Preface

Thank you for choosing SINEE's EM730-PV series inverter.

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The EM730-PV inverter is a high-reliable and small-sized universal inverter which designed specifically for solar water pumps launched by SINEE. EM730-PV supports three-phase AC asynchronous motors and permanent magnet synchronous motors.

Features of the EM730-PV series inverter:

- Supports single-phase/three-phase 200V~240V, three-phase 340V~460V water pump; power from 0.4kW~110kW, frequency range : 0~400Hz.
- Solar tracking efficiency up to 99%.
- Supports optional GPRS module, enabling remote monitoring via computer or mobile APP.
- Models of 4kW and below are equipped with optional boost modules to meet low-voltage working requirements, save solar panels and reduce costs.
- The entire series can switch freely between photovoltaic input and grid input, enabling 24 hours of maintenance-free operation.
- Water source water shortage protection, water pump dry-run/underload protection (Dry-run protection), reservoir full protection, light-weak sleep and wake-up/low voltage input protection, water pump stalled overload protection.

Before using the EM730 series inverter, please read this manual carefully and keep it properly.

While connecting the inverter to motor for the first time, please select the motor type (asynchronous or synchronous) correctly and set the motor nameplate parameters: rated power, rated voltage, rated current, rated frequency, rated speed, motor connection, rated power factor, etc.

Since we are committed to continuously improving our products and product data, the data provided by us may be modified without prior notice.

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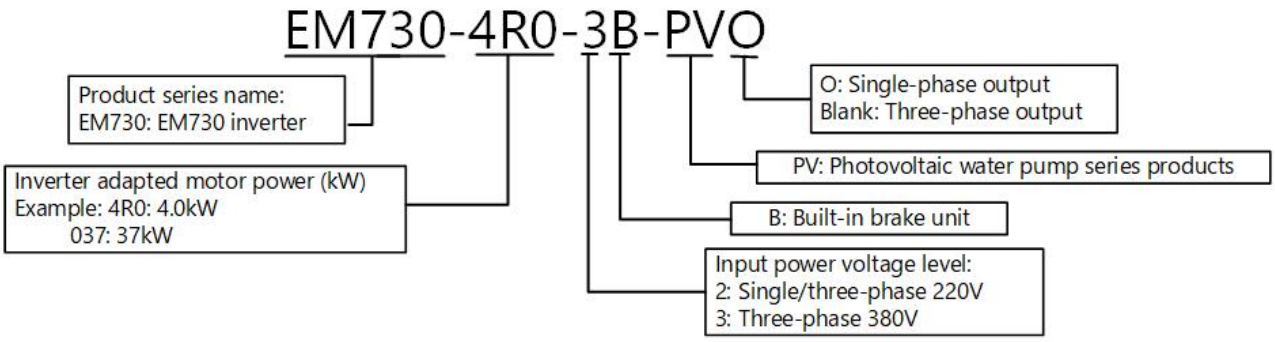
Part 1 Product Specifications

1.1 Naming Convention



1.2 Product Model

Rated power supply voltage	Model	Applicable motor power (kW)	Rated output current (A)
Single-phase output Single-phase/three-phase AC 200~240V input/ Single-phase DC 200~450V input	EM730-0R4-2B-PVO	0.4	4.8
	EM730-0R7-2B-PVO	0.75	8.0
	EM730-1R5-2B-PVO	1.5	10
	EM730-2R2-2B-PVO	2.2	17
	EM730-4R0-2B-PVO	4.0	32
Single-phase/three-phase AC 200~240V input/ Single-phase DC 200~450V input	EM730-0R4-2B-PV	0.4	2.8
	EM730-0R7-2B-PV	0.75	4.8
	EM730-1R5-2B-PV	1.5	8
	EM730-2R2-2B-PV	2.2	10
Three-phase AC 340～460V input/ Single-phase DC 250~900V input	EM730-0R7-3B-PV	0.75	2.5
	EM730-1R5-3B-PV	1.5	4.2
	EM730-2R2-3B-PV	2.2	5.6
	EM730-4R0-3B-PV	4.0	9.4
	EM730-5R5-3B-PV	5.5	13
	EM730-7R5-3B-PV	7.5	17
	EM730-011-3B-PV	11	25
	EM730-015-3B-PV	15	32
	EM730-018-3B-PV	18.5	38
	EM730-022-3B-PV	22	45
	EM730-030-3/3B-PV	30	60

	EM730-037-3/3B-PV	37	75
	EM730-045-3-PV	45	90
	EM730-055-3-PV	55	110
	EM730-075-3-PV	75	150
	EM730-090-3-PV	90	176
	EM730-110-3-PV	110	210

1.3 Product Specifications

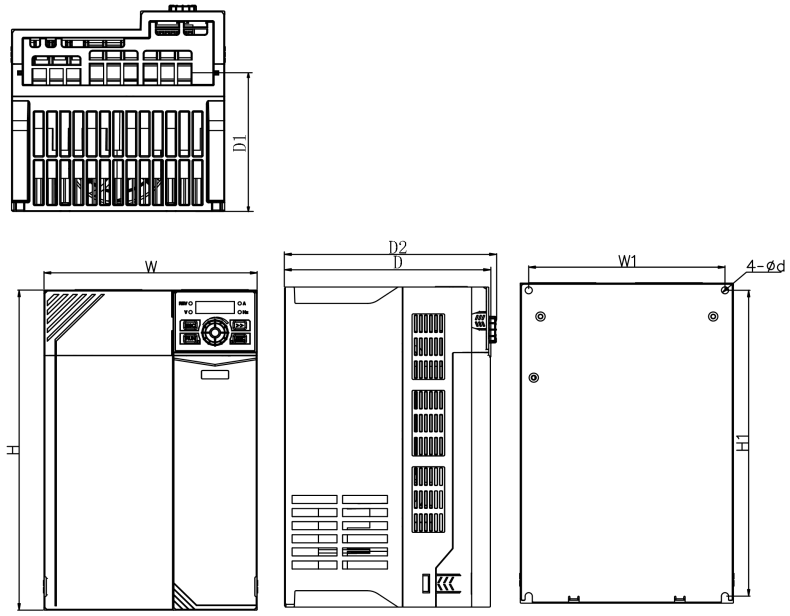
Item		Specification
Power supply	Rated voltage of power supply	2B： MPPT Range 200~450VDC; Single phase/Three phase AC 200V-10% ～ 240V+10%; 50/60HZ±5% 3/3B ： MPPT Range 250~900VDC; Three phase AC 340V-10% ～ 460V+10%; 50/60HZ±5%
Output	Maximum output voltage	The maximum output voltage is the same as the input power voltage.
	Rated output current	Continuous output of 100% rated current
	Maximum overload current	150% rated current 60s 120% rated current 60s
Basic control functions	Drive mode	V/F control (VVF); speed sensorless vector control (SVC)
	Input mode	Frequency (speed) input, torque input
	Start and stop control mode	Keyboard, control terminal (two-line control and three-line control), communication
	Frequency control range	0.00~600.00Hz/0.0~3000.0HZ
	Input frequency resolution	Digital input: 0.01Hz/0.1Hz Analog input: 0.1% of maximum frequency
	Speed control range	1:50 (VVF), 1:200 (SVC)
	Speed control accuracy	Rated synchronous speed ± 0.2%
	Acceleration and deceleration time	0.01 s to 600.00 s / 0.1 s to 6,000.0 s / 1 s to 60,000 s
	Voltage/frequency characteristics	Rated output voltage: 20% to 100%, adjustable Reference frequency: 1Hz to 600Hz/3,000Hz

	Torque boost	Fixed torque boost curve Any V/F curve is acceptable.
	Starting torque	150%/1Hz (VVF) 150%/0.25Hz (SVC)
	Torque control accuracy	±8% rated torque (SVC)
	Self-adjustment of output voltage	When the input voltage changes, the output voltage will basically remain unchanged.
	Automatic current limit	Output current is automatically limited to avoid frequent overcurrent protection actions.
	DC braking	Braking frequency: 0.01 to maximum frequency Braking time: 0～30s Braking current: 0% to 150% rated current
	Signal input source	Communication, multi-speed, analog, etc.
Input and output function	Reference power supply	10V/20mA
	Terminal control power	24V/100mA
	Digital input terminal	5-channel digital multi-function input: X1~X5 X5 can be used as the high-speed pulse input (max 100kHZ).
	Analog input terminal	2-channel analog inputs: One (AI1) voltage source: -10 to 10V input; One channel (AI2): 0 to 10V input voltage or 0 to 20mA input current optional;
	Digital output terminal	Multi-function output of one open collector and one relay Maximum output current of the collector: 50mA; Relay contact capacity: 250VAC/3A or 30VDC/1A, EA-EC: normally open; EB-EC: normally closed
	Analog output terminal	One multi-function analog terminal output M1: 0-10V/0-20mA multi-function analog output terminal
Keyboard	LED display	The LED digital tube displays relevant information about the inverter.
Protection	Protective Function	Short circuit, overcurrent, overvoltage, undervoltage, phase loss, overload, overheat, load loss, external protection, water source water shortage protection, water pump dry-run/underload protection (Dry-run protection), reservoir full protection, light-weak sleep and wake-up/low voltage input protection, water pump

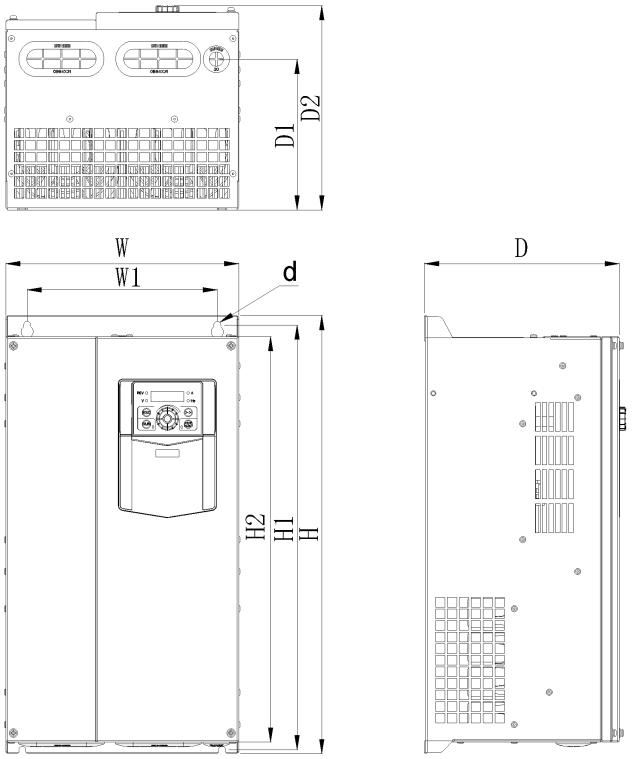
		stalled overload protection etc.
Use conditions	Location	Indoor, at an altitude of less than 1 km, free of dust, corrosive gases and direct sunlight. When the altitude is higher than 1km, it is derated by 1% per 100m. The maximum allowable altitude is 3km.
	Applicable environment	-10℃ to +50℃, 5% to 95%RH (no condensation). When the ambient temperature exceeds 50°C, it needs to be derated by 3% per 1°C temperature rise. The maximum allowable ambient temperature is 60°C.
	Vibration	Less than 0.5g
	Storage environment	-40℃～+70℃
	Installation method	Wall-mounted or installed in the cabinet
Levels of protection		IP20/IP21 (with plastic baffle)
Cooling method		Forced air cooling

Part 2 Product Size

2.1 Product Appearance Drawings



(a)



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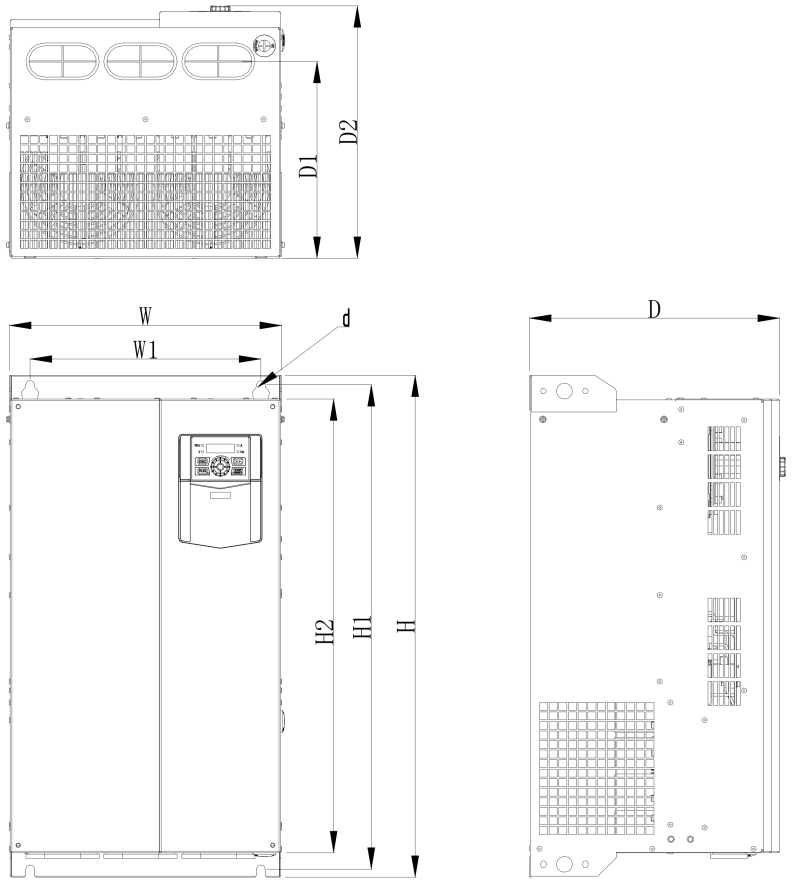

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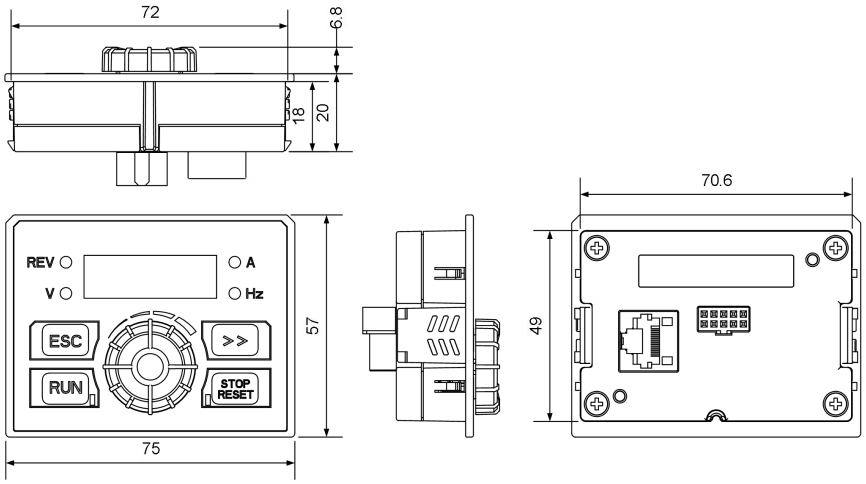


(d) EM730-PV keyboard appearance

2.2 Product Size Table

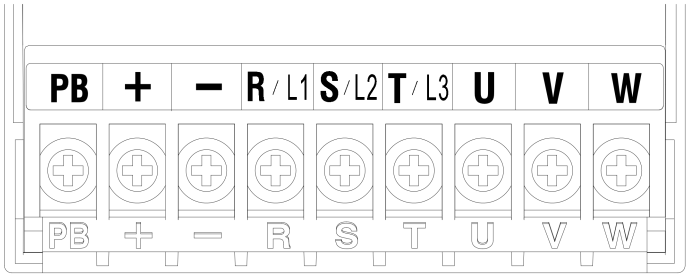
Specifications	W	W1	H	H1	H2	D	D1	D2	d	appearance
EM730-0R4-2B-PV	75	65	142	132		146	67	152	4.5	a
EM730-0R7-2B-PV										
EM730-0R4-2B-PVO										
EM730-1R5-2B-PV	93	82	172	163		136	85	141	4.7	
EM730-0R7-2B-PVO										
EM730-1R5-2B-PVO										
EM730-2R2-2B-PV										
EM730-0R7-3B-PV	75	65	142	132		146	67	152	4.5	
EM730-1R5-3B-PV										
EM730-2R2-3B-PV	93	82	172	163		136	85	141	4.7	
EM730-4R0-3B-PV										
EM730-2R2-2B-PVO	109	98	207	196		154	103	160	5.5	
EM730-5R5-3B-PV										
EM730-7R5-3B-PV										
EM730-4R0-2B-PVO	136	125	250	240		169	115	174	5.5	
EM730-011-3B-PV										
EM730-015-3B-PV										
EM730-018-3B-PV	190	175	293	280		184	145	189	6.5	
EM730-022-3B-PV										
EM730-030-3-PV	245	200	454	440	420	205	156	212	7.5	b
EM730-030-3B-PV										
EM730-037-3-PV										
EM730-037-3B-PV										
EM730-045-3-PV	300	266	524	508	480	229	174	236	9	
EM730-055-3-PV										
EM730-075-3-PV	335	286	580	563	536	228	177	235	9	
EM730-090-3-PV	335	286	630	608	570	310	247	317	11	c
EM730-110-3-PV										

Part 3 Main Circuit Terminal Wiring

3.1 Main Circuit Terminal Composition

Terminal	Terminal Definition
PB	Braking resistor terminals
+	DC power input terminal
-	
R/L1	AC power input terminal
S/L2	
T/L3	
U	Motor terminal
V	
W	
⏚	Grounding

3.2 Main Circuit Terminal Arrangement

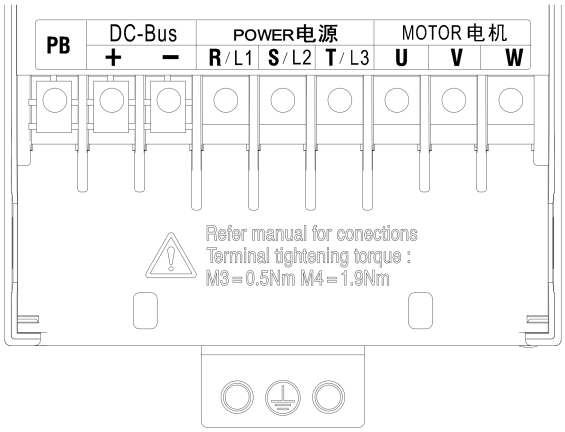


(a) Schematic Diagram of Terminals (EM730-0R7-3B-PV～EM730-1R5-3B-PV)

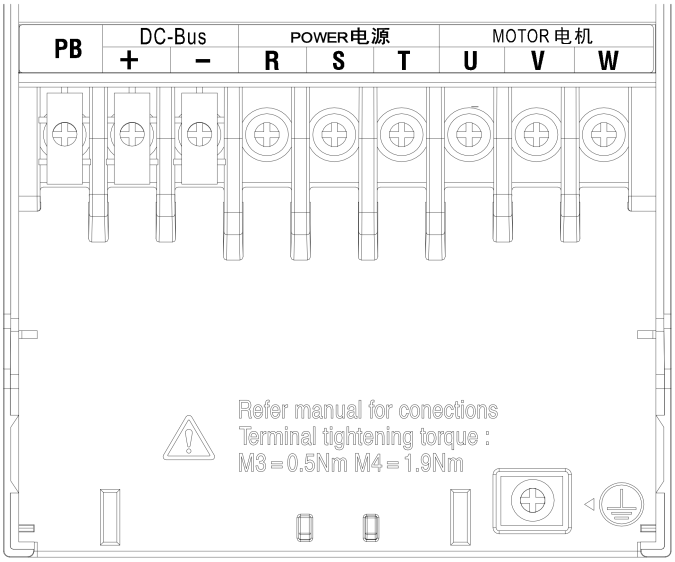
Note:

EM730-0R4-2B~ EM730-0R7-2B terminals are the same as EM730-0R7-3B~ EM730-1R5-3B;

EM730-1R5-2B~ EM730-2R2-2B terminals are the same as EM730-2R2-3B~ EM730-4R0-3B.

