Advanced®
CONTROL

Basic Reference Guide

C220 / C420 Series

1. Wiring mode
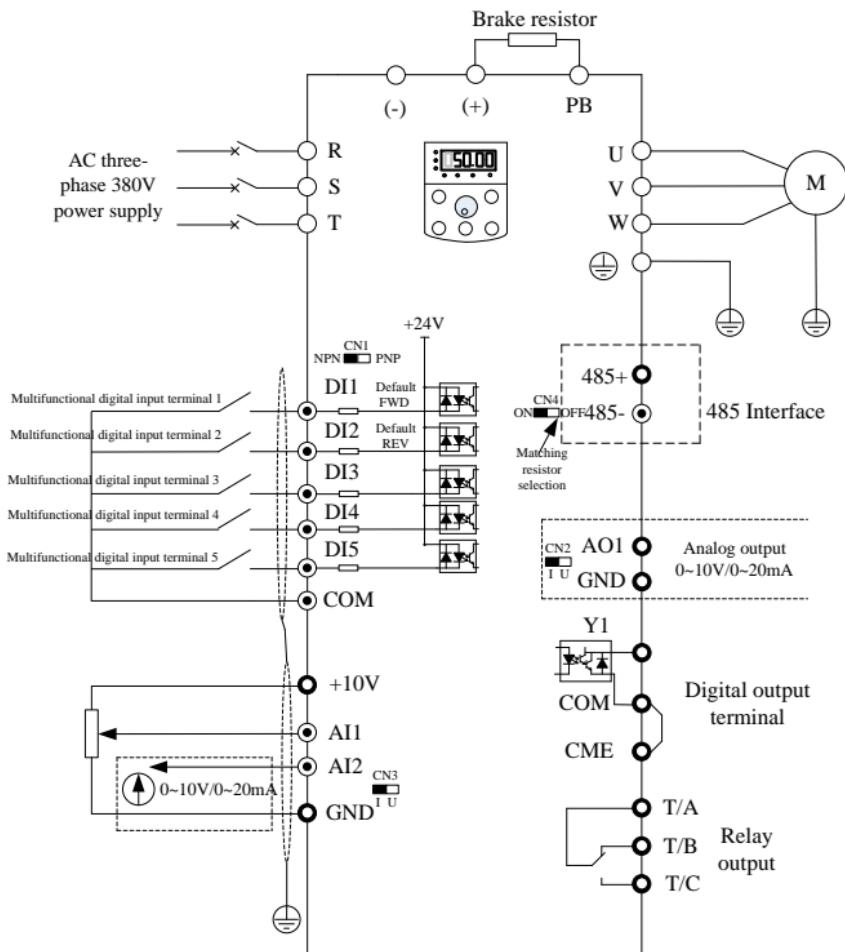


Fig.1. ADV 0.75 C420-M $\sim$ ADV 2.20 C420-M
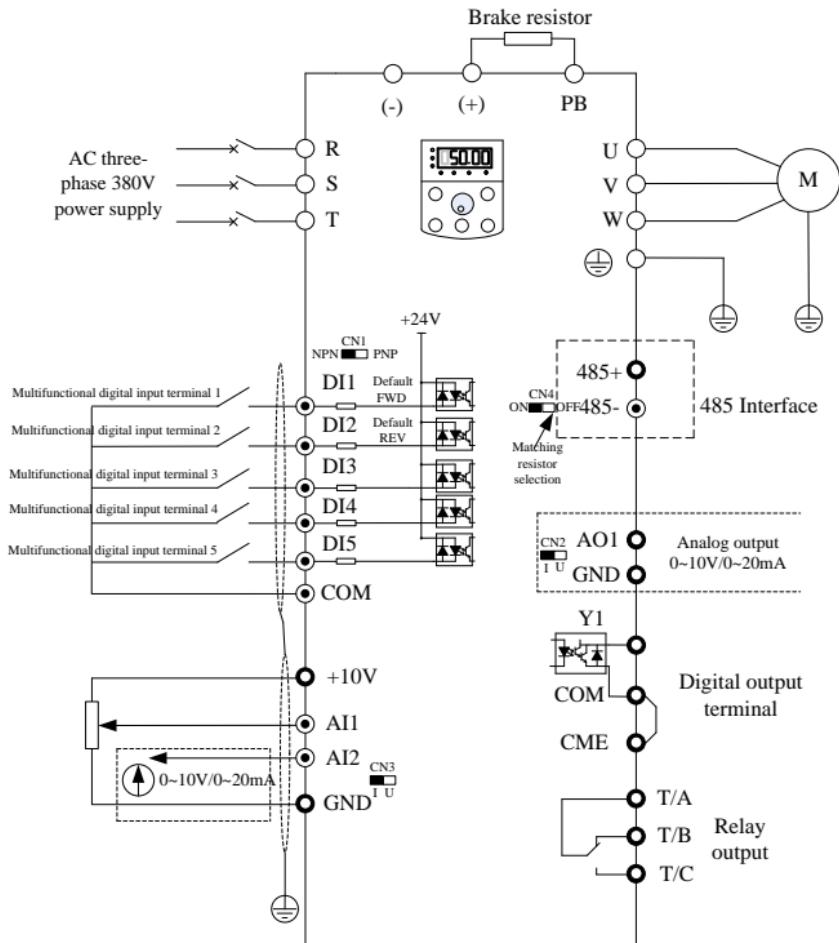
Fig.2. ADV 0.40 C220-M ～ ADV 1.50 C220-M

2. Main Circuit Terminals and Wiring

◇ Danger

1. Make sure that the wiring operation shall be carried out only when the power supply switch is in OFF position, or there may be risk of electric shock..

2. Only the professional technicians who have received training can perform wiring, or it may cause injuries to the equipment and human body.

