 A (AC drive power ≤ 55	Model	★

Function Code	Parameter Name	Setting Range	Default	Property
		kW) 0.1–6553.5 A (AC drive power > 55 kW)	dependent	
F2-05	Rated motor frequency	0.01 Hz to maximum frequency	Model dependent	★
F2-06	Rated motor rotational speed	1–65535 RPM	Model dependent	★
F2-07	Stator resistance (asynchronous motor)		Model dependent	★
F2-08	Rotor resistance (asynchronous motor)		Model dependent	★
F2-09	Leakage inductive reactance (asynchronous motor)		Model dependent	★
F2-10	Mutual inductive reactance (asynchronous motor)		Model dependent	★
F2-11	No-load current (asynchronous motor)		Model dependent	★
F2-12	Auto-tuning selection	0: No auto-tuning 1: Asynchronous motor static auto-tuning 2: Asynchronous motor complete auto-tuning 3: Asynchronous motor static complete auto-tuning	0	★
Group F3: Vector Control Parameters				
F3-00	Speed loop proportional gain 1	0–100	30	☆
F3-01	Speed loop integral time 1	0.01–10.00s	0.50s	☆
F3-02	Switchover frequency 1	0.00 to F3-05	5.00Hz	☆
F3-03	Speed loop proportional gain 2	0–100	20	☆
F3-04	Speed loop integral time 2	0.01–10.00s	1.00s	☆
F3-05	Switchover frequency 2	F3-02 to maximum output frequency	10.00Hz	☆
F3-06	Vector control slip gain	50%–200%	100%	☆
F3-07	Time constant of speed loop filter	0.000–0.100s	0.000s	☆
F3-08	Vector control over-excitation gain	0–200	64	☆
F3-09	Torque upper limit source in speed control mode	0: F3-10 1: AI 2: Reserved 3: Keyboard potentiometer 4: Reserved 5: Communication setting 6: Reserved 7: Reserved The full range of value 1-7 corresponds to the digital setting of F3-10	0	☆
F3-10	Digital setting of torque upper limit in speed control mode	0.0%–200.0%	150.0%	☆
F3-13	Excitation adjustment	0–20000	2000	☆

Function Code	Parameter Name	Setting Range	Default	Property
	proportional gain			
F3-14	Excitation adjustment integral gain	0–20000	1300	☆
F3-15	Torque adjustment proportional gain	0–20000	2000	☆
F3-16	Torque adjustment integral gain	0–20000	1300	☆
F3-17	Speed loop integral property	Unit's digit: integral separation 0: Disabled 1: Enabled	0	☆
F3-18	Speed/Torque control selection	0: Speed control 1: Torque control	0	★
F3-19	Torque setting source in torque control	0: Digital setting (F3-21) 1: AI 2: Reserved 3: Keyboard potentiometer 4: Reserved 5: Communication setting 6: Reserved 7: Reserved The full range of value 1-7 corresponds to the digital setting of F3-21	0	★
F3-20	Reserved	-	-	●
F3-21	Torque digital setting in torque control	-200.0%–200.0%	150.0%	☆
F3-22	Reserved	-	-	●
F3-23	Forward maximum frequency in torque control	0.00 Hz to maximum frequency (F0-09)	50.00Hz	☆
F3-24	Reverse maximum frequency in torque control	0.00 Hz to maximum frequency (F0-09)	50.00Hz	☆
F3-25	Acceleration time in torque control	0.00–65000s	0.00s	☆
F3-26	Deceleration time in torque control	0.00–65000s	0.00s	☆
Group F4: V/F Control Parameters				
F4-00	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	★
F4-01	Torque boost	0.0% (No torque boost) 0.1%–30.0%	Model dependent	☆
F4-02	Cut-off frequency of torque boost	0.00 Hz to maximum output frequency	50.00Hz	★
F4-03	Multi-point V/F frequency 1 (F1)	0.00 Hz to F4-05	5.00Hz	★
F4-04	Multi-point V/F voltage 1 (V1)	0.0%–100.0%	20.0%	★
F4-05	Multi-point V/F frequency 2 (F2)	F4-03 to F4-07	25.00Hz	★
F4-06	Multi-point V/F voltage 2 (V2)	0.0%–100.0%	50.0%	★
F4-07	Multi-point V/F frequency 3 (F3)	F4-05 to rated motor frequency (F2-05)	50.00Hz	★
F4-08	Multi-point V/F voltage 3	0.0%–100.0%	100.0%	★

Function Code	Parameter Name	Setting Range	Default	Property
	(V3)			
F4-09	V/F slip compensation gain	0%–200.0%	0.0%	☆
F4-10	V/F over-excitation gain	0–200	64	☆
F4-11	V/F oscillation suppression gain	0–100	Model dependent	☆
F4-12	Voltage source for V/F separation	0: Digital setting (F4-13) 1: AI 2: Reserved 3: Keyboard potentiometer 4: Reserved 5: Multi-reference 6: Simple PLC 7: PID 8: Communication setting 100.0% corresponds to the rated motor voltage (F2-03).	0	☆
F4-13	Voltage digital setting for V/F separation	0 V to rated motor voltage	0V	☆
F4-14	Voltage rise time of V/F separation	0.0–1000.0s It indicates the time for the voltage rising from 0 V to rated motor voltage.	0.0s	☆
F4-15	DPWM switchover frequency upper limit	0.00–15.00 Hz	12.00Hz	☆
F4-16	PWM modulation mode	0: Asynchronous modulation 1: Synchronous modulation	0	☆
F4-17	Random PWM depth	0: Random PWM invalid, 1–10	0	☆
Group F5: Input Terminals				
F5-00	S1 function selection	0: No function 1: Forward RUN (FWD) 2: Reverse RUN (REV) 3: Three-line control 4: Forward JOG (FJOG) 5: Reverse JOG (RJOG)	1	★
F5-01	S2 function selection	6: Terminal UP 7: Terminal DOWN 8: Coast to stop 9: Fault reset (RESET) 10: RUN pause	2	★
F5-02	S3 function selection	11: Normally open (NO) input of external fault 12: Multi-reference terminal 1 13: Multi-reference terminal 2 14: Multi-reference terminal 3 15: Multi-reference terminal 4	4	★
F5-03	S4 function selection	16: Terminal 1 for acceleration/ deceleration time selection 17: Terminal 2 for acceleration/ deceleration time selection 18: Frequency source switchover 19: UP and DOWN setting clear (terminal, operation panel)	9	★