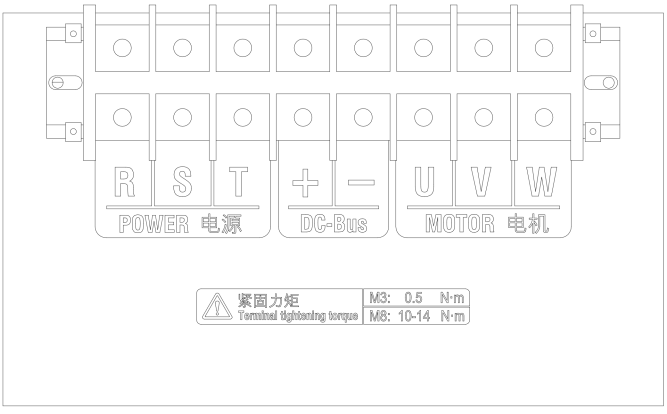


(b) Schematic Diagram of Terminals (EM730-2R2-3B-PV～EM730-4R0-3B-PV)



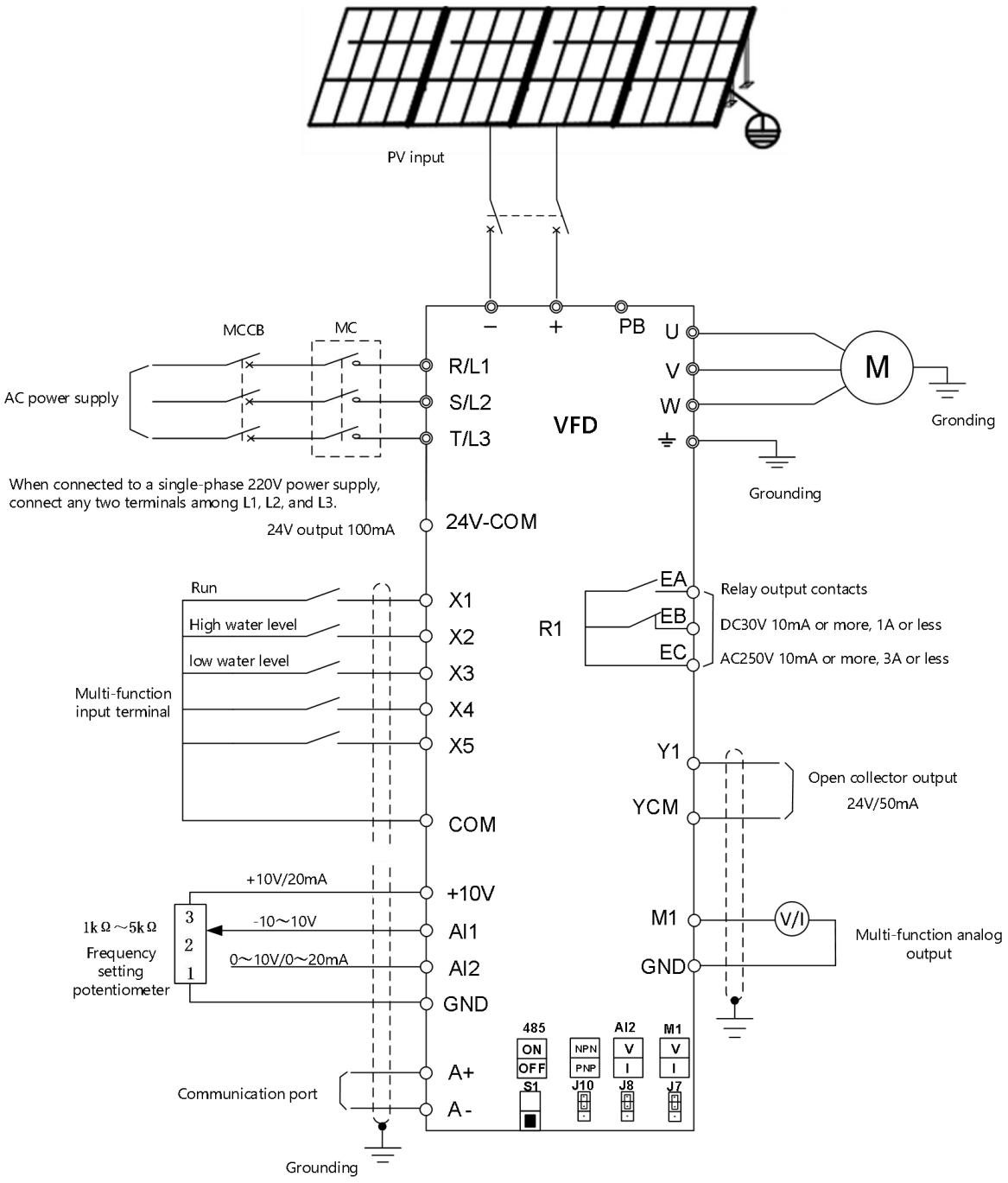
(c) Schematic Diagram of Terminals (EM730-5R5-3B-PV～EM730-022-3B-PV)
(with slight difference in the grounding position)

(d) Schematic Diagram of Terminals (EM730-030-3/3B-PV～EM730-037-3/3B-PV)

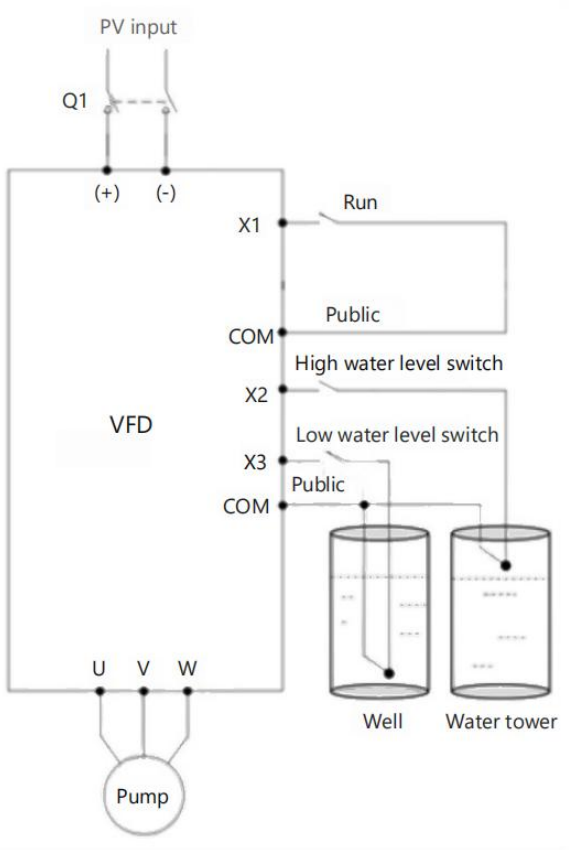


(e) Schematic Diagram of Terminals (EM730-045-3-PV～EM730-110-3-PV)

3.3 Wiring



(a) Main circuit terminal wiring



(b) Main circuit terminal wiring

Part 4 Product Installation

Attention

1. **When carrying the inverter, hold its bottom.**

   If you hold the panel only, the body main fall to hit your feet.

2. **Install the inverter on non-flammable boards (e.g. metal).**

   If the inverter is installed on a flammable object, a fire may occur.

3. **When two or more inverters are installed in one control cabinet, please install a cooling fan and keep the air temperature below 50 ℃ at the air inlet.**

   Overheating may cause fire and other accidents.

4.1 Installation Site

The installation site should meet the following conditions:

① The room is well ventilated.

② The ambient temperature should be -10°C to 50°C. When the plastic case is used at the ambient temperature above 40℃, remove the top baffle.

③ The controller should be free from high temperature and humidity (less than 90% RH) or rainwater and other liquid droplets.

④ Please install the inverter on a fire-retardant object (e.g. metal). Never install it on flammable objects (e.g. wood).

⑤ No direct sunlight.

⑥ There should be no flammable or corrosive gas and liquid.

⑦ There should be no dust, oily dust, floating fibers or metal particles.

⑧ The installation foundation should be secured and vibration-free.

⑨ Avoid electromagnetic interference and keep the controller away from interference sources.

4.2 Environment Temperature

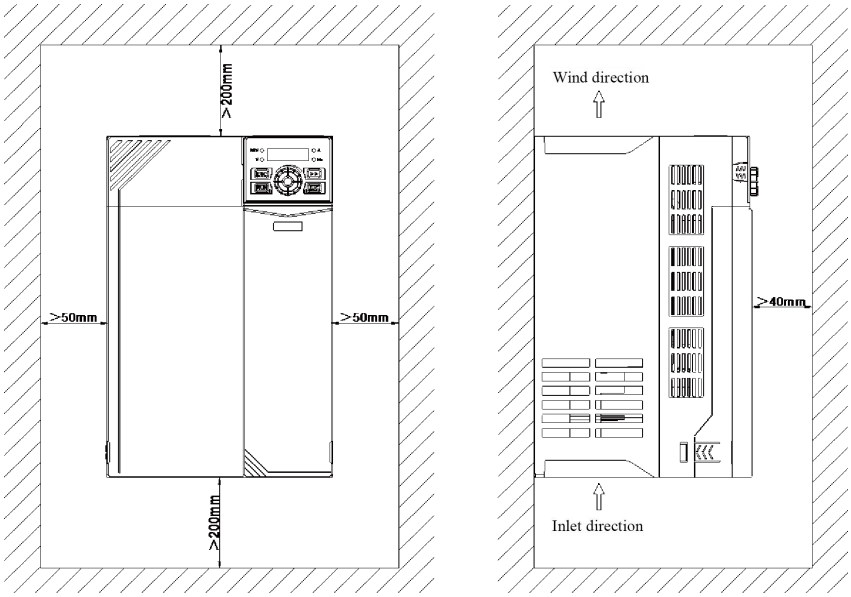
In order to improve the operational reliability, please install the inverter in a well-ventilated place. When it is used in a closed cabinet, a cooling fan or cooling air conditioner should be installed to keep the ambient temperature below 50°C.

4.3 Preventive Measures

Take protective measures to the inverter during installation to prevent metal fragments or dust generated in drilling and other processes from falling into the inverter. Remove the protection after installation.

4.4 Installation Direction and Space

The EM730-1R5-3B-PV inverters and above are equipped with the cooling fan for forced air cooling. To ensure good cyclic cooling effects, the inverter must be installed in a vertical direction, and sufficient spaces must be reserved between the inverter and adjacent objects or baffles (walls).



Part 5 Keyboard Operation

5.1 Keyboard Functions

5.1.1 Structure of LED keyboard

The control panel of EM730 series inverter is a pluggable LED keyboard The LED keyboard has one five-digit LED digital display, four operation buttons, one digital potentiometer, and six status and unit indicators. Users can perform parameter setting, status monitoring and start/stop of the inverter via the keyboard.

Fig. 7-1 LED Keyboard

5.1.2 Functions of keys and indicators on LED keyboard

The functions of the keys and indicators on the LED keyboard are as shown in Table 7-1.

Table 7-1 Functions of Keys and Indicators on LED Keyboard

Key/Indicator	Name	Function
	Right	Select the group number and function number of the currently modified function code. Change the monitoring parameters.
	Back	Go back to the previous menu. Cancel the current parameter modification when the menu mode selection level is enabled from the monitoring level.
	Run	When the keyboard control is enabled, press this key to start the inverter.
	Stop/Reset	When the keyboard control is enabled, press this key to stop the inverter. Reset the protection in use.
	Potentiometer/ Confirm key	Turn it clockWise to select the function code and menu group or increase the parameter value.

		Increase the currently valid reference digital input data.
		Turn it counterclockWise to select the function code and menu group or decrease the parameter value. Decrease the currently valid reference digital input data.
		Click it to enter the lower-level menu. Confirm and save the parameter modification, and enable the function code following the current function code.
	Unit indicator	It is ON when the frequency, current, and voltage are displayed.
	Running direction indicator	This indicator is ON during reverse running. It is OFF during forward running. It is ON when a certain frequency is being monitored or displayed.
 (Green)	Running indicator	It is ON when the inverter is running, flickering when the inverter is being stopped, and OFF after the inverter is stopped.
 (Red)	Protection indicator	When the inverter is in the protection status, this indicator will be ON in red.

( and  below means that the potentiometer rotates clockWise and counterclockWise.)

5.2 Operation Mode of Keyboard with Digital Tube Display

The LED keyboard menu is divided into the monitoring level (Level 0), menu mode selection level (Level 1), function code selection level (Level 2) and parameter level (Level 3) from low to high. The menu levels mentioned below are represent by numbers.

There are five parameter display modes: menu mode (--A--), used to display all function codes; user-defined mode (--U--), used to display only function codes selected by the user based on the F11 group; non-default mode (--C--), used to display only the function codes that differ from the default settings;

Protection information display mode (--E--): display the current protection information; version information mode (--P--): display software and product serial numbers.

When the keyboard is powered on, the first monitoring parameter of Level 0 is displayed by default. Press the ESC key  to open the Level 1 menu. Users can use the keyboard  to select different menu modes. The process of menu mode selection is shown in Fig. 7-2.

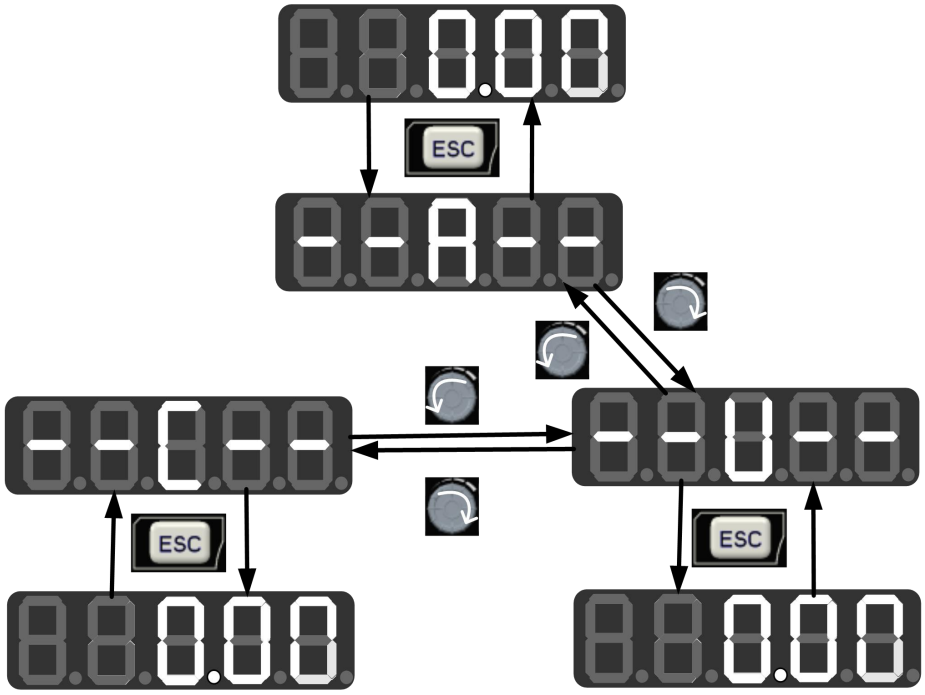


Fig. 7-2 Flowchart of Menu Mode Selection

5.2.1 Full Menu Mode (--A--)

In the full menu mode, press the ENTER key to enter the Level 2 menu and select any function code. Then press the ENTER key to enter the Level 3 menu and view or modify the function code. Except for a few special ones, the function codes needed by general users can be modified.

The entire process from the initial status of power-on to change of the value of the function code F03.28 to 5.28 in the full menu mode is shown in Fig. 7-3.

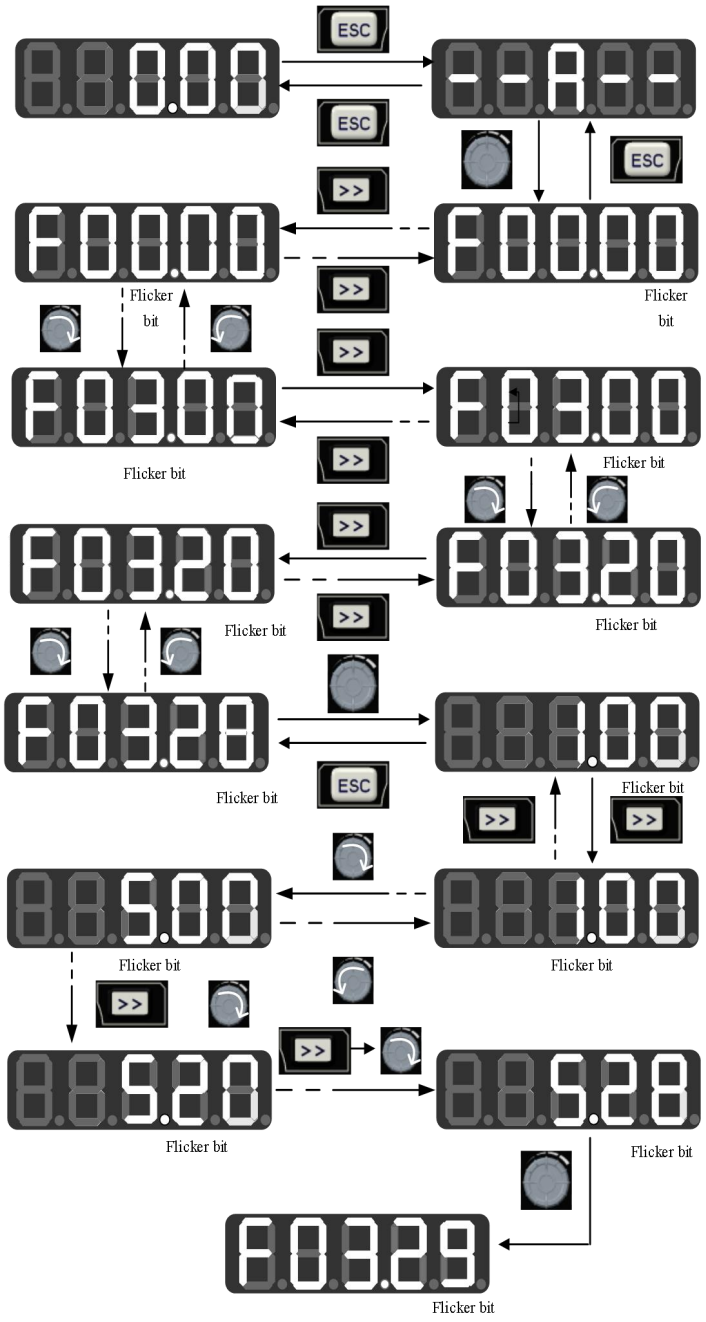


Fig. 7-3 Flowchart from Power-on to F03.28=5.28 Setting

In all menu modes, the user needs to press the ENTER key to save parameter modifications. Differences after parameter saving are as follows: In the full menu mode, enter the function code following the function code that has been successfully modified. In the user-defined mode, enter the user-defined function code (according to the sequence defined in F11.00-F11.31) following the function code that has been successfully modified. In the non-default mode, enter the non-default function code following the non-default function code that has been successfully modified. In the protection information display mode, enter the protection information function code following the protection information function code that has been successfully modified. In the version information display mode, enter the serial number function code

following the serial number function code has been successfully modified.

In the Level 3 menu, press the ESC key ESC to abandon parameter modifications.

5.2.2 User-defined Mode (--U--)

Enter the F11 group of function codes from the full menu mode. Then the user can arbitrarily set the shortcut for the parameter to be accessed frequently. When F11.00 is enabled for the first time, U00.00 will be displayed by default, meaning that the function code defined by default for F11.00 is F00.00. The lowest cursor bit will flicker. The user can set any function code, similar to the function code selection in the Level 2 menu. After setting, press the ENTER key to save it and enter the user-defined menu mode to display the set function code.

For example, F11.00 is set to U00.07 and F11.01 to U00.09. F11.00 and F11.01 will be defined as F00.07 and F00.09, respectively. They are distinguished by U and F. U indicates that this function code is user-defined, as shown in Fig. 7-4.

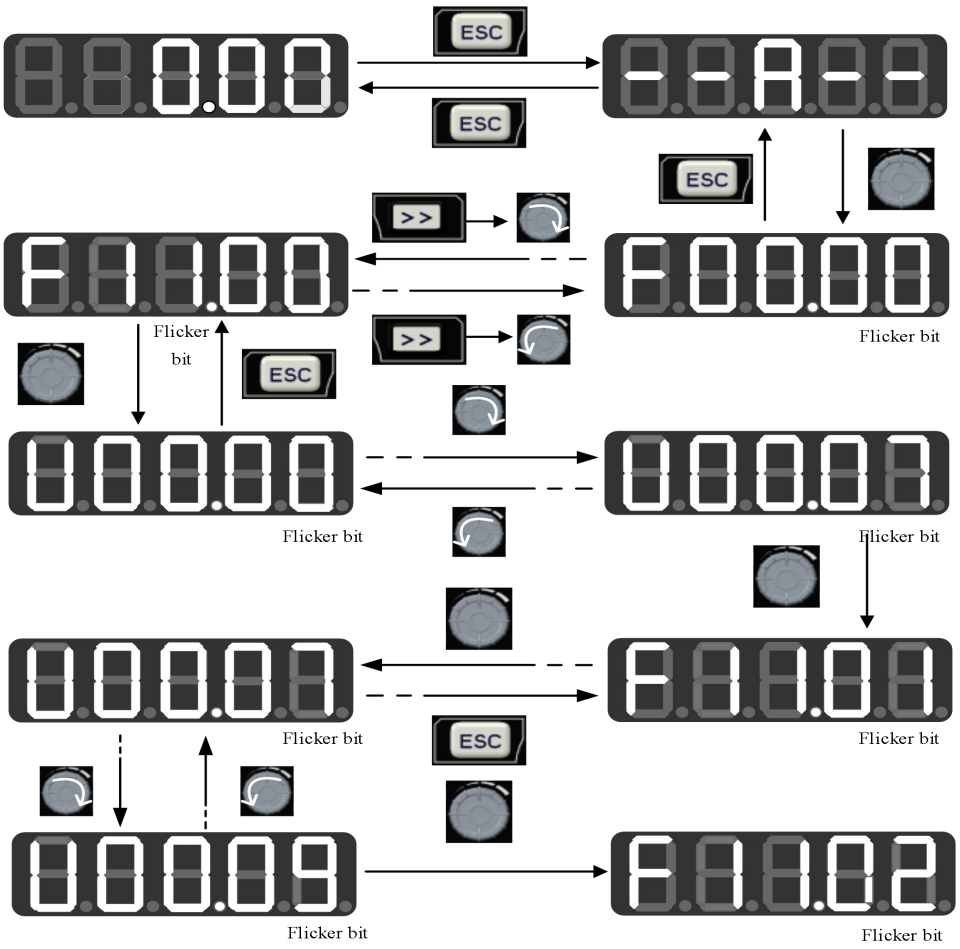


Fig. 7- 4 Example of User-defined Mode Setting

In the user-defined mode, press the ENTER key to enter the Level 2 menu. The Level 2 menu only display 32 user-defined parameters in the F11 group. The user can enter the F11 group from the full menu mode to set these

function codes.