3. It shall be grounded reliably, or there may be risk of electric shock or fire accident.

⚠ Caution

1. Make sure that the input power supply and the rated value of the inverter shall be consistent, or it may damage the inverter.

2. Make sure that the motor is compatible with the inverter, or the motor may be damaged or inverter protection may be caused.

3. Do not connect the power supply to the U, V, W terminals, or it may damage the inverter.

4. Do not connect the brake resistor to the DC bus terminals (+) and (-) directly, or there may be fire accident.

2.1 Description of main circuit terminals of single-phase inverter:

Terminals	Name	Description
L、N	Single-phase power input terminal	Connect to the AC single-phase 220V power supply
(+)、(-)	Negative and positive terminals of DC bus	Shared DC bus input point
(+)、PB	Connecting terminal of braking resistor	Connect to the braking resistor
U、V、W	Output terminal of inverter	Connect to the three-phase motor
⏚	Grounding terminal	Grounding terminal

2.2 Description of main circuit terminals of three-phase inverter:

Terminals	Name	Description
R、S、T	Three-phase power input terminal	Connect to the AC three-phase 380V power supply
(+)、(-)	Negative and positive terminals of DC bus	Shared DC bus input point
(+)、PB	Connecting terminal for brake resistor.	Connection points for the brake
U、V、W	Output terminal of inverter	Connect to three-phase motor
⏚	Grounding terminal	Grounding terminal

2.3 Wiring Precautions

a) Input power supply terminals L, N, R, S or T:

There is no sequence requirement for the wiring at the Input side of the inverter.

b) DC bus (+) and (-) terminals:

The DC bus (+) and (-) terminals still have residual voltage at the time of power-off. Do not touch the equipment until the charge LED is OFF and the voltage measured with multi meter is less than 36V.

The wire length of the brake unit shall not be longer than 10 meters. Twisted wires or pair wires shall be used and connected in parallel.

Do not connect the braking resistor directly to the DC bus, otherwise, the inverter may be damaged, and fire may be caused.

c) Connecting terminals (+) and PB of brake resistor:

The recommended wiring distance for the brake resistor shall be less than 5m.Otherwise, the inverter may be damaged.

d) Inverter output sides U, V and W:

The inverter output side cannot connect to the capacitor or surge absorber, otherwise, the frequent inverter protection may be caused, or the inverter may be damaged.

If the wire between the motor and the inverter is too long, electrical resonance may be caused due to the influence of the distributed capacitance, thus damaging the motor insulation or produce large leakage current to trigger inverter over current protection. When the length of the motor cable is longer than 100 meters, AC output reactor shall be installed.

e) Grounding terminal ⏚:

The terminal must be grounded reliably, and the resistance of the ground wire must be less than 0.1Ω. Otherwise, fault may be caused, or the inverter may be damaged.

Do not share the grounding terminal ⏚ and terminal N of zero line of the power supply.

3. Operation panel

3.1 Introduction to Operation and Display Interface

Function parameter modification, inverter working status monitoring and inverter running control(start/stop) can be changed on operation panel. Refer to outline and function as shown in Table 4-1
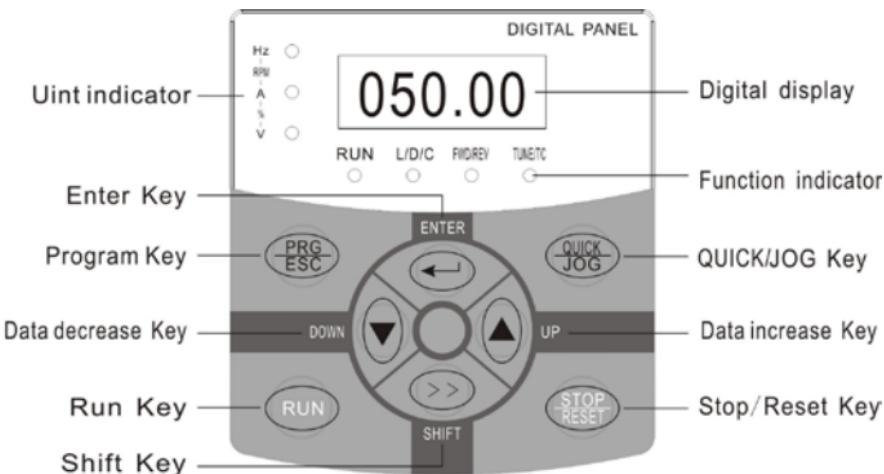
Fig.3 C420
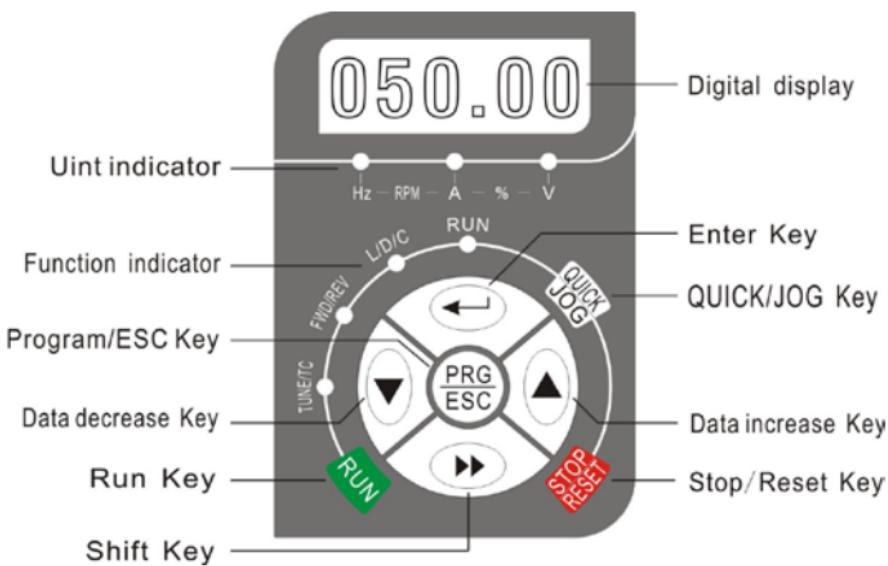
Fig.4 C220
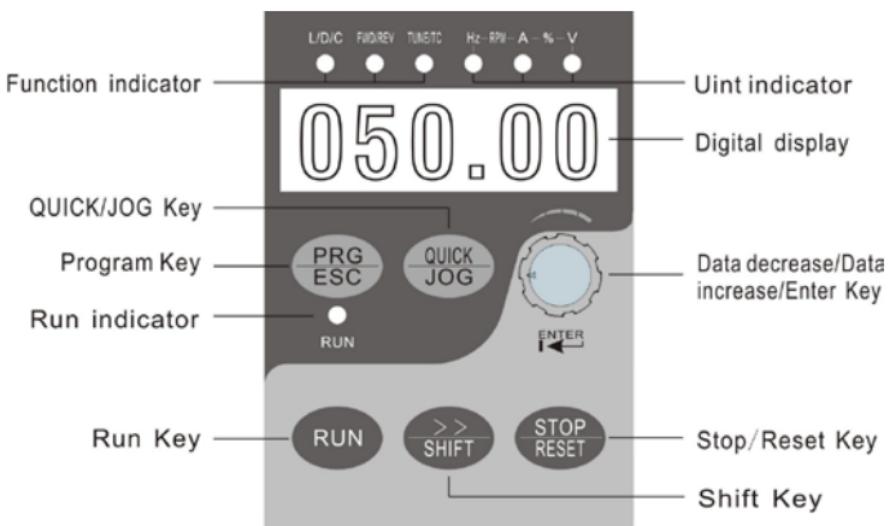
Fig.5 C220/C420-LED