Function Code	Parameter Name	Setting Range	Default	Property
F5-04	S5 function selection	20: Command source switchover terminal 1 21: Acceleration/Deceleration prohibited 22: PID pause 23: PLC status reset 24: Swing pause 25: Counter input	12	★
F5-05	S6 function selection	26: Counter reset 27: Length count input 28: Length reset 29: Torque control prohibited 30: Reserved 31: Reserved 32: Immediate DC braking 33: Normally closed (NC) input of external fault 34: Frequency modification forbidden 35: Reverse PID action direction 36: External STOP terminal 1	13	★
F5-10	VDI1 function selection	37: Command source switchover terminal 2 38: PID integral pause	0	★
F5-11	VDI2 function selection	39: Switchover between main frequency source X and preset frequency 40: Switchover between auxiliary frequency source Y and preset frequency	0	★
F5-12	VDI3 function selection	41-42: Reserved	0	★
F5-13	VDI4 function selection	43: PID parameter switchover 44: User-defined fault 1 45: User-defined fault 2	0	★
F5-14	VDI5 function selection	46: Speed control/Torque control switchover 47: Emergency stop 48: External STOP terminal 2 49: Deceleration DC braking 50: Clear the current running time 51: Two-wire type/three-wire type switch 52: Reverse Frequency Forbid 53-59: Reserved	0	★
F5-15	DI filter time	0.000s~1.000s	0.010s	☆
F5-16	Terminal command mode	0: Two-line mode 1 1: Two-line mode 2 2: Three-line mode 1 3: Three-line mode 2	0	★
F5-17	Terminal UP/DOWN rate	0.001Hz~65.535Hz	1.00Hz	☆
F5-18	DI1 delay time	0.0s~3600.0s	0.0s	★
F5-19	DI2 delay time	0.0s~3600.0s	0.0s	★
F5-20	DI3 delay time	0.0s~3600.0s	0.0s	★
F5-21	DI valid mode selection 1	0: High level 1: low level Unit's digit (S1 valid mode) Ten's digit (S2 valid mode) Hundred's digit (S3 valid state)	00000	★

Function Code	Parameter Name	Setting Range	Default	Property
		Thousand's digit (S4 valid mode) Ten thousand's digit (Reserved)		
F5-22	DI valid mode selection 2	Reserved	00000	★
F5-23	VDI state setting mode	0: Decided by state of VDOx 1: Decided by F5-24 Unit's digit (VDI1) Ten's digit (VDI2) Hundred's digit (VDI3) Thousand's digit (VDI4) Ten thousand's digit (VDI5)	00000	★
F5-24	VDI state selection	0: Invalid; 1: Valid Unit's digit (VDI1) Ten's digit (VDI2) Hundred's digit (VDI3) Thousand's digit (VDI4) Ten thousand's digit (VDI5)	00000	★
F5-25	AI curve minimum input	0.00V~F5-27	0.00V	☆
F5-26	Corresponding setting of AI curve minimum input	-100.0%~+100.0%	0.0%	☆
F5-27	AI curve maximum input	F5-25~+10.00V	10.00V	☆
F5-28	Corresponding setting of AI curve maximum input	-100.0%~+100.0%	100.0%	☆
F5-29	AI filter time	0.00s~10.00s	0.10s	☆
F5-39	Operation panel potentiometer(AI3) filter time	0.00s~10.00s	0.10s	☆
F5-45	Setting for AI less than minimum input	Unit's digit (Setting for AI1 less than minimum input) 0: Minimum value 1: 0.0% Ten's digit (Reserved)	00	☆
F5-46	Reserved			
F5-47	AI input mode selection	0: 0-10V 1: 0-20mA	0	☆
Group F6: Output Terminals				
F6-00	Reserved			
F6-02	Relay function (T/A-T/B-T/C)	0: No output 1: AC drive running 2: Fault output (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 larger than AI2 17: Frequency upper limit reached 18: Frequency lower limit reached	2	☆

Function Code	Parameter Name	Setting Range	Default	Property
		(no output at stop) 19: Undervoltage state 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 becoming 0 33: Reverse running 34: Zero current state 35: Module temperature reached 36: Software current limit exceeded 37: Frequency lower limit reached (having output at stop) 38: Alarm output 39: Motor overheat warning 40: Current running time reached 41: Fault output(no output for automatic power-off and under-voltage)		
F6-06	VDO1 function selection	0: Short with physical DIx internally 1–40: Refer to function selection of physical DO in group F6.	0	☆
F6-07	VDO2 function selection	0: Short with physical DIx internally 1–40: Refer to function selection of physical DO in group F6.	0	☆
F6-08	VDO3 function selection	0: Short with physical DIx internally 1–40: Refer to function selection of physical DO in group F6.	0	☆
F6-09	VDO4 function selection	0: Short with physical DIx internally 1–40: Refer to function selection of physical DO in group F5.	0	☆
F6-10	VDO5 function selection	0: Short with physical DIx internally 1–40: Refer to function selection of physical DO in group F6.	0	☆
F6-11	FMR output delay time	0.0–3600.0s	0.0s	☆
F6-12	Relay 1 output delay time	0.0–3600.0s	0.0s	☆
F6-13	Relay 2 output delay time	0.0–3600.0s	0.0s	☆
F6-14	DO1 output delay time	0.0–3600.0s	0.0s	☆
F6-15	Reserved			☆
F6-16	VDO1 output delay	0.0–3600.0s	0.0s	☆
F6-17	VDO2 output delay	0.0–3600.0s	0.0s	☆
F6-18	VDO3 output delay	0.0–3600.0s	0.0s	☆
F6-19	VDO4 output delay	0.0–3600.0s	0.0s	☆
F6-20	VDO5 output delay	0.0–3600.0s	0.0s	☆
F6-21	DO valid mode selection	0- Positive logic; 1- Negative logic Unit's digit (FMR valid mode)	00000	☆

Function Code	Parameter Name	Setting Range	Default	Property
		Ten's digit (Relay 1 valid mode) Hundred's digit (Relay 2 valid mode) Thousand's digit (DO1 valid mode) Ten thousand's digit (DO2 valid mode)		
F6-22	VDO valid mode selection	0- Positive logic; 1- Negative logic Unit's digit (VDO1 valid mode) Ten's digit (VDO2 valid mode) Hundred's digit (VDO3 valid mode) Thousand's digit (VDO4 valid mode) Ten thousand's digit (VDO5 valid mode)	00000	☆
F6-23	FMP function selection	0: Running frequency 1: Set frequency 2: Output current 3: Output torque (absolute value) 4: Output power	0	☆
F6-24	AO1 function selection	5: Output voltage 6: Reserved 7: AI1 8: Reserved 9: Keyboard potentiometer	0	☆
F6-25	AO2 function selection	10: Length 11: Count value 12: Communication setting 13: Motor rotational speed 14: Output current 15: Output voltage 16: Output torque (actual value)	1	☆
F6-26	Maximum FMP output frequency	0.01~100.00 kHz	50.00kHz	☆
F6-27	AO1 offset coefficient	-100.0%~100.0%	0.0%	☆
F6-28	AO1 gain	-10.00~10.00	1.00	☆
F6-29	AO2 offset coefficient	-100.0%~100.0%	0.0%	☆
F6-30	AO2 gain	-10.00~10.00	1.00	☆
Group F7: Operation Panel and Display				
F7-00	MF.K Key function selection	0: MF.K 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	★
F7-01	STOP/RESET key function	0: STOP/RESET key enabled only in operation panel control 1: STOP/RESET key enabled in any operation mode	1	☆
F7-02	LED display running parameters 1	0000~FFFF Bit00: Running frequency1(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: AI voltage (V)	1D	☆

