

Preface

FR500D series inverter designed special for elevator application. Combined with the control requirements of elevator application, FR500D is developed for construction elevator, simple passenger elevator, and elevator machinery.

Please refer to the commissioning guide for the commissioning in the manual

IMPORTANT NOTES

- ◆ To illustrate the details of the products, pictures in this manual based on products with outer casing or safety cover being removed. When using this product, please be sure to well install outer casing or covering by the rules, and operating in accordance with the manual contents.
- ◆ The illustrations in this manual are for illustration only and may vary with different products you have ordered.
- ◆ The company is committed to continuous improvement of products, product features will continue to upgrade, the information provided is subject to change without notice.
- ◆ If there is any questions when using, please contact our regional agents or our customer service center:(+86-0755-33067999)
- ◆ For other products, please visit our website. <http://www.frecon.com.cn>

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Chapter 1 Product Information

1.1 Nameplate

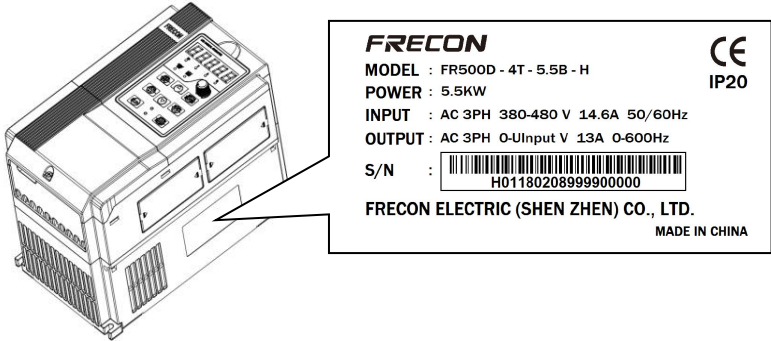


Fig.1-1 Nameplate

Model Instruction

Model numbers on name plate consist of numbers, symbols, and letters, to express its respective series, suitable power type, power level and other information.

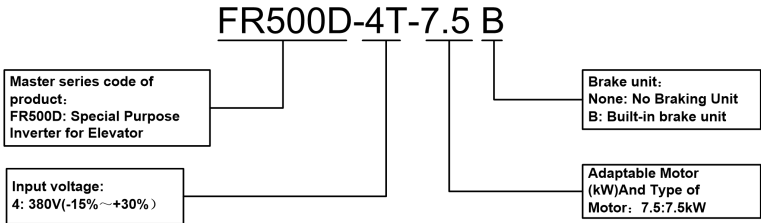


Fig.1-2 Product Model Naming Rules

1.2 FR500D series Special Purpose Inverter Model Selection

Table 1-1 FR500D series model table

Model No.	Power capacity KVA	Rated Input current A	Rated output current A	Applicable motor kW HP		Size
3-Phase: 380V, 50/60Hz Range: -15%~+30%						
FR500D-4T-2.2B	4	5.8	5.5	2.2	3	R1
FR500D-4T-4.0B	6	11	9.5	3.7,4	5	
FR500D-4T-5.5B	8.9	14.6	13	5.5	7.5	R2
FR500D-4T-7.5B	11	20.5	17	7.5	10	
FR500D-4T-011B	17	26	25	11	15	R3
FR500D-4T-015B	21	35	32	15	20	
FR500D-4T-018B	24	38.5	37	18.5	25	
FR500D-4T-022B	30	46.5	45	22	30	R4
FR500D-4T-030B	40	62	60	30	40	
FR500D-4T-037(B)	57	76	75	37	50	R5
FR500D-4T-045(B)	69	92	91	45	60	
FR500D-4T-055(B)	85	113	112	55	70	
FR500D-4T-075(B)	114	157	150	75	100	R6
FR500D-4T-090	134	186	176	90	125	

1.3 Product Terminal Configuration

1.3.1 Main Circuit Terminals

◆ 2.2~4.0KW Main Circuit Terminals

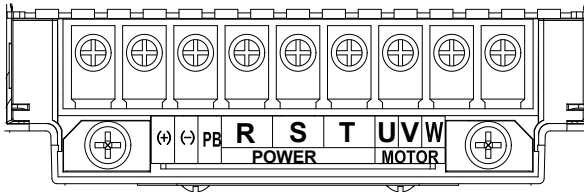


Fig.1-3 2.2~4.0kW Main Circuit Terminal Diagram

◆ 5.5~18kW Main Circuit Terminals

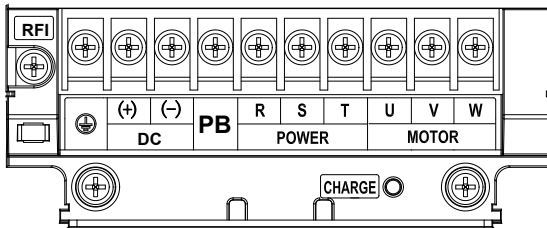


Fig.1-4 5.5~18kW Main Circuit Terminal Diagram

◆22~30kW Main Circuit Terminals

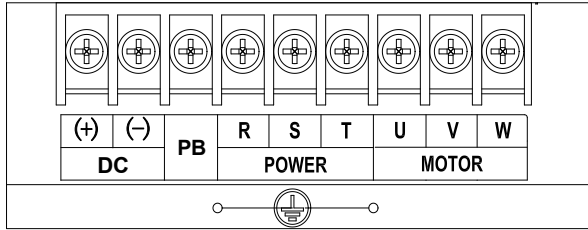


Fig.1-5. 22~30kW Main Circuit Terminal Diagram

◆37~90kW Main Circuit Terminals

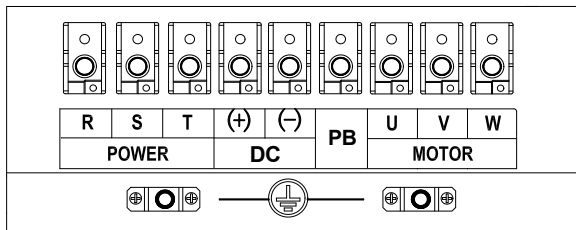


Fig.1-6. 37~90kW Main Circuit Terminal Diagram

Table 1-2 Functions of Inverter Main Circuit Terminals

Terminal Label	Description
R, S, T	AC Power Input Terminal, connected to three-phase 380V AC power.
U, V, W	Inverter AC output terminal, connected to three-phase AC motor
(+), (-)	Respectively to be positive and negative terminal of internal DC bus
PB	Braking resistor connection terminals, one end connected to (+), the other end of PB.
⊕	Ground terminal, connected to the earth.

1.3.2 Control Circuit Terminals

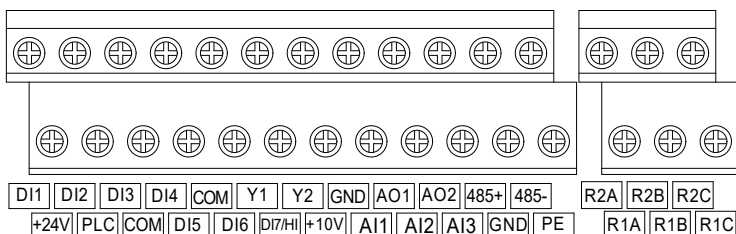



Fig. 1-8 Control Terminals Diagram

Table 1-3 FR500D Inverter Control Circuit Terminal Functions

Type	Terminal Symbol	Terminal Name	Description
Power Supply	+10V-GND	+ 10V Power Supply	Output +10V Power Supply, Maximum Output Current: 10mA. Generally use for power supply of external potentiometer, resistance range of potentiometer: 1~5kΩ
	+24V-COM	24V Power Supply	Output +24V power supply, generally use for power supply of digital input/output terminal and external sensor, maximum output current: 200mA.
	PLC	External Power Input Terminal	Factory default in connection with +24V,when using an external signal to drive DI1~DI7, PLC need to be connected to external power, and disconnected with +24V power terminal.
Analog Input	AI1-GND	Analog Input Terminal 1	Input Range: DC 0~10V/0~20mA, selected by AI1,AI2 toggle switches on control board. Input Impedance:250kΩ for voltage input, 250Ω for current input.
	AI2-GND	Analog Input Terminal 2	
	AI3-GND	Analog Input Terminal 3	Input voltage range: DC -10~+10V Input Impedance: 250kΩ
Digital Input	DI1- COM	Digital Input Terminal 1	Maximum input frequency: 200Hz Input Impedance: 2.4kΩ Voltage Range of level-input:9V~30V
	DI2- COM	Digital Input Terminal 2	
	DI3- COM	Digital Input Terminal 3	
	DI4- COM	Digital Input Terminal 4	
	DI5- COM	Digital Input Terminal 5	
	DI6- COM	Digital Input Terminal 6	
	DI7/Hi-COM	Digital Input Terminal 7 or high-speed pulse input	Besides the features of DI1~DI6, DI7 also can be the channel of high-speed pulse input. Maximum input frequency: 100kHz.

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Analog Output	AO1-GND	Analog Output Terminal 1	Output range: DC 0~10V/0~20mA, selected by A01,A02 toggle switches on control board. Impedance required \geq 10k Ω
	AO2-GND	Analog Output Terminal 2	
Digital Output	Y1-COM	Open Collector Output 1	Voltage Range: 0~24V Current Range: 0~50mA
	Y2/HO-COM	Open Collector Output 2or high-speed pulse output	Apart from Y1 characteristics, Y2 also can be the channel of high-speed pulse input. Maximum output frequency: 100kHz.
Relay Output	R1A-R1C	normal open terminal	Contact driving ability: AC250V, 3A, COS ϕ =0.4。 DC 30V, 1A
	R1B-R1C	normal close terminal	
	R2A-R2C	normal open terminal	
	R2B-R2C	normal close terminal	
485 Communication	485+-485-	485 Communication Terminals	Speed: 4800/9600/19200/38400/57600/115200bps. RS485 toggle switch on control board, setting the terminal matching-resister
	GND	485 Communication Shield Ground	
Shielded	PE	Shield Grounding	It's use for grounding the shield of terminal-wire
Aid Interface		External Keyboard Interface	When connected to operation board, the longest communication distance is up to 50m, adopt the standard network cable (RJ45)
	UP/DOWNL OAD	Parameter Copy Card Interface	

1.4 Dimensions, installation dimensions and weight

◆4.0~18kW Dimensions and wall mounting dimensions

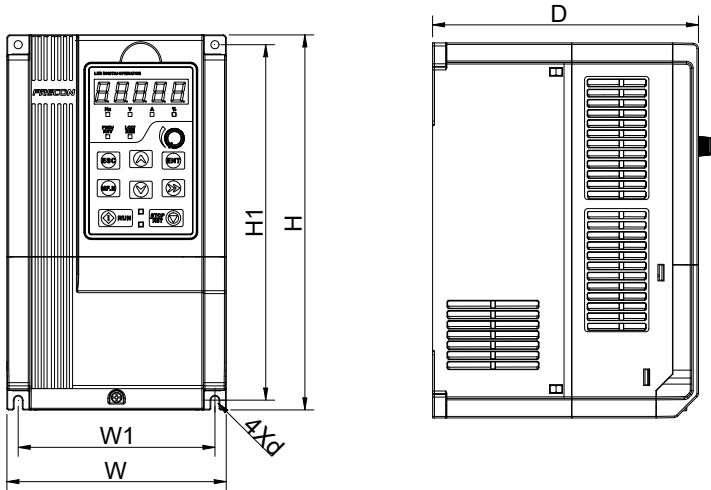


Fig.1-9 4Kw~18kW Wall Installation Diagram

◆ 22~110kW Dimensions and installation dimensions

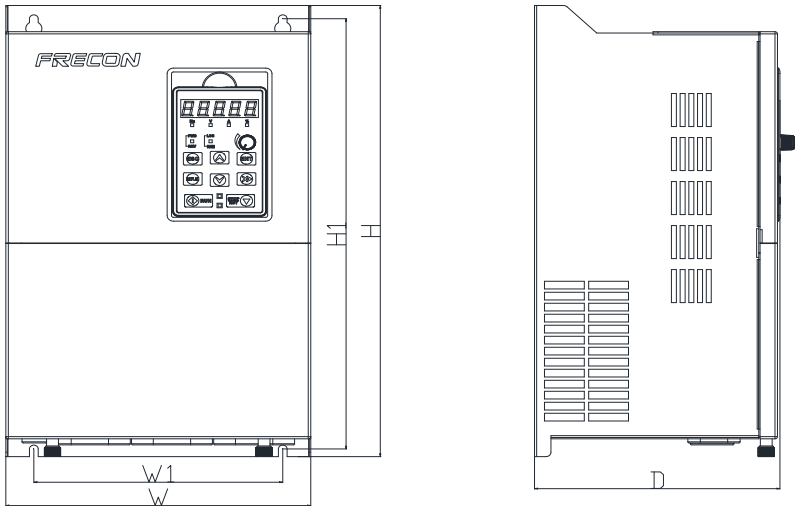


Fig.1-10 22~110kW Wall mounting diagram

Table 1-4 Wall Mounting Size Table

Model NO.	External and installation dimensions (mm)						Weight(Kg)
	W	W1	H	H1	D	Mounting Hole Diameter	
3-Phase:380V, 50/60Hz			Range:-15%~+30%				
R1	116.6	106.6	186.6	176.6	175	4.5	2.5
R2	146	131	249	236	177	5.5	3.9
R3	198	183	300	287	185	5.5	6.2
R4	245	200	410	391	200	7	11.8
R5	275	200	470	451	215	7	15
R6	310	200	620	601	262	9.5	26

Chapter 2 Commissioning guide

FR500D series designed special for elevator application supports open loop & close loop vector control as well as below functions:

2.1 Single multi-step speed terminal elevator controller

The high speed and leveling speed is controlled by high speed terminal's on-off, the wiring is as below

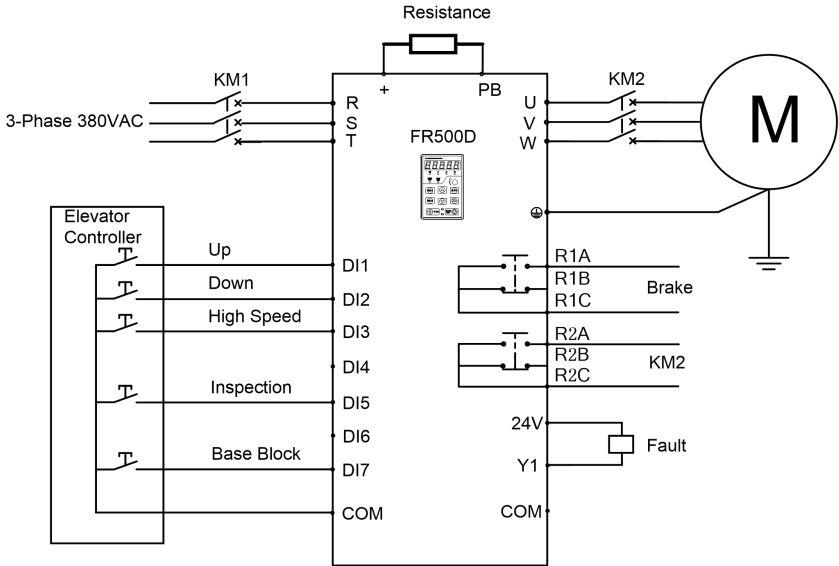


Fig. 2-1 Wiring of single multi-step speed terminal elevator controller

To complete the wiring of controller, elevator and motor, no need R2 & Y1 wiring if the controller is without operation contactor (KM20) and fault signal receive. Then commissioning procedure as below

1, To set high speed and leveling speed, which are switched through one high speed terminal, setting parameter as below:

F12.00= Leveling speed

F12.01=High speed

2, To set maintenance speed. Maintenance speed and leveling speed will be common in some elevator controllers, if no maintenance signal output, no need wiring for maintenance; If maintenance signal output available, the speed can be set via function code

H00.13=Maintenance speed

3, Base block signal, no need wiring of base block if base block signal is not available in elevator controller; If base block is available, most of elevator controllers provide normally closed signal, if so need to set DI7 in anti-logic as below

F04.14=00010

4, Maintenance operation testing, the elevator controller switched to maintenance operation mode, and press LIFT UP or LIFT DOWN to check if the running direction is consistent. If not, exchange UP and DOWN signal line, means exchange DI1 & DI2 signal lines

5, Trial run in normal mode, switch to normal operation mode for testing, to improve the comfort by adjusting acceleration & deceleration (F03.00, F03.01) and S curve time (F03.11)

2.2 Two multi-step speed terminal elevator controller

High speed is controlled by one of terminals' on-off, another terminal is for the control of leveling speed or 0 speed according to different controller. The wiring is as below:

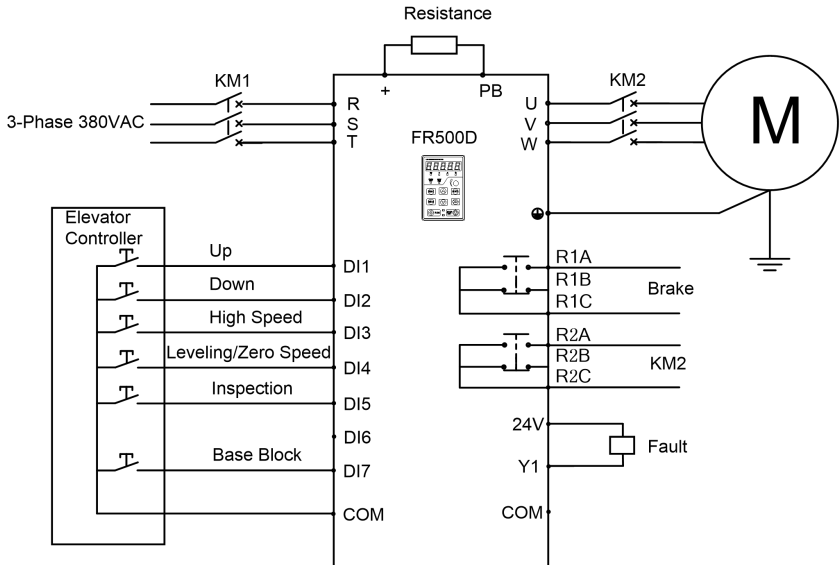


Fig. 2-2 Wiring of two multi-step speed terminal elevator controller

To complete the wiring of controller, elevator and motor, no need R2 & Y1 wiring if the controller is without operation contactor (KM20) and fault signal receive. Then commissioning procedure as below

1, To set high speed and leveling speed, which are switched through these two terminals. If the terminal signals of the controller are high speed signal and leveling speed signal, related setting parameter is as below:

- F12.00= 0
- F12.01=High speed
- F12.02= Leveling speed

If the terminal signals of the controller are high speed signal and 0 speed signal, related setting parameter is as below:

- F12.00= Leveling speed
- F12.01=High speed
- F12.02= 0

2, To set maintenance speed. Maintenance speed and leveling speed will be common in some elevator controllers, if no maintenance signal output, no need wiring for maintenance; If maintenance signal output available, the speed can be set via function code

- H00.13=Maintenance speed

3, Base block signal, no need wiring of base block if base block signal is not available in elevator controller; If base block is available, most of elevator controllers provide normally closed signal, if so need to set DI7 in anti-logic as below

- F04.14=00010

4, Maintenance operation testing. The elevator controller switched to maintenance operation mode,

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and press LIFT UP or LIFT DOWN to check if the running direction is consistent. If not, exchange UP and DOWN signal line, means exchange DI1 & DI2 signal lines

5, Trial run in normal mode, switch to normal operation mode for testing, to improve the comfort by adjusting acceleration & deceleration (F03.00, F03.01) and S curve time (F03.11)

2.3 Emergency Operation Mode

When elevator is in operation, if system power supply is suddenly cut off, it may cause the passenger to be locked in the car

FR500D series elevator inverter supports emergency UPS power supply input and continue emergency operation, emergency signal receives from DI6 of inverter, the wiring is as below

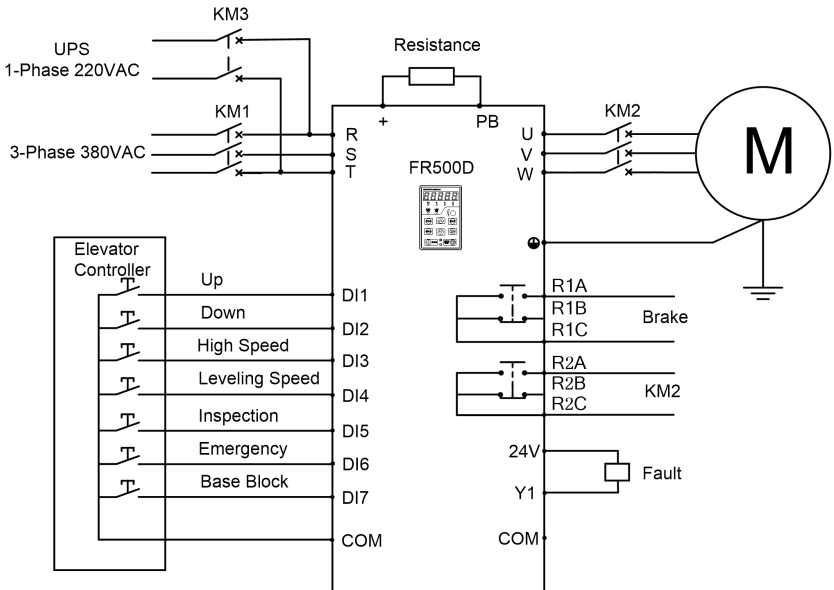


Fig. 2-3 Emergency mode wiring

When grid power supply cut off, elevator controller switched to be USP power supply and transmit emergency signal to inverter, then inverter will switch to emergency operation automatically. FR500D supports 220V single phase input and 380V three phase USP power supply.

In emergency mode, inverter will run via emergency operation frequency(H00.12), and run via acceleration time of F03.06 and deceleration time of F03.07. Meanwhile, if emergency operation frequency(H00.12) is controlled by H00.30, please refer to H00.30 parameter description

2.4 Inspection Operation Mode

When inspection signal is valid, inverter frequency will be given by H00.13, meanwhile the acceleration and deceleration time will be set by F03.04 & F03.05

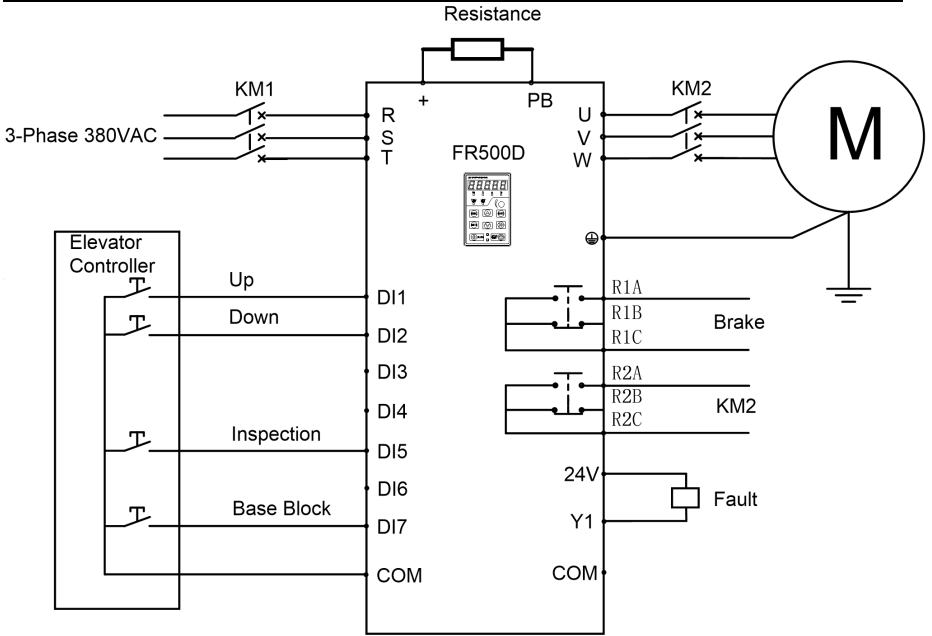


Fig. 2-3 Inspection mode

2.5 Closed Loop Vector Control

FR500D series supports closed vector control, providing kinds of PG card to different encoder, please refer to Chapter 5 for PG card details. And please refer to the wiring as below:

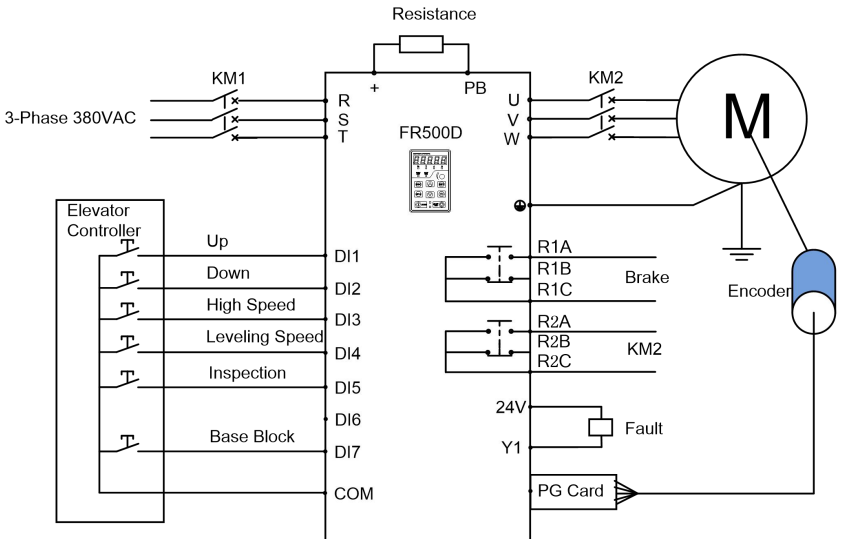


Fig. 2-5 Wiring of inverter with closed loop vector control

To complete the wiring of controller, elevator and motor and the wiring of PG card and encoder, no need R2 & Y1 wiring if the controller is without operation contactor (KM20) and fault signal receive. Then commissioning procedure is as below:

1, To set high speed and leveling speed,, related setting parameter according to the wiring is as below:

F12.00= 0

F12.01=High speed

F12.02= Leveling speed

2, To set maintenance speed. Maintenance speed and leveling speed will be common in some elevator controllers, if no maintenance signal output, no need wiring for maintenance; If maintenance signal output available, the speed can be set via function code

H00.13=Maintenance speed

3, Base block signal, no need wiring of base block if base block signal is not available in elevator controller; If base block is available, most of elevator controllers provide normally closed signal, if so need to set DI7 in anti-logic as below

F04.14=00010

4, Maintenance operation testing. First, set F00.08=1, then switch the elevator controller to maintenance operation mode, and press LIFT UP or LIFT DOWN to check if the running direction is consistent. If not, exchange UP and DOWN signal line, means exchange DI1 & DI2 signal lines

5, To check encoder direction, set F00.08=1, then switch the elevator controller to maintenance operation mode, and press LIFT UP or LIFT DOWN to check if the output frequency is consistent with feedback speed of encoder (Shown in U00.33). If output frequency is positive, the speed of U00.33 should be also positive; If output frequency is negative, the speed of U00.33 should be also negative. If the directions are not consistent, need to set F08.25=1 or exchange A & B pulse of encoder, then to check output frequency is consistent with feedback speed of encoder.

6, Operation in closed loop vector control mode, to set encoder line number of F08.23, also set motor and encoder speed ratio of F08.27, and set F00.08 for closed loop vector control mode, to switch the elevator controller to maintenance operation mode, and press LIFT UP or LIFT DOWN to check if elevator is working normally

7, Trial run in normal mode, to switch elevator controller to be normal operation mode for testing, to improve the comfort by adjusting acceleration & deceleration (F03.00, F03.01) and S curve time (F03.11)

2.6 Multi-step speed setting method

In different elevator controllers, the combination difference of multi-step speed terminal output signal will cause the parameter setting difference of leveling speed and high speed, please refer to below diagram for the parameter setting:

DI4(F04.03=14)	DI3(F04.02=13)	Speed setting parameter
0	0	F12.00
0	1	F12.01
1	0	F12.02
1	1	F12.03

Speed parameter of group F12 will be set by percentage, 100.0% corresponded to maximum frequency (Setting value of F01.08), meanwhile every step speed can be acceleration time and deceleration time independently, please refer to below diagram for the details

Multi step speed	Parameter for selecting accel and decel time
F12.00	F12.34

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F12.01	F12.35
F12.02	F12.36
F12.03	F12.37

FR500D totally supports four group of acceleration time and deceleration time, time selection parameter range 0~3, please refer to below parameter setting:

	0 th group	1 st group	2 nd group	3 th group
Acceleration time	F03.00	F03.02	F03.04	F03.06
Deceleration time	F03.01	F03.03	F03.05	F03.07

Chapter 3 Function Parameters

3.1 The Basic Function Parameters

Table 3-1 Basic Function Parameters

Param	Parameter Name	Setting Range	Default	Attr	RAM Address
Group F00: System Parameters					
F00.00	Setting of User Password	0~65535	0	×	0000
F00.01	Display of Parameters	0: Display all parameters	0	×	0001
		1: Only display F00.00, F00.01 and user-defined parameters F17.00~F17.29			
		2: Only display F00.00, F00.01, and the parameters different with factory default			
F00.02	Parameter Protection	0: All parameter programmable	0	×	0002
		1: Only F00.02 and this parameter programmable			
F00.03	G/P type display	0: G type (constant torque load)	0	×	0003
		1: P type (variable torque load e.g. fan and pump)			
F00.04	Parameter Initialization	0: No operation	0	×	0004
		1: Restore all parameters to factory default (excluding motor parameters)			
		2: Clear fault record			
		3: Back up current user parameters			
		4: Restore user backup parameters			
		5: Restore factory default. (include motor parameter)			
6: Power consumption zero clearing (U00.35)					
F00.06	Parameter editing mode	0: Editable via keypad and RS485.	0	×	0006
		1: Editable via keypad			
		2: Editable via RS485			
F00.07	Motor selection	0: Motor 1	0	×	0007
		1: Motor 2			
F00.08	Motor 1 control mode	Unit's place: Motor 1 control mode	1	×	0008
		0: V/F control			
		1: Sensor-less vector control 1			
		2: Sensor-less vector control 2			
		3: Vector control with PG card			
		Ten's place: Motor 2 control mode			
0: V/F control					
1: Sensor-less vector control 1					
2: Sensor-less vector control 2					
3: Vector control with PG card					
F00.09	DI7/Hi input mode	0: Digital input terminal 7	0	×	0009
		1: Pulse input			
F00.10	AI1/AI2/AI3 input mode	Unit's place: AI1 0: Analog input 1: Digital input	000	×	000A

		Ten's place: AI2 (same as AI1)			
		Hundred's place: AI3 (same as AI1)			
F00.11	Y2/HO input mode	0: Digital Output terminal 2 1: Pulse output	0	×	000B
F00.12	PWM optimization	Unit's place: PWM modulation mode 0: Fixed carrier 1: Random carrier 2: Derating of fixed carrier 3: Derating of random carrier	500	×	000C
		Ten's place: PWM modulation mode 0: Seven-segment mode 1: Five-segment mode 2: Five-segment and seven-segment automatic switchover			
		Hundred's place: over-modulation coefficient 0: Invalid 1~9: 1.01~1.09 times of over-modulation			
F00.13	Carrier frequency	0.700~16.000kHz	Model defined	△	000D
F00.14	Upper carrier frequency	0.700~16.000kHz	8.000k Hz	×	000E
F00.15	Lower carrier frequency	0.700~16.000kHz	2.000k Hz	×	000F
F00.16	Output voltage	5.0~150.0%	100.0 %	×	0010
F00.17	AVR	0: Disabled	1	×	0011
		1: Enabled			
		2: AVR is disabled if the DC bus voltage > the rated voltage of DC bus, and it will be enabled if the DC bus voltage ≤ the rated voltage of DC bus.			
F00.18	Fan control	0: Run at power-on	1	×	0012
		1: Fan working during running			
F00.19	Factory password	0~65535	0	×	0013
F00.20	Drive rated power	0.2~1000.0kW	Model defined	⊙	0014
F00.21	Drive rated voltage	60~660V	Model defined	⊙	0015
F00.22	Drive rated current	0.1~1500.0A	Model defined	⊙	0016
F00.23	Software version	0.00~655.35	Model defined	⊙	0017
F00.24	Dealer password	0~65535	0	×	0018
F00.25	Run time setting	0~65535h(0: Invalid)	0h	×	0019
Group F01: Frequency Command					
F01.00	Frequency source selection	0: Master frequency source	0	×	0100
		1: Auxiliary frequency source			
		2: Master +Auxiliary			

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		3: Master - Auxiliary			
		4: MAX{Master, Auxiliary }			
		5: MIN {Master, Auxiliary }			
		6: AI1 (Master + Auxiliary)			
		7: AI2 (Master +Auxiliary)			
F01.01	Master Frequency Command Source	0:Master digital setting (F01.02)	1	×	0101
		1: keypad potentiometer			
		2: Analog input AI1			
		3: Communication			
		4: Multi-reference			
		5: PLC			
		6: Process PID output			
		7: X7/HI pulse input			
		8: AI2			
		9: AI3			
F01.02	Master Frequency Digital setting	0.00~Fmax	50.00Hz	△	0102
F01.03	Auxiliary Frequency Command Source	0: Auxiliary digital setting (F01.04)	0	×	0103
		1: keypad potentiometer			
		2: Analog input AI1			
		3: Communication			
		4: Multi-reference			
		5: PLC			
		6: Process PID output			
		7: X7/HI pulse input			
		8: Analog input AI2			
		9: Analog input AI3			
F01.04	Auxiliary frequency digital setting	0.00~Fmax	50.00Hz	△	0104
F01.05	Auxiliary frequency range	0: Relative to maximum frequency	0	×	0105
		1: Relative to master frequency			
F01.06	Auxiliary frequency coeff	0.0~1000.0%	100.0%	△	0106
F01.07	Jog frequency	0.00~Fmax	5.00Hz	△	0107
F01.08	Maximum frequency	20.00~600.00Hz	50.00Hz	×	0108
F01.09	Upper limit frequency	Fdown~Fmax Lower limit frequency~maximum frequency	50.00Hz	×	0109
F01.10	Lower limit frequency	0.00~Fup	0.00Hz	×	010A
F01.11	Operation when command frequency lower than lower limit frequency	0: Run at lower limit frequency	0	×	010B
		1: Run at 0 Hz would be activated after the time delay set by F01.12			
F01.12	Lower limit frequency running time	0.0~6000.0s	60.0s	×	010C
F01.13	Up to this frequency, start frequency compensation	0.00~600.00Hz	50.00Hz	△	010D

F01.14	Frequency compensation per 50Hz	0.00~50.00Hz	0.00Hz	△	010E
Group F02: Start/Stop Control					
F02.00	Run command	0: Keypad control (LED off)	0	×	0200
		1: Terminal control (LED on)			
		2: Communication control (LED blinking)			
F02.01	Running direction	0: Forward	0	△	0201
		1: Reverse			
F02.02	Reverse-proof action	0: Reverse enabled	0	×	0202
		1: Reverse disabled			
F02.03	Dead time between forward and reverse	0.0~6000.0s	0.0s	×	0203
F02.04	Start mode	Unit's place: Start Mode 0: Start directly 1: Rotational speed track and restart	00000	×	0204
		Ten's place: short-circuit detection function 0: Ungrounded short-circuit detection 1: Grounding short-circuit detection before the first starts 2: Grounding short-circuit detection before each starts			
		Hundred's place: Speed tracking 0: Track from zero speed 1: Track from max frequency			
		Thousand's place: Select if Jog function takes the priority 0: Disable 1: Enable			
		Ten thousand's place: Tracking direction 0: Last direction when stop 1: Positive direction 2: Negative direction 3: Starting direction			
F02.05	Start frequency	0.00~10.00Hz	0.00Hz	×	0205
F02.06	Startup frequency holding time	0.0~100.0s	0.0s	×	0206
F02.07	Startup DC braking current	0.0~150.0%	0.0%	×	0207
F02.08	DC braking time at start	0.0~100.0s	0.0s	×	0208
F02.09	Speed search current	0.0~180.0%	130.0%	△	0209
F02.10	Sped search decel time	0.0~10.0s	1.0s	×	020A
F02.11	Sped search coefficient	0.01~5.00	0.30	△	020B
F02.12	Stop mode	0: Ramp to stop	0	×	020C
		1: Coast to stop			