3.1.1 Description of Function LED Indicator

LED Symbol		Unit	Implication	Colour
Unit LED	Hz	Freq.Unit	LED on——indicates frequency	Green
	A	Current Unit	LED on——indicates current	Green
	V	Voltage Unit	LED on——indicates voltage	Green
	RPM	Speed Unit	LED on ——indicates speed	Green
	%	Percent	LED on——indicates percentage values	Green

LED Symbol		Unit	Implication	Colour
Function LED	RUN	running status LED	LED on——in status of running for inverter Light off——in status of stop for inverter	Green
	L/D/C	control mode LED	LED off——in status of keyboard control mode for inverter LED on——in status of terminal control mode for inverter LED flash——in status of remoted communication control mode	Red
	FWD/REV	Running direction LED	LED off——in status of forward rotation LED on——in status of reverse running	Red
	TUNE/TC	tuning/torque LED	LED on——in status of tuning Both LED and RUN LED are on——tuning	Red

3.1.2 Digital display zone:

Five digits LED display is able to show setup frequency ,output frequency ,various monitoring data and alarm code. According to function code F7-29/F7-30 , the user can freely set the data in need ,all the details are shown as function code F7-29/F7-30.

3.1.3 Key Button Description

Tab.1 Keyboard function table

Button	Name	Function
PRG/ESC	Program/ Exit	entry or exit ,return to primary menu
ENTER	ENTER	entry into the menu interface ,confirm the setup parameters
	increase (+)	Increase in the data or function code
	decrease (-)	Decrease in the data or function code
》	shift key	select the displayed parameters in turn on the stop display interface and running display interface ,and select the modification digit of parameters when modifying parameters.
RUN	Run key	used in running operation under keyboard control mode
STOP/RESET	STOP/RESET	In the status of running ,pressing it can stop the running operation; in fault alarm ,can reset operation, this button characteristic is limited
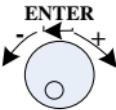
		by the function code F7-02
QUICK/JOG	QUICK/JOG	F7-28 is to set 0 it indicates quick key, F7-28 is to set 1,it shows Jog key, then pressing this key shows in reverse

3.2 Description of Function Code Viewing and Modification Methods

The operation panel of the C220/C420inverter adopts there level menu structure to carry out operation such as parameter setting

The three-level menu includes function parameter set (level 1 menu) →Function code (level 2 menu) →Function code setup value (level 3). Refer to Fig.6 for the operation procedure.
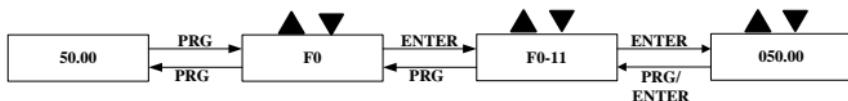
Fig.6 The operation procedure of three-level menu

Caution: when operation on level 3 menu, press PRG key or Enter key to return to level 2 menu. The difference between them is described as follows :Pressing Enter key will save the setup parameter and return to the level 2 menu ,and then automatically shift to the next function code ,while pressing PRG key will directly return to level 2 menu without saving the parameter, and it will return to the current function code.

Example: Modify the function code F2-02 from 50.00H2 to 20.00H2 (the bold-type work indicates the flashing bit)
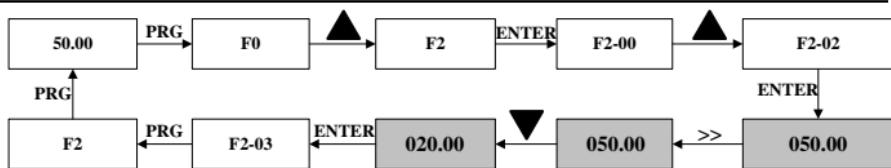
Fig.7 Example of parameter editing operation

Caution: in level 3 menu, if the parameter has no flashing bit ,it indicates that the function code cannot be modified. The possible reasons include:

1）the function code is an unchangeable parameter such as actual detection parameter, running record parameter, etc.