Function Code	Parameter Name	Setting Range	Default	Property
		Bit10: Reserved Bit11: Reserved Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting		
F7-03	LED display running parameters 2	Bit00: PID feedback Bit01: PLC stage Bit02: Pulse setting frequency (kHz) Bit03: Running frequency 2 (Hz) Bit04: Remaining running time Bit05: AI voltage before correction (V) Bit06: Reserved Bit07: Keyboard potentiometer Bit08: Linear speed Bit09: Current power-on time (Hour) Bit10: Current running time (Min) Bit11: Reserved Bit12: Communication setting value Bit13: Encoder feedback speed (Hz) Bit14: Main frequency X display (Hz) Bit15: Auxiliary frequency Y display (Hz)	0	☆
F7-04	LED display stop parameters	Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: DI input status Bit03: DO output status Bit04: AI voltage (V) Bit05: Reserved Bit06: Reserved Bit07: Count value Bit08: Length value Bit09: PLC stage Bit10: Load speed Bit11: PID setting Bit12: Pulse setting frequency (kHz)	33	☆
F7-05	Heatsink temperature of inverter module	0.0–100.0°C	-	●
F7-06	Load speed display coefficient	0.0001–6.5000	3.0000	☆
F7-07	Number of decimal places for load speed display	0: 0 decimal place 1: 1 decimal place 2: 2 decimal places 3: 3 decimal places	1	☆
F7-08	Accumulative running time	0–65535 h	-	●
F7-09	Accumulative power-on time	0–65535 h	-	●
F7-10	Accumulative power consumption	0–65535 kWh	-	●
F7-11	Product number	-	-	●
F7-12	Software version	-	-	●
Group F8: Auxiliary Functions				
F8-00	JOG running frequency	0.00 Hz to maximum frequency	2.00Hz	☆
F8-01	JOG acceleration time	0.0–6500.0s	20.0s	☆
F8-02	JOG deceleration time	0.0–6500.0s	20.0s	☆
F8-03	Acceleration time 2	0.0–6500.0s	Model dependent	☆

Function Code	Parameter Name	Setting Range	Default	Property
F8-04	Deceleration time 2	0.0–6500.0s	Model dependent	☆
F8-05	Acceleration time 3	0.0–6500.0s	Model dependent	☆
F8-06	Deceleration time 3	0.0–6500.0s	Model dependent	☆
F8-07	Acceleration time 4	0.0–500.0s	Model dependent	☆
F8-08	Deceleration time 4	0.0–6500.0s	Model dependent	☆
F8-09	Jump frequency 1	0.00 Hz to maximum frequency	0.00Hz	☆
F8-10	Jump frequency 2	0.00 Hz to maximum frequency	0.00Hz	☆
F8-11	Frequency jump amplitude	0.00 Hz to maximum frequency	0.00Hz	☆
F8-12	Forward/Reverse rotation dead-zone time	0.0–3000.0s	0.0s	☆
F8-13	Reverse control	0: Enabled 1: Disabled	0	☆
F8-14	Cooling fan control	0: Fan working during running 1: Fan working continuously	0	☆
F8-15	Droop control	0.00–10.00 Hz	0.00Hz	☆
F8-16	Accumulative power-on time threshold	0–65000 h	0h	☆
F8-17	Accumulative running time threshold	0–65000 h	0h	☆
F8-18	Startup protection	0: No 1: Yes	0	☆
F8-19	Frequency detection value (FDT1)	0.00 Hz to maximum frequency	50.00Hz	☆
F8-20	Frequency detection hysteresis (FDT hysteresis 1)	0.0%–100.0% (FDT1 level)	5.0%	☆
F8-21	Detection range of frequency reached	0.00–100% (maximum frequency)	0.0%	☆
F8-22	Jump frequency during acceleration/ deceleration	0: Disabled1: Enabled	0	☆
F8-25	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00 Hz to maximum frequency	0.00Hz	☆
F8-26	Frequency switchover point between deceleration time 1 and deceleration time 2	0.00 to maximum frequency	0.00Hz	☆
F8-27	Terminal JOG preferred	0: Disabled 1: Enabled	0	☆
F8-28	Frequency detection value (FDT2)	0.00 to maximum frequency	50.00Hz	☆
F8-29	Frequency detection hysteresis (FDT hysteresis 2)	0.0%–100.0% (FDT2 level)	5.0%	☆
F8-30	Any frequency reaching detection value 1	0.00 Hz to maximum frequency	50.00Hz	☆
F8-31	Any frequency reaching detection amplitude 1	0.0%–100.0% (maximum frequency)	0.0%	☆
F8-32	Any frequency reaching detection value 2	0.00 Hz to maximum frequency	50.00Hz	☆
F8-33	Any frequency reaching	0.0%–100.0% (maximum frequency)	0.0%	☆

Function Code	Parameter Name	Setting Range	Default	Property
	detection amplitude 2			
F8-34	Zero current detection level	0.0%–300.0% (rated motor current)	5.0%	☆
F8-35	Zero current detection delay time	0.00–600.00s	0.10s	☆
F8-36	Output overcurrent threshold	0.0% (no detection) 0.1%–300.0% (rated motor current)	200.0%	☆
F8-37	Output overcurrent detection delay time	0.00–600.00s	0.00s	☆
F8-38	Any current reaching 1	0.0%–300.0% (rated motor current)	100.0%	☆
F8-39	Any current reaching 1 amplitude	0.0%–300.0% (rated motor current)	0.0%	☆
F8-40	Any current reaching 2	0.0%–300.0% (rated motor current)	100.0%	☆
F8-41	Any current reaching 2 amplitude	0.0%–300.0% (rated motor current)	0.0%	☆
F8-42	Timing function	0: Disabled 1: Enabled	0	☆
F8-43	Timing duration source	0: F8-44 1: AI 2: Reserved 3: Reserved (100% of analog input corresponds to the value of F8-44)	0	☆
F8-44	Timing duration	0.0–6500.0 min	0.0Min	☆
F8-45	AI1 input voltage lower limit	0.00 V to F8-46	3.10V	☆
F8-46	AI1 input voltage upper limit	F8-45 to 10.00V	6.80V	☆
F8-47	Module temperature threshold	0°C~100°C	75°C	☆
F8-48	Current running time reached	0.0Min~6500.0Min	0.0Min	☆
Group F9: Process Control PID Function				
F9-00	PID setting source	0: FA-01 1: AI 2: Reserved 3: Keyboard potentiometer 4: Reserved 5: Communication setting 6: Multi-reference	0	☆
F9-01	PID digital setting	0.0~F9-04	0	☆
F9-02	PID feedback source	0: AI 1: Reserved 2: Keyboard potentiometer 3: Reserved 4: Reserved 5: Communication setting 6: Reserved 7: Reserved 8: Reserved	0	☆
F9-03	PID action direction	0: Forward action 1: Reverse action	0	☆
F9-04	PID setting feedback range	0–65535	1000	☆
F9-05	Proportional gain Kp1	0.0–100.0	20.0	☆
F9-06	Integral time Ti1	0.01–10.00s	2.00s	☆
F9-07	Differential time Td1	0.00–10.000	0.000s	☆