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F02.13	Initial frequency of stop DC braking	0.01~50.00Hz	2.00Hz	×	020D
F02.14	Stop DC braking current	0.0~150.0%	0.0%	×	020E
F02.15	Waiting time of stop DC braking	0.0~30.0s	0.0s	×	020F
F02.16	Stop DC braking time	0.0~30.0s	0.0s	×	0210
F02.17	Dynamic brake	0: Disabled	0	×	0211
		1: Enabled			
		2: Enabled at running			
		3: Enabled at deceleration			
F02.18	Voltage of dynamic braking	480~800V	700V	×	0212
F02.19	Brake use ratio	5.0~100.0%	100.0%	×	0213
F02.20	0Hz output selection	0: No voltage output	0	×	0214
		1: Voltage output			
F02.21	Auto-start of power-on again	0: Invalid	0	△	0215
		1: Valid			
F02.22	Waiting time between auto-start and power-on again	0.0~10.0s	0.5s	△	0216
Group F03: Accel/Decel Parameters					
F03.00	Accel time 1	0.0~6000.0s	15.0s	△	0300
F03.01	Decel time 1	0.0~6000.0s	15.0s	△	0301
F03.02	Accel time 2	0.0~6000.0s	15.0s	△	0302
F03.03	Decel time 2	0.0~6000.0s	15.0s	△	0303
F03.04	Accel time 3	0.0~6000.0s	15.0s	△	0304
F03.05	Decel time 3	0.0~6000.0s	15.0s	△	0305
F03.06	Accel time 4	0.0~6000.0s	15.0s	△	0306
F03.07	Decel time 4	0.0~6000.0s	15.0s	△	0307
F03.08	Jog accel time	0.0~6000.0s	15.0s	△	0308
F03.09	Jog decel time	0.0~6000.0s	15.0s	△	0309
F03.10	Accel/Decele curve	0: Linear Accel/Decel	0	×	030A
		1: S-curve Accel/Decel			
F03.11	Initial segment time of acceleration of S curve	0.0~6000.0s	0.0s	×	030B
F03.12	Time unit of acceleration and deceleration	0: 0.1s	0	×	030C
		1: 0.01s			
F03.13	Frequency switchover point between acceleration time 1 and acceleration time 2	0.00~Fmax	0.00Hz	×	030D
F03.14	Frequency	0.00~Fmax	0.00Hz	×	030E

	switchover point between deceleration time 1 and deceleration time 2				
F03.15	End segment time of acceleration of S curve	0.0~6000.0s	0.0s	×	030F
F03.16	Initial segment time of deceleration of S curve	0.0~6000.0s	0.0s	×	0310
F03.17	End segment time of deceleration of S curve	0.0~6000.0s	0.0s	×	0311
Group F04 Digital Input					
F04.00	Function of terminal DI1	00: No function	1	×	0400
F04.01	Function of terminal DI2	01: Running forward (FWD) 02: Running reverse (REV) 03: Three-wire control	2	×	0401
F04.02	Function of terminal DI3	04: JOG forward 05: JOG reverse	7	×	0402
F04.03	Function of terminal DI4	06: Coast to stop 07: Fault reset (RESET)	13	×	0403
F04.04	Function of terminal DI5	08: Running suspended 09: External fault input	0	×	0406
F04.05	Function of terminal DI6	10: Terminal UP 11: Terminal DOWN	0	×	0405
F04.06	Function of terminal DI7	12: UP/DOWN (including \wedge/\vee key) adjustment clear	0	×	0406
F04.07	Function of terminal AI1	13: Multi-step frequency terminal 1 14: Multi-step frequency terminal 2	0	×	0407
F04.08	Function of terminal AI2	15: Multi-step frequency terminal 3 16: Multi-step frequency terminal 4	0	×	0408
F04.09	Function of terminal AI3	17: Accel/Decel time determinant 1 18: Accel/Decel time determinant 2 19: Accel/Decel disabled(ramp stop not inclusive) 20: Switch to auxiliary speed setting 21: PLC status reset 22: Simple PLC paused 23: Simple PLC paused 24: PID adjustment direction 25: PID integration paused 26: PID parameter switch 27: Swing frequency pause(output the current frequency) 28: Swing frequency reset(output the central frequency) 29: Run command switched to keypad control 30: Run command switched to terminal control 31: Run command switched to communication control	0	×	0409

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		<p>32: Count input 33: Count clear 34: Length count 35: Length clear 36: DC brake input command at Stop 37: Speed/torque control switch 38: No reverse 39: No forward 40: zero-serve (FR510A only) 41: Enable spindle orientation (FR510A only) 42: Orientation position selection 1 (FR510A only) 43: Orientation position selection 2 (FR510A only) 44: Simple carry origin signal input (FR510A only) 45: FWD carry (FR510A only) 46: REV carry (FR510A only) 47: Carry amount selection terminal 1 (FR510A only) 48: Carry amount selection terminal 2 (FR510A only) 49: Carry amount selection terminal 3 (FR510A only) 70: Position given X7 direction input (FR510A only) 71: Position Pulse Zero Clearing (FR510A only) 72: Forward position offset enable (FR510A only) 73: Reverse position offset enable (FR510A only) 74: Pulse proportion selection of Ho output encoder (FR510A only) 75: Current overrun switching(FR510A only) 76: Carry enable(FR510A only)</p>			
F04.10	Filtering time of digital input terminal	0.000~1.000s	0.010s	△	040A
F04.11	Delay time before terminal DI1 is valid	0.0~300.0s	0.0s	△	040B
F04.12	Delay time before terminal DI2 is valid	0.0~300.0s	0.0s	△	040D
F04.13	Terminal DI1~DI5 positive/negative logic	DI5, DI4, DI3, DI2, DI1	00000	×	040C
		0: Positive logic(Terminals are on at 0V/off at 24V) 1: Negative Logic (Terminals are off at 0V/on at 24V)			
F04.14	Terminal DI6~AI3 positive/negative logic	AI3, AI2, AI1, DI7, DI6	00000	×	040E
		0: Positive logic 1: Negative Logic			
F04.15	FWD/REV terminal	0: Two-wire mode 1	0	×	040F
		1: Two-wire mode 2			

	control mode	2: Three-wire mode 1 3: Three-wire mode 2			
F04.16	Terminal UP/DOWN frequency adjustment control	Unit's place: action when stop 0: Clear 1: Holding Ten's place: action on power loss 0: Clear 1: Holding Hundreds place: integral function 0: No integral function 1: Integral function enabled Thousand's place: Select if it can be reduced to negative frequency 0: Disable 1: Enable Ten thousand's place: Jog action to clear UP/DOWN 0: Not Clear 1: Clear	00001	×	0410
F04.17	Terminal UP/DOWN frequency change step size	0.00~50.00Hz 0.00:Disabled	1.00Hz / 200ms	△	0411
F04.18	Terminal action selection when power on	0: Level effective 1: Edge trigger +Level effective(When power on) 2: Edge trigger +Level effective(Every start)	0	×	0412
F04.19	Delay time before terminal DI1 is invalid	0.0~300.0s	0.0s	△	0413
F04.20	Delay time before terminal DI2 is invalid	0.0~300.0s	0.0s	△	0414
Group F05 Digital Output					
F05.00	Y1 output function	00: No output 01: Drive is running	1	×	0500
F05.01	Y2 output function	02: Fault output 03: Frequency-level detection FDT1 output	3		0501
F05.02	Relay 1 output function	04: Frequency-level detection FDT2 output	2	×	0502
F05.03	Relay 2 output function	05: Drive in 0Hz running 1(no output at stop) 06: Drive in 0Hz running 2(output at stop) 07: Upper limit frequency attained 08: Lower limit frequency attained 09: Frequency attained 10: Drive is ready to work 11: Drive (motor) overloaded alarm 12: Drive overheat warning 13: Current running time attained 14: Accumulative power-on time attained 15: Consecutive running time attained	11	×	0503

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		16: PLC cycle completed 17: Set count value attained 18: Designated count value attained 19: Length attained 20: Under load alarm 21: Brake output 22: DI1 23: DI2 24: When reach the range of set frequency (FDT1) 25: Spindle orientation completion (FR510A only) 26: PID feedback loss 27: operation status (inching without output) 28: communication setting (address 2007h) 40: The current exceeds the limit			
F05.04	Y1 output delay time	0.0~6000.0s	0.0s	△	0504
F05.05	Y2 output delay time	0.0~6000.0s	0.0s	△	0505
F05.06	R1 output delay time	0.0~6000.0s	0.0s	△	0506
F05.07	R2 output delay time	0.0~6000.0s	0.0s	△	0507
F05.08	Enabled state of digital output	Unit's place: Y1	0000	×	0508
		0: Positive logic			
		1: Negative logic			
		Ten's place: Y2 (same as unit's place)			
		Hundreds place: Relay 1 output (same as unit's place)			
Thousands place: Relay 2 output (same as unit's place)					
F05.09	Detection width of frequency attained	0.00~20.00Hz	5.00Hz	×	0509
F05.10	FDT1 upper bound	0.00~Fmax	30.00Hz	×	050A
F05.11	FDT1 lower bound	0.00~Fmax	30.00Hz	×	050B
F05.12	FDT2 upper bound	0.00~Fmax	30.00Hz	×	050C
F05.13	FDT2 lower bound	0.00~Fmax	30.00Hz	×	050D
F05.14	Consecutive running time	0.0~6000.0Min 0.0:Disabled	0.0Min	×	050E
F05.15	Accumulative power-on time setting	0~65535h 0:Disabled	0h	×	050F
F05.16	Accumulative running time setting	0~65535h 0:Disabled	0h	×	0510
F05.17	Brake control selection	0: Disabled	0	×	0511
		1: Enabled			
F05.18	Brake opened	Closed frequency ~30.00Hz	2.50Hz	×	0512

	frequency				
F05.19	Brake opened current	0.0~200.0%	0.0%	△	0513
F05.20	Brake open waiting time	0.00~10.00s	0.00s	×	0514
F05.21	Brake open operating time	0.00~10.00s	0.50s	×	0515
F05.22	Brake closed frequency	0.00Hz~opened frequency	2.00Hz	×	0516
F05.23	Brake close waiting time	0.00~10.00s	0.00s	×	0517
F05.24	Brake close operating time	0.00~10.00s	0.50s	×	0518
F05.26	Current overrun 1	0.1~1500.0A	0.0A	△	051A
F05.27	Current overrun 2	0.1~1500.0A	0.0A	△	051B
Group F06 Analog and Pulse Input					
F06.00	Minimum input of curve AI1	0.0%~input of inflection point1 of curve AI1	1.0%	△	0600
F06.01	Set value corresponding to minimum input of curve AI1	-100.0~100.0%	0.0%	△	0601
F06.02	Input of inflection point 1 of curve AI1	Minimum input of curve AI1~Input of inflection point 2 of curve AI1	100.0%	△	0602
F06.03	Set value corresponding to input of inflection point 1 of curve AI1	-100.0~100.0%	100.0%	△	0603
F06.04	Input of inflection point 2 of curve AI1	Input of inflection point 1 of curve AI1~Maximum input of curve AI1	100.0%	△	0604
F06.05	Set value corresponding to input of inflection point 2 of curve AI1	-100.0~100.0%	100.0%	△	0605
F06.06	Maximum input of curve AI1	Input of inflection point 2 of curve AI1~100.0%	100.0%	△	0606
F06.07	Set value corresponding to maximum input of curve AI1	-100.0~100.0%	100.0%	△	0607
F06.08	Minimum input of curve AI2	0.0% ~ input of inflection point1 of curve AI2	1.0%	△	0608
F06.09	Set value corresponding to minimum	-100.0~100.0%	0.0%	△	0609

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	input of curve AI2				
F06.10	Input of inflection point 1 of curve AI2	Minimum input of curve AI1 ~ Input of inflection point 2 of curve AI2	100.0 %	△	060A
F06.11	Set value corresponding to input of inflection point 1 of curve AI2	-100.0 ~ 100.0%	100.0 %	△	060B
F06.12	Input of inflection point 2 of curve AI2	Input of inflection point 1 of curve AI2 ~ Maximum input of curve AI2	100.0 %	△	060C
F06.13	Set value corresponding to input of inflection point 2 of curve AI2	-100.0 ~ 100.0%	100.0 %	△	060D
F06.14	Maximum input of curve AI2	Input of inflection point A of curve AI2 ~ 100.0%	100.0 %	△	060E
F06.15	Set value corresponding to maximum input of curve AI2	-100.0 ~ 100.0%	100.0 %	△	060F
F06.16	Minimum input of curve AI3	0.0% ~ input of inflection point 1 of curve AI3	0.0%	△	0610
F06.17	Set value corresponding to minimum input of curve AI3	-100.0 ~ 100.0%	-100.0 %	△	0611
F06.18	Input of inflection point 1 of curve AI3	Minimum input of curve AI1 ~ Input of inflection point 2 of curve AI3	25.0%	△	0612
F06.19	Set value corresponding to input of inflection point 1 of curve AI3	-100.0 ~ 100.0%	-50.0%	△	0613
F06.20	Input of inflection point 2 of curve AI3	Input of inflection point 1 of curve AI3 ~ Maximum input of curve AI3	75.0%	△	0614
F06.21	Set value corresponding to input of inflection point 2 of curve AI3	-100.0 ~ 100.0%	25.0%	△	0615
F06.22	Maximum input of curve AI3	Input of inflection point A of curve AI3 ~ 100.0%	100.0 %	△	0616
F06.23	Set value	-100.0 ~ 100.0%	100.0	△	0617

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	corresponding to maximum input of curve AI3		%		
F06.24	Minimum input of curve keypad potentiometer	0.0 ~ Maximum input of curve keypad potentiometer	0.5%	△	0618
F06.25	Set value corresponding to minimum input of curve keypad potentiometer	-100.0~100.0%	0.0%	△	0619
F06.26	Maximum input of curve keypad potentiometer	Minimum input of curve keypad potentiometer~100.0	99.9%	△	061A
F06.27	Set value corresponding to maximum input of curve keypad potentiometer	-100.0~100.0%	100.0 %	△	061B
F06.28	AI1 terminal filtering time	0.000~10.000s	0.100s	△	061C
F06.29	AI2 terminal filtering time	0.000~10.000s	0.100s	△	061D
F06.30	AI3 terminal filtering time	0.000~10.000s	0.100s	△	061E
F06.31	Keypad potentiometer filtering time	0.000~10.000s	0.100s	△	061F
F06.32	Minimum input of curve HI	0.00 kHz~ Maximum input of curve HI	0.00kHz z	△	0620
F06.33	Set value corresponding to minimum input of curve HI	-100.0~100.0%	0.0%	△	0621
F06.34	Maximum input of curve HI	Minimum input of curve HI ~ 100.00kHz	50.00k Hz	△	0622
F06.35	Set value corresponding to maximum input of curve HI	-100.0~100.0%	100.0 %	△	0623
F06.36	HI terminal filtering time	0.000~10.000s	0.100s	△	0624
Group F07 Analog and Pulse Output					
F07.00	AO1 output function	00: No output 01: Output frequency	1	×	0700
F07.01	AO2 output function	02: Command frequency 03: Output current	2	×	0701
F07.02	Y2/HO output function (when used as HO)	04: Output voltage 05: Output power 06: Bus voltage 07: +10V	3	×	0702

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		08: keypad potentiometer 09: AI1 10: AI2 11: AI3 12: HI 13: Output torque 14: Ao communication given 1 15: Ao communication given 2 16: Encoder input (FR510A only)			
F07.03	AO1 offset	-100.0~100.0%	0.0%	△	0703
F07.04	AO1 gain	-2.000~2.000	1.000	△	0704
F07.05	AO1 filtering time	0.000~10.000s	0.000s	△	0705
F07.06	AO2 offset	-100.0~100.0%	0.00%	△	0706
F07.07	AO2 gain	-2.000~2.000	1.000	△	0707
F07.08	AO2 filtering time	0.000~10.000s	0.000s	△	0708
F07.09	HO maximum output pulse frequency	0.01~100.00kHz	50.00k Hz	△	0709
F07.10	HO output filtering time	0.000~10.000s	0.010s	△	070A
F07.11	Ho output encoder pulse proportion 1 (FR510A only)	0.00~10.00	1.00	△	070B
F07.12	Ho output encoder pulse proportion 2 (FR510A only)	0.00~10.00	1.00	△	070C
Group F08 Parameters of Motor 1					
F08.00	Motor 1 type selection	0: Three phase asynchronous motors	0	×	0800
		1: PMSM (FR510A only)			
		2: Single phase asynchronous motors (Remove capacity)			
		3: Single phase asynchronous motors (No need to remove capacity)			
F08.01	Power rating of motor 1	0.1~1000.0kW	Model defined	×	0801
F08.02	Rated voltage of motor 1	60~660V	Model defined	×	0802
F08.03	Rated current of motor 1	0.1~1500.0A	Model defined	×	0803
F08.04	Rated frequency of motor 1	20.00~Fmax	Model defined	×	0804
F08.05	Rated speed of motor 1	1~30000	Model defined	×	0805
F08.08	Stator resistance R1 of async motor 1	0.001~65.535Ω	Model defined	×	0808
F08.09	Rotor resistance R2 of async motor 1	0.001~65.535Ω	Model defined	×	0809
F08.10	Leakage	0.01~655.35mH	Model	×	080A

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	inductance L1 of async motor 1		defined		
F08.11	Mutual inductance L2 of asynchronous motor 1	0.1~6553.5mH	Model defined	×	080B
F08.12	No-load current of async motor 1	0.1~1500.0A	Model defined	×	080B
F08.13	Field weakening coeff 1 of async motor 1	0.0~100.0	87%	×	080C
F08.14	Field weakening coeff 2 of async motor 1	0.0~100.0	75%	×	080E
F08.15	Field weakening coeff 3 of async motor 1	0.0~100.0	70%	×	080F
F08.16	PMSM stator resistance (FR510A only)	0.001~65.535Ω	Model defined	×	0810
F08.17	PMSM d-axis inductance (FR510A only)	0.01~655.35mH	Model defined	×	0811
F08.18	PMSM d-axis inductance (FR510A only)	0.01~655.35mH	Model defined	×	0812
F08.19	PMSM back EMF (FR510A only)	0~65535V	Model defined	×	0813
F08.20	Installation angle of encoder (FR510A only)	0.0~359.9°	0.0°	×	0814
F08.21	Pole number of motor	0~1000	4	×	0815
F08.22	Find encoder origin at beginning (FR510A only)	0: Not find 1: Find	1	×	0816
F08.23	Encoder line number (FR510A only)	0~10000	1024	×	0817
F08.24	Encoder type (FR510A only)	0: ABZ encoder 1: UVW encoder 2: Rotary encoder 3: ECN1313 4: Sine-cosine encoder	0	×	0818
F08.25	AB Phase Sequence of	0: Positive 1: Negative	0	×	0819