2）the function code is an unchangeable in running, and can be modified in stop

3.3 Method of Viewing Status Parameters

In stop or running, it can display multiple status parameters, and select whether to display the parameter through the function codes F7-29(Led running parameters) and F7-30 (stop parameter) in accordance with binary bits. For the meaning of binary bits, refer to Chapter 6 F7-29 and F7-30

In status of stop, there are seven stop status parameters for selection, namely: setup frequency ,bus voltage, DI input status, DO output status, analog input A11 voltage, PLC running step, the displaying of the selected parameters can be switched by pressing shift key in sequence(displaying of parameters are converted into binary system by F7-30)

In running , there are thirteen running parameters displayed , five parameters are displayed for running frequency ,setup frequency ,bus voltage, output voltage and output current ,other eight parameters for output power ,DI input status, DO output status, analog input A11 voltage ,analog input A12 voltage ,PID setup, PID feedback and PLC, These parameters are displayed in accordance with the selection of F7-29 (converted into binary system).The displaying of the selected parameters can be switched by the button in sequence

When the inverter is restarted on power off, the displayed parameters are the selected parameters before the power off.

3.4 Automatic Tuning of Motor Parameters

To select the vector control running mode ,it must input the nameplate parameter of the motor accurately prior to the running of inverter, The C220/C420inverter will select standard motor parameters matching the nameplate parameter; depending on the motor parameters ,the vector control mode must acquire the accurate parameters of the controlled motor to ensure the good control performance the procedures for the automatic tuning of motor parameters are described below

First, select the command source (F0-04) as the command channel of the operation panel

Second, input the following parameters in accordance with the actual motor parameters

Second, input the following parameters in accordance with the actual motor parameters

F4-01: Rated motor power   F4-02: Rated motor voltage

F4-04: Rated motor current   F4-05: Rated motor Frequency

F4-06: Rated motor speed

If the motor cannot be completely disconnected with the load, select 2 (complete tuning) in F4-00,and then press RUN key on the keyboard panel, the inverter will automatically calculate the following parameters

F4-07: no-load current   F4-08: stator resistance

F4-09: Rotor resistance   F4-10: mutual inductive reactance

F4-11: Leakage inductive reactance.

Finally, complete the automatic tuning of motor parameters

If the motor cannot be totally disconnected with the load, select 1 (static tuning)in

F4-00,and then press RUN key on the keyboard panel

Note: A suggestion from factory said that customer to select the way of complete tuning which is able to help you acquire the motor parameters more accurately.

4. Function Parameter Table

If F7-41 is set to non-zero value, it means parameter protection password is set, and the parameter menu cannot be entered until correct password is input. To cancel the password, it needs to set F7-41 to "0".

The parameters in the shortcut menu are free from password protection.

The symbols in the function table are described as follows:

"   ☆":

It indicates that the parameter setup value can be modified when the inverter is in Stop status and running status.

"   ★":

It indicates that the parameter setup value cannot be modified when the inverter is in the running status.

"○":

It indicates that the numerical value of the parameter is the actually measured value, which cannot be modified.

"●":

It indicates this parameter is "Factory default parameter" and can be set only by the manufacturer.