Function Code	Parameter Name	Setting Range	Default	Property
F9-08	Cut-off frequency of PID reverse rotation	0.00 to maximum frequency	0.00Hz	☆
F9-09	PID deviation limit	0.0%–100.0%	0.0%	☆
F9-10	PID differential limit	0.00%–100.00%	0.10%	☆
F9-11	PID setting change time	0.00–650.00s	0.00s	☆
F9-12	PID feedback filter time	0.00–60.00s	0.00s	☆
F9-13	PID output filter time	0.00–60.00s	0.00s	☆
F9-14	Proportional gain Kp2	0.0–100.0	20.0	☆
F9-15	Integral time Ti2	0.01–10.00s	2.00s	☆
F9-16	Differential time Td2	0.000–10.000s	0.000s	☆
F9-17	PID parameter switchover condition	0: No switchover 1: Switchover via DI 2: Automatic switchover based on deviation	0	☆
F9-18	PID parameter switchover deviation 1	0.0% to F9-19	20.0%	☆
F9-19	PID parameter switchover deviation 2	F9-18 to 100.0%	80.0%	☆
F9-20	PID initial value	0.0%–100.0%	0.0%	☆
F9-21	PID initial value holding time	0.00–650.00s	0.00s	☆
F9-22	Maximum deviation between two PID outputs in forward direction	0.00%–100.00%	1.00%	☆
F9-23	Maximum deviation between two PID outputs in reverse direction	0.00%–100.00%	1.00%	☆
F9-24	PID integral property	Unit's digit (Integral separated) 0: Invalid 1: Valid Ten's digit (Whether to stop integral operation when the output reaches the limit) 0: Continue integral operation 1: Stop integral operation	00	☆
F9-25	Detection value of PID feedback loss	0.0%: Not judging feedback loss 0.1%–100.0%	0.0%	☆
F9-26	Detection time of PID feedback loss	0.0–20.0s	0.0s	☆
F9-27	PID operation at stop	0: No PID operation at stop 1: PID operation at stop	0	☆
F9-28	PID sleep mode	0: No sleep 1: sleep use frequency mode 2: sleep use PID error mode	2	☆
F9-29	Deviation value of PID feedback when sleep	0.0%–F9-32 (The full range corresponds to the PID setting)	5.0%	
F9-30	Dormant frequency	0.00 Hz to max frequency	20.00Hz	☆
F9-31	Dormant delay time	0.0–6500.0s	10.0s	☆
F9-32	Deviation value of PID feedback when wake up	F9-29–100.0% (The full range corresponds to the PID setting)	20.0%	☆
F9-33	Wakeup delay time	0.0–6500.0s	3.0s	☆
F9-34	Sleep rate	1–10 (use when PID sleep use PID error mode)	1	☆
Group FA: Fault and Protection				
FA-00	Motor overload protection selection	0: Disabled 1: Enabled	1	☆

Function Code	Parameter Name	Setting Range	Default	Property
FA-01	Motor overload protection gain	0.20–10.00	1.00	☆
FA-02	Motor overload warning coefficient	50%–100%	80%	☆
FA-03	Overvoltage stall gain	0 (no stall overvoltage)–100	40	☆
FA-04	Overvoltage stall protective voltage	120%–150%	S: 380V T: 760V	☆
FA-05	Overcurrent stall gain	0–100	20	☆
FA-06	Overcurrent stall protective current	100%–200%	150%	☆
FA-07	Short-circuit to ground upon power-on	0: Disabled 1: Enabled	1	☆
FA-08	Rapid current limit	0: Disabled 1: Enabled	1	☆
FA-09	Fault auto reset times	0–20	0	☆
FA-10	DO action during fault auto reset	0: Not act 1: Act	0	☆
FA-11	Time interval of fault auto reset	0.1s–100.0s	1.0s	☆
FA-12	Input phase loss protection/ contactor energizing protection selection	Unit's digit: Input phase loss protection Ten's digit: Contactor energizing protection 0: Disabled 1: Enabled	11	☆
FA-13	Output phase loss protection selection	0: Disabled 1: Enabled	1	☆
FA-16	Fault protection action selection 1	Unit's digit (Motor overload, Err11) 0: Coast to stop 1: Stop according to stop mode 2: Continue to run Ten's digit (Power input phase loss, Err12) Hundred's digit (Power output phase loss, Err13) Thousand's digit (External equipment fault, Err15) Ten thousand's digit (Communication fault, Err16)	00000	☆
FA-17	Fault protection action selection 2	Unit's digit (Reserved) 0: Coast to stop 1: Stop according to the stop mode Ten's digit (EEPROM read-write fault, Err21) 0: Coast to stop 1: Stop according to the stop mode Hundred's digit (Reserved) Thousand's digit (Motor overheat, Err25) Ten thousand's digit (Accumulative running time reached, Err26)	00000	☆
FA-18	Fault protection action selection 3	Unit's digit (User-defined fault 1, Err27) 0: Coast to stop 1: Stop according to stop mode 2: Continue to run Ten's digit (User-defined fault 2, Err28) 0: Coast to stop 1: Stop according to stop mode	00000	☆

Function Code	Parameter Name	Setting Range	Default	Property
		2: Continue to run Hundred's digit (Accumulative power-on time reached, Err29) 0: Coast to stop 1: Stop according to stop mode 2: Continue to run Thousand's digit (Load becoming 0, Err30) 0: Coast to stop 1: Stop according to the stop mode 2: Continue to run at 7% of rated motor frequency and resume to the set frequency if the load recovers Ten thousand's digit (PID feedback lost during running, Err31) 0: Coast to stop 1: Stop according to stop mode 2: Continue to run		
FA-21	Frequency selection for continuing to run upon fault	0: Current running frequency 1: Set frequency 2: Frequency upper limit 3: Frequency lower limit 4: Backup frequency upon abnormality	0	☆
FA-22	Backup frequency upon abnormality	0.0%–100.0% (maximum frequency)	100.0%	☆
FA-23	Action selection at instantaneous power failure	0: Invalid 1: Decelerate 2: Decelerate to stop	0	☆
FA-24	Action pause judging voltage at instantaneous power failure	80.0%–100.0%	90.0%	☆
FA-25	Voltage rally judging time at instantaneous power failure	0.00–100.00s	0.50s	☆
FA-26	Action judging voltage at instantaneous power failure	60.0%–100.0% (standard bus voltage)	80.0%	☆
FA-27	Protection upon load becoming 0	0: Disabled 1: Enabled	0	☆
FA-28	Detection level of load becoming 0	0.0%–100.0% (rated motor current)	10.0%	☆
FA-29	Detection time of load becoming 0	0.0–60.0s	1.0s	☆
FA-33	Detection value of too large speed deviation	0.0%–50.0% (maximum frequency)	20.0%	☆
FA-34	Detection time of too large speed deviation	0.0–60.0s	5.0s	☆
Group FB: Swing Frequency, Fixed Length and Count				
Fb-00	Swing frequency setting mode	0: Relative to the central frequency 1: Relative to the maximum frequency	0	☆
Fb-01	Swing frequency amplitude	0.0%–100.0%	0.0%	☆
Fb-02	Jump frequency amplitude	0.0%–50.0%	0.0%	☆
Fb-03	Swing frequency cycle	0.0–3000.0s	10.0s	☆
Fb-04	Triangular wave rising time coefficient	0.0%–100.0%	50.0%	☆