After the function codes are defined in the F11 group, enter the user-defined mode. Then we can see F00.07 defined by the first function code F11.00, F00.09 defined by the first function code F11.01, and so on to F11.31, 32 in total. Function code modification in the Level 3 menu is equivalent to that in the full menu mode, and the modification method is also the same.

In the Level 2 menu of the user-defined mode, turn the potentiometer key on the keyboard, to change the function code defined by F11.00 to that defined by F11.31.

When the right shift key >> is pressed in the Level 2 menu, the cursor will not shift. Press the ENTER key to enter the Level 3 menu. If the displayed function code is modifiable currently, the lowest bit indicated by the cursor will flicker. Parameter modification is the same as that in the Level 3 menu under the full menu mode. After modification, press the ENTER key to confirm and save the parameters and enable next user-defined parameter. Function code modifications in the Level 3 menus under different menu modes have equivalent effects.

5.2.3 Non-default Mode (--C--)

In the non-default mode, press the ENTER key to enter the Level 2 menu. The first parameter different from the default settings of the inverter will be displayed, starting from F00.00. When the right shift key >> is pressed in the Level 2 menu, the cursor will not shift. If the increment or decrement key on the keyboard is pressed, the function group and function code will not be modified, and the non-default function code following and in front of the current function code will be displayed respectively. If the displayed function code is modifiable currently in the Level 3 menu, the lowest bit indicated by the cursor will flicker. In this case, parameters can be modified in the Level 3 menu under the full menu mode. After modification, press the ENTER key to confirm and save the parameters and enable next non-default parameter.

For example, change F00.03 to 1 and F00.07 to 40.00 in the full menu mode, which are not default values. Then enable the non-default mode. F00.03 will be displayed first. When the potentiometer key on the keyboard is turned clockWise, F00.07 will be displayed; and when the potentiometer key on the keyboard is turned counterclockWise, F00.03 will be returned, as shown below:

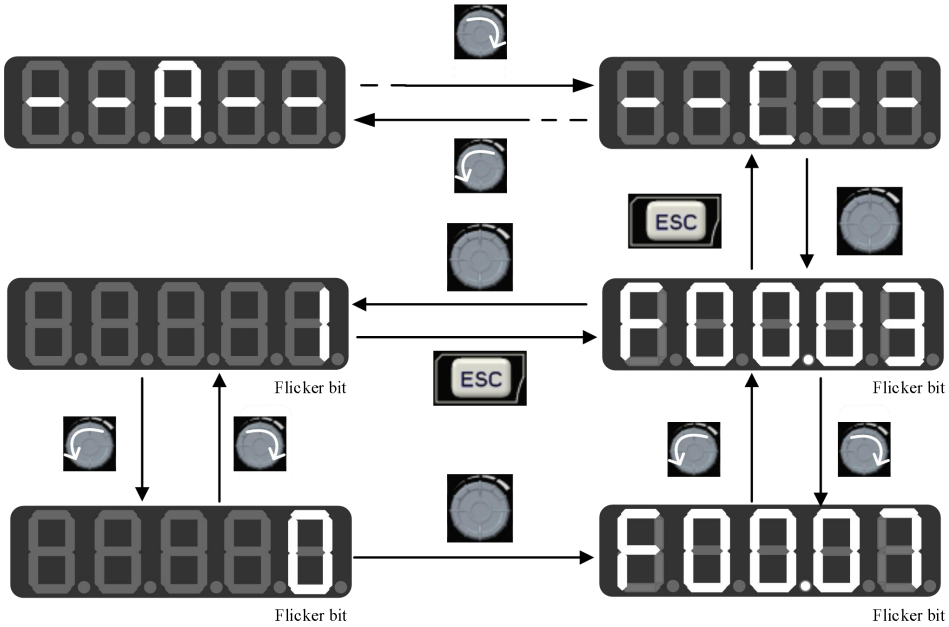


Fig. 7- 5 Function Code Modification in Non-default Mode

5.2.4 Protection Information Display Mode (--E--)

In the protection information display mode, press the ENTER key to enter the Level 2 menu. The Level 2 menu will only display the fault record group under the F19 group, which is conducive to direct viewing of protection record information.

Turn the potentiometer key on the keyboard in the Level 2 menu under this mode to increase or decrease the function code of the protection group, and the shift key will be unavailable. In case of protection, you can press the shift key on the keyboard in the Level 3 menu to switch the display of the protection code, protection output frequency, protection output current, protection bus voltage, and protection operation status.

5.3 Protection Monitoring

When the inverter is in the protection status, you can directly press the right shift key to switch the current protection type and the output frequency, output current, output voltage, running status and working time during the protection.

5.4 Operation Monitoring

5.4.1 Normal Monitoring

In the monitoring status mode 1 of EM730, you can set any function code to be viewed between F12.33 and F12.37. When F12.32=1, the monitoring mode 1 will be enabled. If the Level 0 monitoring menu appears, you can press the right shift key to switch the monitoring parameters according to the order set for each function code between F12.33 and F12.37. When the inverter changes from the stop status to running status, the monitoring parameter will automatically change from the current value to that indicated by F12.33. When the inverter changes

from the running status to stop status, the monitoring parameter will automatically change from the current value to that indicated by F12.34.

5.4.2 Editing Mode

Quick change in the monitoring mode:

When F00.04 is set to “0: digital frequency setting F00.07”, turn the potentiometer key to directly change the offset;

When F00.04 is set to “8: digital potentiometer”, turn the potentiometer key to change the set frequency of F12.42 digital potentiometer. In this case, turn the potentiometer key to enter the editing mode. The value will change from the second digit of the digital tube by default. The digital tube corresponding to the changed digit will flash. Press the right shift key >> to move to next digit on the right. Press the ESC key ESC to cancel change and return to the original value. Or, press the ENTER key to confirm the change and exit the editing mode. The indicator will not be flicker. Press the right shift key >> to enable the normal monitoring mode: switch to next monitoring parameter. Fig. 7-6 shows the editing status in the monitoring mode.

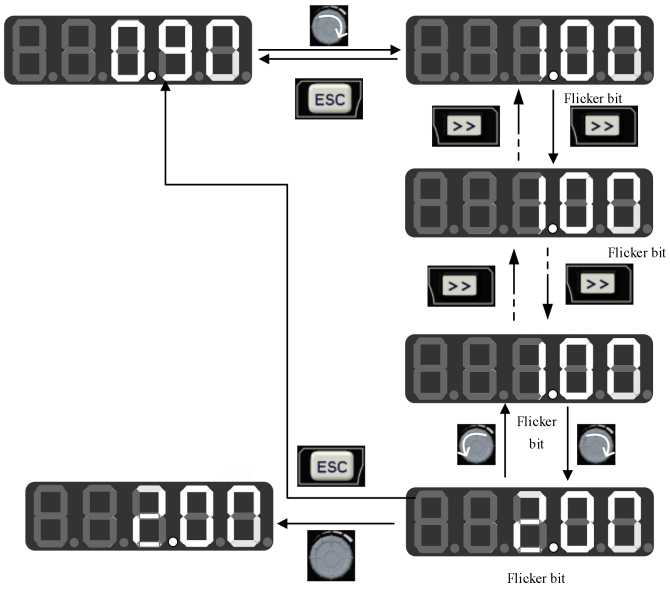


Fig. 7-6 Editing Status in the Monitoring Mode

5.5 Run/Stop

After setting the parameters, press the RUN key RUN to enable the normal operation of the inverter, and the STOP/RESET key STOP RESET to stop the inverter.

5.6 Other Warning Prompts

5.6.1 P.-ON Prompt

The P.-ON prompt will be displayed after power-on initialization.

5.6.2 P.-OFF Prompt

When the voltage drops to 250V (with the soft start disconnected), P-OFF will be displayed, and the keyboard can be operated freely to exit the P.-OFF display and display normal information. In case of no keyboard operation within 5s, P-OFF will be displayed again. After the voltage is restored and the soft start is engaged, P.-ON will be displayed again.

5.6.3 SOFT.E Warning

If the soft start is not engaged and the inverter is started, the SOFT.E warning will appear. After the voltage is restore and the soft start is engaged, normal operation will be enabled.

Part 6 Debugging Guide

6.1 Pre-operation Check

Please make sure to check the following items before turning on the power.

① Check whether the inverter is reliably grounded;

② Check whether the wiring is correct and reliable;

③ Check whether the selection of AC and DC circuit breakers is correct;

④ Check whether the solar DC input voltage is within the allowable range of the inverter;

⑤ Check whether the type, voltage and power of the motor match those of the inverter.

6.2 Trial Operation

Close the DC circuit breaker. The inverter will automatically start running after a delay of about 15 seconds, and observe the water output of the water pump. If the water output is normal, the trial run is successful; if the water output is small, swap any two motor wires before running.

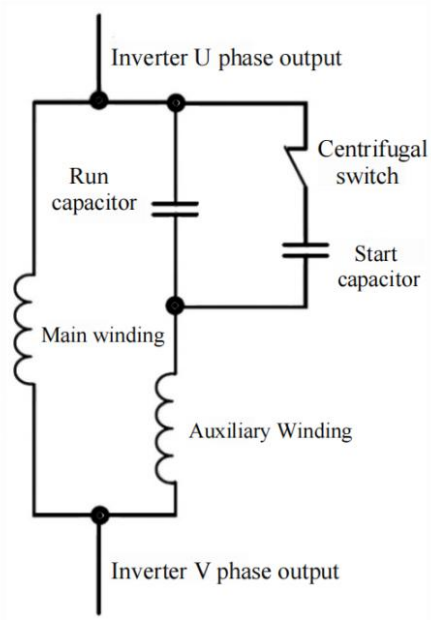
6.3 Parameter Settings

The inverter runs automatically when powered on by default. If you need to set parameters, you can modify them directly through the keyboard. For some parameters that need to be stopped to modify, you need to set the parameters within 15 seconds after the inverter is powered on. If the inverter is already running after powering on, press the STOP/RESET key to stop it and then enter the parameter setting interface. After completing the parameter setting, turn off the power switch and then turn it on again to put it into operation again.

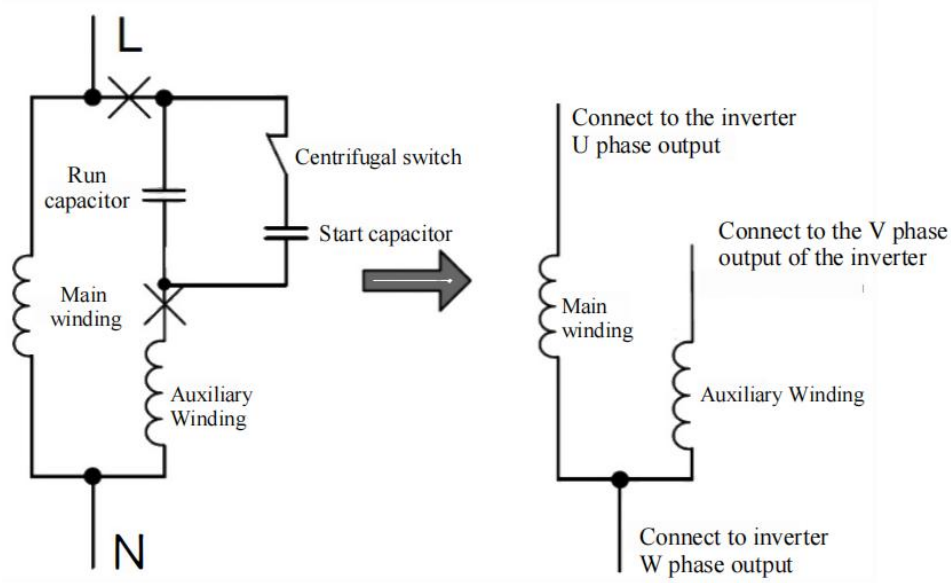
6.4 Description of Single-phase Asynchronous Motor

6.4.1Wiring Method

① Connect the running capacitor : The output U and V phases of the inverter are connected to the phase line of the single-phase motor



② Remove the running capacitor : connect the inverter U phase to one end of the main winding, the V phase to one end of the auxiliary winding, and short-circuit the other ends of the main and auxiliary windings together and connect them to the inverter W phase.



6.4.2Parameter Settings

① Connect running capacitor : Select single-phase motor as the motor type and connect running capacitor (F01.00=6). Since the running capacitor is set at 50 Hz, when the frequency is low, the secondary winding capacitive reactance is large, resulting in a small current. Therefore, it cannot be started when the

frequency is set too low. Generally, it needs to be higher than 30 Hz, or a large capacitor that can run for a long time is connected to the secondary winding for low-frequency starting. If the motor vibrates or the current is large, it can be set to multi-point broken line VF (F05.00=1), and the values of F05.01~F05.06 can be adjusted according to the motor operation : reduce the voltage when the motor current is too large, and increase the voltage when the motor cannot start.

② Remove the running capacitor : Select the single-phase motor with running capacitor (F01.00=5) as the motor type. Set the motor parameters F01.00~F01.06, and then perform motor parameter self-learning (F01.34 = 1). After parameter self-learning, the three-phase wiring phase sequence can be automatically adapted, and the U/V/W three-phase wiring can be connected arbitrarily.Since the impedance of the main and auxiliary windings are different, if the main and auxiliary windings output the same voltage, the motor may vibrate. If the motor vibrates, adjust the main and auxiliary winding voltage ratio (F51.42) to reduce the vibration.

③ Output voltage gain setting :

If the motor current is large or jitter occurs at the maximum frequency, the maximum output voltage can be reduced by adjusting the output voltage gain (F51.43) .

6.5 Function Parameter List

Function code	Function code name	Parameter description	Unit	Default setting	Attribute	mailing address
F00	**Basic function parameter group**					
F00.00	Reserved					
F00.01	Drive control mode of motor 1	0: v/f control (VVF) 1: speed sensorless vector control (SVC)		0	○	0x0001
F00.02	Options of command source	0: keyboard control (LOC/REM indicator: ON) 1: terminal control (LOC/REM indicator: OFF) 2: communication control (LOC/REM indicator: flicker)		0	○	0x0002
F00.03	Options of terminal control mode	0: terminal RUN (running) and F/R (forward/reverse) 1: terminal RUN (forward) and F/R (reverse) 2: terminal RUN (forward), Xi (stop) and F/R (reverse)		0	○	0x0003

		3: terminal RUN (running), Xi (stop) and F/R (forward/reverse)				
F00.04	Options of main frequency source A	0: digital frequency setting F00.07 1：AI1 2：AI2 3：reserved 4：reserved 5: high frequency pulse input (X5) 6: main frequency communication setting (percentage) 7: main frequency communication setting (direct frequency) 8: digital potentiometer setting		0	○	0x0004
F00.05	Options of auxiliary frequency source B	0: digital frequency setting F00.07 1：AI1 2：AI2 3: reserved 4: reserved 5: high frequency pulse input (X5) 6: auxiliary frequency communication setting (percentage) 7: auxiliary frequency communication setting (direct frequency) 8: digital potentiometer setting 9: reserved 10: process PID 11: simple PLC		0	○	0x0005
F00.06	Options of frequency source	0: main frequency source A 1: auxiliary frequency source B 2: main and auxiliary operation results 3: switching between main frequency source A and		0	○	0x0006

		auxiliary frequency source B 4: switching between main frequency source A and main and auxiliary operation results 5: switching between auxiliary frequency source B and main and auxiliary operation results 6: auxiliary frequency source B + feedforward calculation (winding application)				
F00.07	Digital frequency setting	0.00 to maximum frequency F00.16	Hz	50.00	●	0x0007
F00.08	Options of main and auxiliary operation	0: main frequency source A + auxiliary frequency source B 1: main frequency source A - auxiliary frequency source B 2: larger value of main and auxiliary frequency sources 3: smaller value of main and auxiliary frequency sources 4: main frequency source A - auxiliary frequency source B, the operation result is greater than or equal to zero 5: main frequency source A + auxiliary frequency source B, the operation result is greater than or equal to zero		0	○	0x0008
F00.09	Reference options of auxiliary frequency source B in main and auxiliary operation	0: relative to he maximum frequency 1: relative to main frequency source A		0	○	0x0009
F00.10	Gain of main frequency source	0.0～300.0	%	100.0	●	0x000A
F00.11	Gain of auxiliary frequency source	0.0～300.0	%	100.0	●	0x000B
F00.12	Synthetic gain of main and	0.0～300.0	%	100.0	●	0x000C

	auxiliary frequency sources					
F00.13	Analog adjustment of synthetic frequency	0: synthetic frequency of main and auxiliary channels 1: AI1 * synthetic frequency of main and auxiliary channels 2: AI2 * synthetic frequency of main and auxiliary channels 3: reserved 4: reserved 5: high frequency pulse (PULSE) * synthetic frequency of main and auxiliary channels		0	○	0x000D
F00.14	Acceleration time 1	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	5.00	●	0x000E
F00.15	Deceleration time 1	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	0.5	●	0x000F
F00.16	Maximum frequency	1.00~600.00/1.0~3000.0	Hz	50.00	○	0x0010
F00.17	Options of upper frequency limit control	0: set by F00.18 1：AI1 2：AI2 3: reserved 4: reserved 5: high frequency pulse input (X5) 6: communication setting (percentage) 7: communication setting (direct frequency)		0	○	0x0011
F00.18	Upper frequency limit	lower frequency limit F00.19 to maximum frequency F00.16	Hz	50.00	●	0x0012
F00.19	Lower frequency limit	0.00 to upper frequency limit F00.18	Hz	0.00	●	0x0013
F00.20	Running direction	0: consistent direction 1: opposite direction		0	●	0x0014

F00.21	Reverse control	0: allow forward/reverse running 1: prohibit reversing		0	○	0x0015
F00.22	Duration of forward and reverse dead zone	0.00～650.00	s	0.00	●	0x0016
F00.23	Carrier frequency	1.0 ~ 16.0 (rated power of the inverter: 0.75-4.00kW) 1.0 ~ 10.0 (rated power of the inverter: 5.50~7.50kW) 1.0 ~ 8.0 (rated power of inverter 11.00 - 45.00kW) 1.0 ~ 4.0 (rated power of inverter 55.00 - 90.00kW) 1.0 ~ 3.0 (rated power of inverter: 110.00 and above)	kHz	4.0 (0.75 and below) /2.0	●	0x0017
F00.24	Automatic adjustment of carrier frequency	0: invalid 1: valid 1 2: valid 2		1	○	0x0018
F00.25	Noise suppression of carrier frequency	0: invalid 1: noise suppression of carrier frequency mode 1 2: noise suppression of carrier frequency mode 2		0	○	0x0019
F00.26	Noise suppression width	1～20	Hz	1	●	0x001A
F00.27	Noise suppression intensity	0: invalid 0~10: noise suppression of carrier frequency mode 1 0~ 4: noise suppression of carrier frequency mode 2	%	2	●	0x001B
F00.28	Options of motor parameter group	0: parameter group of motor 1 1: parameter group of motor 2		0	○	0x001C
F00.29	User password	0 ~ 65535		0	○	0x001D
F00.31	Frequency resolution	0：0.01Hz 1: 0.1Hz (speed unit: 10rpm)		0	○	0x001E
F00.35	Power supply voltage	0: 380V		0	○	0x0023

	selection	1: 440V				
F00.39	Single and double brush PWM switching control	0: Single brush 1: Double brush 2: Automatic switching		0	○	0x0027
F01	**Parameter group of motor 1**					
F01.00	Motor type	0: ordinary asynchronous motor 1: variable-frequency asynchronous motor 2: permanent magnet synchronous motor 3 : Reserved 4 : Reserved 5 : Single-phase asynchronous motor (without running capacitor) 6 : Single-phase asynchronous motor (connected to running capacitor)		0	○	0x0100
F01.01	Rated power of electric motor	0.10～650.00	kW	Depending on the motor type	○	0x0101
F01.02	Rated voltage of motor	50～2000	V	Depending on the motor type	○	0x0102
F01.03	Rated current of motor	1~ 60000 (rated power of motor: ≤ 75 kW) 0.1~6000.0 (rated power of motor: > 75kW)	A	Depending on the motor type	○	0x0103
F01.04	Rated frequency of motor	0.01～600.00	Hz	Depending on	○	0x0104

				the motor type		
F01.05	Rated speed	1～60000	rpm	Depending on the motor type	○	0x0105
F01.06	Motor winding connection	0:Y 1:Δ		Depending on the motor type	○	0x0106
F01.07	Rated power factor of motor	0.600～1.000		Depending on the motor type	○	0x0107
F01.08	Motor efficiency	30.0～100.0	%	Depending on the motor type	○	0x0108
F01.09	Stator resistance of asynchronous motor	1~ 60000 (rated power of motor: ≤ 75 kW) 0.1~6000.0 (rated power of motor: > 75kW)	mΩ	Depending on the motor type	○	0x0109
F01.10	Rotor resistance of asynchronous motor	1~ 60000 (rated power of motor: ≤ 75 kW) 0.1~6000.0 (rated power of motor: > 75kW)	mΩ	Depending on the	○	0x010A