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
Group F0 Basic Function					
F0-00	Software version	-	-	#.#	●
F0-01	Model display	0：G model	0	0	●
F0-02	Rated current	-	0.1A	model dependent	●
F0-03	control mode	0：open loop flux vector control 1 1：open loop flux vector control 2 2：V/F control	1	0	★
F0-04	command source selection	0：operation panel command channel（LED OFF） 1：terminal command channel（LED ON） 2：Serial port command channel（LED flashes）	1	0	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F0-06	Main frequency source X	0：digital setup UP、DOWN(non-recorded) 1：digital setup UP、DOWN(recorded) 2：AI1 3：AI2 4：MS speed 5：PLC 6：PID 7：Fixed communication	1	1	★
F0-07	Auxiliary Frequency source Y selection	0：digital setup UP、DOWN(non-recorded) 1：digital setup UP、DOWN(recorded) 2：AI1 3：AI2 4：MS speed 5：PLC 6：PID 7：Fixed communication	1	0	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F0-08	Auxiliary Frequency source Y relative value selection	0 ： Relatively maximun frequency 1：Relatively frequency source X	1	0	☆
F0-09	Auxiliary Frequency source Y	0%～100%	1%	100%	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F0-10	Frequency source selection	0：main frequency source X 1：main frequency source X+auxiliary frequency source Y 2：Switching between the main frequency source X and the auxiliary frequency source Y 3：Switching between the main frequency source X and (the main frequency source X+ the auxiliary frequency source Y) 4：Switching between the auxiliary frequency source Y (the main frequency source X+ the auxiliary frequency source Y) 5：Maximum of the main frequency source X and of the auxiliary frequency sourceY	1	0	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F0-11	Preset frequency	0.00Hz ～ 0.00 to max. frequency F0-14	0.01Hz	50.00 Hz	☆
F0-13	Running direction	0：direction is consistent 1：direction is reverse 2：no reverse	1	0	★
F0-14	Maximum frequency	50.00Hz～400.00Hz	1	50.00	★
F0-15	frequency source of upper limit	0：F0-16 setup 1：AI1 2：AI2 3：Communication setup	1	0	★
F0-16	frequency upper	frequency lower limit F0-18 to maximum frequency F0-14	0.01Hz	50.00 Hz	☆
F0-17	Frequency upper limit offset	0.00Hz to maximum frequency F0-14	0.01Hz	0.00Hz	☆
F0-18	frequency lower limit	0.00Hz to frequency upper limit F0-16	0.01Hz	0.00Hz	☆
F0-23	speed-up time 1	0.0s～3000.0s	0.1s	20.0s	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F0-24	speed–down time 1	0.0s～3000.0s	0.1s	20.0s	☆
F0-26	Carrier frequency	1.0kHz～15.0kHz	0.1kHz	Type determination	☆
F0-27	Carrier frequency adjustment selection	0 : fixed PWM, carrier frequency temperature adjustment inactive 1 : random PWM, carrier frequency temperature adjustment inactive 2：PWM, carrier frequency temperature adjustment inactive 3 : random PWM, carrier frequency temperature adjustment active	1	2	☆
F0-28	parameter initialization	0：none 1：restore factory default value 2： previous user parameters upon power failure 3：fault record	1	0	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
Group F1 start/stop control					
F1-00	start mode	0：direct start 1：speed tracking restart	1	0	★
F1-01	start model	0：beginning from stop frequency 1：beginning from zero speed 2：beginning from maximum frequency	2	0	★
F1-02	speed tracking maximum current	30%～180%	1%	100%	☆
F1-03	speed tracking Fastness and Slowness	1～100	1	20	☆
F1-04	Start up frequency	0.00Hz～10.00Hz	0.01Hz	0.00Hz	★
F1-05	start frequency retention time	0.0s～36.0s	0.1s	0.0s	★
F1-06	DC break current at start	0%～100%	%	0%	★
F1-07	DC break time at start	0.0～36.0s	0.1s	0.0s	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F1-09	S curve acceleration start time	0.00s～25.00s	0.01s	1.00s	★
F1-10	S-curve acceleration end time	0.00s～25.00s	0.01s	1.00s	★
F1-11	S curve deceleration start time	0.00s～25.00s	0.01s	1.00s	★
F1-12	S-curve deceleration end time	0.00s～25.00s	0.01s	1.00s	★
F1-13	Stop model	0: deceleration stop 1: free stop	1	0	☆
F1-14	brake beginning frequency at stop	0.00Hz～F0-14	0.01Hz	0.00Hz	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F1-16	DC brake current at stop	0%～100%	1%	0%	★
F1-17	DC brake time at stop	0.0s～36.0s	0.1s	0.0s	★
F1-18	Brake use ration	0%～100%	%	100%	☆
F1-19	power interruption restart	0：Inactive 1：Start from stop frequency 2：Start from minimum frequency 3：Direct start	1	0	★
F1-20	Permissible time on power supply off	0.0s～5.0s	0.1s	1.0s	☆
F1-21	power interruption recovery waiting time	0.0s～50.0s	0.1s	1.0s	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F1-23	Transient stop/ non-stop function selection	0：Invalid 1：Valid	1	0	☆
F1-24	Transient stop/ non-stop frequency reduction rate	0～3	1	1	★
Group F2 V/F Control Parameters					
F2-00	curve setup	0：Straight V/F curve 1：Multiple point V/F curve 2：Square VF curve	0	0	★
F2-01	Torque boost	0.0%～30.0%	0.1%	1.0%	☆
F2-02	cut off frequency of torque boost	0.00Hz ～ maximum output frequency	0.01Hz	30.00 Hz	★
F2-03	V/F Frequency Point 1 F1	0.00Hz～rated frequency for motor	0.01Hz	0.00H z	★
F2-04	V/F voltage Point 1 V1	0.0%～100.0%	0.1%	0.0%	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F2-05	V/F Frequency Point 2 F2	0.00Hz ~ rated frequency for motor	0.01Hz	0.00Hz	★
F2-06	V/F voltage Point 2 V2	0.0% ~ 100.0%	0.1%	0.0%	★
F2-07	V/F Frequency Point 3 F3	0.00Hz ~ rated frequency for motor	0.01Hz	0.00Hz	★
F2-08	V/F voltage Point 3 V3	0.0% ~ 100.0%	0.1%	0.0%	★
F2-09	skip compensation coefficient	0.0% ~ 200.0%	0.1%	0.0%	☆
F2-10	AVR	0: inactive 1: enabled 2: inactive only at the time of deceleration	1	2	☆
F2-11	Oscillation suppression gain	0 ~ 100	1	0	☆
F2-12	automatic energy saving	0: Inactive 1: Active	1	0	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
Group F3 Vector Control Parameters					
F3-00	switching frequency F1	1.00Hz～F0-14	0.01Hz	10.00	☆
F3-01	Switching width W1	0.00Hz～F0-14	0.01Hz	5.00	☆
F3-02	switching frequency F2	10.00Hz～F0-14	0.01Hz	50.00	☆
F3-03	Switching width W2	0.00Hz～F0-14	0.01Hz	5.00	☆
F3-04	Medium Frequency Speed proportional gain	10～1000	1	100	☆
F3-05	Medium Frequency Speed Integration time	0.01s～10.00s	0.01s	1.20	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F3-06	Low Frequency Speed proportional gain	$10\sim1000$	1	120	☆
F3-07	Low Frequency Speed integration time	$0.01s\sim10.00s$	0.01s	1.00s	☆
F3-08	High Frequency proportional gain	$10\sim1000$	1	80	☆
F3-09	High Frequency Speed integration time	$0.01s\sim10.00s$	0.01s	2.00s	☆
F3-10	flux weakening curve gain	$20\%\sim150\%$	1%	100%	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F3-15	System inertia value	1～65535[0.0001kg*m^2]	1	64	☆
F3-16	torque boost at low frequency	0%～200%	1%	100%	☆
F3-17	skip compensation coefficient	50%～200%	1%	100%	☆
F3-18	time constant of speed command	0ms～65535ms	1ms	10ms	★
F3-19	time constant of speed loop	0.000s～0.100s	s	0.000 s	☆
F3-20	torque upper limit source	0：F3-21 1：AI1 2：AI2 3：Communication setup	1	0	☆
F3-21	Torque upper limit	0.0%～200.0%	0.1%	180.0 %	☆
Group F4 Motor Parameters					