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	ABZ Incremental Encoder (FR510A only)				
F08.26	Speed feedback PG disconnection detection time (FR510A only)	0.0: Invalid 0.1~10.0s	0.0s	×	081A
F08.27	Speed Ratio of Motor to Encoder (FR510A only)	0.001~60.000	1.000	×	081B
F08.28	Pole pairs of rotary encoder (FR510A only)	1~100	1	×	081C
F08.30	Autotuning of motor 1	0: No autotuning	0	×	081E
		1: Static autotuning of motor			
		2: Rotary autotuning of motor			
Group F09 V/f Control Parameters of Motor 1					
F09.00	V/f curve setting	00: Linear V/F	0	×	0900
		01: Multi-stage V/F			
		02: 1.2nd power V/F			
		03: 1.4nd power V/F			
		04: 1.6nd power V/F			
		05: 1.8nd power V/F			
		06: 2.0nd power V/F			
		07: V/F complete separation			
		08: V/F half separation			
		09: 1.2 power inverse curve V/F			
		10: 1.4 power inverse curve V/F			
		11: 1.6 power inverse curve V/F			
		12: 1.8 power inverse curve V/F			
13: 2.0 power inverse curve V/F					
F09.01	Torque boost	0.1%~30.0% 0.0% (fixed torque boost)	0.0%	△	0901
F09.02	Cut-off frequency of torque boost	0.00~Fmax	50.00Hz	△	0902
F09.03	Multi-point V/F frequency 1(F1)	0.00~F09.05	0.00Hz	△	0903
F09.04	Multi-point V/F voltage 1 (V1)	0.0~100.0	5.0%	△	0904
F09.05	Multi-point V/F frequency 2(F2)	F09.03~F09.05	5.00Hz	△	0905
F09.06	Multi-point V/F voltage 2 (V2)	0.0~100.0	14.0%	△	0906
F09.07	Multi-point V/F frequency 3(F3)	F09.05~F09.09	25.00Hz	△	0907
F09.08	Multi-point V/F voltage 3 (V3)	0.0~100.0	50.0%	△	0908
F09.09	Multi-point V/F frequency 4(F4)	F09.07~rated motor frequency	50.00Hz	△	0909
F09.10	Multi-point V/F	0.0~100.0 Ue=100.0%	100.0	△	090A

	voltage 4 (V4)		%		
F09.11	V/F slip compensation gain	0.0~300.0%	80.0%	△	090B
F09.12	Stator voltage drop compensation gain	0.0~200.0%	100.0%	△	090C
F09.13	Excitation boost gain	0.0~200.0%	100.0%	△	090D
F09.14	Oscillation Suppression	0.0~300.0%	100.0%	△	090E
F09.15	Voltage source for V/F separation	0: Digital setting (F09.16)	0	×	090F
		1: keypad potentiometer			
		2: AI1			
		3: Multi-reference			
		4: Pulse setting (DI7/HI)			
		5: PID			
		6: AI2			
7: AI3					
F09.16	Voltage digital setting for V/F separation	0 V to rated motor voltage	0.0%	△	0910
F09.17	Voltage rise time of V/F separation	0.0~6000.0s It indicates the time for the voltage rising from 0 V to rated Motor voltage.	0.1s	△	0911
F09.18	Set the IQ filter time below 0.5Hz in VVVF mode	F09.19~3000ms	500ms	×	0912
F09.19	Set the IQ filter time above 2Hz in VVVF mode	1ms~F09.18	100ms	×	0913
F09.20	Torque revision when run forward	0.0~5.0%	0.0%	△	0914
F09.21	Torque revision when run reverse	0.0~5.0%	1.0%	△	0915
F09.22	PMSM acceleration current compensation setting (FR510A only)	0.0~200.0%	0.0%	△	0916
F09.23	PMSM compensation time decreased after acceleration (FR510A only)	0.0~100.0s	2.0s	△	0917
F09.24	PMSM ID current value will be maintained after	0.0~200.0%	0.0%	△	0918

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	accelerating. (FR510A only)				
Group F10 Vector Control Parameters of Motor 1					
F10.00	Speed/torque control	0: speed control 1: torque control	0	×	0A00
F10.01	ASR low-speed proportional gain Kp1	0.0~100.0	15.0	△	0A01
F10.02	ASR low-speed integration time Ti1	0.001~30.000s	0.100s	△	0A02
F10.03	ASR switching frequency 1	0.00~F10.06	5.00Hz	△	0A03
F10.04	ASR high-speed proportional gain Kp2	1~100.0	10.0	△	0A04
F10.05	ASR high-speed integration time Ti2	0.001~30.000s	0.500s	△	0A05
F10.06	ASR switching frequency 2	F10.03~Fmax	10.00Hz	△	0A06
F10.07	ASR input filtering time	0.0~500.0ms	3.0ms	△	0A07
F10.08	ASR output filtering time	0.0~500.0ms	0.0ms	△	0A08
F10.09	Vector control slip gain	50~200%	100%	△	0A09
F10.10	Digital setting of torque upper limit in speed control mode	80.0~200.0%	165.0%	×	0A0A
F10.11	Excitation adjustment proportional gain Kp1	0.00~10.00	0.50	△	0A0B
F10.12	Excitation adjustment integral gain Ti1	0.0~3000.0ms	10.0ms	△	0A0C
F10.13	Torque adjustment proportional gain Kp2	0.00~10.00	0.50	△	0A0D
F10.14	Torque adjustment integral gain Ti2	0.0~3000.0ms	10.0ms	△	0A0E
F10.15	Excitation gain coefficient	50.0~200%	100%	△	0A0F
F10.16	Torque setting source under torque control	0: Set by F10.17 1: Keypad potentiometer 2: AI1 3: AI2 4: AI3 5: Pulse setting (DI7/HI) 6: Communication setting	0	×	0A10

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F10.17	Digital setting of torque	-200.0~200.0%	50.0%	△	0A11
F10.18	Forward speed limited value under torque control	0.00~Fmax	50.00Hz	△	0A12
F10.19	Reverse speed limited value under torque control	0.00~ Fmax	50.00Hz	△	0A13
F10.20	Set torque accel time	0.0~6000.0s	0.0s	△	0A14
F10.21	Set torque decel time	0.0~6000.0s	0.0s	△	0A15
F10.22	Static friction torque compensation	0.0~100.0%	5.00%	△	0A16
F10.23	Static friction frequency range	0.00~20.00Hz	1.00Hz	△	0A17
F10.24	Static Frequency of Open-Loop Torque	1.00~10.00Hz	1.00Hz	△	0A18
F10.25	SVC optimization method	0: Optimization method 1 1: Optimization method 2 2: Optimization method 3	1	×	0A19
F10.26	Max Frequency source under torque control	0: Set by F10.18 & F10.19	0	×	0A1A
		1: Keypad potentiometer			
		2: AI1			
		3: AI2			
		4: AI3			
5: Pulse setting (DI7/HI)					
F10.27	PMSM Start Excitation Current (FR510A only)	0.0~150.0%	50.0%	×	0A1B
F10.28	PMSM Flux weakening control (FR510A only)	0: Invalid 1: Valid	1	×	0A1C
F10.29	PMSM Flux weakening Voltage (FR510A only)	70.0~100.0%	95.0%	△	0A1D
F10.30	PMSM Flux weakening gain(Kp) (FR510A only)	0.0~500.0%	30.0%	△	0A1E
F10.31	PMSM Flux weakening integral(Ti) (FR510A only)	0.00~60.00s	0.5s	△	0A1F
F10.32	PMSM Flux weakening limit (FR510A only)	0.0~200.0%	100.0%	△	0A20
F10.33	PMSM excitation	F10.34~600.00Hz	15.00Hz	△	0A21

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	current frequency high point (FR510A only)				
F10.34	PMSM excitation current frequency low point (FR510A only)	0.0~F10.33	10.00Hz	△	0A22
F10.35	PMSM excitation current conversion delay (FR510A only)	0.0~10.0s	1.0s	△	0A23
F10.36	PMSM speed estimation Kp (FR510A only)	0.00~10.00	2.00	△	0A24
F10.37	PMSM speed estimation Ti (FR510A only)	0.1~1000.0ms	20.0ms	△	0A25
Group F11 Protection Parameters					
F11.00	Current limit control	0: Current limit disabled	2	×	0B00
		1: Current limit mode 1			
		2: Current limit mode 2			
F11.01	Current limit	100.0~200.0%	150.0%	×	0B01
F11.02	Frequency decreasing time(limit current in constant speed operation)	0.0~6000.0s	5.0s	△	0B02
F11.03	Current limit mode 2 proportion gain	0.1~100.0%	3.0%	△	0B03
F11.04	Current limit mode 2 integral time	0.00~10.00s	10.00s	△	0B04
F11.05	Overvoltage Stall Control	0: Overvoltage stall disabled	2	×	0B05
		1: Overvoltage stall mode 1			
		2: Overvoltage stall mode 2			
F11.06	Overvoltage stall voltage	600~800V	730V	×	0B06
F11.07	Overvoltage Stall Mode 2 Proportion Gain	0.0~100.0%	50.0%	△	0B07
F11.08	Overvoltage stall mode 2 frequency limit	0.00~50.00Hz	5.00Hz	×	0B08

F11.10	Protection action 1	Unit's place: Bus undervoltage 0: Fault reported and coast to stop 1: Stop according to the stop mode 2: Fault reported but continue to run 3: Fault protection disabled	03330	×	0B0A
		Ten's place: Power input phase Loss (Err09) (Same as unit's place)			
		Hundred's place: Power output phase loss(Err10) (Same as unit's place)			
		Thousand's place: Motor overload (Err11)(Same as unit's place)			
		Ten thousand's place: Drive overload(Err12) (Same as unit's place)			
F11.11	Protection action 2	External equipment fault (Err13) 0: Fault reported and coast to stop 1: Stop according to the stop mode 2: Fault reported but continue to run	00000	×	0B0B
		Ten's place: EEPROM read/write fault (Err15) (Same as unit's place)			
		Hundred's place: Communication overtime error (Err18) (Same as unit's place)			
		Thousand's place: PID feedback loss (Err19) (Same as unit's place)			
		Ten thousand's place: Continuous running time reached (Err20) (Same as unit's place)			
F11.12	Protection action 3	Unit's place: Module temperature detection disconnection (Err24) 0: Fault reported and coast to stop 1: Stop according to the stop mode 2: Fault reported but continue to run 3: Fault protection disabled	00030	×	0B0C
		Ten's place: Load becoming 0 (Err25) (Same as unit's place)			
F11.14	Frequency selection for continuing to run upon fault	0: Current running frequency	1	×	0B0D
		1: Set frequency			
		2: Frequency upper limit			
		3: Frequency lower limit			
		4: Backup frequency upon abnormality			
F11.15	Backup frequency upon abnormality	0.00~Fmax	0.00Hz	×	0B0E
F11.17	Motor overload protection time	30.0~300.0s	60.0s	×	0B11
F11.18	Overload alarm	Unit's place: detection option: 0: Always detect 1: Detect at constant speed only	00010	×	0B12

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		Ten's place: compared object 0: Rated current of motor 1: Rated current of drive			
		Hundred's place: Fault reported 0: No fault reported 1: Fault reported			
		Thousand's place: whether to decelerate or not when overload alarm 0: No deceleration 1: Deceleration			
		Ten thousand's place: given mode for overload threshold 0: F11.19 set 1: F11.19*VP 2: F11.19*AI1 3: F11.19*AI2 4: F11.19*AI3			
F11.19	Overload alarm threshold	20.0~200.0%	130.0%	×	0B13
F11.20	Overload alarm activated time that exceeding threshold	0.1~60.0s	5.0s	×	0B14
F11.21	Drive overheat warning threshold	50~overheat Temperature	Model defined	×	0B15
F11.22	Detection level of load loss	5.0~100.0%	20.0%	×	0B16
F11.23	Detection time of load loss	0.1~60.0s	5.0s	×	0B17
F11.24	Action selection at instantaneous power failure	0: Disabled	0	×	0B18
		1: Deceleration			
		2: Bus voltage constant control			
F11.25	Decel time at instantaneous power failure	0.0~6000.0s	5.0s	△	0B19
F11.26	Rapid current limit	0: Disabled	2	×	0B1A
		1: Rapid current limiting mode 1			
		2: Rapid current limiting mode 2			
F11.27	Times of automatic trip(fault) reset	0~20	0	×	0B1B
F11.28	Interval of automatic trip(fault) reset	0.1~100.0s	1.0s	×	0B1C
F11.29	DO action during fault auto reset	0: Not act	0	×	0B1D
		1: Act			
F11.30	Instantaneous power off bus voltage	60.0%~Recovery voltage	80.0%	△	0B1E
F11.31	Instantaneous power off recovery voltage	Power off voltage~100.0%	85.0%	△	0B1F

F11.32	Instantaneous power off voltage detection time	0.01~10.00s	0.10s	△	0B20
F11.33	Instantaneous power off Kp	0.1~100.0%	40.0%	△	0B21
F11.34	Instantaneous power off integration time Ti	0.00 ~ 10.00s (0.00: Integration invalid)	0.10s	△	0B22
F11.35	Motor temperature sensor type	0:None 1:PT100 2:PT1000 3:KTY84	0	×	0B23
F11.36	Zero drift value of motor temperature sensor	-100~100℃	0	△	0B24
F11.37	Reserved				0B25
F11.38	Motor temperature warning action threshold	0~200℃	90℃	△	0B26
F11.39	Motor temperature protection action threshold	0~200℃	110℃	△	0B27
F11.40	Action selection of Excessive Speed and Excessive Speed Deviation (FR510A only)	Unit's place: Overspeed Action Selection 0:Report error and coast to stop 1:Warning and ramp to stop 2: Alarm and continue run with failure frequency 3:No protection Ten's place: Selection of Excessive Speed Deviation 0:Report error and coast to stop 1:Warning and ramp to stop 2: Alarm and continue run with failure frequency 3:No protection	00	×	0B28
F11.41	Overspeed detection value (FR510A only)	0.0~150.0%	120.0%	×	0B29
F11.42	Overspeed detection time (FR510A only)	0.0~60.0s	1.0s	×	0B2A
F11.43	Detection value of excessive velocity deviation (FR510A only)	0.0~50.0%	20.0%	×	0B2B
F11.44	Detection time of excessive velocity deviation (FR510A only)	0.0~60.0s	5.0s	×	0B2C
Group F12: Multi-Reference and Simple PLC Function					

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F12.00	Reference 0	-100.0~100.0%	0.0%	△	0C00
F12.01	Reference 1	-100.0~100.0%	0.0%	△	0C01
F12.02	Reference 2	-100.0~100.0%	0.0%	△	0C02
F12.03	Reference 3	-100.0~100.0%	0.0%	△	0C03
F12.04	Reference 4	-100.0~100.0%	0.0%	△	0C04
F12.05	Reference 5	-100.0~100.0%	0.0%	△	0C05
F12.06	Reference 6	-100.0~100.0%	0.0%	△	0C06
F12.07	Reference 7	-100.0~100.0%	0.0%	△	0C07
F12.08	Reference 8	-100.0~100.0%	0.0%	△	0C08
F12.09	Reference 9	-100.0~100.0%	0.0%	△	0C09
F12.10	Reference 10	-100.0~100.0%	0.0%	△	0C0A
F12.11	Reference 11	-100.0~100.0%	0.0%	△	0C0B
F12.12	Reference 12	-100.0~100.0%	0.0%	△	0C0C
F12.13	Reference 13	-100.0~100.0%	0.0%	△	0C0D
F12.14	Reference 14	-100.0~100.0%	0.0%	△	0C0E
F12.15	Reference 15	-100.0~100.0%	0.0%	△	0C0F
F12.16	Reference 0 source	0: Digital setting (F12.00)	0	×	0C10
		1: keypad potentiometer			
		2: AI1			
		3: Process PID output			
		4: X7/HI pulse input			
		5: AI2			
F12.17	Running mode of simple PLC	Unit's place: PLC running mode 0: Stop after a single cycle 1: Continue to run with the last frequency after a single cycle 2: Repeat cycles	00000	×	0C11
		Ten's place: started mode 0: Continue to run from the step of stop (or fault) 1: Run from the first step "multi-step frequency 0" 2: Run from the eighth step "multi-step frequency 8" 3: Run from the fifteenth step "multi-step frequency 15"			
		Hundreds place: power loss memory 0: Memory disabled on power loss 1: Memory enabled on power loss			
		Thousands place: unit of simple PLC running time 0: Second (s) 1: Minute (min)			
F12.18	Running time of step 0	0.0~6000.0s(h)	0.0s(h)	△	0C12
F12.19	Running time of step 1	0.0~6000.0s(h)	0.0s(h)	△	0C13
F12.20	Running time of step 2	0.0~6000.0s(h)	0.0s(h)	△	0C14
F12.21	Running time of step 3	0.0~6000.0s(h)	0.0s(h)	△	0C15
F12.22	Running time of step 4	0.0~6000.0s(h)	0.0s(h)	△	0C16

F12.23	Running time of step 5	0.0~6000.0s(h)	0.0s(h)	△	0C17
F12.24	Running time of step 6	0.0~6000.0s(h)	0.0s(h)	△	0C18
F12.25	Running time of step 7	0.0~6000.0s(h)	0.0s(h)	△	0C19
F12.26	Running time of step 8	0.0~6000.0s(h)	0.0s(h)	△	0C1A
F12.27	Running time of step 9	0.0~6000.0s(h)	0.0s(h)	△	0C1B
F12.28	Running time of step 10	0.0~6000.0s(h)	0.0s(h)	△	0C1C
F12.29	Running time of step 11	0.0~6000.0s(h)	0.0s(h)	△	0C1D
F12.30	Running time of step 12	0.0~6000.0s(h)	0.0s(h)	△	0C1E
F12.31	Running time of step 13	0.0~6000.0s(h)	0.0s(h)	△	0C1F
F12.32	Running time of step 14	0.0~6000.0s(h)	0.0s(h)	△	0C20
F12.33	Running time of step 15	0.0~6000.0s(h)	0.0s(h)	△	0C21
F12.34	Acceleration/deceleration time of simple PLC reference 0	0~3	0	△	0C22
F12.35	Acceleration/deceleration time of simple PLC reference 1	0~3	0	△	0C23
F12.36	Acceleration/deceleration time of simple PLC reference 2	0~3	0	△	0C24
F12.37	Acceleration/deceleration time of simple PLC reference 3	0~3	0	△	0C25
F12.38	Acceleration/deceleration time of simple PLC reference 4	0~3	0	△	0C26
F12.39	Acceleration/deceleration time of simple PLC reference 5	0~3	0	△	0C27
F12.40	Acceleration/deceleration time of simple PLC reference 6	0~3	0	△	0C28
F12.41	Acceleration/deceleration time of simple PLC reference 7	0~3	0	△	0C29
F12.42	Acceleration/deceleration time of simple PLC reference 8	0~3	0	△	0C2A