				motor type		
F01.11	Leakage inductance of asynchronous motor	0.01 to 600.00 (rated power of motor: ≤ 75 kW) 0.001 to 60.000 (rated power of motor: > 75 kW)	mH	Depending on the motor type	○	0x010B
F01.12	Mutual inductance of asynchronous motor	0.1 to 6000.0 (rated power of motor: ≤ 75 kW) 0.01 to 600.00 (rated power of motor: > 75 kW)	mH	Depen-ding on the motor type	○	0x010C
F01.13	No-load excitation current of asynchronous motor	0.01 to 600.00 (rated power of motor: ≤ 75 kW) 0.1 to 6000.0 (rated power of motor: > 75 kW)	A	Depending on the motor type	○	0x010D
F01.14	Flux weakening coefficient 1 of asynchronous motor	10.00 ~ 100.00	%	87.00	○	0x010E
F01.15	Flux weakening coefficient 2 of asynchronous motor	10.00 ~ 100.00	%	80.00	○	0x010F
F01.16	Flux weakening coefficient 3 of asynchronous motor	10.00 ~ 100.00	%	75.00	○	0x0110
F01.17	Flux weakening coefficient 4 of asynchronous motor	10.00 ~ 100.00	%	72.00	○	0x0111
F01.18	Flux weakening coefficient 5 of asynchronous motor	10.00 ~ 100.00	%	70.00	○	0x0112
F01.19	Stator resistance of synchronous motor	1~ 60000 (rated power of motor: ≤75kW) 0.1 to 6000.0 (rated power of motor: > 75 kW)	mΩ	Depending on the motor	○	0x0113

				type		
F01.20	d-axis inductance of synchronous motor	0.01 to 600.00 (rated power of motor: ≤ 75 kW) 0.001 to 60.000 (rated power of motor: > 75 kW)	mH	Depending on the motor type	○	0x0114
F01.21	q-axis inductance of synchronous motor	0.01~600.00 (rated power of motor: ≤ 75 kW) 0.001~60.000 (rated power of motor: > 75kW)	mH	Depending on the motor type	○	0x0115
F01.22	Counter electromotive force of synchronous motor	10.0 ~ 2000.0 (counter electromotive force of rated speed)	V	Depending on the motor type	○	0x0116
F01.23	Initial electrical angle of synchronous motor	0.0 ~ 359.9 (valid for synchronous motor)			○	0x0117
F01.34	Motor parameter self-learning	00: no operation 01: static self-learning of asynchronous motor 02: rotation self-learning of asynchronous motor 03: inertia self-learning of asynchronous motor 11: static self-learning of synchronous motor 12: rotary self-learning of synchronous motor 13: encoder self-learning of synchronous motor		00	○	0x0122
F02	**Input terminal function group**					
F02.00	Options of X1 digital input function	0: no function 1: terminal running (RUN) 2: running direction (F/R) 3: stop control in three-line operation 4: forward jog (FJOG)		1	○	0x0200
F02.01	Options of X2 digital input function			96	○	0x0201
F02.02	Options of X3 digital input			97	○	0x0202

	function	5: reverse jog (RJOG)				
F02.03	Options of X4 digital input function	6: terminal UP 7: terminal DOWN		12	○	0x0203
F02.04	Options of X5 digital input function	8: clear UP/DOWN offset 9: free stop		13	○	0x0204
F02.07	Options of AI1 digital input function	10: reset protection 11: multi-segment speed terminal 1		0	○	0x0207
F02.08	Options of AI2 digital input function	12: multi-segment speed terminal 2 13: multi-segment speed terminal 3 14: multi-segment speed terminal 4 15: multi-segment PID terminal 1 16: multi-segment PID terminal 2 17: multi-segment torque terminal 1 18: multi-segment torque terminal 2 19: acceleration and deceleration time terminal 1 20: acceleration and deceleration time terminal 2 21: acceleration and deceleration prohibition 22: operation pause 23: external protection input 24: switching of RUN command to keyboard 25: switching of RUN command to communication 26: frequency source switching 27: clearing of regular running time 28: speed control/torque control switching 29: torque control prohibition 30: motor 1/motor 2 switching 31: resetting of simple PLC status (running from the first segment, with the running time cleared) 32: simple PLC time pause (keep running at current segment) 33: reserved		0	○	0x0208

		34: counter input (≤250Hz) 35: high-speed count input (≤100kHz, only valid for X5) 36: count clearing 37: length counter input (≤250Hz) 38: High-speed length counting input (≤100kHz, only valid for X5) 39: reset length (clear by meter) 40: pulse input (≤100kHz, only valid for X5) 41: process PID pause 42: process PID integral pause 43: PID parameter switching 44: PID positive/negative switching 45: stop and DC braking 46: DC braking at stop 47: immediate DC braking 48: fastest deceleration to stop 49: reserved 50: external stop 51: switching of main frequency source to digital frequency setting 52: switching of main frequency source to AI1 53: switching of main frequency source to AI2 54: reserved 55: switching of main frequency source to high-frequency pulse input 56: switching of main frequency source to communication setting 57: inverter enabling 58: prohibit reversing and prohibit enabling 68: Reverse prohibition enable				

<table>
<tr><td></td><td></td><td>69: Reverse prohibition
70: Input terminal expansion
82: Fire mode trigger function
96: Low water level signal
97: Full water level signal
121: external material cutoff signal
122: wiring detection signal
123: brake reset terminal</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">F02.15</td><td rowspan="2">Positive/negative logic 1 of digital input terminal</td><td><table><tr><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td></tr><tr><td>*</td><td>*</td><td>*</td><td>X5</td><td>X4</td><td>X3</td><td>X2</td><td>X1</td></tr></table></td><td></td><td>00000</td><td>○</td><td>0x020F</td></tr>
<tr><td>0: positive logic, valid in the closed state/invalid in the open state
1: negative logic, invalid in the closed state/valid in the open state</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="2">F02.16</td><td rowspan="2">Positive/negative logic 2 of digital input terminal</td><td><table><tr><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td></tr><tr><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>*</td><td>AI2</td><td>AI1</td></tr></table></td><td></td><td>00</td><td>○</td><td>0x0210</td></tr>
<tr><td>0: positive logic, valid in the closed state/invalid in the open state
1: negative logic, invalid in the closed state/valid in the open state</td><td></td><td></td><td></td><td></td></tr>
<tr><td>F02.17</td><td>Filtering times of digital input terminal</td><td>0~100, 0: no filtering; n: sampling every n ms</td><td></td><td>2</td><td>○</td><td>0x0211</td></tr>
<tr><td>F02.18</td><td>X1 valid delay time</td><td>0.000~30.000</td><td>s</td><td>0.000</td><td>●</td><td>0x0212</td></tr>
<tr><td>F02.19</td><td>X1 invalid delay time</td><td>0.000~30.000</td><td>s</td><td>0.000</td><td>●</td><td>0x0213</td></tr>
<tr><td>F02.20</td><td>X2 valid delay time</td><td>0.000~30.000</td><td>s</td><td>0.000</td><td>●</td><td>0x0214</td></tr>
<tr><td>F02.21</td><td>X2 invalid delay time</td><td>0.000~30.000</td><td>s</td><td>0.000</td><td>●</td><td>0x0215</td></tr>
<tr><td>F02.22</td><td>X3 valid delay time</td><td>0.000~30.000</td><td>s</td><td>0.000</td><td>●</td><td>0x0216</td></tr>
</table>

F02.23	X3 invalid delay time	0.000~30.000	s	0.000	●	0x0217
F02.24	X4 valid delay time	0.000~30.000	s	0.000	●	0x0218
F02.25	X4 invalid delay time	0.000~30.000	s	0.000	●	0x0219
F02.26	Minimum input pulse frequency	0.00 to maximum input pulse frequency F02.28	kHz	0.00	●	0x021A
F02.27	Minimum input setting	–100.0 ~ +100.0	%	0.0	●	0x021B
F02.28	Maximum input pulse frequency	0.01~100.00	kHz	50.00	●	0x021C
F02.29	Maximum input setting	–100.0 ~ +100.0	%	100.0	●	0x021D
F02.30	Pulse input filtering time	0.00 ~ 10.00	s	0.10	●	0x021E
F02.31	Options of analog input function	**Ones place: AI1** 0: analog input 1: digital input (0 below 1V, 1 above 3V, the same as last time under 1-3V) **Tens place: AI2** 0: analog input 1: digital input (the same as above)		00B	○	0x021F
F02.32	Options of analog input curve	**Ones place: Options of AI1 curve** 0: curve 1 1: curve 2 2: curve 3 3: curve 4 **Tens place: AI2 curve selection** 0: curve 1 1: curve 2 2: curve 3 3: curve 4		10	○	0x0220

F02.33	Minimum input of curve 1	-10 ~ F02.35	V	0.10	●	0x0221
F02.34	Minimum input setting of curve 1	–100.0 ~ +100.0	%	0.0	●	0x0222
F02.35	Maximum input of curve 1	-10~10.00V	V	9.90	●	0x0223
F02.36	Maximum input setting of curve 1	–100.0~ +100.0	%	100.0	●	0x0224
F02.37	Minimum input of curve 2	-10.00V~F02.39	V	0.10	●	0x0225
F02.38	Minimum input setting of curve 2	–100.0 ~ +100.0	%	0.0	●	0x0226
F02.39	Maximum input of curve 2	F02.37~10.00V	V	9.90	●	0x0227
F02.40	Maximum input setting of curve 2	–100.0 ~ +100.0	%	100.0	●	0x0228
F02.41	Minimum input of curve 3	-10.00V ~ F02.43	V	0.10	●	0x0229
F02.42	Minimum input setting of curve 3	–100.0 ~ +100.0	%	0.0	●	0x022A
F02.43	Input of inflection point 1 of curve 3	F02.41 ~ F02.45	V	2.50	●	0x022B
F02.44	Input setting of inflection point 1 of curve 3	–100.0 ~ +100.0	%	25.0	●	0x022C
F02.45	Input of inflection point 2 of curve 3	F02.43 ~ F02.47	V	7.50	●	0x022D
F02.46	Input setting of inflection point 2 of curve 3	–100.0 ~ +100.0	%	75.0	●	0x022E
F02.47	Maximum input of curve 3	F02.45 ~ 10.00	V	9.90	●	0x022F
F02.48	Maximum input setting of curve 3	–100.0 ~ +100.0	%	100.0	●	0x0230
F02.49	Minimum input of curve 4	-10.00 ~ F02.51	V	-9.90	●	0x0231
F02.50	Minimum input setting of curve 4	–100.0 ~ +100.0	%	-100.0	●	0x0232
F02.51	Input of inflection point 1 of curve 4	F02.49 ~ F02.53	V	-5.00	●	0x0233

F02.52	Input setting of inflection point 1 of curve 4	–100.0 ~ +100.0	%	-50.0	●	0x0234
F02.53	Input of inflection point 2 of curve 4	F02.51 ~ F02.55	V	5.00	●	0x0235
F02.54	Input setting of inflection point 2 of curve 4	–100.0 ~ +100.0	%	50.0	●	0x0236
F02.55	Maximum input of curve 4	F02.53 ~ 10.00	V	9.90	●	0x0237
F02.56	Maximum input setting of curve 4	–100.0 ~ +100.0	%	100.0	●	0x0238
F02.57	AI1 filtering time	0.00 ~ 10.00	s	0.10	●	0x0239
F02.58	AI2 filtering time	0.00 ~10.00	s	0.10	●	0x023A
F02.60	Reserved					0x023C
F02.61	AD hysteresis code	2 ~ 50		2	○	0x023D
F02.62	Selection of analog input AI1 type	0: 0~10V 3: -10~10V 4: 0~5V		0	○	0x023E
F02.63	Selection of analog input AI2 type	0: 0~10V 1: 4~20mA 2: 0~20mA 4: 0~5V		0		0x023F
F02.66	Selection of AI2 current input impedance	0: 500Ω 1: 250Ω		0	○	0x0242
F03	**Output terminal function group**					
F03.00	Options of Y1 output function	0: no output 1: inverter running (RUN) 2: up to output frequency (FAR) 3: output frequency detection FDT1 4: output frequency detection FDT2 5: reverse running (REV) 6: jog 7: inverter protection		1	○	0x0300
F03.02	Options of R1 output function (EA-EB-EC)			7	○	0x0302

		8: inverter ready to run (READY) 9: reach the upper frequency limit 10: reach the lower frequency limit 11: valid current limit 12: valid overvoltage stall 13: complete simple PLC cycle 14: reach the set count value 15: reach the specified count value 16: length reached (in meters) 17: motor overload pre-alarm 18: inverter overheat pre-alarm 19: reach the upper limit of PID feedback 20: reach the lower limit of PID feedback 21: analog level detection ADT1 22: analog level detection ADT2 24: undervoltage state 26: up to the set time 27: zero-speed running 38: off-load 47: PLC output 67: brake control 68: material cutoff detection output 69: FDT1 lower limit (pulse) 70: FDT2 lower limit (pulse) 71: FDT1 lower limit (pulse, invalid in JOG) 72: FDT2 lower limit (pulse, invalid in JOG) 73: output overcurrent				
F03.05	Options of output signal type	D7 D6 D5 D4 D3 D2 D1 D0 * * * * * R1 * Y1 0: level 1: single pulse		0*0	○	0x0305

F03.06	Positive/negative logic of digital output	D7	D6	D5	D4	D3	D2	D1	D0		0*0	○	0x0306
		*	*	*	*	*	R1	*	Y1				
		0: positive logic, valid in the closed state/invalid in the open state 1: Negative logic, invalid in the closed state/valid in the open state											
F03.08	Output status control in jog	D7	D6	D5	D4	D3	D2	D1	D0		00000	○	0x0308
		*	*	*	REV	FDT2	FDT1	FAR	RUN				
		0: valid in jogging 1: invalid in jogging											
F03.09	Y1 valid delay time	0.000～30.000								s	0.000	●	0x0309
F03.10	Y1 invalid delay time	0.000～30.000								s	0.000	●	0x030A
F03.13	R1 valid delay time	0.000～30.000								s	0.000	●	0x030D
F03.14	R1 invalid delay time	0.000～30.000								s	0.000	●	0x030E
F03.17	Single pulse time of Y1 output	0.001～30.000								s	0.250	●	0x0311
F03.19	Single pulse time of R1 output	0.001～30.000								s	0.250	●	0x0313
F03.21	Options of analog output M1	0: running frequency (absolute value) 1: set frequency (absolute value) 2: output torque (absolute value) 3: set torque (absolute value) 4: output current 5: output voltage 6: bus voltage 7: output power 8：AI1 9：AI2 12: high-frequency pulse input (with 100% corresponding to 100.00kHz)									0	○	0x0315

		13: communication setting 1 14: count value 15: length value 16: PID output 18: PID feedback 19: PID setting 30: communication setting 2				
F03.27	M1 output bias	-100.0～100.0	%	0.0	●	0x031B
F03.28	M1 output gain	-10.000～10.000		1.000	●	0x031C
F03.31	Control logic options of PLC output terminal	D7 D6 D5 D4 D3 D2 D1 D0 * * * * * R1 * Y1 0: no output 1: output		00000	●	0x031F
F03.34	Selection of analog output M1 type	0: 0~10V 1: 4~20mA 2: 0~20mA		0	○	0x0322
F04	**Start/stop control parameter group**					
F04.00	Start-up method	0: direct start 1: start of speed tracking		0	○	0x0400
F04.01	Start frequency	0.00 ~ 10.00	Hz	0.00	○	0x0401
F04.02	Start frequency hold time	0.00 ~ 60.00, 0.00 is invalid	s	0.00	○	0x0402
F04.03	Starting current of DC braking	0.0～100.0 (100.0 = Rated current of motor)	%	100.0	○	0x0403
F04.04	Starting time of DC braking	0.00～30.00 0.00: invalid	s	0.00	○	0x0404
F04.06	Pre-excitation current	50.0 ~ 500.0 (100.0 = no-load current)	%	100.0	○	0x0406
F04.07	Pre-excitation time	0.00 ~ 10.00	s	0.10	○	0x0407
F04.08	Speed tracking mode	Ones place: tracking start frequency 0: maximum frequency 1: stop frequency		0	○	0x0408

		2: power frequency Tens place: selection of search direction 0: search only in command direction 1: search in the opposite direction if the speed cannot be found in the command direction				
F04.10	Deceleration time of speed tracking	0.1 ~ 20.0	s	2.0	○	0x040A
F04.11	Speed tracking current	30.0 ~ 150.0 (100.0 = rated current of inverter)	%	50.0	○	0x040B
F04.12	Speed tracking compensation gain	0.00 ~ 10.00		1.00	○	0x040C
F04.14	Acceleration and deceleration mode	0: linear acceleration and deceleration 1: acceleration and deceleration of continuous S curve 2: acceleration and deceleration of intermittent S curve		0	○	0x040E
F04.15	Starting time of S curve in acceleration	0.00~30.00(F15.13=0) 0.0~300.0(F15.13=1) 0~3000(F15.13=2)	s	1.00	●	0x040F
F04.16	Ending time of S curve in acceleration	0.00~30.00(F15.13=0) 0.0~300.0(F15.13=1) 0~3000(F15.13=2)	s	1.00	●	0x0410
F04.17	Starting time of S curve in deceleration	0.00~30.00(F15.13=0) 0.0~300.0(F15.13=1) 0~3000(F15.13=2)	s	1.00	●	0x0411
F04.18	Ending time of S curve in deceleration	0.00~30.00(F15.13=0) 0.0~300.0(F15.13=1) 0~3000(F15.13=2)	s	1.00	●	0x0412
F04.19	Stop mode	0: slow down to stop 1: free stop		0	○	0x0413
F04.20	Starting frequency of DC braking in stop	0.00Hz to maximum frequency F00.16	Hz	0.00	○	0x0414

F04.21	DC braking current in stop	0.0～100.0 (100.0 = Rated current of motor)	%	50.0%	○	0x0415
F04.22	DC braking time in stop	0.00～30.00 0.00: invalid	s	0.00	○	0x0416
F04.23	Demagnetization time for DC braking in stop	0.00 ~ 30.00	s	0.50	○	0x0417
F04.24	Flux braking gain	100~150 (100: no flux braking)		100	○	0x0418
F04.26	Start mode after protection/free stop	0: start according to F04.00 setting mode 1: start of speed tracking		0	○	0x041A
F04.27	Second confirmation of terminal start command	0: Not required for confirmation 1: to be confirmed 2: Not required for confirmation of mode 2(also not required during fault reset)		0	○	0x041B
F04.28	Lowest effective output frequency	0.00～50.00（0.00：function invalid）	Hz	0.00	○	0x041C
F04.29	Zero speed check frequency	0.00 ~ 5.00	Hz	0.25	●	0x041D
F04.30	Initial magnetic pole search mode of synchronous motor	0: Invalid 1: Mode 1		0	●	0x041E
F05	**V/F control parameter group**					
F05.00	V/F curve setting	0: straight line V/F 1: multi-point broken line V/F 2: 1.3-power V/F 3: 1.7-power V/F 4: square V/F 5: vf complete separation mode (Ud = 0, Uq = K * t = voltage of separation voltage source) 6: vf semi-separation mode (Ud = 0, Uq = K * t = F/Fe * 2 * voltage of separation voltage source)		0	○	0x0500
F05.01	Frequency point F1 of multi-point VF	0.00 ~ F05.03	Hz	0.50	●	0x0501
F05.02	Voltage point V1 of multi-point VF	0.0～100.0 (100.0 = Rated voltage)	%	1.0	●	0x0502

F05.03	Frequency point F2 of multi-point VF	F05.01～F05.05	Hz	2.00	●	0x0503
F05.04	Voltage point V2 of multi-point VF	0.0~100.0	%	4.0	●	0x0504
F05.05	Frequency point F3 of multi-point VF	F05.03 to rated frequency of motor (reference frequency)	Hz	5.00	●	0x0505
F05.06	Voltage point V3 of multi-point VF	0.0~100.0	%	10.0	●	0x0506
F05.07	Voltage source of VF separation mode	0: digital setting of VF separation voltage 1：AI1 2：AI2 4: high-frequency pulse (X5) 5：PID 6: communication setting note: 100% is the rated voltage of the motor.		0	○	0x0507
F05.08	Digital setting of VF separation voltage	0.0~100.0 (100.0 = rated voltage of motor)	%	0.0	●	0x0508
F05.09	Rise time of VF separation voltage	0.00 ~ 60.00	s	2.00	●	0x0509
F05.10	Compensation gain of V/F stator voltage drop	0.00 ~ 200.00	%	100.00	●	0x050A
F05.11	V/F slip compensation gain	0.00 ~ 200.00	%	100.00	●	0x050B
F05.12	V/F slip filtering time	0.00 ~ 10.00	s	1.00	●	0x050C
F05.13	Oscillation suppression gain	0 ~ 10000		100	●	0x050D
F05.14	Oscillation suppression cutoff frequency	0.00~600.00	Hz	55.00	●	0x050E
F05.15	Droop control frequency	0.00 ~ 10.00	Hz	0.00	●	0x050F
F05.16	Energy saving rate	0.00 ~ 50.00	%	0.00	●	0x0510
F05.17	Energy saving action time	1.00 ~ 60.00	s	5.00	●	0x0511