Function Code	Parameter Name	Setting Range	Default	Property
Fb-05	Set length	0–65535 m	1000m	☆
Fb-06	Actual length	0–65535 m	0m	☆
Fb-07	Number of pulses per meter	0.1–6553.5	100.0	☆
Fb-08	Set count value	1–65535	1000	☆
Fb-09	Designated count value	1–65535	1000	☆
Group FC: Communication Parameters				
FC-00	Local address	0: Broadcast address, 1–247	1	☆
FC-01	Baud rate	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS 8: 57600BPS 9: 115200BPS	5	☆
FC-02	Data format	0: No check, data format <8,N,2> 1: Even parity check, data format <8,E,1> 2: Odd Parity check, data format <8,O,1> 3: No check, data format <8,N,1> Valid for Modbus	0	☆
FC-03	Response delay	0ms~20ms	2	☆
FC-04	Communication timeout	0.0s (invalid) 0.1–60.0s	0.0	☆
FC-05	Modbus protocol selection	Unit's digit: Modbus protocol 0: Non-standard Modbus protocol 1: Standard Modbus protocol	0	☆
FC-06	Communication reading current resolution	0: 0.01A 1: 0.1A	0	☆
Group FD: Multi-Reference and Simple PLC Function				
Fd-00	Reference 0	-100.0%–100.0%	0.0%	☆
Fd-01	Reference 1	-100.0%–100.0%	0.0%	☆
Fd-02	Reference 2	-100.0%–100.0%	0.0%	☆
Fd-03	Reference 3	-100.0%–100.0%	0.0%	☆
Fd-04	Reference 4	-100.0%–100.0%	0.0%	☆
Fd-05	Reference 5	-100.0%~100.0%	0.0%	☆
Fd-06	Reference 6	-100.0%~100.0%	0.0%	☆
Fd-07	Reference 7	-100.0%~100.0%	0.0%	☆
Fd-08	Reference 8	-100.0%~100.0%	0.0%	☆
Fd-09	Reference 9	-100.0%~100.0%	0.0%	☆
Fd-10	Reference 10	-100.0%~100.0%	0.0%	☆
Fd-11	Reference 11	-100.0%~100.0%	0.0%	☆
Fd-12	Reference 12	-100.0%~100.0%	0.0%	☆
Fd-13	Reference 13	-100.0%~100.0%	0.0%	☆
Fd-14	Reference 14	-100.0%~100.0%	0.0%	☆
Fd-15	Reference 15	-100.0%~100.0%	0.0%	☆
Fd-16	Simple PLC running mode	0: Stop after the AC drive runs one cycle 1: Keep final values after the AC drive	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
		runs one cycle 2: Repeat after the AC drive runs one cycle		
Fd-17	Simple PLC retentive selection	Unit's digit (Retentive upon power failure) 0: No 1: Yes Ten's digit (Retentive upon stop) 0: No 1: Yes	00	☆
Fd-18	Running time of simple PLC reference 0	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-19	Acceleration/deceleration time of simple PLC reference 0	0~3	0	☆
Fd-20	Running time of simple PLC reference 1	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-21	Acceleration/deceleration time of simple PLC reference 1	0~3	0	☆
Fd-22	Running time of simple PLC reference 2	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-23	Acceleration/deceleration time of simple PLC reference 2	0~3	0	☆
Fd-24	Running time of simple PLC reference 3	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-25	Acceleration/deceleration time of simple PLC reference 3	0~3	0	☆
Fd-26	Running time of simple PLC reference 4	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-27	Acceleration/deceleration time of simple PLC reference 4	0~3	0	☆
Fd-28	Running time of simple PLC reference 5	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-29	Acceleration/deceleration time of simple PLC reference 5	0~3	0	☆
Fd-30	Running time of simple PLC reference 6	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-31	Acceleration/deceleration time of simple PLC reference 6	0~3	0	☆
Fd-32	Running time of simple PLC reference 7	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-33	Acceleration/deceleration time of simple PLC reference 7	0~3	0	☆
Fd-34	Running time of simple PLC reference 8	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-35	Acceleration/deceleration time of simple PLC reference 8	0~3	0	☆
Fd-36	Running time of simple PLC reference 9	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-37	Acceleration/deceleration time of simple PLC	0~3	0	☆

Function Code	Parameter Name	Setting Range	Default	Property
	reference 9			
Fd-38	Running time of simple PLC reference 10	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-39	Acceleration/deceleration time of simple PLC reference 10	0~3	0	☆
Fd-40	Running time of simple PLC reference 11	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-41	Acceleration/deceleration time of simple PLC reference 11	0~3	0	☆
Fd-42	Running time of simple PLC reference 12	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-43	Acceleration/deceleration time of simple PLC reference 12	0~3	0	☆
Fd-44	Running time of simple PLC reference 13	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-45	Acceleration/deceleration time of simple PLC reference 13	0~3	0	☆
Fd-46	Running time of simple PLC reference 14	0.0s(h)~6553.5s(h)	0.0s(h)	☆
Fd-47	Acceleration/deceleration time of simple PLC reference 14	0~3	0	☆
Fd-48	Running time of simple PLC reference 15	0.0~6553.5s (h)	0.0s(h)	☆
Fd-49	Acceleration/deceleration time of simple PLC reference 15	0~3	0	☆
Fd-50	Time unit of simple PLC running	0: s (second)1:h (hour)	0	☆
Fd-51	Reference 0 source	0: Set by FC-00 1: AI 2: Reserved 3: Keyboard potentiometer 4: Reserved 5: PID 6: Set by preset frequency (F0- 08), modified via terminal UP/ DOWN	0	☆
Group FE: Error record				
FE-00	1st fault type	0: No fault 1: Reserved 2: Overcurrent during acceleration 3: Overcurrent during deceleration 4: Overcurrent at constant speed 5: Overvoltage during acceleration 6: Overvoltage during deceleration 7: Overvoltage at constant speed 8: Buffer resistance overload 9: Undervoltage 10: AC drive overload	—	●
FE-01	2nd fault type	11: Motor overload 12: Power input phase loss 13: Power output phase loss 14: Module overheat 15: External equipment fault 16: Communication fault	—	●