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F4-00	Motor tuning selection	0：None 1：Static tuning 2：complete tuning	1	0	★
F4-01	Rated power	0.4kw～1000.0kw	0.1kw	model dependent	★
F4-02	Rated voltage	0V～440V	1V	model dependent	★
F4-03	motor poles	2～64	2	4	★
F4-04	Rated current	0.1A～3000.0A	0.1A	model dependent	★
F4-05	Rated frequency	0.00Hz～F0-14	0.01Hz	50.00	★
F4-06	Rated rotation speed	0rpm～30000rpm	1rpm	model dependent	★
F4-07	No load current	0.1A～1500.0A	0.1A	model dependent	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F4-08	Stator resistance	$0.001\Omega\sim65.535\Omega$	0.001Ω	model dependent	☆
F4-09	Rotor resistance	$0.001\Omega\sim65.535\Omega$	0.001Ω	model dependent	☆
F4-10	Mutual inductive reactance	$0.1mH\sim655.35\ mH$	$0.1\ mH$	model dependent	☆
F4-11	Leakage Inductive reactance	$0.01mH\sim65.535mH$	$0.01\ mH$	model dependent	☆
F4-12	Complete tuning acceleration	$1\sim60000$	1	5000	☆
F4-13	Complete tuning Deceleration	$1\sim60000$	1	5000	☆
Group F5 Input Terminal					
F5-00	DI1 terminal function selection	0：None 1：Forward rotation (FWD) 2：Reverse rotation (REV)	1	1	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F5-01	DI2 terminal Function selection	3： Three-line mode running control 4： Forward rotation Jog (FJOG)	1	2	★
F5-02	DI3 terminal function selection	5：Reverse rotation Jog (RJOG) 6： Terminal UP 7： Terminal DOWN 8： Free stop	1	9	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F5-03	DI4 terminal Function selection	9：Fault reset (RESET) 10：Running pause 11：External fault normally open input 12：MS speed terminal 1 13：MS speed terminal 2 14：MS speed terminal 3 15：MS speed terminal 4 16：Speed-up/speed-down time selection terminal 1 17：Speed-up/speed-down time selection terminal 2 18：Frequency source switching 19：UP and DOWN setup clear (terminal and keyboard) 20：Running command switching terminal 21：Speed-up/speed-down inactive 22：PID Pause 23：PLC status reset 24：Swing frequency pause 25：Timer trigger input	1	12	★

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F5-10	DI filter time	1ms～100ms	1ms	10ms	☆
F5-11	Terminal command mode	0：Two-line mode 1 1：Two-line mode 2 2：Three-line mode 1 3：Three-line mode 2	1	0	★
F5-12	Terminal UP/DOWN Speed	0.01Hz/s～100.00Hz/s	0.01Hz/s	1.00Hz/s	☆
F5-15	AI1 minimum input	0.00V～10.00V	0.01V	0.00V	☆
F5-16	AI1 minimum input corresponding setup	-100.0%～100.0%	0.1%	0.0%	☆
F5-17	AI1 maximum input	0.00V～10.00V	0.01V	10.00V	☆
F5-18	AI1 maximum input corresponding setup	-100.0%～100.0%	0.1%	100.0%	☆
F5-19	AI1 input filter time	0.00s～10.00s	0.01s	0.10s	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F5-20	AI2 minimum input	0.00V～10.00V	0.01V	0.00V	
F5-21	AI2 minimum input corresponding setup	-100.0%～100.0%	0.1%	0.0%	☆
F5-22	AI2 maximum input	0.00V～10.00V	0.01V	10.00 V	☆
F5-23	AI2 maximum input corresponding setup	-100.0%～100.0%	0.1%	100.0 %	☆
F5-24	AI1 input filter time	0.00s～10.00s	0.01s	0.10s	☆
Group F6 Output Terminal					
F6-00	Control board RELAY 1 output selection	0：None 1：In running 2：Fault output	1	2	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F6-02	Y1 output selection	3：Frequency Level detection FDT arrival 4：Frequency arrival 5：In zero speed 6：Motor overload pre-alarm 7：Inverter overload pre-alarm 8：PLC cycle finished 9：Running time off 10：In frequency limited 11：Ready for running 12：AI1>AI2 13：Frequency upper limit arrival 14：Frequency lower limit arrival 15：Under voltage status output 16：Communication setting 17：Timer output function	1	1	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F6-09	AO1 output selection	0：Running frequency 1：Setup frequency 2：Output current 3：Output power 4：Output voltage 5：AI1 6：AI2 7：Communication setup	1	0	☆
F6-12	AO1 offset coefficient	-100.0%～100.0%	0.1%	0.0%	☆
F6-13	AO1 gain	-10.00V～10.00V	0.01V	1.00V	☆
Group F7 Auxiliary Function and Man-Machine Interface Function					
F7-00	Jog running frequency	0.00Hz～maximum frequency	0.01Hz	6.00Hz	☆
F7-01	Jog speed up time	0.0s～3000.0s	0.1s	20.0s	☆
F7-02	Jog speed down time	0.0s～3000.0s	0.1s	20.0s	☆
F7-03	Speed up time 2	0.0s～3000.0s	0.1s	20.0s	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F7-04	Speed down time 2	0.0s～3000.0s	0.1s	20.0s	☆
F7-05	Speed up time 3	0.0s～3000.0s	0.1s	20.0s	☆
F7-06	Speed down time 3	0.0s～3000.0s	0.1s	20.0s	☆
F7-07	Speed up time 4	0.0s～3000.0s	0.1s	20.0s	☆
F7-08	Speed down time 4	0.0s～3000.0s	0.1s	20.0s	☆
F7-09	skip frequency 1	0.00Hz～maximum frequency	0.01Hz	0.00Hz	☆
F7-10	skip frequency 2	0.00Hz～maximum frequency	0.01Hz	0.00Hz	☆
F7-11	skip frequency 3	0.00Hz～maximum frequency	0.01Hz	0.00Hz	☆
F7-12	skip frequency 4	0.00Hz～maximum frequency	0.01Hz	0.00Hz	☆
F7-13	skip frequency 5	0.00Hz～maximum frequency	0.01Hz	0.00Hz	☆
F7-14	skip frequency 6	0.00Hz～maximum frequency	0.01Hz	0.00Hz	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F7-15	Forward/Reverse rotation dead-zone time	0.0s～3000.0s	0.1s	0.0s	☆
F7-17	Setup frequency is lower than frequency lower limit action	0：run with the frequency lower limit 1：stop 2：run with zero speed	1	0	☆
F7-18	Droop control	0.00Hz～10.00Hz	0.01Hz	0.00Hz	☆
F7-19	The delay time for frequency is lower than the lower limit at stop	0.0s～600.0s	0.1s	300.0s	☆
F7-20	Setup running time	0h～65535h	1h	65535h	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F7-22	Frequency test value(FDT level)	0.00Hz～maximum frequency	0.01Hz	50.00 Hz	☆
F7-23	Frequency test hysteresis(FDT hysteresis)	0.0%～100.0%（FDT level）	0.1%	5.0%	☆
F7-24	Frequency arrival test amplitude	0.0%～100.0% maximum frequency）	0.1%	0.0%	☆
F7-26	Running time to action selection	0：keep running 1：stop	1	0	★
F7-27	STOP/RESET Function	0：active in keyboard control mode 1：stop function is active under terminal control 2：stop reset function is active under terminal control 3：both stop and fault reset on stop key are active under terminal control	1	0	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F7-28	Keyboard JOG function	0: Jog function key 1: switching function key on forward/reverse rotation	1	0	★
F7-29	LED operation display parameters	1～16383	1	1023	☆
F7-30	LED stop display parameters	1～127	1	63	☆
F7-31	Load speed Display coefficient	0.001～10.000	0.001	1.000	☆
F7-32	Radiator temperature	0 ℃100 ℃	1 ℃	-	●
F7-34	Accumulated running time (minutes)	0～1440	1min	0	●
F7-35	Accumulated running time (days)	0～65535	1day	0	●