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F12.43	Acceleration/deceleration time of simple PLC reference 9	0~3	0	△	0C2B
F12.44	Acceleration/deceleration time of simple PLC reference 10	0~3	0	△	0C2C
F12.45	Acceleration/deceleration time of simple PLC reference 11	0~3	0	△	0C2D
F12.46	Acceleration/deceleration time of simple PLC reference 12	0~3	0	△	0C2E
F12.47	Acceleration/deceleration time of simple PLC reference 13	0~3	0	△	0C2F
F12.48	Acceleration/deceleration time of simple PLC reference 14	0~3	0	△	0C30
F12.49	Acceleration/deceleration time of simple PLC reference 15	0~3	0	△	0C31
F12.50	UP/DOWN function selection of Multi-reference	Unit's place: Action selection when power off 0:Zero clearing when power off 1:Hold when power off	00	×	0C32
		Ten's place: select if it can be reduced to negative 0:Disable 1:Enable			
F12.51	UP/DOWN speed of Multi-reference	0.0~100.0% (0.0%Invalid)	0.0%	△	0C33
Group F13 Process PID					
F13.00	PID setting	0: F13.01 digital setting	0	×	0D00
		1:keypad potentiometer			
		2: AI1			
		3: Communication			
		4: Multi-Reference			
		5: DI7/HI pulse input			
		6: AI2			
7: AI3					
F13.01	PID digital setting	0.0~100.0%	50.0%	△	0D01
F13.02	PID feedback	0: AI1	0	×	0D02
		1: AI2			
		2: Communication			
		3: AI1+AI2			
		4: AI1-AI2			
5: Max{AI1, AI2}					

		6: Min{AI1, AI2}			
		7: DI7/HI pulse input			
		8: AI3			
F13.03	PID setting feedback range	0.0~6000.0	100.0	△	0D03
F13.04	PID action direction	0: Forward action 1: Reverse action	0	×	0D04
F13.05	Filtering time of PID setting	0.000~10.000s	0.000s	△	0D05
F13.06	Filtering time of PID feedback	0.000~10.000s	0.000s	△	0D06
F13.07	Filtering time of PID output	0.000~10.000s	0.000s	△	0D07
F13.08	Proportional gain Kp1	0.0~100.0	1.0	△	0D08
F13.09	Integration time Ti1	0.01~10.00s	0.10s	△	0D09
F13.10	Differential time Td1	0.000~10.000s	0.000s	△	0D0A
F13.11	Proportional gain Kp2	0.0~100.0	1.0	△	0D0B
F13.12	Integration time Ti2	0.01~10.00s	0.10s	△	0D0C
F13.13	Differential time Td2	0.000~10.000s	0.000s	△	0D0D
F13.14	PID parameter switch	0: No switch, determined by parameters Kp1, Ti1 and Td1 1: Auto switch on the basis of input offset 2: Switched by terminal	0	×	0D0E
F13.15	PID parameter switchover deviation 1	0.0~100.0%	20.0%	×	0D0F
F13.16	PID parameter switchover deviation 2	0.0~100.0%	80.0%	×	0D10
F13.17	PID offset limit	0.0~100.0%	0.0%	×	0D011
F13.18	PID integral property	Unit's place (Whether to stop integral operation when the output reaches the limit) 0: Continue integral operation 1: Stop integral operation Ten's place (Integral separated) 0: Invalid 1: Valid	00	×	0D12
F13.19	PID differential limit	0.0~100.0%	0.5%	×	0D13
F13.20	PID initial value	0.0~100.0%	0.0%	×	0D14
F13.21	Holding time of PID initial value	0.0~6000.0s	0.0s	×	0D15
F13.22	PID output frequency upper limit	PID output frequency lower limit ~ 100.0% (100.0% corresponds to	100.0%	×	0D16

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		maximum frequency)			
F13.23	PID output frequency lower limit	-100.0%~PID output frequency lower limit	0.0%	×	0D17
F13.24	Low value of PID feedback loss	0.1~100.0% 0.0%: Not judging feedback loss	0.0%	×	0D18
F13.25	Detection time for low value of PID feedback loss	0.0~30.0s	1.0s	×	0D19
F13.26	PID operation selection	Unit's place: PID operation selection when stop 0:Do not operate when stop 1:Operate when stop	00000	×	0D1A
		Ten's place: output is limited by output frequency 0:No limited 1:limited			
		Hundred's place: UP/DOWN digital given of PID 0:Zero clearing when power off 1:Hold when power off			
		Thousand's place: PID feedback loss detection when stop 0:Not detect when stop 1:detect when stop			
		Then thousand's place: action for PID feedback loss 0:Report fault 1:Ramp to stop			
F13.27	UP/DWON speed of PID digital given	0.0~100.0% (0.0% Invalid)	0.0%	△	
F13.28	High value of PID feedback loss	0.1~100.0% 0.0%: Not judging feedback loss	100.0%	×	0D1B
F13.29	Detection time for high value of PID feedback loss	0.0~30.0s	1.0s	×	0D1C
F13.30	PID upper limit source	0:F13.22 1:F13.22*VP 2:F13.22*AI1 3:F13.22*AI2 4:F13.22*HI 5:F13.22*AI3	0	×	0D1D
F13.31	PID lower limit source	0:F13.23 1:F13.23*VP 2:F13.23*AI1 3:F13.23*AI2 4:F13.23*HI 5:F13.23*AI3	0	×	0D1E
Group F14: Swing Frequency,					

Fixed Length , Wakeup and Count					
F14.00	Swing frequency setting mode	0: Relative to the setting frequency	0	×	0E00
		1: Relative to the maximum frequency			
F14.01	Swing frequency amplitude	0.0~100.0%	0.0%	△	0E01
F14.02	Jump frequency amplitude	0.0~50.0%	0.0%	△	0E02
F14.03	Rising Time of Swing frequency	0.0~6000.0s	5.0s	△	0E03
F14.04	Dropping Time of Swing frequency	0.0~6000.0s	5.0s	△	0E04
F14.05	Set length	0m~65535m	1000m	×	0E05
F14.06	Number of pulses per meter	0.1~6553.5	100.0	×	0E06
F14.07	Command when the length attained	Unit's place: stop when the length reaches 0: Not stop 1: Stop	00	×	0E07
		Ten's place: length calculation method 0: pulse by pulse 1: Reference maximum frequency 2: Refer to Ai1 channel 3: Refer to Ai2 channel 4: Refer to Ai3 channel			
F14.08	Set count value	1~65535	1000	×	0E08
F14.09	Designated count value	1~65535	1000	×	0E09
F14.10	Wakeup frequency	Dormant frequency (F14.12)~Fmax	0.00Hz	△	0E0A
F14.11	Wakeup delay time	0.0~6000.0s	0.0s	△	0E0B
F14.12	Dormant frequency	0.00~Wakeup frequency	0.00Hz	△	0E0C
F14.13	Dormant delay time	0.0~6000.0s	0.0s	△	0E0D
F14.14	Wake up mode selection	0: Frequency	0	×	0E0E
		1: Pressure			
F14.15	Dormancy mode selection	0: Frequency	0	×	0E0F
		1: Pressure			
F14.16	Voltage feedback source	Unit's place: pressure feedback 0: AI1 1: AI2 2: DI7/HI pulse input 3: AI3	0	×	0E10
		Ten's place: pressure dormancy mode 0: Positive direction, dormancy on			

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		big pressure and wakeup on small pressure 1:Negative direction, dormancy on small pressure and wakeup on big pressure			
F14.17	Wake up pressure	0.0%~Dormancy pressure	10.0%	△	0E11
F14.18	Dormancy pressure	Wake up pressure~100.0%	50.0%	△	0E12
Group F15: Communication Parameters					
F15.00	Baud rate	0: 4800bps	1	×	0F00
		1: 9600bps			
		2: 19200bps			
		3: 38400bps			
		4: 57600bps			
5: 115200bps					
F15.01	Data format	No check, data format (1-8-N-2) for RTU	0	×	0F01
		1: Even parity check, data format (1-8-E-1) for RTU			
		2: Odd Parity check, data format (1-8-O-1) for RTU			
		3: No check, data format(1-8-N-1) for RTU			
F15.02	Local address	1~247 0: Broadcast address	1	×	0F02
F15.03	Communication timeout	0.0~60.0s	0.0s	×	0F03
F15.04	Response time delay	0~200ms	1ms	×	0F04
F15.05	Master-slave Communication Mode	0:The Drive is the slave	0	×	0F05
		1:The Drive is the master			
F15.06	The Master Communication Sending Data	0: Set frequency	0	×	0F06
		1: Current running frequency			
F15.07	Message return when communication error	0: No return	1		0F07
		1: Return			
F15.08	U group return value	0: Positive and negative	0	△	0F08
		1: Absolute value			
Group F16 Keys and Display of Keypad Parameters					
F16.00	MF.K key setting	0: No function	1	×	1000
		1: Jog			
		2: Forward/reverse switchover			
		3: Run command sources shifted			
4: Jog reverse					
F16.01	Keyboard operation display	Unit's digit: Function selection of STOP/RESET key 0: stop function of STOP/RESET key is valid only in keyboard operation mode 1: Stop function of STOP/RES key is valid in any operation mode	001	×	1001

		Ten's digit: Speed display (U00.05) 0: According to the actual speed 1: Multiply frequency by speed coefficient(F16.11)			
		Hundred's digit: Decimal places 0: No decimal places 1: One decimal places 2: Two decimal places 3: Three decimal places			
F16.02	Keys locked option	0: Not locked 1: Full locked 2: Keys locked other than RUN, STOP/RST 3: Keys locked other than STOP/RST 4: Keys locked other than >>	0	×	1002
F16.03	LED displayed parameters setting 1 on running status	0~99(correspond U00.00~U00.99)	0	△	1003
F16.04	LED displayed parameters setting 2 on running status	0~99(correspond U00.00~U00.99)	6	△	1004
F16.05	LED displayed parameters setting 3 on running status	0~99(correspond U00.00~U00.99)	3	△	1005
F16.06	LED displayed parameters setting 4 on running status	0~99(correspond U00.00~U00.99)	2	△	1006
F16.07	LED displayed parameters setting 1 on stop status	0~99(correspond U00.00~U00.99)	1	△	1007
F16.08	LED displayed parameters setting 2 on stop status	0~99(correspond U00.00~U00.99)	6	△	1008
F16.09	LED displayed parameters setting 3 on stop status	0~99(correspond U00.00~U00.99)	15	△	1009
F16.10	LED displayed parameters setting 4 on stop status	0~99(correspond U00.00~U00.99)	16	△	100A
F16.11	Speed display coefficient	0.00~100.00	1.00	△	100B
F16.12	Power display coefficient	0.0~300.0%	100.0%	△	100C
F16.13	The enable difference range of U00.00 and U00.01	0.00Hz~5.00Hz	0.10Hz	△	100D
Group F17 User-d					

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efined Display Parameters					
F17.00	User-defined Display Parameter 0	00.00~49.99	00.03	△	1100
F17.01	User-defined Display Parameter 1	00.00~49.99	01.01	△	1101
F17.02	User-defined Display Parameter 2	00.00~49.99	01.02	△	1102
F17.03	User-defined Display Parameter 3	00.00~49.99	01.08	△	1103
F17.04	User-defined Display Parameter 4	00.00~49.99	01.09	△	1104
F17.05	User-defined Display Parameter 5	00.00~49.99	02.00	△	1105
F17.06	User-defined Display Parameter 6	00.00~49.99	02.01	△	1106
F17.07	User-defined Display Parameter 7	00.00~49.99	02.12	△	1107
F17.08	User-defined Display Parameter 8	00.00~49.99	03.00	△	1108
F17.09	User-defined Display Parameter 9	00.00~49.99	03.01	△	1109
F17.10	User-defined Display Parameter 10	00.00~49.99	04.00	△	110A
F17.11	User-defined Display Parameter 11	00.00~49.99	04.01	△	110B
F17.12	User-defined Display Parameter 12	00.00~49.99	04.02	△	110C
F17.13	User-defined Display Parameter 13	00.00~49.99	04.03	△	110D
F17.14	User-defined Display Parameter 14	00.00~49.99	05.02	△	110E
F17.15	User-defined Display Parameter 15	00.00~49.99	08.01	△	110F
F17.16	User-defined Display Parameter 16	00.00~49.99	08.02	△	1110
F17.17	User-defined Display	00.00~49.99	08.03	△	1111

	Parameter 17				
F17.18	User-defined Display Parameter 18	00.00~49.99	08.04	△	1112
F17.19	User-defined Display Parameter 19	00.00~49.99	08.05	△	1113
F17.20	User-defined Display Parameter 20	00.00~49.99	08.30	△	1114
F17.21	User-defined Display Parameter 21	00.00~49.99	11.10	△	1115
F17.22	User-defined Display Parameter 22	00.00~49.99	13.00	△	1116
F17.23	User-defined Display Parameter 23	00.00~49.99	13.01	△	1117
F17.24	User-defined Display Parameter 24	00.00~49.99	13.02	△	1118
F17.25	User-defined Display Parameter 25	00.00~49.99	13.08	△	1119
F17.26	User-defined Display Parameter 26	00.00~49.99	13.09	△	111A
F17.27	User-defined Display Parameter 27	00.00~49.99	00.00	△	111B
F17.28	User-defined Display Parameter 28	00.00~49.99	00.00	△	111C
F17.29	User-defined Display Parameter 29	00.00~49.99	00.00	△	111D
Group F18 Parameters of Motor 2					
F18.00	Motor 2 type selection	0: Three phase asynchronous motors	0	×	1200
		1: Sync motor(PMSM)			
		2: Single phase asynchronous motors (Remove capacity)			
		3: Single phase asynchronous motors (No need to remove capacity)			
F18.01	Power rating of motor 2	0.1~1000.0kW	Model defined	×	1201
F18.02	Rated voltage of motor 2	60~660V	Model defined	×	1202
F18.03	Rated current of motor 2	0.1~1500.0A	Model defined	×	1203
F18.04	Rated frequency of motor 2	20.00~Fmax	Model defined	×	1204
F18.05	Rated speed of motor 2	1~30000	Model defined	×	1205
F18.08	Stator resistance R1	0.001~65.535Ω	Model defined	×	1208

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	of async motor 2				
F18.09	Rotor resistance R2 of async motor 2	0.001~65.535Ω	Model defined	×	1209
F18.10	Leakage inductance L1 of async motor 2	0.01~655.35mH	Model defined	×	120A
F18.11	Mutual inductance L2 of asynchronous motor 2	0.1~6553.5mH	Model defined	×	120B
F18.12	No-load current of async motor 2	0.1~1500.0A	Model defined	×	120C
F18.13	Field weakening coeff 1 of async motor 2	0.0~100.0	87%	×	120D
F18.14	Field weakening coeff 2 of async motor 2	0.0~100.0	75%	×	120E
F18.15	Field weakening coeff 3 of async motor 2	0.0~100.0	70%	×	120F
F18.16	PMSM Stator resistance (FR510A only)	0.001~65.535Ω	Model defined	×	1210
F18.17	PMSM D-axis inductance (FR510A only)	0.01~655.35mH	Model defined	×	1211
F18.18	PMSM Q-axis inductance (FR510A only)	0.01~655.35mH	Model defined	×	1212
F18.19	PMSM back EMF (FR510A only)	0~65535V	Model defined	×	1213
F18.20	Installation angle of encoder (FR510A only)	0.0~359.9°	0.0°	×	1214
F18.21	Pole number of motor	0~1000	4	×	1215
F18.22	Find encoder origin at beginning (FR510A only)	0: Not find 1: Find	1	×	1216
F18.23	Encoder line number (FR510A only)	0~10000	1024	×	1217

F18.24	Encoder type (FR510A only)	0: ABZ encoder 1: UVW encoder 2: Rotary encoder 3: ECN1313 4: Sine-cosine encoder	0	×	1218
F18.25	AB Phase Sequence of ABZ Incremental Encoder (FR510A only)	0: Positive 1: Negative	0	×	1219
F18.26	Speed feedback PG disconnection detection time (FR510A only)	0.0: Invalid 0.1~10.0s	0.0s	×	121A
F18.27	Speed Ratio of Motor to Encoder (FR510A only)	0.001~60.000	1.000	×	121B
F18.28	Pole pairs of rotary encoder (FR510A only)	1~100	1	×	121C
F18.30	Autotuning of motor 2	0: No autotuning	0	×	121E
		1: Static autotuning of motor			
		2: Rotary autotuning of motor			
Group F19 V/f Control Parameters of Motor 2					
F19.00	V/f curve setting	00: Linear V/F	0	×	1300
		01: Multi-stage V/F			
		02: 1.2nd power V/F			
		03: 1.4nd power V/F			
		04: 1.6nd power V/F			
		05: 1.8nd power V/F			
		06: 2.0nd power V/F			
		07: V/F complete separation			
		08: V/F half separation			
		09: 1.2 power inverse curve V/F			
		10: 1.4 power inverse curve V/F			
		11: 1.6 power inverse curve V/F			
		12: 1.8 power inverse curve V/F			
13: 2.0 power inverse curve V/F					
F19.01	Torque boost	0.1%~30.0% 0.0% (fixed torque boost)	0.0%	△	1301
F19.02	Cut-off frequency of torque boost	0.00~Fmax	50.00Hz	△	1302
F19.03	Multi-point V/F frequency 1(F1)	0.00~F19.05	0.00Hz	△	1303
F19.04	Multi-point V/F voltage 1 (V1)	0.0~100.0	5.0%	△	1304
F19.05	Multi-point V/F frequency 2(F2)	F19.03~F19.05	5.00Hz	△	1305
F19.06	Multi-point V/F voltage 2 (V2)	0.0~100.0	14.0%	△	1306
F19.07	Multi-point V/F	F19.05~F19.09	25.00Hz	△	1307