Function Code	Parameter Name	Setting Range	Default	Property
		17: Contactor fault 18: Current detection fault 19: Motor auto-tuning fault 19: Motor auto-tuning fault 20: Encoder/PG card fault		
FE-02	3rd (latest) fault type	21: EEPROM read-write fault 22: AC drive hardware fault 23: Short circuit to ground 24: Reserved 25: Reserved 26: Accumulative running time reached 27: User-defined fault 1 28: User-defined fault 2 29: Accumulative power-on time reached 30: Load becoming 0 31: PID feedback lost during running 40: With-wave current limit fault 41: Motor switchover fault during running 42: Too large speed deviation 99: Communication fault between Keypad and control board (ERR99)	—	●
FE-03	Frequency upon 3rd fault	—	—	●
FE-04	Current upon 3rd fault	—	—	●
FE-05	Bus voltage upon 3rd fault	—	—	●
FE-06	DI status upon 3rd fault	—	—	●
FE-07	Output terminal status upon 3rd fault	—	—	●
FE-08	AC drive status upon 3rd fault	—	—	●
FE-09	Power-on time upon 3rd fault	—	—	●
FE-10	Running time upon 3rd fault	—	—	●
FE-11	Frequency upon 2nd fault	—	—	●
FE-12	Current upon 2nd fault	—	—	●
FE-13	Bus voltage upon 2nd fault	—	—	●
FE-14	DI status upon 2nd fault	—	—	●
FE-15	Output terminal status upon 2nd fault	—	—	●
FE-16	AC drive status upon 2nd fault	—	—	●
FE-17	Power-on time upon 2nd fault	—	—	●
FE-18	Running time upon 2nd fault	—	—	●
FE-19	Frequency upon 1st fault	—	—	●
FE-20	Current upon 1st fault	—	—	●
FE-21	Bus voltage upon 1st fault	—	—	●
FE-22	DI status upon 1st fault	—	—	●
FE-23	Output terminal status upon 1st fault	—	—	●

Function Code	Parameter Name	Setting Range	Default	Property
FE-24	AC drive status upon 1rd fault	—	—	●
FE-25	Power-on time upon 1rd fault	—	—	●
FE-26	Running time upon 1rd fault	—	—	●
Group FP: Function Code Management				
FP-00	User password	0~65535	0	☆
FP-01	Restore default settings	0: No operation 01: Restore factory settings except motor parameters 02: Clear records	0	★
FP-02	Parameter modification property	0: Modifiable 1: Not modifiable	0	☆
FP-05	Copy parameters	0: No operation 1: Upload Parameters 2: Download Parameters (Include Motor Parameters) 3: Download Parameters (Exclude Motor Parameters)	0	★

U0 Group: Monitoring Parameters

Function Code	Parameter Name	Min. Unit
U0-00	Running frequency (Hz)	0.01 Hz
U0-01	Set frequency (Hz)	0.01 Hz
U0-02	Bus voltage	0.1 V
U0-03	Output voltage	1 V
U0-04	Output current	0.01 A
U0-05	Output power	0.1 kW
U0-06	Output torque	0.1%
U0-07	DI state	1
U0-08	DO state	1
U0-09	AI1 voltage (V)	0.01 V
U0-10	AI2 voltage (V)/current (mA)	0.01 V/0.01 mA
U0-11	AI3 voltage (V)	0.01 V
U0-12	Count value	1
U0-13	Length value	1
U0-14	Load speed	1
U0-15	PID setting	1
U0-16	PID feedback	1
U0-17	PLC stage	1
U0-18	Input pulse frequency (Hz)	0.01 kHz
U0-19	Feedback speed	0.01 Hz
U0-20	Remaining running time	0.1 Min
U0-21	AI1 voltage before correction	0.001 V

U0-22	AI2 voltage (V)/current (mA) before correction	0.01 V/0.01 mA
U0-23	AI3 voltage before correction	0.001 V
U0-24	Linear speed	1 m/Min
U0-25	Accumulative power-on time	1 Min
U0-26	Accumulative running time	0.1 Min
U0-27	Pulse input frequency	1 Hz
U0-28	Communication setting value	0.01%
U0-29	Encoder feedback speed	0.01 Hz
U0-30	Main frequency X	0.01 Hz
U0-31	Auxiliary frequency Y	0.01 Hz
U0-34	Target Torque(%)	0.1%
U0-35	Power factor angle	0.1
U0-36	Target voltage upon V/F separation	1 V
U0-37	Output voltage upon V/F separation	1V
U0-38	DI state visual display	
U0-39	DO state visual display	
U0-40	DI function state visual display 1	
U0-41	DI function state visual display 2	
U0-42	Fault information	
U0-43	Inverter operation status	

7. Solutions to the faults of the Inverter

Fault Name	Display	Possible Causes	Solutions
Inverter unit protection	Err01	1: The output circuit is grounded or short circuited.	1: Eliminate external faults. 2: Install a reactor or an output filter. 3: Check the air filter and the cooling fan. 4: Connect all cables properly. 5: Contact the agent or our company.
		2: The connecting cable of the motor is too long.	
		3: The module overheats.	
		4: The internal connections become loose.	
		5: The main control board is faulty.	
		6: The drive board is faulty.	
		7: The inverter module is faulty.	
Overcurrent during acceleration	Err02	1: The output circuit is grounded or short circuited.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Increase the acceleration time.
		2: Motor auto-tuning is not performed.	
		3: The acceleration time is too short.	

		4: Manual torque boost or V/F curve is not appropriate. 5: The voltage is too low.	4: Adjust the manual torque boost or V/F curve.
		6: The startup operation is performed on the rotating motor.	5: Adjust the voltage to normal range.
		7: A sudden load is added during acceleration.	6: Select rotational speed tracking restart or start the motor after it stops.
		8: The AC drive model is of too small power class.	7: Remove the added load. 8: Select an AC drive of higher power class.
Overcurrent during deceleration	Err03	1: The output circuit is grounded or short circuited.	1: Eliminate external faults.
		2: Motor auto-tuning is not performed.	2: Perform the motor auto-tuning.
		3: The deceleration time is too short.	3: Increase the deceleration time.
		4: The voltage is too low.	4: Adjust the voltage to normal range.
		5: A sudden load is added during deceleration.	5: Remove the added load.
		6: The braking unit and braking resistor are not installed.	6: Install the braking unit and braking resistor.

Fault Name	Display	Possible Causes	Solutions
Overcurrent at constant speed	Err04	1: The output circuit is grounded or short circuited. 2: Motor auto-tuning is not performed. 3: The voltage is too low. 4: A sudden load is added during operation. 5: The AC drive model is of too small power class.	1: Eliminate external faults. 2: Perform the motor auto-tuning. 3: Adjust the voltage to normal range. 4: Remove the added load. 5: Select an AC drive of higher power class.
Overvoltage during acceleration	Err05	1: The input voltage is too high. 2: An external force drives the motor during acceleration. 3: The acceleration time is too short. 4: The braking unit and braking resistor are not installed.	1: Adjust the voltage to normal range. 2: Cancel the external force or install a braking resistor. 3: Increase the acceleration time. 4: Install the braking unit and braking resistor.