F05.18	Flux compensation gain of synchronous motor	0.00 ~500.00	%	0.00	●	0x0512
F05.19	Filtering time constant of flux compensation of synchronous motor	0.00 ~ 10.00	s	0.50	●	0x0513
F05.20	Change rate of VF separate power supply setting	-500.0 ~ +500.0	%	0.0	●	0x0514
F05.21	Manual torque boost cut-off frequency	-50.00～50.00	%	0.00	●	0x0515
F05.22	Automatic torque boost gain	0.00～50.00	Hz	50.00	●	0x0516
F05.23	Oscillation suppression mode selection	0: Low-pass filter suppression 1: Low-pass and high-pass filter suppression		0	○	0x0517
F05.24	Torque current filter time constant	0.0～6500.0	ms	30.0	●	0x0518
F05.25	Excitation current filter time constant	0.0～500.0	ms	0.5	●	0x0519
F05.26	Overexcitation enable bit	0: Disable overexcitation function 1: Enable overexcitation function		1	○	0x051A
F05.27	Overexcitation current setting value	0.0～180.0	%	150.0	●	0x051B
F05.28	Overexcitation action voltage	110.0～140.0	%	120.0	●	0x051C
F05.29	Overexcitation current regulation proportional gain	0.00～100.00	ms	0.10	●	0x051D
F05.30	Overexcitation current regulation integration time	0.00～600.00	ms	50.00	●	0x051E
F05.31	Overvoltage suppression adjusts the proportional gain	0.00～600.00	ms	2.50	●	0x051F
F05.32	Overvoltage suppression	0.00～600.00	ms	20.00	●	0x0520

	frequency modulation integration time					
F05.33	Undervoltage suppression frequency modulation time	0.00～600.00	ms	30.00	●	0x0521
F05.34	Torque boost loop proportional gain	0.00～600.00	ms	0.50	●	0x0522
F05.35	Torque boost loop integral time	0.00～600.00	ms	20.00	●	0x0523
F05.36	Oscillation suppression gain during acceleration and deceleration	0～20000		10	●	0x0524
F05.37	Asynchronous machine VF high speed overcurrent stall gain	0.00～60.00		0.10	●	0x0525
F05.38	Asynchronous motor VF high speed overcurrent stall integral time	0.000～6.000	ms	0.350	●	0x0526
F05.39	Asynchronous machine VF method selection	0: VF control 1: VF optimization mode 2: VF performance improvement mode		1	○	0x0527
F06	**Vector control parameter group**					
F06.00	Speed proportional gain ASR_P1	0.00 ~ 100.00		12.00	●	0x0600
F06.01	Speed integral time constant ASR_T1	0.000-30.000 0.000: no integral	s	0.200	●	0x0601
F06.02	Speed proportional gain ASR_P2	0.00 ~ 100.00		8.00	●	0x0602
F06.03	Speed integral time constant ASR_T2	0.000-30.000 0.000: no integral	s	0.300	●	0x0603

F06.04	Switching frequency 1	0.00 to switching frequency 2	Hz	5.00	●	0x0604
F06.05	Switching frequency 2	Switching frequency 1 to maximum frequency F00.16	Hz	10.00	●	0x0605
F06.06	No-load current gain	50.0~300.0	%	100.0	●	0x0606
F06.07	Filtering time constant of speed loop output	0.000 ~ 0.100	s	0.001	●	0x0607
F06.08	Vector control slip gain	50.00 ~ 200.00	%	100.00	●	0x0608
F06.09	Upper limit source selection of speed control torque	0: set by F06.10 and F06.11 1: AI1 2: AI2 3: reserved 4: reserved 5: communication setting (percentage) 6: The larger of AI1 and AI2 7: The smaller of AI1 and AI2		0	○	0x0609
F06.10	Upper limit of speed control motor torque	0.0 ~ 250.0	%	165.0	●	0x060A
F06.11	Upper limit of speed control brake torque	0.0 ~ 250.0	%	165.0	●	0x060B
F06.12	Excitation current proportional gain ACR-P1	0.00 ~ 100.00		0.50	●	0x060C
F06.13	Excitation current integral time constant ACR-T1	0.00-600.00 0.00: no integral	ms	10.00	●	0x060D
F06.14	Torque current proportional gain ACR-P2	0.00 ~ 100.00		0.50	●	0x060E
F06.15	Torque current integral time constant ACR-T2	0.00 ~ 600.00 0.00: no integral	ms	10.00	●	0x060F

F06.17	SVC zero-frequency processing	0: braking 1: not processed 2: seal the tube		2	○	0x0611
F06.18	SVC zero-frequency braking current	50.0 ~ 400.0 (100.0 is the no-load current of the motor)	%	100.0	○	0x0612
F06.20	Voltage feedforward gain	0 ~ 100	%	0	●	0x0614
F06.21	Flux weakening control options	0: invalid 1: direct calculation 2: automatic adjustment		2	○	0x0615
F06.22	Flux weakening voltage	70.00 ~ 100.00	%	95.00	●	0x0616
F06.23	Maximum field weakening current of synchronous motor	0.0 ~ 150.0 (100.0 is the rated current of the motor)	%	100.0	●	0x0617
F06.24	Proportional gain of flux weakening regulator	0.00 ~ 10.00		0.50	●	0x0618
F06.25	Integral time of flux weakening regulator	0.01 ~ 60.00	s	2.00	●	0x0619
F06.26	MTPA control option of synchronous motor	0: invalid 1: valid		1	○	0x061A
F06.27	Self-learning gain at initial position	0 ~ 200	%	100	●	0x061B
F06.28	Frequency of low frequency band of injection current	0.00 ~ 100.00 (100.00 is the rated frequency of the motor)	%	10.00	●	0x061C
F06.29	Injection current of low frequency band	0.0 ~ 60.0 (100.0 is the rated current of the motor)	%	20.0 40.0-(F1 6.00=2)	●	0x061D
F06.30	Regulator gain of low frequency band of injection current	0.00 ~ 10.00		0.50	●	0x061E

F06.31	Regulator integral time of low frequency band of injection current	0.00 ~ 300.00	ms	10.00	●	0x061F
F06.32	Frequency of high frequency band of injection current	0.00 ~ 100.00 (100.00 is the rated frequency of the motor)	%	20.00	●	0x0620
F06.33	Injection current of high frequency band	0.0 ~ 30.0 (100.0 is the rated current of the motor)	%	8.0	●	0x0621
F06.34	Regulator gain of high frequency band of injection current	0.00 ~ 10.00		0.50	●	0x0622
F06.35	Regulator integral time of high frequency band of injection current	0.00 ~ 300.00	ms	10.00	●	0x0623
F06.36	Magnetic saturation coefficient of synchronous motor	0.00~1.00		0.75	○	0x0624
F06.37	Stiffness coefficient of speed loop	0~20		12	●	0x0625
F06.38	Gain coefficient of sliding mode of synchronous motor	1.00~3.70		3.50	○	0x0626
F06.39	Error width of sliding mode of synchronous motor	0.005~0.100		0.100	○	0x0627
F06.40	Amplitude of injected reactive current of synchronous motor	0.0~20.0	%	10.0	○	0x0628
F06.41	Open-loop low-frequency processing of synchronous motor	0: VF 1: IF 2: IF in start and VF in stop		0	○	0x0629
F06.42	Open-loop low-frequency processing range of	0.0 ~ 50.0	%	8.0	○	0x062A

	synchronous motor					
F06.43	IF injection current	0.0 ~ 600.0	%	50.0	○	0x062B
F06.44	Time constant of pull-in current of magnetic pole	0.0 ~ 6000.0	ms	1.0	○	0x062C
F06.45	Initial lead angle of magnetic pole	0.0 ~ 359.9	°	30.0	○	0x062D
F06.46	Speed tracking proportional gain of synchronous motor	0.00 ~ 10.00		1.00	○	0x062E
F06.47	Speed tracking integral gain of synchronous motor	0.00 ~ 10.00		1.00	○	0x062F
F06.48	Filtering time constant of speed tracking of synchronous motor	0.00 ~ 10.00	ms	0.40	○	0x0630
F06.49	Speed tracking control intensity of synchronous motor	1.0 ~ 100.0		5.0	○	0x0631
F06.50	Speed tracking control threshold of synchronous motor	0.00 ~ 10.00		0.20	○	0x0632
F06.51	Rise time of injected active current of synchronous motor	0.010 ~ 1.000	s	0.020	○	0x0633
F06.52	High frequency injection switching frequency point	0.0～50.0	%	2.5	●	0x0652
F06.58	Initial position self-learning injection pulse width	0.020～5.000	ms	0.050	○	0x063A
F06.61	Initial position self-learning current setting	0.00～1.25	%	0.75	○	0x063d
F06.62	High frequency injection enable bit	0: Disable high-frequency injection (recommended for surface-mount motors) 1: High-frequency injection method 1		0	○	0x063E

		(recommended for embedded motors) 2: High-frequency injection method 2 (recommended for embedded motors) 3: High-frequency injection method 3 (recommended for embedded motors)				
F06.63	High frequency injection voltage	5～100	V	28	○	0x063F
F06.64	High frequency injection frequency	1～2000	Hz	500	○	0x0640
F06.65	Passband Width	1～100	Hz	40	○	0x0641
F06.66	Synchronous motor type	0: Embedded permanent magnet synchronous motor 1: Surface mounted permanent magnet synchronous motor 2: Permanent magnet direct drive motor		1	○	0x642
F06.67	Id_MTPA current given gain	0.0～0.1	%	100.0	●	0x0643
F06.69	Estimated speed proportional gain	10～1000		100	○	0x0645
F06.74	High frequency injection proportional gain	0.00～10.00		0.50	●	0x064A
F06.75	High frequency injection integration time constant	0.00～60.00	s	0.30	●	0x064B
F06.76	Low-speed correction factor of stator resistor of asynchronous motor	10.0~500.0	%	100.0	●	0x064C
F06.77	Low speed correction factor of rotor resistor of asynchronous motor	10.0~500.0	%	100.0	●	0x064D
F06.78	Slip gain switching frequency of asynchronous	0.10 ~ Fmax	Hz	5.00	○	0x064D

	motor					
F06.82	Udc filtering time constant	0～1500.0	ms	2.0	●	0x0652
F06.83	Flux coefficient online identification enable bit	0: Disable 1: Enable		0	○	0x0653
F06.84	Back EMF estimation integration time	0～500		100	●	0x0654
F06.85	Back EMF Estimation Proportional Gain	0～500		20	●	0x0655
F06.86	Selection of Derivation Methods for Synchronous Machine Speed Estimation Model	0～3		0	○	0x0656
F06.87	Excitation current estimation compensation factor	0.00～0.99		0	●	0x0657
F06.88	IF test is enabled	0～1		0	○	0x0658
F06.89	IF test current given	0.0～150.0	%	50.0	○	0x0659
F06.90	IF test current oscillation gain	0.000～2.000		0.010	●	0x065A
F06.91	Zero servo speed loop proportional gain	0.00～100.00		40.00	●	0x0658
F06.92	Zero servo speed loop integral time constant	0.000～30.000 0.000：No points	s	0.050	●	0x0659
F06.93	Zero servo action time	0.0～30.0	s	1.0	●	0x065A
F07	**Protection function setting group**					
F07.00	Protection shield	E20 * E13 E06 * E04 E07 E08		0*0 0*000	○	0x0700
		0: valid protection 1: shielded protection				
F07.01	Motor overload protection	0.20 ~ 10.00		1.00	●	0x0701

	gain					
F07.02	Motor overload pre-alarm coefficient	50 ~ 100	%	80	●	0x0702
F07.06	Bus voltage control options	Ones place: instantaneous stop/no-stop function options 0: invalid 1: deceleration 2: deceleration to stop Tens place: overvoltage stall function options 0: invalid 1: valid		10	○	0x0706
F07.07	Voltage of overvoltage stall control	110.0 ~ 150.0 (380V, 100.0=537V)	%	131.0 (703V)	○	0x0707
F07.08	Instantaneous stop/no-stop operating voltage	60.0 to instantaneous stop/no-stop recovery voltage (100.0 = standard bus voltage)	%	76.0	○	0x0708
F07.09	Instantaneous stop/no-stop recovery voltage	instantaneous stop/no-stop operating voltage to 100.0	%	86.0	●	0x0709
F07.10	Check time for instantaneous stop/no-stop recovery voltage	0.00 ~ 100.00	s	0.50	●	0x070A
F07.11	Current limit control	0: invalid 1: limit mode 1 2: limit mode 2		2	○	0x070B
F07.12	Current limit level	20.0-180.0(100.0 = the rated current of inverter)	%	150.0	●	0x070C
F07.13	Quick current limit options	0: invalid 1: valid		0	○	0x070D
F07.14	Protection retries	0-20; 0: Disable protection retry		0	○	0x070E
F07.15	Options of digital output action in protection retries	0: no action 1: action		0	○	0x070F
F07.16	Interval of protection retries	0.01 ~ 30.00	s	0.50	●	0x0710

F07.17	Restoration time of protection retries	0.01 ~ 30.00								s	10.00	●	0x0711
F07.18	Action option of protection	E08	*	E07	*	E02	E06	E05	E04		0 *0 *0000	○	0x0712
		0: allow protection retry 1: disable protection retry											
F07.19	Action option 1 of protection	E21	E16	E15	E14	E13	*	E08	E07		000 00*00	○	0x0713
		0: free stop 1: stop according to stop mode											
F07.20	Action option 2 of protection	E28		E27		*		E23			00*0	○	0x0714
		0: free stop 1: stop according to stop mode											
F07.21	Options of load loss protection	0: invalid 1: valid									0	●	0x0715
F07.22	Load loss detection level	0.0 ~ 100.0								%	20.0	●	0x0716
F07.23	Load loss detection time	0.0 ~ 60.0								s	1.0	●	0x0717
F07.24	Options of load loss protection action	0: trip protection, free stop 1: trip protection, stop according to stop mode 2: continue to run, with DO status output									1	○	0x0718
F07.25	Motor overspeed detection level	0.0 ~ 50.0 (reference: maximum frequency F00.16)								%	20.0	●	0x0719
F07.26	Motor overspeed detection time	0.0 ~ 60.0, 0.0: disable motor overspeed protection								s	1.0	●	0x071A
F07.27	AVR function	0: invalid 1: valid 2: automatic									1	○	0x071B
F07.28	Stall protection detection time	0.0~6000.0(0.0: no stall protection detection)								s	0.0	○	0x071C

F07.29	Stall control intensity	0 ~ 100								%	20	○	0x071D
F07.30	Instantaneous stop/no-stop deceleration time	0.00 ~ 300.00								s	20.00	○	0x071E
F07.32	Action option 2 of protection	E10	E13	E15	E16	*	E19	E20	*		000 00000	○	0x0720
		0: allow protection retry 1: disable protection retry											
F07.36	Action option 3 of protection	*	*	*	*	*	*	E09	E17		**** *00	○	0x0724
		0: allow protection retry 1: disable protection retry											
F07.37	Save the initial voltage during power-off	60.0～100.0								%	76.0	○	0x0725
F07.38	Power-on read and judge the voltage	60.0～100.0								%	86.0	○	0x0726
F07.39	Power-on read judgment delay time	0～100.00								S	5.00	○	0x0727
F07.40	Steady-state undervoltage judgment delay time	5～6000								ms	20	○	0x0728
F07.42	Short-circuit the ground to judge the setting value of the current	0.0～100.0								%	20	○	0x072A
F07.48	Stall judgment frequency	0-600.00								Hz	10.00	●	0x0730
F07.49	Stall judgment time	0-60.000								s	0	●	0x0731
F07.50	STO fault reset	0-1									0	○	0x0732
F08	**Multi-segment speed and simple PLC**												
F08.00	Multi-segment speed 1	0.00 to maximum frequency F00.16								Hz	0.00	●	0x0800
F08.01	Multi-segment speed 2	0.00 to maximum frequency F00.16								Hz	5.00	●	0x0801

F08.02	Multi-segment speed 3	0.00 to maximum frequency F00.16	Hz	10.00	●	0x0802
F08.03	Multi-segment speed 4	0.00 to maximum frequency F00.16	Hz	15.00	●	0x0803
F08.04	Multi-segment speed 5	0.00 to maximum frequency F00.16	Hz	20.00	●	0x0804
F08.05	Multi-segment speed 6	0.00 to maximum frequency F00.16	Hz	25.00	●	0x0805
F08.06	Multi-segment speed 7	0.00 to maximum frequency F00.16	Hz	30.00	●	0x0806
F08.07	Multi-segment speed 8	0.00 to maximum frequency F00.16	Hz	35.00	●	0x0807
F08.08	Multi-segment speed 9	0.00 to maximum frequency F00.16	Hz	40.00	●	0x0808
F08.09	Multi-speed 10	0.00 to maximum frequency F00.16	Hz	45.00	●	0x0809
F08.10	Multi-segment speed 11	0.00 to maximum frequency F00.16	Hz	50.00	●	0x080A
F08.11	Multi-segment speed 12	0.00 to maximum frequency F00.16	Hz	50.00	●	0x080B
F08.12	Multi-segment speed 13	0.00 to maximum frequency F00.16	Hz	50.00	●	0x080C
F08.13	Multi-segment speed 14	0.00 to maximum frequency F00.16	Hz	50.00	●	0x080D
F08.14	Multi-segment speed 15	0.00 to maximum frequency F00.16	Hz	50.00	●	0x080E
F08.15	Simple PLC running mode	0: stop after a single run 1: stop after a limited number of cycles 2: run at the last segment after a limited number of cycles 3: continuous cycles		0	●	0x080F
F08.16	Limited number of cycles	1 ~ 10000		1	●	0x0810
F08.17	Simple PLC memory options	Ones place: stop memory options 0: no memory (from the first segment) 1: memory (from the moment of stop) Tens place: power-down memory options 0: no memory (from the first segment) 1: memory (from the power-down moment)		0	●	0x0811
F08.18	Simple PLC time unit	0: s (second) 1: min (minute)		0	●	0x0812
F08.19	Setting of the first segment	Ones place: running direction options 0: forward		0	●	0x0813

		1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4				
F08.20	Running time of the first segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0814
F08.21	Setting of the second segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x0815
F08.22	Running time of the second segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0816
F08.23	Setting of the third segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x0817
F08.24	Running time of the third segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0818

F08.25	Setting of the fourth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x0819
F08.26	Running time of the fourth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x081A
F08.27	Setting of the fifth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x081B
F08.28	Running time of the fifth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x081C
F08.29	Setting of the sixth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x081D

F08.30	Running time of the sixth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x081E
F08.31	Setting of the seventh segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x081F
F08.32	Running time of the seventh segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0820
F08.33	Setting of the eighth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x0821
F08.34	Running time of the eighth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0822
F08.35	Setting of the ninth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2		0	●	0x0823

		2: acceleration and deceleration time 3 3: acceleration and deceleration time 4				
F08.36	Running time of the ninth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0824
F08.37	Setting of the tenth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x0825
F08.38	Running time of the tenth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0826
F08.39	Setting of the eleventh segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x0827
F08.40	Running time of the eleventh segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0828
F08.41	Setting of the twelfth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options		0	●	0x0829

		0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4				
F08.42	Running time of the twelfth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x082A
F08.43	Setting of the thirteenth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x082B
F08.44	Running time of the thirteenth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x082C
F08.45	Setting of the fourteenth segment	Ones place: running direction options 0: forward 1: reverse Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4		0	●	0x082D
F08.46	Running time of the fourteenth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x082E
F08.47	Setting of the fifteenth segment	Ones place: running direction options 0: forward 1: reverse		0	●	0x082F

		Tens place: acceleration and deceleration time options 0: acceleration and deceleration time 1 1: acceleration and deceleration time 2 2: acceleration and deceleration time 3 3: acceleration and deceleration time 4				
F08.48	Running time of the fifteenth segment	0.0 ~ 6000.0	s/ min	5.0	●	0x0830
F09	**PID function group**					
F09.00	PID setting source	0: digital PID setting 1: AI1 2: AI2 3: reserved 4: reserved 5: PULSE, high-frequency pulse (X5) 6: communication setting		0	○	0x0900
F09.01	Digital PID setting	0.0 to PID setting feedback range F09.03		0.0	●	0x0901
F09.02	PID feedback source	1: AI1 2: AI2 3: reserved 4: reserved 5: PULSE, high-frequency pulse (X5) 6: communication setting		1	○	0x0902
F09.03	PID setting feedback range	0.1 ~ 6000.0		100.0	●	0x0903
F09.04	PID positive and negative action selection	0: positive 1: negative		0	○	0x0904
F09.05	Proportional gain 1	0.00 ~ 100.00		0.40	●	0x0905
F09.06	Integral time 1	0.000 ~ 30.000, 0.000: no integral	s	2.000	●	0x0906
F09.07	Differential time 1	0.000 ~ 30.000	ms	0.000	●	0x0907
F09.08	Proportional gain 2	0.00 ~ 100.00		0.40	●	0x0908