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F7-36	Fan control selection	0：fan keeps running 1：stop running for one minute and stop 2：action with start /stop on the driver 3：checking the temperature on radiator to reach 50 then restart	1	1	☆
F7-37	Water supply sleeping function	0：invalidation 1：validation	1	0	☆
F7-38	Restart delay time after sleeping	0.0s～600.0s	0.1s	1.0s	☆
F7-39	Timing time in the status of DI -on	0.0s～6000.0s	0.1s	2.0s	☆
F7-40	Timing time in the status of DI-off	0.0s～6000.0s	0.1s	2.0s	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F7-41	Starting protection function	0: invalidation 1: validation	1	1	☆
F7-42	Delay time for direct start upon power	1.0s～60.0s	0.1s	1.0s	☆
F7-49	User password	0～65535	1	00000	☆
Group F8 Communication Parameter Description					
F8-00	Baud rate	0: 300BPS 1: 600BPS 2: 1200BPS 3: 2400BPS 4: 4800BPS 5: 9600BPS 6: 19200BPS 7: 38400BPS	1	5	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F8-01	Data format	0 ： No check: data format<8,N,2> 1：Even parity check :data format <8,E,1> 2：Odd parity check :data format<8,O,1>	1	0	☆
F8-02	Local Add.	0～247(0 is broadcast address)	1	1	☆
F8-03	Response delay	0ms～20ms	1ms	10ms	☆
F8-04	Communication overtime	0.0s～60.0s	0.1s	0.0s	☆
Group F9 Fault and Protection					
F9-00	Motor overload protection selection	0：Inactive 1：Active	1	1	☆
F9-01	Motor overload protection gain	0.20～10.00	0.01	1.00	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-02	Motor over load pre-warning coefficient	50%～100%	1%	80%	☆
F9-03	Stall gain over voltage	0%～100%	1	50%	☆
F9-04	Stall protection voltage over voltage	120%～150%	1%	130%	☆
F9-05	Stall gain over current	0～100	1	20	☆
F9-06	Stall protection current over current	100%～200%	1%	180%	☆
F9-11	Fault auto reset times	0～3	1	0	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-12	Fault relay action selection during the fault auto reset	0: No action 1: Action	1	0	☆
F9-13	Fault auto reset interval	0.1s～100.0s	0.1s	1.0	☆
F9-14	Input phase failure protection selection	0: Inactive 1: Active	1	1	☆
F9-15	Output phase failure protection selection	0: Inactive 1: Active	1	1	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-16	First fault type	0：None 1：Inverter Unit Protection（ERR01） 2：Hardware Over Current（ERR02） 3：Hardware Over Voltage（ERR03） 4：Acceleration Over Current（ERR04） 5：Deceleration Over Current（ERR05） 6：Constant Speed Over Current（ERR06） 7：Stop Over Current（ERR07） 8：Acceleration Over Voltage（ERR08）	—	—	●

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-17	Second Fault type	9：Deceleration Over Voltage（ERR09） 10：Constant Speed Over Voltage（ERR10） 11：Stop Over Voltage(ERR11) 12：Under voltage fault（ERR12） 13：Inverter Overload（ERR13） 14：Motor Overload（ERR14） 15：Module Over Heat（ERR15） 16：AD Converter Fault（ERR16）	—	—	●