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	frequency 3(F3)		Z		
F19.08	Multi-point V/F voltage 3 (V3)	0.0~100.0	50.0%	△	1308
F19.09	Multi-point V/F frequency 4(F4)	F19.07~rated motor frequency	50.00Hz	△	1309
F19.10	Multi-point V/F voltage 4 (V4)	0.0~100.0 Ue=100.0%	100.0%	△	130A
F19.11	V/F slip compensation gain	0.0~300.0%	80.0%	△	130B
F19.12	Stator voltagedrop compensation gain	0.0~200.0%	100.0%	△	130C
F19.13	Excitation boost gain	0.0~200.0%	100.0%	△	130D
F19.14	Oscillation Suppression	0.0~300.0%	100.0%	△	130E
F19.15	Voltage source for V/F separation	0: Digital setting (F19.16)	0	×	130F
		1: keypad potentiometer			
		2: AI1			
		3: Multi-reference			
		4: Pulse setting (DI7/HI)			
		5: PID			
		6: AI2			
7: AI3					
F19.16	Voltage digital setting for V/F separation	0 V to rated motor voltage	0.0%	△	1310
F19.17	Voltage rise time of V/F separation	0.0~6000.0s It indicates the time for the voltage rising from 0 V to rated Motor voltage.	0.1s	△	1311
F19.18	Set the IQ filter time below 0.5Hz in VVF mode	F19.19~3000ms	500ms	×	1312
F19.19	Set the IQ filter time above 2Hz in VVF mode	1ms~F19.18	100ms	×	1313
F19.20	Torque revision when run forward	0.0~5.0%	0.0%	△	1314
F19.21	Torque revision when run reverse	0.0~5.0%	1.0%	△	1315
F19.22	PMSM acceleration current compensation setting (FR510A only)	0.0~200.0%	0.0%	△	1316
F19.23	PMSM compensation time decreased	0.0~100.0s	2.0s	△	1317

	after acceleration (FR510A only)				
F19.24	PMSM ID current value will be maintained after accelerating. (FR510A only)	0.0~200.0%	0.0%	△	1318
Group F20 Vector Control Parameters of Motor 2					
F20.00	Speed/torque control	0: speed control	0	×	1400
		1: torque control			
F20.01	ASR low-speed proportional gain Kp1	0.0~100.0	15.0	△	1401
F20.02	ASR low-speed integration time Ti1	0.001~30.000s	0.100s	△	1402
F20.03	ASR switching frequency 1	0.00~F20.06	5.00Hz	△	1403
F20.04	ASR high-speed proportional gain Kp2	1~100.0	10.0	△	1404
F20.05	ASR high-speed integration time Ti2	0.001~30.000s	0.500s	△	1405
F20.06	ASR switching frequency 2	F20.03~Fmax	10.00Hz	△	1406
F20.07	ASR input filtering time	0.0~500.0ms	3.0ms	△	1407
F20.08	ASR output filtering time	0.0~500.0ms	0.0ms	△	1408
F20.09	Vector control slip gain	50~200%	100%	△	1409
F20.10	Digital setting of torque upper limit in speed control mode	80.0~200.0%	165.0%	×	140A
F20.11	Excitation adjustment proportional gain Kp1	0.00~10.00	0.50	△	140B
F20.12	Excitation adjustment integral gain Ti1	0.0~3000.0ms	10.0ms	△	140C
F20.13	Torque adjustment proportional gain Kp2	0.00~10.00	0.50	△	140D
F20.14	Torque adjustment integral gain Ti2	0.0~3000.0ms	10.0ms	△	140E
F20.15	Excitation gain coefficient	50.0~200%	100%	△	140F
F20.16	Torque setting	0: Set by F20.17	0	×	1410

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	source under torque control	1: Keypad potentiometer 2: AI1 3: AI2 4: AI3 5: Pulse setting (DI7/HI) 6: Communication setting			
F20.17	Digital setting of torque	-200.0~200.0%	50.0%	△	1411
F20.18	Forward speed limited value under torque control	0.00~Fmax	50.00Hz	△	1412
F20.19	Reverse speed limited value under torque control	0.00~ Fmax	50.00Hz	△	1413
F20.20	Set torque accel time	0.0~6000.0s	0.0s	△	1414
F20.21	Set torque decel time	0.0~6000.0s	0.0s	△	1415
F20.22	Static friction torque compensation	0.0~100.0%	5.00%	△	1416
F20.23	Static friction frequency range	0.00~20.00Hz	1.00Hz	△	1417
F20.24	Static Frequency of Open-Loop Torque	1.00~10.00Hz	1.00Hz	△	1418
F20.25	SVC optimization method	0: Optimization method 1 1: Optimization method 2 2: Optimization method 3	1	×	1419
F20.26	Max Frequency source under torque control	0: Set by F20.18 & F20.19 1: Keypad potentiometer 2: AI1 3: AI2 4: AI3 5: Pulse setting (DI7/HI)	0	×	141A
F20.27	PMSM Start Excitation Current (FR510A only)	0.0~150.0%	50.0%	×	141B
F20.28	PMSM Flux weakening control (FR510A only)	0: Invalid 1: Valid	1	×	141C
F20.29	PMSM Flux weakening Voltage (FR510A only)	70.0~100.0%	95.0%	△	141D
F20.30	PMSM Flux weakening gain(Kp) (FR510A only)	0.0~500.0%	30.0%	△	141E
F20.31	PMSM Flux weakening	0.00~60.00s	0.5s	△	141F

	integral(Ti) (FR510A only)				
F20.32	PMSM Flux weakening limit (FR510A only)	0.0~200.0%	100.0 %	△	1420
F20.33	PMSM excitation current frequency high point (FR510A only)	F10.34~600.00Hz	15.00H z	△	1421
F20.34	PMSM excitation current frequency low point (FR510A only)	0.0~F10.33	10.00H z	△	1422
F20.35	PMSM excitation current conversion delay (FR510A only)	0.0~10.0s	1.0s	△	1423
F20.36	PMSM speed estimation Kp (FR510A only)	0.00~10.00	2.00	△	1424
F20.37	PMSM speed estimation Ti (FR510A only)	0.1~1000.0ms	20.0ms	△	1425
Group F21 Position Control (FR510A only)					
F21.00	Selection of Position Control Mode	0: Non-position control	0	×	1500
		1: Zero Servo (Frequency Achievement Effective)			
		2: Zero Servo (Terminal Effective)			
		3: Spindle orientation			
		4: Simple carry			
5: Pulse train					
F21.01	Position loop gain	0.000~40.000	1.000	△	1501
F21.02	Zero Servo Initiation Frequency	0.00Hz~Fmax	1.00Hz	×	1502
F21.03	Location completion width	0~3000	10	×	1503
F21.04	Location completion time	0.000~40.000s	0.200s	×	1504
F21.05	Spindle orientation position 1	0~40000	0	△	1505
F21.06	Spindle orientation position 2	0~40000	0	△	1506
F21.07	Spindle orientation position 3	0~40000	0	△	1507
F21.08	Spindle	0~40000	0	△	1508

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	orientation position 4				
F21.09	Spindle orientation	Unit's place: spindle orientation direction 0: Orient from current direction of rotation 1: Direction from positive direction 2: Orient from reverse direction	00	×	1509
		Ten's place: positioning when parking 0: Do not locate when parking 1: Positioning when parking			
F21.10	Spindle orientation speed	0.00Hz~Fmax	10.00Hz	×	150A
F21.11	Spindle orientation deceleration time	0.0~60.0s	2.0s	×	150B
F21.12	Orientation position confirmation time	0.000~6.000s	0.010s	×	150C
F21.13	Regression Origin Selection	Unit's place: back to origin selection 0: Invalid 1: Valid	00	×	150D
		Ten's place: whether carry requires terminal enable signal 0: no need 1: Need			
F21.14	Regression Origin Direction	0:Forward	0	×	150E
		1:Reverse			
F21.15	Regression Origin Frequency 1	0.00Hz~600.00Hz	10.00Hz	×	150F
F21.16	Regression Origin Frequency 2	0.00Hz~60.00Hz	1.00Hz	×	1510
F21.17	Carry amount 0 high	0~9999	0	△	1511
F21.18	Carry amount 0 low	0~9999	0	△	1512
F21.19	Carry amount 1 high	0~9999	0	△	1513
F21.20	Carry amount 1 low	0~9999	0	△	1514
F21.21	Carry amount 2 high	0~9999	0	△	1515
F21.22	Carry amount 2 low	0~9999	0	△	1516
F21.23	Carry amount 3 high	0~9999	0	△	1517
F21.24	Carry amount 3 low	0~9999	0	△	1518
F21.25	Carry amount 4 high	0~9999	0	△	1519
F21.26	Carry amount 4 low	0~9999	0	△	151A

F21.27	Carry amount 5 high	0~9999	0	△	151B
F21.28	Carry amount 5 low	0~9999	0	△	151C
F21.29	Carry amount 6 high	0~9999	0	△	151D
F21.30	Carry amount 6 low	0~9999	0	△	151E
F21.31	Carry amount 7 high	0~9999	0	△	151F
F21.32	Carry amount 7 low	0~9999	0	△	1520
F21.33	Selection of Position-Given Mode	0:X7 pulse input 1: Encoder gives A/B phase pulse, A phase ahead B phase 90 reads forward 2: Encoder gives A/B phase pulse, B phase ahead A phase 90 reads forward	0	×	1521
F21.34	Electronic Gear Ratio Molecule	1~9999	1000	×	1522
F21.35	Electronic gear denominator	1~9999	1000	×	1523
F21.36	feed forward gain	0.000~7.000	1.000	△	1524
F21.37	Feedforward filtering time	0.000~7.000s	0.001s	△	1525
F21.38	Position offset change rate	0~9999	800	×	1526
F22Group:Virtual IO					
F22.00	Function selection of virtual VDI1 terminal	The same as function code F04.00	0	×	1600
F22.01	Function selection of virtual VDI2 terminal	The same as function code F04.00	0	×	1601
F22.02	Function selection of virtual VDI3 terminal	The same as function code F04.00	0	×	1602
F22.03	Function selection of virtual VDI4 terminal	The same as function code F04.00	0	×	1603
F22.04	Function selection of virtual VDI5 terminal	The same as function code F04.00	0	×	1604
F22.05	Valid status setting mode of virtual VDI terminals	VDI5, VDI4, VDI3, VDI2, VDI1	00000	×	1605
		0:Validity of VDI depends on virtual VDOx's status			
		1:Validity of VDI set by function code F22.06			

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F22.06	Settings of virtual VDI terminal status	VDI5, VDI4, VDI3, VDI2, VDI1	00000	△	1606
		0: Invalid			
		1: Valid			
F22.07	Function selection of virtual VDO1 terminals output	0 : Internal short circuited to physics DIx Other: The same as function code F05.00	0	△	1607
F22.08	Function selection of virtual VDO2 terminals output	0 : Internal short circuited to physics DIx Other: The same as function code F05.00	0	△	1608
F22.09	Function selection of virtual VDO3 terminals output	0 : Internal short circuited to physics DIx Other: The same as function code F05.00	0	△	1609
F22.10	Function selection of virtual VDO4 terminals output	0 : Internal short circuited to physics DIx Other: The same as function code F05.00	0	△	160A
F22.11	Function selection of virtual VDO5 terminals output	0 : Internal short circuited to physics DIx Other: The same as function code F05.00	0	△	160B
F22.12	Virtual VDO1 output delay time	0.0s~6000.0s	0.0s	△	160C
F22.13	Virtual VDO2 output delay time	0.0s~6000.0s	0.0s	△	160D
F22.14	Virtual VDO3 output delay time	0.0s~6000.0s	0.0s	△	160E
F22.15	Virtual VDO4 output delay time	0.0s~6000.0s	0.0s	△	160F
F22.16	Virtual VDO5 output delay time	0.0s~6000.0s	0.0s	△	1610
F22.17	VDO output terminal positive and negative logic	VDO5, VDO4, VDO3, VDO2, VDO1	00000	△	1611
		0: Positive logic			
		1: Negative logic			
Group U00 Status Monitoring					
U00.00	Running frequency	0.00~Fup	0.00Hz	⊙	3000
U00.01	Set frequency	0.00~Fmax	0.00Hz	⊙	3001
U00.02	Output voltage	0~660V	0.0V	⊙	3002
U00.03	Output current	0.0~3000.0A	0.0A	⊙	3003
U00.04	Output power	-3000.0~3000.0kW	0.0kW	⊙	3004
U00.05	Estimated Motor Speed	0~60000rpm	0rpm	⊙	3005
U00.06	Bus voltage	0~1200V	0V	⊙	3006
U00.07	Synchronous Frequency	0.00~Fup	0.00Hz	⊙	3007
U00.08	PLC step	1~15	1	⊙	3008

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U00.09	Program Operation Time	0.0~6000.0s(h)	0.0s(h)	⊙	3009
U00.10	PID set	0~60000	0	⊙	300A
U00.11	PID feedback	0~60000	0	⊙	300B
U00.12	Status of DI1~DI5 digital input terminal	DI5 DI4 DI3 DI2 DI1	00000	⊙	300C
U00.13	Status of DI6~DI7 digital input terminal	DI7 DI6	00	⊙	300D
U00.14	Status of digital output terminal	R2 R1 Y2 Y1	0000	⊙	300E
U00.15	AI1 input	0.0~100.0%	0.0%	⊙	300F
U00.16	AI2 input	0.0~100.0%	0.0%	⊙	3010
U00.17	AI3 input	-100.0~100.0%	0.0%	⊙	3011
U00.18	Keypad potentiometer input	0.0~100.0%	0.0%	⊙	3012
U00.19	HI input	0.00~100.00kHz	0.00kHz	⊙	3013
U00.20	AO1 output	0.0~100.0%	0.0%	⊙	3014
U00.21	AO2 output	0.0~100.0%	0.0%	⊙	3015
U00.22	HO output	0.00~100.00kHz	0.00kHz	⊙	3016
U00.23	Temperature of Drive	-40.0℃~120.0℃	0.0℃	⊙	3017
U00.24	Accumulative power-on time	0~65535min	0min	⊙	3018
U00.25	Accumulative running time	0~6553.5min	0.0min	⊙	3019
U00.26	Cumulative power-on time	0~65535h	0h	⊙	301A
U00.27	Cumulative running time	0~65535h	0h	⊙	301B
U00.28	Count value	0~65535	0	⊙	301C
U00.29	Length value	0~65535m	0m	⊙	301D
U00.30	Linear speed	0~65535m/min	0m/Min		301E
U00.31	Output torque	0.0~300.0%	0.0%	⊙	301F
U00.32	PTC motor temperature detection	-40℃~200℃	0℃	⊙	3020
U00.33	Speed that detected by encoder	0~60000rpm	0rpm	⊙	3021
U00.34	Monitoring of encoder line number	0~65535	0	⊙	3022
U00.35	Power consumption	0~65535kWh	0kWh	⊙	3023
U00.36	VDI1~VDI5 input status	VDI5 VDI4 VDI3 VDI2 VDI1	00000	⊙	3024
U00.37	VDO1~VDO5output	VDO5 VDO4 VDO3 VDO2 VDO1	00000	⊙	3025

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	status				
U00.38	High speed pulse X7 or the line number of extension card monitoring	0~65535	0	⊖	3026
U00.39	Sine cosine encoder C signal (FR510A only)	0~4096	0	⊖	3027
U00.40	Sine cosine encoder D signal (FR510A only)	0~4096	0	⊖	3028
U00.41	UVW encoder U V W signal (FR510A only)	U V W	000	⊖	3029
Group U01 Fault Record					
U01.00	Code of the latest fault	Err00~Err44	0	⊖	3100
U01.01	Running frequency when the latest fault occurred	0.00~Fup	0.00Hz	⊖	3101
U01.02	Output current when the latest fault occurred	0.0~3000.0A	0.0A	⊖	3102
U01.03	Bus voltage when the latest fault occurred	0~1200V	0V	⊖	3103
U01.04	Cumulative running time when the latest fault occurred	0~65535h	0h	⊖	3104
U01.05	Code of previous fault	Same as U01.00	0	⊖	3105
U01.06	Running frequency when previous fault occurred	0.00~Fup	0.00Hz	⊖	3106
U01.07	Output current when previous fault occurred	0.0~3000.0A	0.0A	⊖	3107
U01.08	Bus voltage when previous fault occurred	0~1200V	0V	⊖	3108
U01.09	Cumulative	0~65535h	0h	⊖	3109

	running time when previous fault occurred				
U01.10	Before-previous fault code	Same as U01.00	0	⊙	310A
U01.11	Running frequency when before-previous fault occurred	0.00~Fup	0.00Hz	⊙	310B
U01.12	Output current when before-previous fault occurred	0.0~3000.0A	0.0A	⊙	310C
U01.13	Bus voltage when before-previous fault occurred	0~1200V	0V	⊙	310D
U01.14	Cumulative running time when before-previous fault occurred	0~65535h	0h	⊙	310E
U01.15	Previous 3 categories of faults	The same with U01.00	Err00	⊙	310F
U01.16	Previous 4 categories of faults	The same with U01.00	Err00	⊙	3110
U01.17	Previous 5 categories of faults	The same with U01.00	Err00	⊙	3111
U01.18	Previous 6 categories of faults	The same with U01.00	Err00	⊙	3112
U01.19	Previous 7 categories of faults	The same with U01.00	Err00	⊙	3113
U01.20	Previous 8 categories of faults	The same with U01.00	Err00	⊙	3114
U01.21	Previous 9 categories of faults	The same with U01.00	Err00	⊙	3115
U01.22	Previous 10 categories of faults	The same with U01.00	Err00	⊙	3116
U01.23	Previous 11 categories of faults	The same with U01.00	Err00	⊙	3117
U01.24	Previous 12 categories of faults	The same with U01.00	Err00	⊙	3118
U01.25	Previous 13	The same with U01.00	Err00	⊙	3119