F09.09	Integral time 2	0.000 ~ 30.000, 0.000: no integral	s	2.000	●	0x0909
F09.10	Differential time 2	0.000 ~ 30.000	ms	0.000	●	0x090A
F09.11	PID parameter switching conditions	0: no switching 1: switching via digital input terminal 2: automatic switching according to deviation 3: automatic switching by frequency		0	●	0x090B
F09.12	PID parameter switching deviation 1	0.00 ~ F09.13	%	20.00	●	0x090C
F09.13	PID parameter switching deviation 2	F09.12 ~ 100.00	%	80.00	●	0x090D
F09.14	Initial PID value	0.00~100.00	%	0.00	●	0x090E
F09.15	PID initial value holding time	0.00～650.00	s	0.00	●	0x090F
F09.16	Upper limit of PID output	F9.17~ +100.0	%	100.0	●	0x0910
F09.17	Lower limit of PID output	–100.0~F9.16	%	0.0	●	0x0911
F09.18	PID deviation limit	0.00~100.00 (0.00: invalid)	%	0.00	●	0x0912
F09.19	PID differential limit	0.00~100.00	%	5.00	●	0x0913
F09.20	PID integral separation threshold	0.00~100.00 (100.00% = invalid integral separation)	%	100.00	●	0x0914
F09.21	PID setting change time	0.000~30.000	s	0.000	●	0x0915
F09.22	PID feedback filtering time	0.000~30.000	s	0.000	●	0x0916
F09.23	PID output filtering time	0.000~30.000	s	0.000	●	0x0917
F09.24	Upper limit detection value of PID feedback disconnection	0.00~100.00; 100.00 = invalid feedback disconnection	%	100.00	●	0x0918
F09.25	Lower limit detection value of PID feedback disconnection	0.00~100.00; 0.00 = invalid feedback disconnection	%	0.00	●	0x0919
F09.26	Detection time of PID	0.000 ~ 30.000	s	0.000	●	0x091A

	feedback disconnection					
F09.27	PID sleep control options	0: invalid 1: sleep at zero speed 2: sleep at lower frequency limit 3: sleep with tube sealed		0	●	0x091B
F09.28	Sleep action point	0.00-100.00 (100.00 corresponds to the PID setting feedback range)	%	100.00	●	0x091C
F09.29	Sleep delay time	0.0 ~ 6500.0	s	0.0	●	0x091D
F09.30	Wake-up action point	0.00 ~100.00 (100.00 corresponds to the PID setting feedback range)	%	0.00	●	0x091E
F09.31	Wake-up delay time	0.0 ~ 6500.0	s	0.0	●	0x091F
F09.32	Multi-segment PID setting 1	0.0 to PID setting feedback range F09.03		0.0	●	0x0920
F09.33	Multi-segment PID setting 2	0.0 to PID setting feedback range F09.03		0.0	●	0x0921
F09.34	Multi-segment PID setting 3	0.0 to PID setting feedback range F09.03		0.0	●	0x0922
F09.35	Upper limit of feedback voltage	lower limit of feedback voltage to 10.00	V	10.00	●	0x0923
F09.36	Lower limit of feedback voltage	0.00 to upper limit of feedback voltage	V	0.00	●	0x0924
F09.37	Integral action option within set PID change time	0: always calculate the integral term 1: calculate the integral term after the F09.21 set time is reached 2: calculate the integral term when the error is less than F09.38		0 Straight -2	●	0x0925
F09.38	Integral within set PID change time Input deviation	0.00-100.00	%	0	●	0x0926
F09.39	Wake-up option	0: target pressure F09.01* coefficient of wake-up		0	○	0x0927

		action point 1: wake-up action point (F09.30)				
F09.40	Coefficient of wake-up action point	0.0~100.0 (100% corresponds to PID setting)	%	90.0	●	0x0928
F09.41	Pipeline network alarm overpressure	0.0 to pressure sensor range F09.03	%	90.0	●	0x0929
F09.42	Overpressure protection time	0 ~ 3600 (0: invalid)	s	6	●	0x092A
F09.43	PID reverse limit	0: no limit 1: limit		1	○	0x092B
F09.44	Dormation method selection	0: Follow the frequency of dormancy (F09.45) 1: Follow the dormant movement point to sleep (F09.28)		0	○	0x092C
F09.45	Dormant frequency	0.00 ~ upper limit frequency f00.18	Hz	30.00	●	0x092D
F09.46	Pressure feedback increment	0～100		5	●	0x092E
F09.47	PID regulating dead area	0.00～600.00	Bar	0.02	●	0x092F
F10	**Communication function group**					
F10.00	Local Modbus communication address	1-247; 0: broadcast address		1	○	0x0A00
F10.01	Baud rate of Modbus communication	0:4800 1:9600 2:19200 3:38400 4:57600 5:115200		1	○	0x0A01
F10.02	Modbus data format	0: 1-8-N-1 (1 start bit + 8 data bits + 1 stop bit) 1: 1-8-E-1 (1 start bit + 8 data bits + 1 even parity check bit + 1 stop bit) 2: 1-8-O-1 (1 start bit + 8 data bits + 1 odd parity check bit + 1 stop bit)		0	○	0x0A02

		3: 1-8-N-2 (1 start bit + 8 data bits + 2 stop bits) 4: 1-8-E-2 (1 start bit + 8 data bits + 1 even parity check bit + 2 stop bits) 5: 1-8-O-2 (1 start bit + 8 data bits + 1 odd parity check bit + 2 stop bits)				
F10.03	485 communication timeout	0.0s ~ 60.0s; 0.0: invalid (valid for the master-slave mode)	s	0.0	●	0x0A03
F10.04	Modbus response delay	1 ~ 20	ms	2	●	0x0A04
F10.05	Options of master-slave communication function	0: invalid 1: valid		0	○	0x0A05
F10.06	Master-slave options	0: slave 1: host (Modbus protocol broadcast transmission)		0	○	0x0A06
F10.07	Data sent by host	0: output frequency 1: set frequency 2: output torque 3: set torque 4: PID setting 5: output current		1	○	0x0A07
F10.08	Proportional factor of slave reception	0.00 ~ 10.00 (multiple)		1.00	●	0x0A08
F10.09	Host sending interval	0.000 ~ 30.000	s	0.200	●	0x0A09
F10.10	Communication protocol option	0: Modbus-RTU protocol		0	×	0x0A0A
F10.56	Options of 485 EEPROM writing	0-10: default operation (for commissioning) 11: writing not triggered (available after commissioning)		0	○	0x0A38
F10.57	Enabling of SCI sending timeout resetting	0: invalid resetting 1: valid resetting		1	●	0x0A39
F10.58	Delay time of SCI sending timeout resetting	110 ~10000	mS	150	●	0x0A3A
F10.61	SCI response option	0: reply to both read and write commands		0	○	0x0A3

		1: reply to write commands only 2: no reply to both read and write commands				D
F11	**User-selected parameter group**					
F11.00	User-selected parameter 1	The displayed content is Uxx.xx, which means that the Fxx.xx function code is selected When the function code F11.00 is enabled, the keyboard displays U00.00, indicating that the first selected parameter is F00.00.		U 00.00	●	0x0B00
F11.01	User-selected parameter 2			U 00.01	●	0x0B01
F11.02	User-selected parameter 3			U 00.02	●	0x0B02
F11.03	User-selected parameter 4			U 00.03	●	0x0B03
F11.04	User-selected parameter 5			U 00.04	●	0x0B04
F11.05	User-selected parameter 6			U 00.07	●	0x0B05
F11.06	User-selected parameter 7			U 00.14	●	0x0B06
F11.07	User-selected parameter 8			U 00.15	●	0x0B07
F11.08	User-selected parameter 9			U 00.16	●	0x0B08
F11.09	User-selected parameter 10			U 00.18	●	0x0B09
F11.10	User-selected parameter 11			U 00.19	●	0x0B0A
F11.11	User-selected parameter 12			U 00.29	●	0x0B0B
F11.12	User-selected parameter 13			U 02.00	●	0x0B0C
F11.13	User-selected parameter 14			U 02.01	●	0x0B0D

F11.14	User-selected parameter 15			U 02.02	●	0x0B0E
F11.15	User-selected parameter 16			U 03.00	●	0x0B0F
F11.16	User-selected parameter 17			U 03.02	●	0x0B10
F11.17	User-selected parameter 18			U 03.21	●	0x0B11
F11.18	User-selected parameter 19			U 04.00	●	0x0B12
F11.19	User-selected parameter 20			U 04.20	●	0x0B13
F11.20	User-selected parameter 21			U 05.00	●	0x0B14
F11.21	User-selected parameter 22			U 05.03	●	0x0B15
F11.22	User-selected parameter 23			U 05.04	●	0x0B16
F11.23	User-selected parameter 24			U 08.00	●	0x0B17
F11.24	User-selected parameter 25			U 19.00	●	0x0B18
F11.25	User-selected parameter 26			U 19.01	●	0x0B19
F11.26	User-selected parameter 27			U 19.02	●	0x0B1A
F11.27	User-selected parameter 28			U 19.03	●	0x0B1B
F11.28	User-selected parameter 29			U 19.04	●	0x0B1C
F11.29	User-selected parameter 30			U	●	0x0B1

				19.05		D
F11.30	User-selected parameter 31			U 19.06	●	0x0B1E
F12	**Keyboard and display function group**					
F12.00	Reserved			1	○	0x0C00
F12.01	Options of stop function of STOP key	0: valid only in keyboard control 1: with all command channels valid		1	○	0x0C01
F12.02	Parameter locking	0: do not lock 1: reference input not locked 2: all locked, except for this function code		0	●	0x0C02
F12.03	Parameter copying	0: no operation 1: parameter upload to keyboard 2: download parameters to inverter(F01 and F14 groups do not download) 3: download parameters to inverter		0	○	0x0C03
F12.09	Load speed display coefficient	0.01～600.00		30.00	●	0x0C09
F12.10	UP/DOWN acceleration and deceleration rate	0.00: automatic rate 0.05~500.00Hz/s		5.00Hz/s	○	0x0C0A
F12.11	Options of UP/DOWN offset clearing	0: not clear (clear changes in main frequency setting) 1: clear in non-running state 2: clear by releasing the UP/DOWN button 3: clear once in non-running state		0	○	0x0C0B
F12.12	Options of UP/DOWN power-down saving of offset	0: do not save 1: save (valid after the offset is modified)		1	○	0x0C0C
F12.13	Power meter resetting	0: do not clear 1: clear		0	●	0x0C0D
F12.14	Restoration of factory defaults	0: no operation 1: restoration of factory defaults (excluding the		0	○	0x0C0E

		motor parameters, inverter parameters, manufacturer parameters, running and power-on time record)				
F12.15	Cumulative power-on time (h)	0~65535	h	XXX	×	0x0C0F
F12.16	Cumulative power-on time (min)	0 ~ 59	min	XXX	×	0x0C10
F12.17	Cumulative running time (h)	0 ~ 65535	h	XXX	×	0x0C11
F12.18	Cumulative running time (min)	0 ~ 59	min	XXX	×	0x0C12
F12.19	Rated power of inverter	0.40 ~ 650.00	kW	Depending on the motor type	×	0x0C13
F12.20	Rated voltage of inverter	60 ~ 690	V	Depending on the motor type	×	0x0C14
F12.21	Rated current of inverter	0.1 ~ 1500.0	A	Depending on the motor type	×	0x0C15
F12.22	Performance software S/N 1	XXX.XX		XXX.XX	×	0x0C16
F12.23	Performance software S/N2	XX.XXX		XX.XXX	×	0x0C17
F12.24	Functional software S/N 1	XXX.XX		XXX.X	×	0x0C18

				X		
F12.25	Functional software S/N 2	XX.XXX		XX.XX X	×	0x0C19
F12.26	Keyboard software serial number 1	XXX.XX		XXX.X X	×	0x0C1 A
F12.27	Keyboard software serial number 2	XX.XXX		XX.XX X	×	0x0C1B
F12.28	Serial No. 1	XX.XXX		XX.XX X	×	0x0C1C
F12.29	Serial No. 2	XXXX.X		XXXX. X	×	0x0C1 D
F12.30	Serial No. 3	XXXXX		XXXX X	×	0x0C1E
F12.31	LCD language options	0: Chinese 1: English 2: reserved		0	●	0x0C1F
F12.33	Running status display parameter 1 of Mode 1 (LED stop status display parameter 5)	0.00 ~ 99.99		18.00	●	0x0C21
F12.34	Running status display parameter 2 of Mode 1 (LED stop status display parameter 1)	0.00 - 99.99		18.01	●	0x0C22
F12.35	Running status display parameter 3 of Mode 1 (LED stop status display parameter 2)	0.00 ~ 99.99		18.06	●	0x0C23
F12.36	Running status display parameter 4 of Mode 1	0.00 ~ 99.99		18.08	●	0x0C24

	(LED stop status display parameter 3)					
F12.37	Running status display parameter 5 of Mode 1 (LED stop status display parameter 4)	0.00 ~ 99.99		18.09	●	0x0C25
F12.38	LCD large-line display parameter 1	0.00 ~ 99.99		18.00	●	0x0C26
F12.39	LCD large-line display parameter 2	0.00 ~ 99.99		18.06	●	0x0C27
F12.40	LCD large-line display parameter 3	0.00 ~ 99.99		18.09	●	0x0C28
F12.41	Options of UP/DOWN zero crossing	0: invalid 1: valid		0	○	0x0C29
F12.42	Frequency setting of digital potentiometer	0.00 to maximum frequency F00.16	Hz	0.00	×	0x0C2A
F12.43	Digital potentiometer torque setting	0.00-|Digital torque setting F13.02|	%	0.0	×	0x0C2B
F12.45	UP/DOWN function options of keyboard	Communication / High- speed pulse / Analog quantity / Digital frequency / Multi-segment speed 0 / 0 / 0 / 0 / 0 0: invalid 1: valid		00000	○	0x0C2C
F12.48	Output frequency display	0：absolute value 1：positive/negative		1	●	0x0C30
F13	**Torque control parameter group**					
F13.00	Speed/torque control options	0: speed control 1: torque control		0	○	0x0D00
F13.01	Options of torque setting source	0: digital torque setting F13.02 1: AI1		0	○	0x0D01

		2: AI2 3: reserved 4: reserved 5: high frequency pulse input (X5) 6: communication setting 7: reserved 8: digital potentiometer setting (Full range of the items 1-6, corresponding to F13.02 digital torque setting)				
F13.02	Digital torque setting	-200.0 ~ 200.0	%	100.0	●	0x0D02
F13.03	Multi-segment torque 1	-200.0 ~ 200.0	%	0.0	●	0x0D03
F13.04	Multi-segment torque 2	-200.0 ~ 200.0	%	0.0	●	0x0D04
F13.05	Multi-segment torque 3	-200.0 ~ 200.0	%	0.0	●	0x0D05
F13.06	Torque control acceleration and deceleration time	0.00 ~ 120.00	s	0.00	●	0x0D06
F13.08	Upper frequency limit options of torque control	0: set by F13.09 1: AI1 2: AI2 3: reserved 4: reserved 5: high frequency pulse input (X5) 6: communication setting (percentage) 7: communication setting (direct frequency)		0	○	0x0D08
F13.09	Positive upper limit of torque control frequency	0.50 to maximum frequency F00.16	Hz	50.00	●	0x0D09
F13.10	Upper frequency limit offset	0.00 to maximum frequency F00.16	Hz	0.00	●	0x0D0A
F13.11	Static friction torque compensation	0.0 ~ 100.0	%	0.0	●	0x0D0B
F13.12	Frequency range of static	0.00 ~ 50.00	Hz	1.00	●	0x0D0

	friction compensation					C
F13.13	Dynamic friction torque compensation	0.0 ~ 100.0	%	0.0	●	0x0D0D
F13.18	Reverse speed limit options	0 ~ 100	%	100	●	0x0D12
F13.19	Reverse torque control options	0 ~ 1		0	●	0x0D13
F14	**Parameter group of motor 2**					
F14.00	Motor type	0: ordinary asynchronous motor 1: variable-frequency asynchronous motor 2: permanent magnet synchronous motor		0	○	0x0E00
F14.01	Rated power of electric motor	0.10～650.00	kW	Depending on the motor type	○	0x0E01
F14.02	Rated voltage of motor	50～2000	V	Depending on the motor type	○	0x0E02
F14.03	Rated current of motor	0.01 to 600.00 rated power of motor: ≤ 75 kW) 0.1 to 6000.0 (rated power of motor: > 75 kW)	A	Depending on the motor type	○	0x0E03
F14.04	Rated frequency of motor	0.01～600.00	Hz	Depending on the motor type	○	0x0E04

F14.05	Rated speed	1～60000	rpm	Depending on the motor type	○	0x0E05
F14.06	Motor winding connection	0:Y 1: Δ		Depending on the motor type	○	0x0E06
F14.07	Rated power factor of motor	0.600～1.000		Depending on the motor type	○	0x0E07
F14.08	Motor efficiency	30.0～100.0	%	Depending on the motor type	○	0x0E08
F14.09	Stator resistance of asynchronous motor	1~ 60000 (rated power of motor: ≤ 75 kW) 0.1~ 6000.0 (rated power of motor: > 75kW)	mΩ	Depending on the motor type	○	0x0E09
F14.10	Rotor resistance of asynchronous motor	1~60000 (rated power of motor: ≤ 75 kW) 0.1~6000.0 (rated power of motor: > 75kW)	mΩ	Depending on the motor type	○	0x0E0A
F14.11	Leakage inductance of	0.01 to 600.00 (rated power of motor: ≤ 75 kW)	mH	Dependi	○	0x0E0B

	asynchronous motor	0.001 to 60.000 (rated power of motor: > 75 kW)		ng on the motor type		
F14.12	Mutual inductance of asynchronous motor	0.1 to 6000.0 (rated power of motor: ≤ 75 kW) 0.01 to 600.00 (rated power of motor: > 75 kW)	mH	Dependi ng on the motor type	○	0x0E0C
F14.13	No-load excitation current of asynchronous motor	0.01 to 600.00 (rated power of motor: ≤ 75 kW) 0.1 to 6000.0 (rated power of motor: > 75 kW)	A	Dependi ng on the motor type	○	0x0E0D
F14.14	Flux weakening coefficient 1 of asynchronous motor	10.00 ~ 100.00	%	87.00	○	0x0E0E
F14.15	Flux weakening coefficient 2 of asynchronous motor	10.00 ~ 100.00	%	80.00	○	0x0E0F
F14.16	Flux weakening coefficient 3 of asynchronous motor	10.00 ~ 100.00	%	75.00	○	0x0E10
F14.17	Flux weakening coefficient 4 of asynchronous motor	10.00 ~ 100.00	%	72.00	○	0x0E11
F14.18	Flux weakening coefficient 5 of asynchronous motor	10.00 ~ 100.00	%	70.00	○	0x0E12
F14.19	Stator resistance of synchronous motor	1~60000 (rated power of motor: ≤75kW) 0.1 to 6000.0 (rated power of motor: > 75 kW)	mΩ	Dependi ng on the motor type	○	0x0E13
F14.20	d-axis inductance of synchronous motor	0.01~600.00 (rated power of motor: ≤ 75 kW) 0.001~60.000 (rated power of motor: > 75kW)	mH	Dependi ng on	○	0x0E14

				the motor type		
F14.21	q-axis inductance of synchronous motor	0.01~600.00 (rated power of motor: ≤ 75 kW) 0.001~60.000 (rated power of motor: > 75kW)	mH	Depending on the motor type	○	0x0E15
F14.22	Counter electromotive force of synchronous motor	10.0~2000.0 (counter electromotive force of rated speed)	V	Depending on the motor type	○	0x0E16
F14.23	Initial electrical angle of synchronous motor	0.0~359.9 (valid for synchronous motor)			○	0x0E17
F14.34	Motor parameter self-learning	00: no operation 01: static self-learning of asynchronous motor 02: rotation self-learning of asynchronous motor 03: inertia self-learning of asynchronous motor 11: static self-learning of synchronous motor 12: rotary self-learning of synchronous motor 13: encoder self-learning of synchronous motor		00	○	0x0E22
F14.35	Drive control mode of motor 2	0: v/f control (VVF) 1: speed sensorless vector control (SVC)		0	○	0x0E23
F14.36	Speed proportional gain ASR_P1	0.00~100.00		12.00	●	0x0E24
F14.37	Speed integral time constant ASR_T1	0.000~30.000 0.000: no integral	s	0.200	●	0x0E25
F14.38	Speed proportional gain ASR_P2	0.00~100.00		8.00	●	0x0E26

F14.39	Speed integral time constant ASR_T2	0.000~30.000 0.000: no integral	s	0.300	●	0x0E27
F14.40	Switching frequency 1	0.00 to switching frequency 2	Hz	5.00	●	0x0E28
F14.41	Switching frequency 2	switching frequency 1 to maximum frequency F00.16	Hz	10.00	●	0x0E29
F14.42	No-load current gain of motor 2	50.0~300.0	%	50.0	●	0x0E2A
F14.43	Filtering time constant of speed loop output	0.000 ~ 0.100	s	0.001	●	0x0E2B
F14.44	Vector control slip gain	50.00~200.00	%	100.00	●	0x0E2C
F14.45	Upper limit source selection of speed control torque	0: set by F06.10 and F06.11 1: AI1 2: AI2 3: reserved 4: reserved 5: communication setting (percentage) 6: The larger of AI1 and AI2 7: The smaller of AI1 and AI2		0	○	0x0E2D
F14.46	Upper limit of speed control motor torque	0.0 ~ 250.0	%	165.0	●	0x0E2E
F14.47	Upper limit of speed control brake torque	0.0 ~ 250.0	%	165.0	●	0x0E2F
F14.48	Excitation current proportional gain ACR-P1	0.00 ~100.00		0.50	●	0x0E30
F14.49	Excitation current integral time constant ACR-T1	0.00 ~ 600.00 0.00: no integral	ms	10.00	●	0x0E31
F14.50	Torque current proportional gain	0.00 ~ 100.00		0.50	●	0x0E32