Overvoltage during deceleration	Err06	1: The input voltage is too high. 2: An external force drives the motor during deceleration. 3: The deceleration time is too short. 4: The braking unit and braking resistor are not installed.	1: Adjust the voltage to normal range. 2: Cancel the external force or install the braking resistor. 3: Increase the deceleration time. 4: Install the braking unit and braking resistor.
Overvoltage at constant speed	Err07	1: The input voltage is too high. 2: An external force drives the motor during deceleration.	1: Adjust the voltage to normal range. 2: Cancel the external force or install the braking resistor.
Control power supply fault	Err08	The input voltage is not within the allowable range.	Adjust the input voltage to the allowable range.
Undervoltage	Err09	1: Instantaneous power failure occurs on the input power supply.	
		2: The AC drive's input voltage is not within the allowable range. 3: The bus voltage is abnormal.	1: Reset the fault. 2: Adjust the voltage to normal range.
		4: The rectifier bridge and buffer resistor are faulty.	3: Contact the agent or our company.
		5: The drive board is faulty.	
		6: The main control board is faulty.	
AC drive overload	Err10	1: The load is too heavy or locked-rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.

Fault Name	Display	Possible Causes	Solutions
Motor overload	Err11	1: FA-01 is set improperly. 2: The load is too heavy or locked-rotor occurs on the motor. 3: The AC drive model is of too small power class.	1: Set FA-01 correctly. 2: Reduce the load and check the motor and the mechanical condition. 3: Select an AC drive of higher power class.
Power input phase loss	Err12	1: The three-phase power input is abnormal. 2: The drive board is faulty. 3: The lightening board is faulty. 4: The main control board is faulty.	1: Eliminate external faults. 2: Contact the agent or our company.
Power output phase loss	Err13	1: The cable connecting the AC drive and the motor is faulty. 2: The AC drive's three-phase outputs are unbalanced when the motor is running. 3: The drive board is faulty. 4: The	1: Eliminate external faults. 2: Check whether the motor three-phase winding is normal. 3: Contact the agent or

		module is faulty.	our company.
Module overheat	Err14	1: The ambient temperature is too high. 2: The air filter is blocked. 3: The fan is damaged. 4: The thermally sensitive resistor of the module is damaged. 5: The inverter module is damaged.	1: Lower the ambient temperature. 2: Clean the air filter. 3: Replace the damaged fan. 4: Replace the damaged thermally sensitive resistor. 5: Replace the inverter module.
External equipment fault	Err15	1: External fault signal is input via DI. 2: External fault signal is input via virtual I/O.	Reset the operation.
Communicati on fault	Err16	1: The host computer is in abnormal state. 2: The communication cable is faulty. 3: F0-28 is set improperly. 4: The communication parameters in group FD are set improperly.	1: Check the cabling of host computer. 2: Check the communication cabling. 3: Set F0-28 correctly. 4: Set the communication parameters properly.
Contactor fault	Err17	1: The drive board and power supply are faulty. 2: The contactor is faulty.	1: Replace the faulty drive board or power supply board. 2: Replace the faulty contactor.
Current detection fault	Err18	1: The HALL device is faulty. 2: The drive board is faulty.	1: Replace the faulty HALL device. 2: Replace the faulty drive board.

Fault Name	Display	Possible Causes	Solutions
Motor auto-tuning fault	Err19	1: The motor parameters are not set according to the nameplate. 2: The motor auto-tuning times out.	1: Set the motor parameters according to the nameplate properly. 2: Check the cable connecting the AC drive and the motor.
EEPROM read- write fault	Err21	The EEPROM chip is damaged.	Replace the main control board.
Short circuit to ground	Err23	The motor is short circuited to the ground.	Replace the cable or motor.

Accumulative running time reached	Err26	The accumulative running time reaches the setting value.	Clear the record through the parameter initialization function.
User-defined fault 1	Err27	1: The user-defined fault 1 signal is input via DI. 2: User-defined fault 1 signal is input via virtual I/O.	Reset the operation.
User-defined fault 2	Err28	1: The user-defined fault 2 signal is input via DI. 2: The user-defined fault 2 signal is input via virtual I/O.	Reset the operation.
Accumulative power-on time reached	Err29	The accumulative power-on time reaches the setting value.	Clear the record through the parameter initialization function.
Load becoming 0	Err30	The AC drive running current is lower than F9-64.	Check that the load is disconnected or the setting of F9-64 and F9-65 is correct.
PID feedback lost during running	Err31	The PID feedback is lower than the setting of FA-26.	Check the PID feedback signal or set FA-26 to a proper value.
Pulse-by-pulse current limit fault	Err40	1: The load is too heavy or locked-rotor occurs on the motor. 2: The AC drive model is of too small power class.	1: Reduce the load and check the motor and mechanical condition. 2: Select an AC drive of higher power class.
Too large speed deviation	Err42	2: The motor auto-tuning is not performed. 3: FA-33 and FA-34 are set incorrectly.	1: Perform the motor auto-tuning. 2: Set FA-33 and FA-34 correctly based on the actual situation.
Communication fault between Keypad and control board	Err99	The keypad connection cable is loose or damaged. The keypad or the control board is damaged.	Reinsert the connection cable correctly. Replace the connection cable. Replace the keypad or control board.

8. Common Faults and Solutions

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on.	1: There is no power supply to the AC drive or the power input to the AC drive is too low. 2: The power supply of the switch on the drive board of the AC drive is faulty. 3: The rectifier bridge is damaged. 4: The control board or the operation panel is faulty. 5: The cable connecting the control board and the drive board and the operation panel breaks.	1: Check the power supply. 2: Check the bus voltage. 3: Re-connect the 8-core and 28-core cables. 4: Contact the agent or our company for technical support.
2	The AC drive display is normal upon power-on. But the display is abnormal after running and stops immediately.	1: The cooling fan is damaged or locked-rotor occurs. 2: The external control terminal cable is short circuited.	1: Replace the damaged fan. 2: Eliminate external fault.
3	"Err23" is displayed at power-on.	1: The motor or the motor output cable is short-circuited to the ground. 2: The AC drive is damaged.	1: Measure the insulation of the motor and the output cable with a megger. 2: Contact the agent or our company for technical support.
4	Err14 (module overheat) fault is reported frequently.	1: The setting of carrier frequency is too high. 2: The cooling fan is damaged, or the air filter is blocked. 3: Components inside the AC drive are damaged (thermal coupler or others).	1: Reduce the carrier frequency (F0-20). 2: Replace the fan and clean the air filter. 3: Contact the agent or our company for technical support.
5	The motor does not rotate after the AC drive runs.	1: Check the motor and the motor cables. 2: The AC drive parameters are set improperly (motor parameters). 3: The cable between the drive board and the control board is in poor contact. 4: The drive board is faulty.	1: Ensure the cable between the AC drive and the motor is normal. 2: Replace the motor or clear mechanical faults. 3: Check and re-set motor parameters.