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-18	Three fault type	17：IU Fault Current Detection （ERR17） 18：IV Fault Current Detection （ERR18） 19：IW Fault Current Detection （ERR19） 20：Earth Short Circuit Fault （ERR20） 21：Motor Tuning Fault （ERR21） 22：Reserve（ERR22） 23：Phase Loss At The Input Side	－	－	●

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-19	Most Recen fault type	（ERR23） 24：Phase failure at output side （ERR24） 25：Parameter Storage Fault （ERR25） 26：Wrong Password Three Times （ERR26） 27：Communications Fault （ERR27） 28：External equipment fault （ERR28）	—	—	●
F9-20	Frequency upon fault	—	—	—	●
F9-21	Current upon fault	—	—	—	●
F9-22	Bus voltage upon fault	—	—	—	●
F9-23	Input terminal status upon fault	—	—	—	●

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
F9-24	Output terminal upon fault	—	—	—	●
Group FA Process Control PID Function					
FA-00	PID reference source	0：FA-01 1：AI1 2：AI2 3：Communication setup	1	0	☆
FA-01	PID keyboard reference	0.0%～100.0%	0.1%	50.0%	☆
FA-02	PID reference change duration	0.0s～3000.0s	0.1s	0.0s	☆
FA-03	PID feedback source	0：AI1 1：AI2 2：AI1-AI2 3：Communication setup	1	0	☆
FA-04	PID action direction	0：Positive action 1：Reverse action	1	0	☆
FA-05	PID reference feedback range	0～65535	1	1000	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FA-06	Proportional gain P	0.0～100.0	0.1	20.0	☆
FA-07	Integration time l	0.01s～10.00s	0.01s	2.00s	☆
FA-08	Differential time D	0.00s～10.00s	0.01s	0.00s	☆
FA-09	Cutoff frequency of reverse rotation	0.00Hz～maximum frequency	0.01Hz	2.00 Hz	☆
FA-10	Deviation limit	0.0%～100.0%	0.1%	0.0%	☆
Group FB Swing Frequency					
FB-00	Swing frequency setup mode	0 : Relative to the central frequency 1 : Relative to maximum frequency	0	0	☆
FB-01	Swing frequency amplitude	0.0%～100.0%	0.1%	0.0%	☆
FB-02	Kick frequency amplitude	0.0%～50.0%	0.1%	0.0%	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FB-03	Swing frequency cycle	0.1s～3000.0s	0.1s	10.0s	☆
FB-04	Time constant of triangular wave boost	0.1%～100.0%	0.1%	50.0%	☆
Group FC MS Speed Function and Simple PLC Function					
FC-00	MS Speed 0	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-01	MS Speed 1	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-02	MS Speed 2	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-03	MS Speed 3	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-04	MS Speed 4	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-05	MS Speed 5	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-06	MS Speed 6	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-07	MS Speed 7	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-08	MS Speed 8	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-09	MS Speed 9	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-10	MS Speed 10	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-11	MS Speed 11	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-12	MS Speed 12	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-13	MS Speed 13	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-14	MS Speed 14	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-15	MS Speed 15	negative maximum frequency to maximum frequency	0.1Hz	0.0Hz	☆
FC-16	PLC running mode	0: stop at the end of one-time running 1: keep final value at the end of one-time running 2: constant circulation	1	0	☆
FC-17	PLC power off memory selection	0: power off without memory 1: power off with memory	0	0	☆
FC-18	PLC Segment 0 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-19	PLC Segment 0 speed-up /down time	0～3	1	0	☆
FC-20	PLC Segment 1 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-21	PLC Segment 1 speed-up /down time	0～3	1	0	☆
FC-22	PLC Segment 2 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-23	PLC Segment 2 speed-up /down time	0～3	1	0	☆
FC-24	PLC Segment 3 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-25	PLC Segment 3 speed-up /down time	0～3	1	0	☆
FC-26	PLC Segment 4 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-27	PLC Segment 4 speed-up /down time	0～3	1	0	☆
FC-28	PLC Segment 5 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-29	PLC Segment 5 speed-up /down time	0～3	1	0	☆
FC-30	PLC Segment 6 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-31	PLC Segment 6 speed-up /down time	0～3	1	0	☆
FC-32	PLC Segment 7 Running Time	0.0～6553.5s(h)	0.1s（h）	0.0s （h）	☆
FC-33	PLC Segment 7 speed-up /down time	0～3	1	0	☆
FC-34	PLC Segment 8 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s （h）	☆
FC-35	PLC Segment 8 speed-up /down time	0～3	1	0	☆
FC-36	PLC Segment 9 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s （h）	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-37	PLC Segment 9 speed-up /down time	0～3	1	0	☆
FC-38	PLC Segment 10 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-39	PLC Segment 10 speed-up /down time	0～3	0.1s（h）	0.0s（h）	☆
FC-41	PLC Segment 11 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-41	PLC Segment 11 speed-up /down time	0～3	1	0	☆
FC-42	PLC Segment 12 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-43	PLC Segment 12 speed-up /down time	0～3	1	0	☆
FC-44	PLC Segment 13 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-45	PLC Segment 13 speed-up /down time	0～3	1	0	☆
FC-46	PLC Segment 14 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆
FC-47	PLC Segment 14 speed-up /down time	0～3	1	0	☆
FC-48	PLC Segment 15 Running Time	0.0s(h)～6553.5s(h)	0.1s（h）	0.0s（h）	☆

Function code	Name	Setup Range	Minimum Unit	Factory Default Value	Change
FC-49	PLC Segment 15 speed-up /down time	0～3	1	0	☆
FC-50	PLC Running time unit selection	0：s 1：h	1	0	☆
Group FD、FE Reserve					
Group FF Factory Parameter					
FF-00	Factory Parameter Password	******	*	******	☆