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	categories of faults			
Group H00: Elevator Special Purpose Group				
H00.00	Special Purpose Inverter Function Enable	0: Invalid 1: Valid	1	×
H00.01	Brake Open Delay	0.00~10.00s	0.00s	×
H00.02	Start Frequency	0.00~10.00Hz	5.00Hz	×
H00.03	Start Frequency Holding Time	0.00~10.00s	0.00s	×
H00.04	Brake Release Delay	0.00~10.00s	0.30s	×
H00.05	Brake Open Frequency (Rising)	0.00~10.00Hz	1.00Hz	×
H00.06	Brake Release Frequency (Rising)	0.00~10.00Hz	0.20Hz	×
H00.07	Brake Open Frequency (Falling)	0.00~10.00Hz	1.00Hz	×
H00.08	Brake Release Frequency (Falling)	0.00~10.00Hz	0.20Hz	×
H00.09	Brake Open Current	0.0~100.0%	40.0%	△
H00.10	Brake Open Frequency Holding Time	0.00~10.00s	0.30s	×
H00.11	Brake Open Type	0: Open according to frequency 1: Open according to frequency & current	0	×
H00.12	Emergency Operation Frequency	0.00~50.00Hz	5.00Hz	△
H00.13	Maintenance Operation Frequency	0.00~50.00Hz	8.00Hz	△
H00.14	Emergency Signal Processing	0: Lift Stop 1: Lift Powered on By UPS And Run	1	×
H00.15	Running Contactor Release Delay	0.00~10.00s	0.20s	×
H00.16	Running Contactor Open Delay	0.00~10.00s	0.10s	×
H00.17	Stop DC Injection Time ,	0.00~10.00s	0.50s	×
H00.18	Short Floor Function	0:Invalid 1:Short Floor Function 2:Senior Short Floor Function	0	×
H00.19	Short Floor Speed	0.0~100.0%	60.0%	×
H00.20	Leveling Jerk	0.0~100.0%	0.0%	×
H00.21	Leveling Jerk Frequency	0.00~1.00	0.20	×
H00.22	Motor Mode Slip	0.00~3.00Hz	0.00Hz	×
H00.23	Generator Mode Slip	0.00~3.00Hz	0.00Hz	×
H00.24	Emergency Signal Valid Time	0.0~500.0s	10.0s	×
H00.25	Emergency Signal Invalid Time	0.0~1000.0s	180.0s	×
H00.26	Light load direction search	0: Invalid	1	×

	enable	1: Valid		
H00.27	Light load direction detection time	0.0~5.0s	1.0s	×
H00.28	UPS lower limit	0.0~200.0%	70.0%	×
H00.29	UPS lower limit error	0: Invalid 1: Valid	1	×
H00.30	Emergency mode frequency given by terminal	0: Invalid 1: Valid	0	×
H00.31	Emergency mode intelligent drive output	0: Invalid 1: Valid	1	×
H00.32	Emergency mode output percentage	0.0~100.0%	100.0%	×
H00.33	Emergency signal running invalid time	0.0~1000.0s	60.0s	×
H00.34	Err41 overload times setting	0~5	2	×
H00.35	Err41 times interval time	0~1000Min	60Min	×
H00.36	Err41 overload reset time	0~1000s	120s	×
H00.37	Err41 overload reset time timing		0s	⊙
H00.38	Err41 overload times		0	⊙
H00.39	S curve Time 5	0.00~60.00s	1.00s	△
H00.40	S curve Time 6	0.00~60.00s	1.00s	△
H00.41	Coefficient of S curve time when short floor function is enabled	0.00~1.00	0.7	△
H00.42	Percentage of torque when leveling	0.0~120.0%	0.0%	×
H00.43	Torque boost Kp when leveling	0.000~1.000	0.100	△
H00.44	Torque boost Ki when leveling	0.000~1.000	0.300	△
H00.45	Duration for torque boost	0.0~10.0s	1.0s	△

3.2 H00 group function code detailed explanation

H00.00	Special Purpose Inverter Function Enable	0: Invalid	1	×
		1: Valid		

0: Invalid

1: Valid

Special purpose for elevator, group H00is valid

H00.01	Brake Open Delay	0.00~10.00s	0.00s	×
H00.02	Start Frequency	0.00~10.00Hz	5.00Hz	×
H00.03	Start Frequency Holding Time	0.00~10.00s	0.00s	×
H00.04	Brake Release Delay	0.00~10.00s	0.30s	×
H00.05	Brake Open Frequency (Rising)	0.00~10.00Hz	1.00Hz	×
H00.06	Brake Release Frequency (Rising)	0.00~10.00Hz	0.20Hz	×
H00.07	Brake Open Frequency (Falling)	0.00~10.00Hz	1.00Hz	×

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H00.08	Brake Release Frequency (Falling)	0.00~10.00Hz	0.20Hz	×
H00.09	Brake Open Current	0.0~100.0%	40.0%	△
H00.10	Brake Open Frequency Holding Time	0.00~10.00s	0.30s	×
H00.15	Running Contactor Release Delay	0.00~10.00s	0.20s	×
H00.16	Running Contactor Open Delay	0.00~10.00s	0.10s	×
H00.17	Stop DC Injection Time ,	0.00~10.00s	0.50s	×

Setting function code H00.01~H00.10 and H00.15~H00.17 can improve the comfort when elevator start star/stop, DC brake current when braking to stop can be adjusted by F02.14, every function code shown as below:

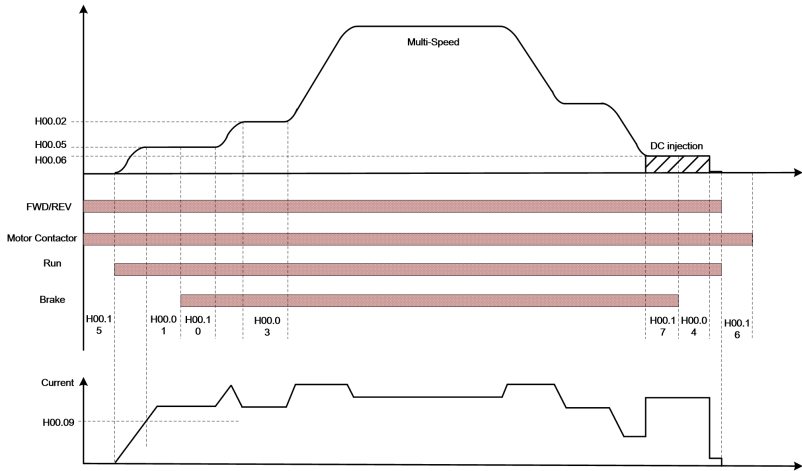


Figure 3.1 Elevator Operation Logic

H00.05(Brake Open Frequency (Rising)),H00.06(Brake Release Frequency (Rising)) and H00.07(Brake Open Frequency (Falling)),H00.08(Brake Release Frequency (Falling)) are same meanings, rising group use for frequency adjusting on FWD, falling group use for frequency adjusting on REV.

H00.11	Brake Open Type	0: Open according to frequency	0	×
		1: Open according to frequency & current		

0: Open according to frequency

Criteria for judging the brake opening is inverters output reach to the setting frequency of H00.05 (rising) or H00.07 (falling), and then open the brake by setting time of H00.01 (Brake Open Delay).

1: Open according to frequency and current

Criteria for judging the brake opening is inverters output reach to the setting frequency of H00.05 (rising) or H00.07 (falling), meanwhile, inverter current reach H00.09 (brake open current) setting value.

H00.12	Emergency Operation Frequency	0.00~50.00Hz	20.00Hz	△
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When emergency signal input, inverters will entry emergency operating mode, the frequency of

H00.12 will be the operation frequency of inverter, and inverter will select accel/decels time 4 as current accel/decels time.

H00.13	Maintenance Operation Frequency	0.00~50.00Hz	20.00Hz	△
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When maintenance signal input, the frequency of H00.13 will be the operation frequency of inverter

H00.14	Emergency Signal Processing	0: Elevator no run	1	×
		1: Elevator Powered on By UPS And Run		

0: 0: Elevator no run

When emergency signal input, inverter no output

1: Elevator Powered on By UPS And Run

When emergency signal input, inverter is powered by UPS and output via emergency operation frequency

H00.18	Short Floor Function	0:Invalid	0	×
		1:Short Floor Function		
		2:Senior Short Floor Function		

0: Invalid

Short floor function is invalid

1: Short floor function

When elevator is running during short floor and when short floor function is triggered, inverter will continue to run via setting speed of H00.19.

2: Senior short floor function

When elevator is running during short floor and when short floor function is triggered, inverter will calculate remaining running time and maintain current frequency to run till remaining time finished

H00.19	Short Floor Speed	0.0~100.0%	60.0%	×
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When H00.18=1, inverter run via speed of H00.19 when running in short floor

H00.20	Leveling Jerk	0.0~100.0%	0.0%	×
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H00.21	Leveling Jerk Frequency	0.00~1.00	0.20	×
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The parameters are used for improving the jerk when elevator stop

H00.22	Motor Mode Slip	0.00~3.00Hz	0.00Hz	×
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The parameter used for improving the leveling when elevator is falling. If leveling is good when elevator is falling with half load but leveling is not good when elevator is falling without load, to increase the value of H00.02 to improve the leveling.

H00.23	Generator Mode Slip	0.00~3.00Hz	0.00Hz	×
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The parameter used for improving the leveling when elevator is rising. If leveling is good when elevator is rising with half load but leveling is not good when elevator is rising without load, to increase the value of H00.23 can improve the leveling.

H00.24	Emergency Signal Valid Time	0.0~500.0s	10.0s	×
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H00.25	Emergency Signal Invalid Time	0.0~1000.0s	180.0s	×
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H00.33	Emergency signal running invalid time	0.0~1000.0s	60.0s	×
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When emergency signal is valid, inverter start timing, when timing is over setting value of H00.24, and when output terminal function (Y1 Y2 R1 R2) selected to be "32" the function of emergency signal time completed, the terminal output valid signal and last setting time of H00.25(if VFD is running then it will last H00.33 setting time), then terminal output is invalid.

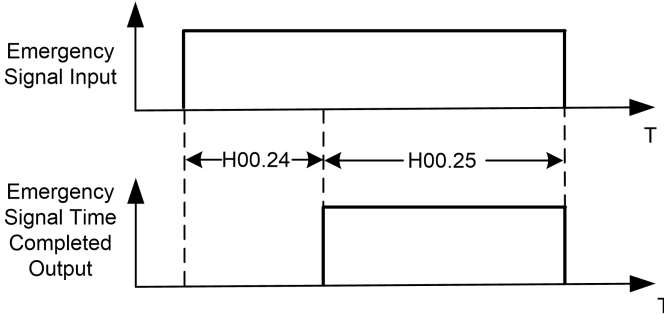


Figure 3.2 Emergency signal time completed logic

H00.26	Light load direction search enable	0: Invalid	1	×
		1: Valid		

0: Invalid

No load detection, execute according to the running direction

1: Valid

Inverter detects elevator light load direction

H00.27	Light load direction detection time	0.0~5.0s	1.0s	×
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This function is used for setting light load direction detection time in emergency mode. In emergency mode, when H00.26=1 and start running, inverter completes detection of light load direction automatically, then inverter will run with light load direction, and output “Light load direction search completed” and “Light load direction search direction” signal via terminal Y1, Y2, R1, R2.

When detected light load direction is same with given running command direction, inverter will stop and continue to run via detected light load direction, running timing diagram as below:

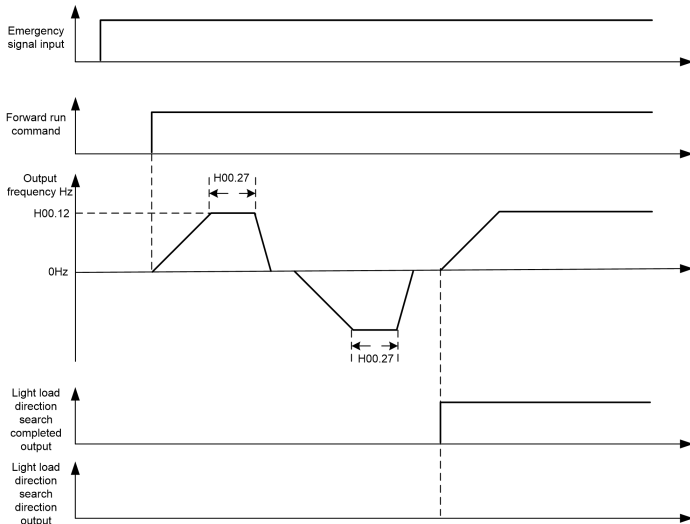


Figure 3.3 Light load direction search timing diagram

When detected light load direction is opposite with given running command direction, inverter continues to run with emergency setting frequency, running timing diagram as below:

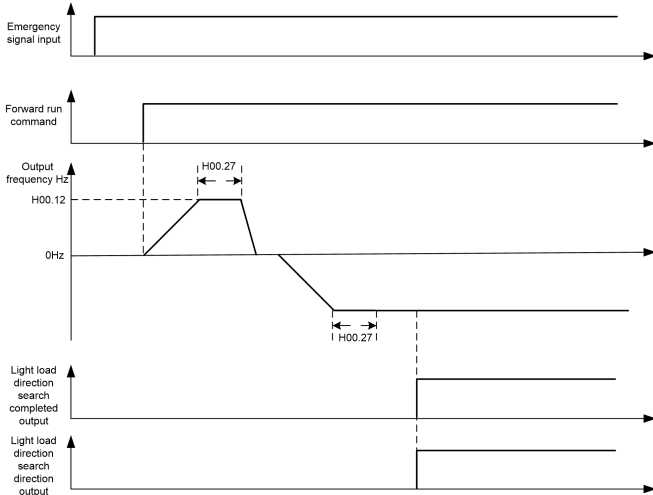


Figure 3.4 Light load direction search timing diagram

H00.28	UPS voltage lower limit	0.0~200.0%	70.0%	×
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Used for setting UPS power voltage lower limit, when inverter is detecting light load direction, UPS power voltage is lower than the setting of H00.28, inverter will change to detect reverse direction

H00.29	UPS voltage lower limit error	0: Invalid	1	×
		1: Valid		

0: Invalid

When light load direction detection completed, inverter run via light load direction

1: Valid

When detecting light load direction, when UPS power voltages in both direction are lower than setting of H00.28, inverter will trip with Err43

H00.30	Emergency mode frequency given by terminal	0: Invalid	1	×
		1: Valid		

0: Invalid

In emergency mode, frequency is given by H00.12

1: Valid

In emergency mode, when terminal given is invalid, given frequency is 0Hz, when terminal given valid, frequency given by H00.12

H00.31	Emergency mode intelligent drive output	0: Invalid	1	×
		1: Valid		

0: Invalid

In emergency mode, inverter output according to the setting drive mode

1: Valid

In emergency mode, inverter output via setting of H00.32

H00.32	Emergency mode output percentage	0.0~100.0%	100.0%	×
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Used for setting output percentage when H00.31=1

H00.34	Err41 overload times setting	0~5	2	×
H00.35	Err41 times interval time	0~1000Min	60Min	×
H00.36	Err41 overload reset time	0~1000s	120s	×

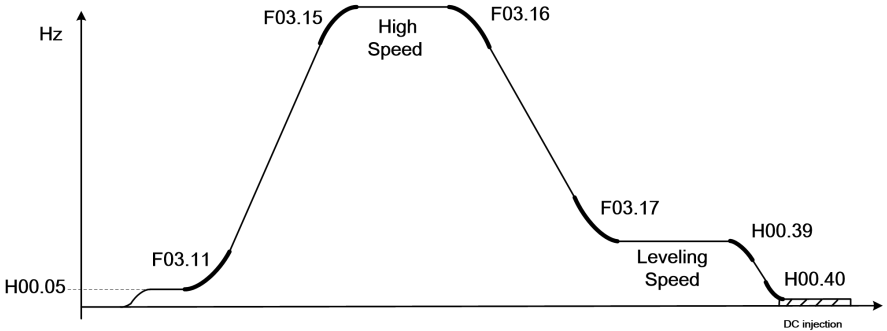
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H00.37	Err41 overload reset time timing		0s	⊖
H00.38	Err41 overload times		0	⊖

When Err41 overload fault, system will record Err41 overload fault times which is displayed in H00.38. When fault reset, if no again Err41 within setting time (H00.35), zero clearance in H00.38; If again Err41 within setting time H00.35, the value will be accumulated in H00.38, when the value H00.38 is bigger than the value H00.34, system will forbid Err41 reset, only after setting time H00.36 can reset Err41. H00.37 FOR reset time timing.

F03.11	S curve Time 1	0.00~600.00s	1.00s	×
F03.15	S curve Time 2	0.00~600.00s	1.00s	×
F03.16	S curve Time 3	0.00~600.00s	1.00s	×
F03.17	S curve Time 4	0.00~600.00s	1.00s	×
H00.39	S curve Time 5	0.00~60.00s	1.00s	△
H00.40	S curve Time 6	0.00~60.00s	0.50s	△

S curve time setting:



H00.41	Coefficient of S curve time when short floor function is enabled	0.00~1.00	0.7	△
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When short floor function is enabled and triggered, deceleration time will multiple this coefficient set by H00.41.

H00.42	Percentage of torque boost when leveling	0.0~120.0%	0.0%	×
H00.43	Torque boost Kp when leveling	0.000~1.000	0.100	△
H00.44	Torque boost Ki when leveling	0.000~1.000	0.300	△
H00.45	Duration for torque boost	0.0~10.0s	1.0s	△

This Four function codes are used to increase the torque when leveling.

Chapter 4 Troubleshooting

FR500D inverter provides a number of warning information and protection, when a fault occurs, the protective function is activated, the inverter will stop output, inverter fault relay contact, and in the inverter displays the fault code on the display panel. Before seeking service user can press the self-examination tips in this section, analyze problems, and identify solutions. If the problem still cannot be excluded, seek services, or contact the dealer you purchase the inverter with my company.

Display	Fault Name	Possible Causes	Solutions
Err01	Accel overcurrent	1: The output circuit is grounded or short circuited. 2: The acceleration time is too short. 3: Manual torque boost or V/F curve is not appropriate. 4: The voltage is too low. 5: The startup operation is performed on the rotating motor. 6: A sudden load is added during acceleration. 7: The AC drive model is of too small power class.	1: Eliminate external faults. 2: Increase the acceleration time. 3: Adjust the manual torque boost or V/F curve. 4: Adjust the voltage to normal range. 5: Select rotational speed tracking restart or start the motor after it stops. 6: Remove the added load. 7: Select an AC drive of higher power class
Err02	Decel overcurrent	1: The output circuit is grounded or short circuited. 2: The deceleration time is too short. 3: The voltage is too low. 4: A sudden load is added during deceleration. 5: The braking unit and braking resistor are not installed.	1: Eliminate external faults. 2: Increase the deceleration time. 3: Adjust the voltage to normal range. 4: Remove the added load. 5: Install the braking unit and braking resistor.
Err03	Constant-speed overcurrent	1: The output circuit is grounded or short circuited. 2: The voltage is too low. 3: A sudden load is added during operation. 4: The AC drive model is of too small power class.	1: Eliminate external faults 2: Adjust the voltage to normal range. 3: Remove the added load 4: Select an AC drive of higher power class.
Err04	Accel overvoltage	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.