9. Communication protocol

Inverter drive supports modbus-RTU slave communication protocol, which has the following functions:

- View and modify the parameters.

- View various running status parameters.

- Send run command and frequency reference to AC Drive from host computer.

9.1 About Modbus Communication Protocol

The protocol defines content and format of transmitted messages during serial communications, 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 can not complete the action required by the master, the slave returns a fault message as a response to the master.

9.2 Application

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

9.3 Bus Structure

- (1) Interface mode

- RS232/RS485 hardware .

- (2) 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, a PLC or an 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 receive data.

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

- (3) Transmission mode

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.

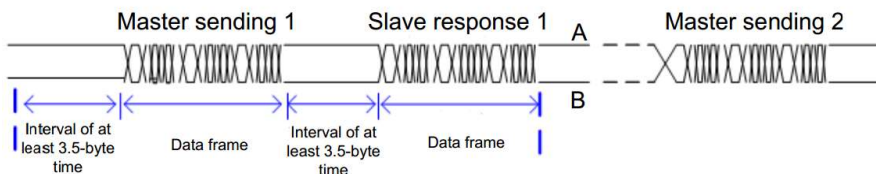
The communication protocol used by the drive is the Modbus-RTU slave communication protocol, which allows the drive to provide data to respond to "query/command" from the master or execute the action according to "query/command" from the master.

The master can be a PC, an industrial device, or a PLC. The master can communicate with a single slave or send broadcast messages to all slaves. When the master communicates with a single slave, the slave needs to return a message (response) to "query/command" from the master. For a broadcast message sent by the master, the slaves need not return a response.

9.4 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:



In theory, host computer can read several consecutive parameters (n 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.

RTU Frame Format:

Frame header (START)	3.5 byte of idle time
Slave Address (ADR)	1~247
Command code (CMD)	03: Read; 06: Write
Data (N-1)	Number of byte ($2n$)
Data (N-2)	
.....	
Data (0)	
CRC Check Low bytes	2 bytes
CRC Check High bytes	
END	3.5 byte of idle time

For example, read 2 function code value (address start at F002) from the drive (slave address is 01) :

Master Query Frame Information

Slave Address (ADR)	01H
Command code (CMD)	03H
Function code start address(H)	F0H
Function code start address(L)	02H
Number of function codes (H)	00H
Number of function codes (L)	02H
CRC CHK (L)	To be calculate
CRC CHK (H)	

Slave Response Frame Information

FC-05 is set to 0:

ADR	01H
CMD	03H
Data byte number (H)	00H
Data byte number (L)	04H
Data(F002) value (H)	00H
Data(F002) value (L)	00H
Data(F003) value (H)	00H
Data(F003) value (L)	01H
CRC CHK (L)	To be calculate
CRC CHK (H)	

FC-05 is set to 1:

ADR	01H
CMD	03H
Data byte number	04H
Data(F002) value (H)	00H
Data(F002) value (L)	00H
Data(F003) value (H)	00H
Data(F003) value (L)	01H
CRC CHK (L)	To be calculate
CRC CHK (H)	

For example, : write value 5000 (1388H) to function code F00A of the drive (slave address is 02H)

Master Query Frame Information

ADR	02H
CMD	06H
Parameter address (H)	F0H
Parameter address (L)	0AH
Parameter value (H)	13H
Parameter value (L)	88H
CRC CHK (L)	To be calculate
CRC CHK (H)	

Slave Response Frame Information

ADR	02H
CMD	06H
Parameter address (H)	F0H
Parameter address (L)	0AH
Parameter value (H)	13H
Parameter value (L)	88H
CRC CHK (L)	To be calculate
CRC CHK (H)	

9.5 Definition of Communication Parameter Addresses

Read and written parameters

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

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

High-order bytes: F0-FF(groups F), 70-7F(group U)

Low-order bytes: 00-FF

For example, to read parameter F3-12, communication address of F3-12 is expressed as 0xF30C.

Note:

Group FF: 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 AC drive. In addition, pay attention to setting range, unit and description of parameters when modifying them.

Frequent storage to 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 F parameters, users only need to change high order F of the function code address to 0.

For example, if function code F3-12 is not stored into EEPROM, the address is expressed as 030C;

Stop/RUN Parameters:

Para. Address	Description
1000	Communication setting value (-10000~10000) (Decimal)
1001	Running frequency
1002	Bus voltage
1003	Output voltage
1004	Output current
1005	Output power
1006	Output torque
1007	Running speed
1008	DI input indication
1009	DO output indication
100A	AI voltage
100B	Reserved
100C	Keyboard potentiometer
100D	Counting value input
100E	Length value input
100F	Load speed
1010	PID reference
1011	PID feedback
1012	PLC process
1013	Reserved
1014	Feedback speed, unit 0.1Hz
1015	Remaining running time
1016	AI voltage before correction
1017	Reserved
1018	Keyboard potentiometer
1019	Linear speed
101A	Current power-on time
101B	Current running time
101C	Reserved
101D	Communication reference
101E	Actual feedback speed
101F	Main frequency reference display
1020	Auxiliary frequency 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 F0-09 (maximum frequency).

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 state
	0002: Reverse run state
	0003: stop state

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	BIT0: Reserved BIT1: Reserved BIT2: RELAY1 control BIT3: Reserved BIT4: Reserved BIT5: VDO1 BIT6: VDO2 BIT7: VDO3 BIT8: VDO4 BIT9: VDO5

AO1 control: (write-only)

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

AO2 control: (write-only)

Command Address	Command Content
2003H	0~7FFF indications 0%~100%

Pulse output control: (write-only)

Command Address	Command Content
2004H	0~7FFF indications 0%~100%

AC drive fault description:

AC Drive 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 at constant speed 0005: Over voltage during acceleration 0006: Over voltage during deceleration 0007: Over voltage at constant speed 0008: Buffer resistor overload 0009: Under voltage 000A: AC drive overload 000B: Motor overload 000C: Power input phase lost 000D: Power output phase lost 000E: IGBT overheat 000F: External fault 0010: Communication fault 0011: Contactor fault 0012: Current detection fault 0013: Motor auto-tuning fault 0015: EEPROM fault 0016: AC drive hardware fault 0017: Motor short circuit to earth 001A: Accumulative running time reached 001B: User define fault 1 001C: User define fault 2 001D: Accumulative power-on time reached 001E: load lost 001F: PID feedback lost during running 0028: Fast current limit timeout
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Communication Fault Description (Error Code) :

Communication Fault Address	Fault Description
8001H	0000: No fault 0001: Password is uncorrected 0002: Command word is uncorrected 0003: CRC check word is uncorrected 0004: Address is invalid 0005: The parameter is invalid 0006: Can not change the parameter 0007: AC drive is lock 0008: AC drive is processing EEPROM