	ACR-P2					
F14.51	Torque current integral time constant ACR-T2	0.00 ~ 600.00 0.00: no integral	ms	10.00	●	0x0E33
F14.52	Stiffness coefficient of speed loop of motor 2	0~20		12	●	0x0E34
F14.53	SVC zero-frequency processing	0: braking 1: not processed 2: seal the tube		2	○	0x0E35
F14.54	SVC zero-frequency braking current	50.0 ~ 400.0 (100.0 is the no-load current of the motor)	%	100.0	○	0x0E36
F14.56	Voltage feedforward gain	0 ~ 100	%	0	●	0x0E38
F14.57	Flux weakening control options	0: invalid 1: direct calculation 2: automatic adjustment		2	○	0x0E39
F14.58	Flux weakening voltage	70.00 ~ 100.00	%	95.00	●	0x0E3A
F14.59	Maximum field weakening current of synchronous motor	0.0 ~ 150.0 (100.0 is the rated current of the motor)	%	100.0	●	0x0E3B
F14.60	Proportional gain of flux weakening regulator	0.00 ~ 10.00		0.50	●	0x0E3C
F14.61	Integral time of flux weakening regulator	0.01 ~ 60.00	s	2.00	●	0x0E3D
F14.62	MTPA control option of synchronous motor	0: invalid 1: valid		0	○	0x0E3E
F14.63	Self-learning gain at initial position	0 ~ 200	%	100	●	0x0E3F
F14.64	Frequency of low frequency band of injection current	0.00 ~ 100.00 (100.00 is the rated frequency of the motor)	%	10.00	●	0x0E40

F14.65	Injection current of low frequency band	0.0 ~ 60.0 (100.0 is the rated current of the motor)	%	20.0	●	0x0E41
F14.66	Regulator gain of low frequency band of injection current	0.00 ~ 10.00		0.50	●	0x0E42
F14.67	Regulator integral time of low frequency band of injection current	0.00 ~ 300.00	ms	10.00	●	0x0E43
F14.68	Frequency of high frequency band of injection current	0.00 ~ 100.00 (100.00 is the rated frequency of the motor)	%	20.00	●	0x0E44
F14.69	Injection current f high frequency band	0.0 ~ 30.0 (100.0 is the rated current of the motor)	%	8.0	●	0x0E45
F14.70	Regulator gain of high frequency band of injection current	0.00 ~ 10.00		0.50	●	0x0E46
F14.71	Regulator integral time of high frequency band of injection current	0.00 ~ 300.00	ms	10.00	●	0x0E47
F14.77	Acceleration/deceleration time options of motor 2	0: the same as motor 1 1: acceleration and deceleration time 1 2: acceleration and deceleration time 2 3: acceleration and deceleration time 3 4: acceleration and deceleration time 4		0	○	0x0E4D
F14.78	Maximum frequency of motor 2	20.00 ~ 600.00	Hz	50	○	0x0E4E
F14.79	Upper frequency limit of motor 2	lower limit frequency F00.19 to maximum frequency F14.78	Hz	50	●	0x0E4F
F14.80	V/F curve setting of motor 2	0: straight line V/F 1: multi-point broken line V/F 2: 1.3-power V/F		0	○	0x0E50

		3: 1.7-power V/F 4: square V/F 5: VF complete separation mode (Ud = 0, Uq = K * t = voltage of separation voltage source) 6: VF semi-separation mode (Ud = 0, Uq = K * t = F/Fe * 2 * voltage of separation voltage source)				
F14.81	Multi-point VF frequency F1 of motor 2	0.00 ~ F14.83	Hz	0.50	●	0x0E51
F14.82	Multi-point VF voltage V1 of motor 2	0.0～100.0 (100.0 = Rated voltage)	%	1.0	●	0x0E52
F14.83	Multi-point VF frequency F2 of motor 2	F14.81 ~ F14.85	Hz	2.00	●	0x0E53
F14.84	Multi-point VF voltage V2 of motor 2	0.0 ~ 100.0	%	4.0	●	0x0E54
F14.85	Multi-point VF frequency F3 of motor 2	F14.83 to rated frequency of motor (reference frequency)	Hz	5.00	●	0x0E55
F14.86	Multi-point VF voltage V3 of motor 2	0.0 ~ 100.0	%	10.0	●	0x0E56
F14.87	Stop mode of motor 2	0: slow down to stop 1: free stop		0	○	0x0E57
F14.96	Low speed correction factor of stator resistor of asynchronous motor 2	10.0 ~ 500.0	%	100.0	●	0x0E60
F14.97	Low speed correction factor of rotor resistor of asynchronous motor 2	10.0 ~ 500.0	%	100.0	●	0x0E61
F14.98	Slip gain switching frequency of asynchronous motor 2	0.10 ~ Fmax	Hz	5.00	○	0x0E62
F15	**Auxiliary function group**					
F15.00	Jog frequency	0.00 to maximum frequency F00.16	Hz	5.00	●	0x0F00

F15.01	Jog acceleration time	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	5.00	●	0x0F01
F15.02	Jog deceleration time	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	5.00	●	0x0F02
F15.03	Acceleration time 2	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	15.00	●	0x0F03
F15.04	Deceleration time 2	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	15.00	●	0x0F04
F15.05	Acceleration time 3	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	15.00	●	0x0F05
F15.06	Deceleration time 3	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	15.00	●	0x0F06
F15.07	Acceleration time 4	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	15.00	●	0x0F07
F15.08	Deceleration time 4	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	15.00	●	0x0F08
F15.09	Fundamental frequency of acceleration and deceleration time	0: maximum frequency F00.16 1: 50.00Hz 2: set frequency		0	○	0x0F09
F15.10	Automatic switching of acceleration and deceleration time	0: invalid 1: valid		0	○	0x0F0A
F15.11	Switching frequency of	0.00 to maximum frequency F00.16	Hz	0.00	●	0x0F0B

	acceleration time 1 and 2					
F15.12	Switching frequency of deceleration time 1 and 2	0.00 to maximum frequency F00.16	Hz	0.00	●	0x0F0C
F15.13	Acceleration and deceleration time unit	0:0.01s 1:0.1s 2:1s		0	○	0x0F0D
F15.14	Frequency hopping point 1	0.00 ~ 600.00	Hz	600.00	●	0x0F0E
F15.15	Hopping range 1	0.00 ~ 20.00, 0.00 is invalid	Hz	0.00	●	0x0F0F
F15.16	Frequency hopping point 2	0.00 ~ 600.00	Hz	600.00	●	0x0F10
F15.17	Hopping range 2	0.00 ~ 20.00, 0.00 is invalid	Hz	0.00	●	0x0F11
F15.18	Frequency hopping point 3	0.00 ~ 600.00	Hz	600.00	●	0x0F12
F15.19	Hopping range 3	0.00 ~ 20.00, 0.00 is invalid	Hz	0.00	●	0x0F13
F15.20	Detection width of output frequency arrival (FAR)	0.00 ~ 50.00	Hz	2.50	○	0x0F14
F15.21	Output frequency detection FDT1	0.00 to maximum frequency F00.16	Hz	30.00	○	0x0F15
F15.22	FDT1 hysteresis	-(Fmax-F15.21)～F15.21	Hz	2.00	○	0x0F16
F15.23	Output frequency detection FDT2	0.00 to maximum frequency F00.16	Hz	20.00	○	0x0F17
F15.24	FDT2 hysteresis	-(Fmax-F15.23)～F15.23	Hz	2.00	○	0x0F18
F15.25	Options of analog level detection ADT	0：AI1 1：AI2		0	○	0x0F19
F15.26	Analog level detection ADT1	0.00 ~ 100.00	%	20.00	●	0x0F1A
F15.27	ADT1 hysteresis	0.00 to F15.26 (valid down in one direction)	%	5.00	●	0x0F1B
F15.28	Analog level detection ADT2	0.00 ~ 100.00	%	50.00	●	0x0F1C
F15.29	ADT2 hysteresis	0.00 to F15.28 (valid down in one direction)	%	5.00	●	0x0F1D
F15.30	Options of energy	0: invalid		0	○	0x0F1E

	consumption braking function	1: valid				
F15.31	Energy consumption braking voltage	110.0 ~ 140.0 (380V, 100.0 = 537V)	%	125.0	○	0x0F1F
F15.32	Braking rate	20 ~ 100 (100 means that duty ratio is 1)	%	100	●	0x0F20
F15.33	Operating mode with set frequency less than lower frequency limit	0: running at the lower frequency limit 1: shutdown 2: zero-speed running		0	○	0x0F21
F15.34	Fan control	Ones place: fan control mode 0: running after power-on 1: running at startup 2: intelligent operation, subject to temperature control Tens place: power on fan control 0: run for 1 minute and then run in fan control mode 1: directly operate in fan control mode Hundreds place: Fan low speed mode enable (above 280kW) 1: the operation at low speed is invalid 2: low speed operation is valid		101	○	0x0F22
F15.35	Overmodulation intensity	1.00 ~ 1.10		1.05	●	0x0F23
F15.36	Switching options of PWM modulation mode	0: invalid (7-segment PWM modulation) 1: valid (5-segment PWM modulation)		0	○	0x0F24
F15.37	Switching frequency of PWM modulation mode	0.00 to maximum frequency F00.16	Hz	15.00	●	0x0F25
F15.38	Options of dead zone compensation mode	0: no compensation 1: compensation mode 1 2: compensation mode 2		1	○	0x0F26
F15.39	Terminal jog priorityv	0: invalid 1: valid		0	○	0x0F27

F15.40	Deceleration time for quick stop	0.00 ~ 650.00 (F15.13=0) 0.0 ~ 6500.0 (F15.13=1) 0 ~ 65000 (F15.13=2)	s	1.00	●	0x0F28
F15.44	The current reaches the measured value	0.0～300.0（100.0% corresponding to rated motor current）	%	100.0	●	0x0F37
F15.45	The current reaches the hysteresis	0.0～F15.44	%	5.0	●	0x0F38
F15.46	Torque reaches test value	0.0～300.0（100.0% corresponding to rated motor torque）	%	100.0	●	0x0F39
F15.47	The torque reaches the hysteresis ring	0.0～F15.46	%	5.0	●	0x0F3A
F15.62	PG card feedback frequency display filtering time	0～20000	ms	300	●	0x0F3E
F15.63	The speed reaches the limit of rise	0.00～Fmax	Hz	30.00	●	0x0F3F
F15.64	The speed reaches filtering time	0～60000	ms	500	●	0x0F40
F15.65	The speed reaches the limit of descent	0.00～Fmax	Hz	0.00	●	0x0F41
F15.66	Overcurrent detection level	0.1~ 300.0 (0.0: no detection; 100.0%: corresponding to the rated current of motor)	%	200.0	●	0x0F42
F15.67	Overcurrent detection delay time	0.00 ~ 600.00	s	0.00	●	0x0F43
F15.68	Market price	0.00 ~ 100.00		1.00	○	0x0F44
F15.69	Power-frequency load factor	30.0 ~ 200.0	%	90.0	○	0x0F45
F16	**Customization function group**					
F16.00	Industry application	0：universal model 1：water supply application		0	○	0x1000

		2：air compressor application 3：winding application 4：fan application 5：spindle application of machine tool 6：extruder application 7：high-speed motor application 8：plastic extruding machine 9：EM100 comm macro 10: EM303B comm macro				
F16.01	Set length	1 ~ 65535 (F16.13=0) 0.1 ~ 6553.5 (F16.13=1) 0.01~ 655.35 (F16.13=2) 0.001 ~ 65.535 (F16.13=3)	m	1000	●	0x1001
F16.02	Pulses per meter	0.1 ~ 6553.5		100.0	●	0x1002
F16.03	Set count value	F16.04 ~ 65535		1000	●	0x1003
F16.04	Specified count value	1 ~ F16.03		1000	●	0x1004
F16.05	Set time of regular running	0.0~ 6500.0, 0.0 is invalid	min	0.0	●	0x1005
F16.06	Agent password	0~65535		0	●	0x1006
F16.07	Setting of cumulative power-on arrival time	0-65535; 0: disable the protection when the power-on time is up	h	0	●	0x1007
F16.08	Setting of cumulative running arrival time	0-65535; 0: disable the protection when the running time is up	h	0	●	0x1008
F16.09	Factory password	0~65535		XXXX	●	0x1009
F16.10	Analog output percentage corresponding to the count value 0	0.00 ~100.00	%	0.00	○	0x100A
F16.11	Analog output percentage corresponding to the set count value	0.00 ~100.00	%	100.00	○	0x100B
F16.13	Set length resolution	0:1m		0	○	0x100D

<table>
<tr><td></td><td></td><td colspan="8">1:0.1m
2:0.01 m
3:0.001m</td><td></td><td></td><td></td><td></td></tr>
<tr><td>F17</td><td colspan="12">Virtual I/O function group</td></tr>
<tr><td>F17.00</td><td>VX1 virtual input function options</td><td colspan="8" rowspan="8">The same as the function options of digital input terminal of F02 group</td><td></td><td>0</td><td>○</td><td>0x1100</td></tr>
<tr><td>F17.01</td><td>VX2 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1101</td></tr>
<tr><td>F17.02</td><td>VX3 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1102</td></tr>
<tr><td>F17.03</td><td>VX4 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1103</td></tr>
<tr><td>F17.04</td><td>VX5 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1104</td></tr>
<tr><td>F17.05</td><td>VX6 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1105</td></tr>
<tr><td>F17.06</td><td>VX7 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1106</td></tr>
<tr><td>F17.07</td><td>VX8 virtual input function options</td><td></td><td>0</td><td>○</td><td>0x1107</td></tr>
<tr><td rowspan="3">F17.08</td><td rowspan="3">Virtual input positive/negative logic</td><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td><td></td><td rowspan="2">000
00000</td><td rowspan="2">○</td><td rowspan="2">0x1108</td></tr>
<tr><td>VX8</td><td>VX7</td><td>VX6</td><td>VX5</td><td>VX4</td><td>VX3</td><td>VX2</td><td>VX1</td></tr>
<tr><td colspan="8">0: positive logic, valid in the closed state/invalid in the open state
1: negative logic, invalid in the closed state/valid in the open state</td><td></td><td></td><td></td><td></td></tr>
<tr><td rowspan="3">F17.09</td><td rowspan="3">VX1-VX8 status setting options</td><td>D7</td><td>D6</td><td>D5</td><td>D4</td><td>D3</td><td>D2</td><td>D1</td><td>D0</td><td></td><td rowspan="2">000
00000</td><td rowspan="2">○</td><td rowspan="2">0x1109</td></tr>
<tr><td>VX8</td><td>VX7</td><td>VX6</td><td>VX5</td><td>VX4</td><td>VX3</td><td>VX2</td><td>VX1</td></tr>
</table>

		0: the VXn status is the same as VYn output status 1: status set by F17.10										
F17.10	VX1-VX8 status setting	D7	D6	D5	D4	D3	D2	D1	D0	000 00000	●	0x110A
		VX8	VX7	VX6	VX5	VX4	VX3	VX2	VX1			
		0: invalid 1: valid										
F17.11	VX1 valid delay time	0.000~30.000								s	0.000	●	0x110B
F17.12	VX1 invalid delay time	0.000~30.000								s	0.000	●	0x110C
F17.13	VX2 valid delay time	0.000~30.000								s	0.000	●	0x110D
F17.14	VX2 invalid delay time	0.000~30.000								s	0.000	●	0x110E
F17.15	VX3 valid delay time	0.000~30.000								s	0.000	●	0x110F
F17.16	VX3 invalid delay time	0.000~30.000								s	0.000	●	0x1110
F17.17	VX4 valid delay time	0.000~30.000								s	0.000	●	0x1111
F17.18	VX4 invalid delay time	0.000~30.000								s	0.000	●	0x1112
F17.19	VY1 virtual output function options	The same as the function options of digital output terminal of F03 group									0	○	0x1113
F17.20	VY2 virtual output function options										0	○	0x1114
F17.21	VY3 virtual output function options										0	○	0x1115
F17.22	VY4 virtual output function options										0	○	0x1116
F17.23	VY5 virtual output function options										0	○	0x1117
F17.24	Reserved												0x1118
F17.25	Reserved												0x1119
F17.26	Reserved												0x111A

F17.27	Virtual output positive/negative logic	D7	D6	D5	D4	D3	D2	D1	D0		00000	○	0x111B
		VY8	VY7	VY6	VY5	VY4	VY3	VY2	VY1				
		0: positive logic, valid in the closed state/invalid in the open state 1: negative logic, invalid in the closed state/valid in the open state											
F17.28	Control options of virtual output terminal	D7	D6	D5	D4	D3	D2	D1	D0		11111	○	0x111C
		VY8	VY7	VY6	VY5	VY4	VY3	VY2	VY1				
		0: depending on the status of terminal X1-X5 (without VY6-8) 1: depending on the output function status											
F17.29	VY1 valid delay time	0.000~30.000								s	0.000	●	0x111D
F17.30	VY1 invalid delay time	0.000~30.000								s	0.000	●	0x111E
F17.31	VY2 valid delay time	0.000~30.000								s	0.000	●	0x111F
F17.32	VY2 invalid delay time	0.000~30.000								s	0.000	●	0x1120
F17.33	VY3 valid delay time	0.000~30.000								s	0.000	●	0x1121
F17.34	VY3 invalid delay time	0.000~30.000								s	0.000	●	0x1122
F17.35	VY4 valid delay time	0.000~30.000								s	0.000	●	0x1123
F17.36	VY4 invalid delay time	0.000~30.000								s	0.000	●	0x1124
F17.37	Virtual input terminal status	VX8	VX7	VX6	VX5	VX4	VX3	VX2	VX1		000 00000	×	0x1125
		0: invalid 1: valid											
F17.38	Virtual output terminal status	VY8	VY7	VY6	VY5	VY4	VY3	VY2	VY1		00000	×	0x1126
		0: invalid											

		1: valid				
F18	**Monitoring parameter group**					
F18.00	Output frequency	0.00 to upper frequency limit	Hz	XXX	×	0x1200
F18.01	Set frequency	0.00 to maximum frequency F00.16	Hz	XXX	×	0x1201
F18.03	Estimate feedback frequency	0.00 to upper frequency limit	Hz	XXX	×	0x1203
F18.04	Output torque	-200.0 ~ 200.0	%	XXX	×	0x1204
F18.05	Torque setting	-200.0 ~ 200.0	%	XXX	×	0x1205
F18.06	Output current	0.00 to 650.00 (rated power of motor: ≤ 75 kW) 0.0 to 6500.0 (rated power of motor: > 75 kW)	A	XXX	×	0x1206
F18.07	Output current percentage	0.0~300.0 (100.0 = the rated current of inverter)	%	0	×	0x1207
F18.08	Output voltage	0.0 ~ 690.0	V	XXX	×	0x1208
F18.09	DC bus voltage	0 ~ 1200	V	XXX	×	0x1209
F18.10	Simple PLC running times	0 ~ 10000		XXX	×	0x120A
F18.11	Simple PLC operation stage	1 ~ 15		XXX	×	0x120B
F18.12	PLC running time at the current stage	0.0 ~ 6000.0		XXX	×	0x120C
F18.14	Load rate	0~65535	rpm	XXX	×	0x120E
F18.15	UP/DOWN offset frequency	0.00 to 2 * Maximum frequency F00.16	Hz	XXX	×	0x120F
F18.16	PID setting	0.0 to PID maximum range		XXX	×	0x1210
F18.17	PID feedback	0.0 to PID maximum range		XXX	×	0x1211
F18.18	Power meter: MWh	0~65535	MWh	XXX	×	0x1212
F18.19	Watt-hour meter: kWh	0.0 ~ 999.9	kWh	XXX	×	0x1213
F18.20	Output power	-650.00~650.00	kW	XXX	×	0x1214
F18.21	Output power factor	-1.000 ~ 1.000		XXX	×	0x1215
F18.22	Digital input terminal status	X5 X4 X3 X2 X1		XXX	×	0x1216

	1	0/1	0/1	0/1	0/1	0/1				
F18.23	Digital input terminal status 2	*	AI2	AI1	*	*		XXX	×	0x1217
		*	0/1	0/1	*	0/1				
F18.25	Output terminal state	*	*	R1	*	Y1		XXX	×	0x1219
		*	*	0/1	*	0/1				
F18.26	AI1	0.0~100.0					%	XXX	×	0x121A
F18.27	AI2	0.0~100.0					%	XXX	×	0x121B
F18.31	High-frequency pulse input frequency: kHz	0.00~100.00					kHz	XXX	×	0x121F
F18.32	High-frequency pulse input frequency: Hz	0~65535					Hz	XXX	×	0x1220
F18.33	Count value	0~65535						XXX	×	0x1221
F18.34	Actual length	0~65535					m	XXX	×	0x1222
F18.35	Remaining time of regular running	0.0 ~ 6500.0					min	XXX	×	0x1223
F18.36	Rotor position of synchronous motor	0.0~359.9°						XXX	×	0x1224
F18.39	VF separation target voltage	0 ~ 690					V	XXX	×	0x1227
F18.40	VF separation output voltage	0 ~ 690					V	XXX	×	0x1228
F18.45	Speed setting	0～65535					rpm	XXX	×	0x12D
F18.46	Output frequency symbol	0～65535						XXX	×	0x122E
F18.51	PID output	-100.0 ~ 100.0					%		×	0x1233
F18.60	Inverter temperature	-40 to 200					℃	0	×	0x123C
F18.67	Saved electric energy (MWH)	cumulative energy saving MWH					0～65535	MWh	×	0x1243
F18.68	Saved electric energy	cumulative energy saving kWH					0.0	kWh	×	0x1244