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Err05	Decel overvoltage	<p>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.</p>	<p>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.</p>
Err06	Constant-speed overvoltage	<p>1: The input voltage is too high 2: An external force drives the motor during deceleration.</p>	<p>1: Adjust the voltage to normal range. 2: Cancel the external force or install the braking resistor.</p>
Err07	Bus undervoltage	<p>1: Instantaneous power failure occurs on the input power supply. 2: The AC drive's input voltage is not within the allowable range. 3: The bus voltage is abnormal. 4: The rectifier bridge and buffer resistor are faulty. 5: The drive board is faulty. 6: The main control board is faulty.</p>	<p>1: Reset the fault. 2: Adjust the voltage to normal range. 3: Contact the agent or Frecon.</p>
Err08	Short circuit	<p>1: The output circuit is grounded or short circuited. 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.</p>	<p>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 Frecon. 6: Ask for technical support 7: Ask for technical support</p>
Err09	Power input phase loss	<p>1: The three-phase power input is abnormal. 2: The drive board is faulty. 3: The lightning board is faulty. 4: The main control board is faulty.</p>	<p>1: Eliminate external faults. 2: Contact the agent or FRECON.</p>
Err10	Power output phase loss	<p>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 module is faulty.</p>	<p>1: Eliminate external faults. 2: Check whether the motor Three-phase winding is normal. 3: Contact the agent or Frecon.</p>
Err11	Motor overload	<p>1: F11-17 is set improperly. 2: The load is too heavy or locked-rotor occurs on the</p>	<p>1: Set F11-17 correctly. 2: Reduce the load and check the motor and the</p>

		motor. 3: The AC drive model is of too small power class.	mechanical condition. 3: Select an AC drive of higher power class.
Err12	Inverter overload	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.
Err13	External equipment fault	1: External fault signal is input via DI.	Reset the operation.
Err14	Module overheat	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.
Err15	EEPROM read/write fault	The EEPROM chip is damaged.	Replace the main control board.
Err16	Motor auto-tuning cancelled	Since the identification process, press STOP / RST key	Press STOP / RST key to reset
Err17	Motor auto-tuning fault	1: the motor and the inverter output terminals are not connected 2: The motor does not disengage the load 3: The electrical fault	1: check the connection between the inverter and motor 2: The motor is disengaged load 3: Check the motor
Err18	Communication overtime error	1: The PC is not working properly 2: The communication line is not normal 3: F15 set communication parameters set incorrectly	1: Check the PC Connection 2: Check the communication cable 3: The communication parameters are set correctly
Err19	PID feedback loss	PID feedback set value is less than F13.24	Check the PID feedback signal or set to an appropriate value F13.24
Err20	Continuous running time reached	Set the running time to reach this function	reference F05.14 Description
Err21	Parameter upload fault	1: Is not installed or is not plugged parameter copy card 2: Parameter copy card anomalies 3: The control board abnormalities	1: a copy of the card is properly installed parameters 2: for technical support 3: for technical support

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Err22	Parameter download fault	1: Is not installed or is not plugged parameter copy card 2: Parameter copy card anomalies 3: The control board abnormalities	1: A copy of the card is properly installed parameters 2: For technical support 3: For technical support
Err23	Braking unit fault	1: The brake line failure or damage the brake pipe 2: An external braking resistor is too small	1: Check the brake unit, replace the brake pipe 2: Increasing the braking resistor
Err24	Module temperature detection disconnection	The temperature sensor failure or cable break	For technical support
Err25	Load disconnected	The AC drive running current is lower than F11.22	Check that the load is disconnected or the setting F11-22 and F11-23 is correct.
Err26	With-wave current limit fault	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.
Err27	Inverter soft-start relay is off	1: The grid voltage is too low 2: Rectifier module failure	1: Check the grid voltage 2: Demand for technical support
Err28	Software version compatibility fault	1: The upper and lower transmission module parameters in the parameter version of the control panel version mismatch.	re-upload module parameters to pass down
Err29	Instantaneous overcurrent	1. Inverter output circuit being grounded or short-circuit; 2. The acceleration and deceleration time is too short; 3. Manually torque boost or V/F curve not appropriate; 4. Voltage too low; 5. Start the running motor; 6. Sudden-load in the acceleration process; 7. Model selection of inverter power is too small.	1. Troubleshooting peripheral problems; 2. To increase the acceleration time; 3. Adjust the manually torque boost or V/F curve; 4. Adjust the voltage to normal range; 5. Select RPM track start or start after motor stopped; 6. Cancel sudden-load; 7. Select the inverter with larger power.
Err30	Instantaneous overvoltage	1: Input voltage is too high; 2. There is external force drag the motor to run in deceleration process; 3. The deceleration time is too short; 4. No installation of braking	1: Adjust the voltage to normal range; 2. Cancel external force or install brake resistor; 3. To increase the deceleration time; 4. Install braking resistor

		resistor.	
Err36	PG card disconnection	1,Encoder no signal or lack of signal 2,Encoder damage 3,Speed feedback PG disconnection detection time setting unreasonable	1.Check the feedback line if disconnection 2. Check sensor if working abnormally 3. Adjust the time to be the reasonable one
Err37	Overspeed(FVC mode)	1,Encoder parameter setting incorrect 2,No motor auto-tuning 3,Motor overspeed detection parameter F11.41 and F11.42 setting unreasonable	1,Correct encoder parameter setting 2,Do motor auto-tuning 3,According to actual condition to set reasonable detection value
Err38	Speed deviation too big (FVC mode)	1,Encoder parameter setting incorrect 2,No motor auto-tuning 3,Speed deviation detection too big parameter F11.43 and F11.44 setting unreasonable	1,Setting correct speed deviation value 2,Make load stable 3,Correct setting
Err40	Setting running time ends	1. Running time is bigger than F00.25	Contact the agent or FRECON.
Err41	Overload warning fault	1. Elevator overload 2. Check the setting of F11.18,F11.19,F11.20	1. Lesser people 2. To set right parameter of F11.18,F11.19,F11.20
Err43	Light load direction search error	1. Wrong UPS lower voltage setting 2. UPS power too small 3. No need this error	1. Reset H00.28 2.Select matching UPS power 3. Set H00.29 to be invalid
Err44	Short circuit to ground	When the ten's place of F02.04 is set and the drive output is circuited to the ground.	1. Check the value of F02.04 and the output circuit of drive

Chapter 5 PG Card

FR500D series is equipped with PG cards showed as below, as optional parts, is the necessary part for inverter with closed loop vector control mode. PG card feedback the real-time speed of motor through the signal acquisition from encoder to achieve the precise control of motor speed and steering

Model	Description	Connection mode
EXC-PG01	The differential input PG card	Terminal connection
EXC-PG02	Open collector, push input PG card	Terminal connection
EXC-PG03	Rotary transformer PG card	DB9 interface
EXC-PG05	ECN1313 PG card	Terminal connection
EXC-PG06	Sin-Cos encoder PG card	DB15 interface

Relative Parameters

Function code	Code Name	Setting Range	Default	Attr
F00.08	Motor control method	Unit's place: Motor1 control method	11	×
		0: V/F control		
		1: Sensor-less vector control mode1		
		2: Sensor-less vector control mode2		
		3: Close-loop control(with PG card)		
		Ten's place: Motor2 control method		
		0: V/F control		
		1: Sensor-less vector control mode1		
		2: Sensor-less vector control mode2		
3: Close-loop control(with PG card)				
F08.23	Encoder line count	0-65535	1024	×
F08.24	Encoder selection	0:ABZ incremental encoder	0	×
		1:UVW incremental encoder		
		2:Rotary transformer		
		3:ECN1313		
F08.25	AB phase sequence	0: Positive	0	×
		1: Negative		
F08.30	Auto-tuning	0: No autotuning	0	×
		1: Static autotuning of motor		
		2: Rotary autotuning of motor		

Set these parameter according to different encoder

Function code explanation:

- 1)F00.08 = 33(Close-loop control, with PG card)
- 2)When choosing ABZ incremental encoder, F08.24 should be rightly set.
- 3)When choosing ABZ incremental encoder, need to check that AB phase sequence is the same with frequency.

Installation diagram shown as below C-1:

- 1) All kinds of PG cards are installed in the same place
- 2) Cut off the power when to install PG card or uninstall it.
- 3) Connecting the 20 PIN interface of PG card to J3 interface of control board.

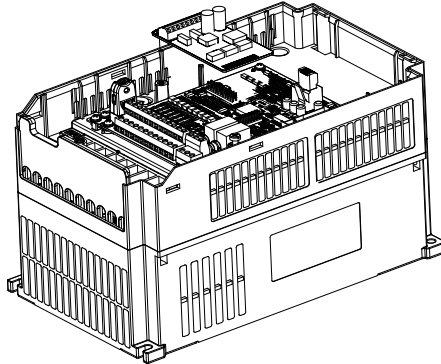


Fig.C-1 PG card installation

5.1 ABZ encoder PG card

External view:

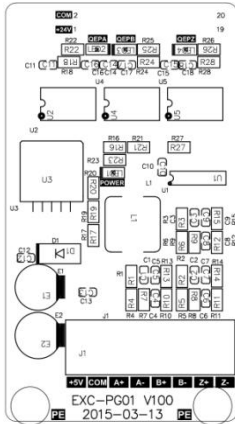


Fig.C-2(a)EXC-PG01

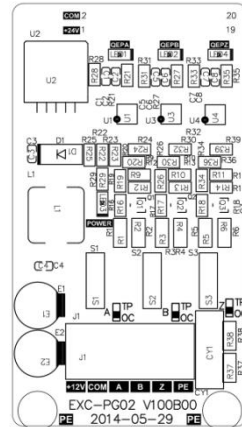


Fig.C-2(b)EXC-PG02

Table C-1 Technical parameter

Model	Power	Characteristics of the input signal		Characteristics of the output signal	
		Response frequency range	Input impedance	Output frequency range	Output current
EXC-PG01	5V	0-300KHz		0-300KHz	200mA
EXC-PG02	12V	0-80KHz		0-80KHz	100mA

Terminals outline drawing:



Fig.C-3(a)EXC-PG01 terminals



Fig.C-3(b)EXC-PG02 terminals

Table C-2 Terminal function description

Model	Connection object	Interface name	Description
EXC-PG 01	The differential input incremental encoder interface	A+,A-	Encoder output signal A, maximum frequency 300kHz
		B+,B-	Encoder output signal B, maximum frequency 300kHz
		Z+,Z-	Encoder output signal Z, zero signal
		+5V	Supply +5V/200mA power
		COM	Power earthing
EXC-PG 02	Open collector, Push input incremental encoder interface	+12V	Supply +12V/100mA power
		COM	Power earthing
		A	Encoder output signal A, maximum frequency 80kHz
		B	Encoder output signal B, maximum frequency 80kHz
		Z	Encoder output signal Z, zero signal
		PE	Shielding line

Schematic diagram of the application connection

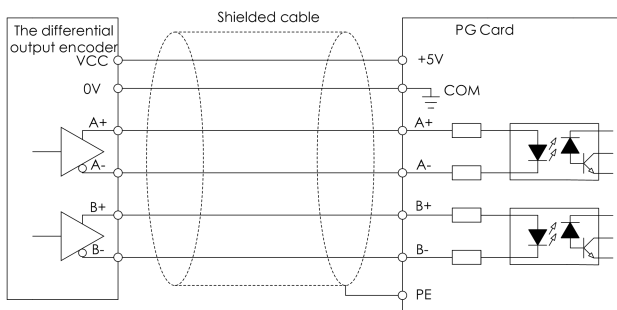
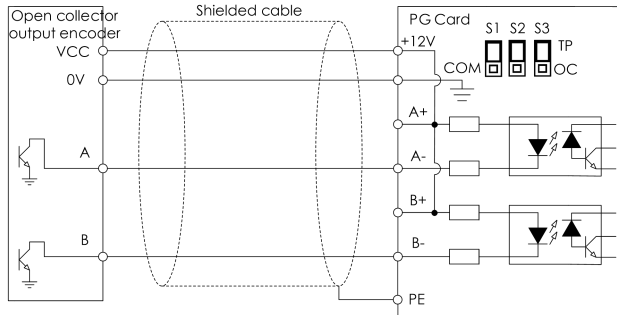
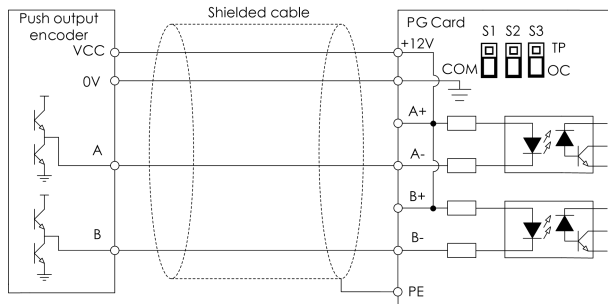


Fig. C-4 Connection schematic diagram of EXC-PG01 and the differential output encoder



**Fig. C-5 Connection schematic diagram of EXC-PG01
And the open collector output encoder**



**Fig. C-6 Connection schematic diagram of EXC-PG01
and the push output encoder**

Usage method

- 1) Follow Figure C-1 to loading PG card
- 2) Follow Figure C-4, C-5, C-6 to connect PG card and encoder
- 3) Shielded cable earthing line PE is connected directly to the fixed screw of PG card
- 4) According to the actual situation to set the inverter parameters as follow:

Parameter setting	Description
F00.08 = 3	Close-loop control(with PG card)
F08.23 = 1024	Encoder line number, setting as the specification of encoder
F08.24 = 0	ABZ incremental encoder
F08.25 = 0	AB phase sequence.

5.2 Rotary transformer PG card

Outline and its interface:

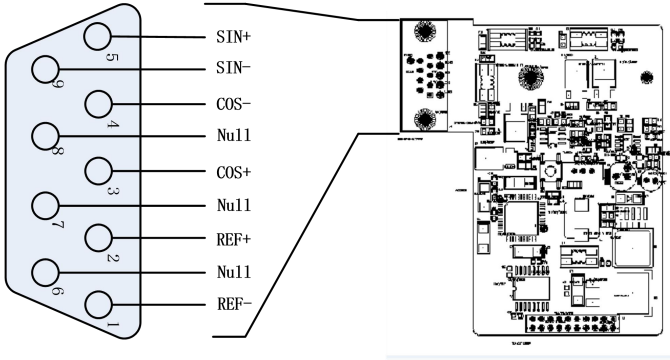


Fig.C-7 EXC-PG03 Schematic diagram and its DB9 pin interface

DB9 PIN

PIN	1	2	3	4	5	6	7	8	9
Name	REF-	REF+	COS+	COS-	SIN+	Null	Null	Null	SIN-

PIN function

Model	Connecting object	Pin name	Description
EXC-PG03	Rotary transformer	COS+,COS-	Cosine signal
		SIN+,SIN-	Sine signal
		REF+,REF-	Voltage reference signal
		Null	Null

Usage method

- 1) Follow Figure C-1 to loading PG card
- 2) Shielded cable earthing line PE is connected directly to the fixed screw of PG card
- 3) According to the actual situation to set the inverter parameters as follow:

Parameter setting	Description
F00.08 = 3	Close-loop control(with PG card)
F08.24 = 2	Select the rotary transformer

5.3 ECN1313 PG Card

Outline and its interface:

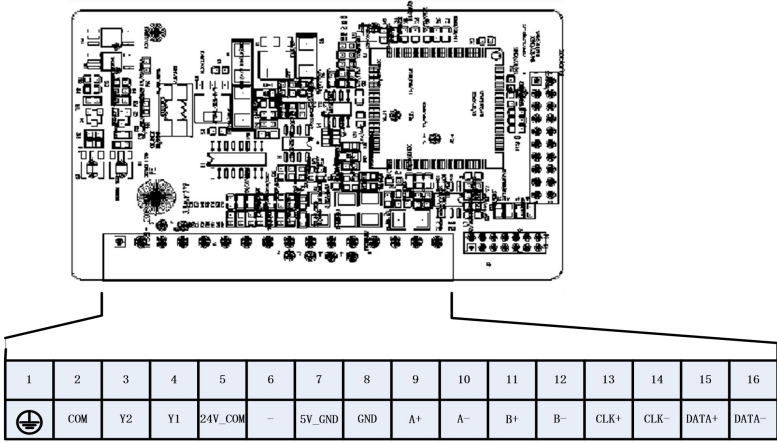


Fig.C-8 EXC-PG05 ECN1313 PG terminals

Terminals:

Model	Connecting Object	Pin Name	Description
EXC-PG05	ECN1313 Encoder		GND
		24_COM,COM	24V output and its common terminal
		5V_GND,GND	5V output and its ground
		A+,A-	A differential signal
		B+,B-	B differential signal
		Y1	B signal OC output (24V)
		Y2	A signal OC output (24V)
		CLK+, CLK-	ECN1313 differential clock input
DATA+, DATA-	ECN1313 differential data input		

Usage method

- 1) Follow Figure C-1 to loading PG card
- 2) Shielded cable earthing line PE is connected directly to the fixed screw of PG card
- 3) According to the actual situation to set the inverter parameters as follow:

Parameter setting	Description
F00.08 = 3	Close-loop control(with PG card)
F08.24 = 3	Select the ECN1313 encoder

5.4 Sin-Cos encoder PG card

Outline and its interface:

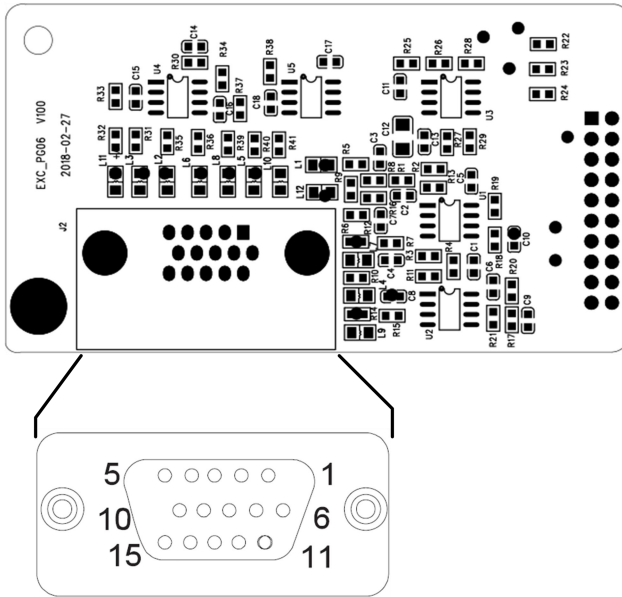


Fig.C-9 EXC-PG06 Sin-Cos encoder PG card

DB15 PIN:

Num.	Pin Name	Description
1	B-	Differential signal B-
2	NC	Null
3	R+	Differential signal R+
4	R-	Differential signal R-
5	A+	Differential signal A+
6	A-	Differential signal A-
7	GND	Power ground
8	B+	Differential signal B+
9	PG VCC	+5V Power
10	C+	Differential signal C+
11	C-	Differential signal C-
12	D+	Differential signal D+
13	D-	Differential signal D-
14,15	NC	Null