	(kWH)		～999.9			
F18.69	Saved electric charge (1,000 yuan)	high cumulative cost saving (*1000)	0～65535		×	0x1245
F18.70	Saved electric charge (yuan)	low cumulative cost saving	0.0～999.9		×	0x1246
F18.71	Power-frequency power consumption MWh	power-frequency power consumption MWH	0～65535	MWh	×	0x1247
F18.72	Power-frequency power consumption kWh	power-frequency power consumption kWH	0.0～999.9	kWh	×	0x1248
F19	**Protection record group**					
F19.00	Category of last protection	0: no protection E01: output short circuit protection E02: instantaneous overcurrent E04: steady-state overcurrent E05: overvoltage E06: undervoltage E07: input phase loss E08: output phase loss E09: inverter overload E10: inverter overheat protection E11: parameter setting conflict E13: motor overload E14: external protection		0	×	0x1300

		E15: inverter memory protection E16: communication abnormality E17: temperature sensor abnormality E18: abnormal disconnection of soft start relay E19: current detection circuit abnormality E20: stall protection E21: PID feedback disconnection E22: reserved E24: parameter identification abnormality E25: reserved E26: load loss protection E27: up to the cumulative power-on time E28: up to the cumulative running time E43: material cutoff protection E44: cable protection E57: overpressure in pipeline network E58: under-pressure in pipeline network E76: short-circuit protection to ground				
F19.01	Output frequency in protection	0.00 to upper frequency limit	Hz	0.00	×	0x1301
F19.02	Output current in protection	0.00 to 650.00 (rated power of motor: ≤ 75 kW) 0.0 to 6500.0 (rated power of motor: > 75 kW)	A	0.00	×	0x1302
F19.03	Bus voltage in protection	0 ~ 1200	V	0	×	0x1303
F19.04	Operating status in protection	0: not running 1: forward acceleration 2: reverse acceleration 3: forward deceleration 4: reverse deceleration 5: constant speed in forward running 6: reverse constant speed in reverse running		0	×	0x1304
F19.05	Working time in protection		h	0	×	0x1305

F19.06	Category of previous protection	same as F19.00 parameter description		0	×	0x1306
F19.07	Output frequency in protection		Hz	0.00	×	0x1307
F19.08	Output current in protection		A	0.00	×	0x1308
F19.09	Bus voltage in protection		V	0	×	0x1309
F19.10	Operating status in protection	same as F19.04 parameter description		0	×	0x130A
F19.11	Working time in protection		h	0	×	0x130B
F19.12	Category of two previous protections	same as F19.00 parameter description		0	×	0x130C
F19.13	Output frequency in protection		Hz	0.00	×	0x130D
F19.14	Output current in protection		A	0.00	×	0x130E
F19.15	Bus voltage in protection		V	0	×	0x130F
F19.16	Operating status in protection	same as F19.04 parameter description		0	×	0x1310
F19.17	Working time in protection		h	0	×	0x1311
F27	**Winding/unwinding application macro parameter group**					
F27.00	Application macro	0: winding mode 1: unwinding mode 2: wire drawing mode 3: straight wire drawing machine mode		0	○	0x1B00
F27.01	Feedforward gain action channel	0: feedforward gain * set source B 1: feedforward gain * set source A 2: feedforward gain * 10V		1	○	0x1B01
F27.02	Feedforward gain input mode	0: no change in feedforward gain 1: 0.00 to upper limit of feedforward gain 2: - upper limit of feedforward gain to + upper limit of feedforward gain		1	○	0x1B02

F27.03	Feedforward control	Ones place: feedforward reset option 0: automatic reset 1: terminal reset Tens place: feedforward power-off stop option 0: save after power failure 1: not save after power failure Hundreds place: options of continuous feedforward calculation 0: not calculate 1: calculate		10	○	0x1B03
F27.04	Upper limit of feedforward gain	0.00~500.00	%	500.00	○	0x1B04
F27.05	Initial feedforward gain	0.00~500.00	%	50.00	●	0x1B05
F27.06	Feedforward gain filter time	0~1000	ms	0	●	0x1B06
F27.07	Feedforward range 0	0.00 to feedforward range 1	%	4.00	●	0x1B07
F27.08	Feedforward range 1	feedforward range 0 to feedforward range 2	%	12.00	●	0x1B08
F27.09	Feedforward range 2	feedforward range 1 to feedforward range 3	%	23.00	●	0x1B09
F27.10	Feedforward range 3	feedforward range 2 to feedforward range 4	%	37.00	●	0x1B0A
F27.11	Feedforward range 4	feedforward range 3 to feedforward range 5	%	52.00	●	0x1B0B
F27.12	Feedforward range 5	feedforward range 4 to 100.00	%	72.00	●	0x1B0C
F27.13	Soft start increment	0.00 ~ 50.00	%/S	0.60	●	0x1B0D
F27.14	Feedforward increment 1	0.00 ~ 50.00	%/S	0.11	●	0x1B0E
F27.15	Feedforward increment 2	0.00 ~ 50.00	%/S	0.30	●	0x1B0F
F27.16	Feedforward increment 3	0.00 ~ 50.00	%/S	0.75	●	0x1B10
F27.17	Feedforward increment 4	0.00 ~ 50.00	%/S	1.55	●	0x1B11
F27.18	Feedforward increment 5	0.00 ~ 50.00	%/S	4.00	●	0x1B12

F27.19	Feedforward increment 6	0.00 ~ 50.00	%/S	11.00	●	0x1B13
F27.20	Material cutoff control mode	Ones place: disconnection detection mode 0: automatic detection 1: external signal Tens place: material cutoff detection control 0: detect when the output is greater than the lower limit of material cutoff detection 1: no detection Hundreds place: material cutoff handling mode 0: protection of terminal action only 1: delayed stop and trip protection 2: material cutoff protection 3: automatic reset after protection shutdown 4: material cutoff detection terminal output only (straight wire drawing machine) 5: automatic reset of cutoff detection terminal (straight wire drawing machine) Thousands place: brake mode 0: mode 0 1: mode 1 Myriabit: reverse unwinding mode 0: no speed limit 1: reverse speed limit by F27.24		01201	○	0x1B14
F27.21	Material cutoff detection delay	0.0~10.0	S	6.0	●	0x1B15
F27.22	Lower limit of material cutoff detection after parking	0.00 ~ 60.00	Hz	5.00	●	0x1B16
F27.23	Time of continuous running after material cutoff	0.0 ~ 60.0	S	10.0	●	0x1B17
F27.24	Frequency of continuous	0.00~Fmax	Hz	5.00	●	0x1B18

	running after material cutoff					
F27.25	Brake signal output frequency	0.00~FUP	Hz	2.50	●	0x1B19
F27.26	Braking signal duration	0.0~100.0	S	5.0	●	0x1B1A
F27.27	Minimum frequency of wiring detection	0.00~20.00	Hz	10.00	●	0x1B1B
F27.28	Judgment time for invalid cable signal	0.1 ~ 20.0	S	10.0	●	0x1B1C
F27.29	Judgment time for valid cable signal	0.1 ~ 20.0	S	2.0	●	0x1B1D
F27.30	Filtering time for material cutoff detection	1~100	ms	5	●	0x1B1E
F27.36	Current value of feedforward gain	-500.0~500.0	%		×	0x1B24
F45	**Modbus free mapping parameter group**					
F45.00	Modbus communication mapping	0：invalid 1：valid	-	0	●	0x2D00
F45.01	Source address 1	0～65535	-	0	●	0x2D01
F45.02	Destination address 1	0～65535	-	0	●	0x2D02
F45.03	Mapping coefficient 1	0.00～100.00	-	1.00	●	0x2D03
F45.04	Source address 2	0～65535	-	0	●	0x2D04
F45.05	Destination address 2	0～65535	-	0	●	0x2D05
F45.06	Mapping coefficient 2	0.00～100.00	-	1.00	●	0x2D06
F45.07	Source address 3	0～65535	-	0	●	0x2D07
F45.08	Destination address 3	0～65535	-	0	●	0x2D08
F45.09	Mapping coefficient 3	0.00～100.00	-	1.00	●	0x2D09
F45.10	Source address 4	0～65535	-	0	●	0x2D0

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F45.11	Destination address 4	0～65535	-	0	●	0x2D0B
F45.12	Mapping coefficient 4	0.00～100.00	-	1.00	●	0x2D0C
F45.13	Source address 5	0～65535	-	0	●	0x2D0D
F45.14	Destination address 5	0～65535	-	0	●	0x2D0E
F45.15	Mapping coefficient 5	0.00～100.00	-	1.00	●	0x2D0F
F45.16	Source address 6	0～65535	-	0	●	0x2D10
F45.17	Destination address 6	0～65535	-	0	●	0x2D11
F45.18	Mapping coefficient 6	0.00～100.00	-	1.00	●	0x2D12
F45.19	Source address 7	0～65535	-	0	●	0x2D13
F45.20	Destination address 7	0～65535	-	0	●	0x2D14
F45.21	Mapping coefficient 7	0.00～100.00	-	1.00	●	0x2D15
F45.22	Source address 8	0～65535	-	0	●	0x2D16
F45.23	Destination address 8	0～65535	-	0	●	0x2D17
F45.24	Mapping coefficient 8	0.00～100.00	-	1.00	●	0x2D18
F45.25	Source address 9	0～65535	-	0	●	0x2D19
F45.26	Destination address 9	0～65535	-	0	●	0x2D1A
F45.27	Mapping coefficient 9	0.00～100.00	-	1.00	●	0x2D1B
F45.28	Source address 10	0～65535	-	0	●	0x2D1C
F45.29	Destination address 10	0～65535	-	0	●	0x2D1D
F45.30	Mapping coefficient 10	0.00～100.00	-	1.00	●	0x2D1E
F45.31	Source address 11	0～65535	-	0	●	0x2D1F

F45.32	Destination address 11	0～65535	-	0	●	0x2D20
F45.33	Mapping coefficient 11	0.00～100.00	-	1.00	●	0x2D21
F45.34	Source address 12	0～65535	-	0	●	0x2D22
F45.35	Destination address 12	0～65535	-	0	●	0x2D23
F45.36	Mapping coefficient 12	0.00～100.00	-	1.00	●	0x2D24
F45.37	Source address 13	0～65535	-	0	●	0x2D25
F45.38	Destination address 13	0～65535	-	0	●	0x2D26
F45.39	Mapping coefficient 13	0.00～100.00	-	1.00	●	0x2D27
F45.40	Source address 14	0～65535	-	0	●	0x2D28
F45.41	Destination address 14	0～65535	-	0	●	0x2D29
F45.42	Mapping coefficient 14	0.00～100.00	-	1.00	●	0x2D2A
F45.43	Source address 15	0～65535	-	0	●	0x2D2B
F45.44	Destination address 15	0～65535	-	0	●	0x2D2C
F45.45	Mapping coefficient 15	0.00～100.00	-	1.00	●	0x2D2D
F45.46	Source address 16	0～65535	-	0	●	0x2D2E
F45.47	Destination address 16	0～65535	-	0	●	0x2D2F
F45.48	Mapping coefficient 16	0.00～100.00	-	1.00	●	0x2D30
F45.49	Source address 17	0～65535	-	0	●	0x2D31
F45.50	Destination address 17	0～65535	-	0	●	0x2D32
F45.51	Mapping coefficient 17	0.00～100.00	-	1.00	●	0x2D33
F45.52	Source address 18	0～65535	-	0	●	0x2D34
F45.53	Destination address 18	0～65535	-	0	●	0x2D35
F45.54	Mapping coefficient 18	0.00～100.00	-	1.00	●	0x2D36
F45.55	Source address 19	0～65535	-	0	●	0x2D37

F45.56	Destination address 19	0～65535	-	0	●	0x2D38
F45.57	Mapping coefficient 19	0.00～100.00	-	1.00	●	0x2D39
F45.58	Source address 20	0～65535	-	0	●	0x2D3A
F45.59	Destination address 20	0～65535	-	0	●	0x2D3B
F45.60	Mapping coefficient 20	0.00～100.00	-	1.00	●	0x2D3C
F45.61	Source address 21	0～65535	-	0	●	0x2D3D
F45.62	Destination address 21	0～65535	-	0	●	0x2D3E
F45.63	Mapping coefficient 21	0.00～100.00	-	1.00	●	0x2D3F
F45.64	Source address 22	0～65535	-	0	●	0x2D40
F45.65	Destination address 22	0～65535	-	0	●	0x2D41
F45.66	Mapping coefficient 22	0.00～100.00	-	1.00	●	0x2D42
F45.67	Source address 23	0～65535	-	0	●	0x2D43
F45.68	Destination address 23	0～65535	-	0	●	0x2D44
F45.69	Mapping coefficient 23	0.00～100.00	-	1.00	●	0x2D45
F45.70	Source address 24	0～65535	-	0	●	0x2D46
F45.71	Destination address 24	0～65535	-	0	●	0x2D47
F45.72	Mapping coefficient 24	0.00～100.00	-	1.00	●	0x2D48
F45.73	Source address 25	0～65535	-	0	●	0x2D49
F45.74	Destination address 25	0～65535	-	0	●	0x2D4A
F45.75	Mapping coefficient 25	0.00～100.00	-	1.00	●	0x2D4B
F45.76	Source address 26	0～65535	-	0	●	0x2D4C
F45.77	Destination address 26	0～65535	-	0	●	0x2D4

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F45.78	Mapping coefficient 26	0.00～100.00	-	1.00	●	0x2D4E
F45.79	Source address 27	0～65535	-	0	●	0x2D4F
F45.80	Destination address 27	0～65535	-	0	●	0x2D50
F45.81	Mapping coefficient 27	0.00～100.00	-	1.00	●	0x2D51
F45.82	Source address 28	0～65535	-	0	●	0x2D52
F45.83	Destination address 28	0～65535	-	0	●	0x2D53
F45.84	Mapping coefficient 28	0.00～100.00	-	1.00	●	0x2D54
F45.85	Source address 29	0～65535	-	0	●	0x2D55
F45.86	Destination address 29	0～65535	-	0	●	0x2D56
F45.87	Mapping coefficient 29	0.00～100.00	-	1.00	●	0x2D57
F45.88	Source address 30	0～65535	-	0	●	0x2D58
F45.89	Destination address 30	0～65535	-	0	●	0x2D59
F45.90	Mapping coefficient 30	0.00～100.00	-	1.00	●	0x2D5A

6.6 Solar water pump special function parameter description

Function code	name	Parameter Detailed Description	Default value	property
F51.00	Solar pump mode	0: General inverter mode 1: CVT mode 2: PID regulation MPPT mode 4: Frequency disturbance regulation MPPT mode 0 means the solar water pump mode is invalid and it is a general model; 1 means that the fixed voltage setting method is adopted , and the reference voltage is the digital reference voltage of F51.01 , which is a fixed value; 2 is the MPPT mode of reference voltage disturbance regulation . A value of 4 indicates the MPPT mode using frequency disturbance regulation.	0	○
F51.01	Reference voltage Digital given	0~F51.02 V When F51.00 is set to 1, the reference voltage value is given by this function code.	600 V /260 V	●
F51.02	Reference voltage Maximum	0~6000 V The maximum value of the reference voltage that can be set	750 V /400 V	○
F51.03	Minimum output frequency allowed	0.00~50.00 Hz When in solar water pump mode, when the output frequency is lower than this value, after the delay time set by F51.12, the inverter reports a weak light sleep fault.	10.00 Hz	●
F51.04	Water shortage dormancy delay	0.0~3600.0 S When the low water level signal of the input terminal is valid (No. 96), after the delay time set by this function code, the water shortage alarm (EtSLP) is reported and the system goes into sleep mode. In the case of non-continuous operation, the delay timer will be automatically reset.	5.0S	●

F51.05	Water shortage Wake-up delay	0.0~3600.0 S When the input terminal low water level signal is invalid (No. 96), after the delay time set by this function code, the water shortage alarm (EtSLP) is invalid and re-enters the running state. In the case of non-continuous, the delay timer will be automatically reset.	20.0S	●
F51.06	Reservoir full of water Sleep delay	0.0~3600.0 S When the full water level signal of the input terminal is valid (No. 97), after the delay time set by this function code, the water tank full water alarm (FuSLP) is reported and the system goes into sleep mode. In the case of non-continuous operation, the delay timer will be automatically reset to zero.	5.0S	●
F51.07	Reservoir full of water Wake-up delay	0.0~3600.0 S When the full water level signal of the input terminal is invalid (No. 97), after the delay time set by this function code, the full water alarm of the reservoir (FuSLP) is invalid and the system re-enters the running state. In the case of non-continuous, the delay timer will be automatically reset.	20.0S	●
F51.08	Dry run detection frequency	0.00~Fmax Hz This function code sets the detection frequency during dry-run detection.	45.00 Hz	●
F51.09	Dry running detection current	0.0~100.0% (100% corresponds to the rated current of the motor) This function code sets the detection current during dry-run detection.	30.0%	●
F51.10	Dry run detection Delay time	0.0~3600.0 S This function code sets the delay current during dry-run detection. When the output frequency is greater than the dry-run detection frequency set by F51.08, the output current is less than the dry-run detection current set by F51.09, and the duration is greater than the dry-run delay time set by F51.10, a dry-run alarm (drSLP) is issued and the system goes into sleep mode. In non-continuous situations, the delay timer will be automatically cleared.	20.0S	●
F51.11	Dry-run	0~600 Min	1 Min	●

	detection alarm reset time	After the dry-run alarm is enabled, the dry-run alarm (drSLP) becomes invalid after the delay time set by this function code, and the system re-enters the running state. In the case of non-continuous operation, the delay timer will be automatically reset to zero.		
F51.12	Weak light sleep delay time	0.0~3600.0 S When the output frequency is less than or equal to the value set by F51.03, the delay timing starts. After this state continues for the weak light sleep delay time, the weak light alarm (LvSLP) is reported and the system goes to sleep. In the case of non-continuity, the delay timing will be automatically cleared.	100.0 S	●
F51.13	Weak light wake-up delay time	0.0~3600.0 S In the weak light alarm, when the solar input voltage is greater than the value set by F51.16, the delay timing starts. After this state continues for the weak light wake-up delay time , the weak light alarm (LvSLP) is cleared and the running state is re-entered.	1 00.0 S	●
F51.14	Weak light voltage setting	0~750 V When the PV input voltage is lower than the set voltage value, the delay timing starts. The PV input voltage continues to be lower than the set voltage value time (F51.15 function code setting). After reaching the time, the weak light alarm (LvSLP) is reported and sleep is performed.	380 V model: 350 220 V model: 180	●
F51.15	Weak light voltage detection time	20 ms~3000 ms	20ms	●
F51.16	Light recovery voltage	0~1200 In the weak light sleep state, if the solar input voltage is greater than this set value and the delay time set by F51.13 has passed, the weak light alarm (LvSLP) is cleared and the system re-enters the running state.	380 V model: 660 220 V model: 3 2 0	●
F51.17	Reference voltage initial	0~200 V The maximum power tracking starts with a disturbance of the	50 V	●

	value adjustment	reference voltage initial value. Initial reference voltage = PV input voltage - F51.17		
F51.18	Maximum tracking reference voltage	F51.19~F51.02 reference voltage for tracking . The factory value is determined by the model: 380 V model: 750 V 220 V model: 400 V	750 V	●
F51.19	Minimum tracking reference voltage coefficient	0.00~1.00 This function code can be used to set the minimum voltage reference for maximum power tracking. Maximum Power Tracking Minimum Voltage Reference = solar panel open circuit voltage * F51.19. The maximum power tracking voltage will track within the range of the minimum voltage reference~ F51.18, F51.23 must be greater than the minimum voltage reference. The smaller the difference between the two, the narrower the tracking range and the faster the tracking. However, it is imperative that the voltage point of the normal maximum power falls within this range. F51.18 and F51.19 must be adjusted appropriately according to the on-site conditions. The current minimum reference voltage can be checked through F51.26.	0.70	●
F51.20	Automatically adjust reference voltage time	0.0~10.0 S (0.0 is invalid) When F51.20 is set to 0.0, the automatic adjustment of reference voltage is invalid. The reference voltage limit is automatically adjusted once every time interval set by F51.20 .	0.5 S	●
F51.21	Allowable output frequency fluctuation range	0.30 Hz~10.00 Hz When the output frequency fluctuation is less than the function code value, the reference voltage is not adjusted, but when the output frequency fluctuation range is greater than the function code value, the reference voltage is increased.	2.00 Hz	●
F51.22	Reference	0~300 V, adjust the reference voltage according to the value set by this	5 V	×

	voltage adjustment amplitude	function code.		
F51.23	Initial reference voltage for PI regulation	0~6000 V Initial reference voltage for PI regulation = Current PV voltage – F51.17		
F51.24	Current PV voltage display	0~6000 V Displays the current PV input voltage		×
F51.25	PV reference voltage display	0~6000 V Display the current reference voltage value		×
F51.26	Minimum tracking reference voltage display	0~6000 V Displays the minimum reference voltage for maximum power tracking		×
F51.27	reserve			
F51.28	reserve			
F51.29	Rated flow of water pump	0.0~1000.0 m3/h The flow rate of the pump at rated frequency and rated head Q_N Unit: cubic meter/hour	6.0 m3/h	●
F51.30	Rated head of water pump	0.0~500.0 m The head of the pump at rated frequency and rated flow rate is H_N Unit: meter	24.0 m	●
F51.31	Pump total flow reset	0: Do not reset 1: Reset This function code to 1 can reset the total flow of the pump. F51.32 and F51.33 will be cleared and restarted. After the reset is completed, function code F51.29 will automatically become 0.	0	●
F51.32	Current flow of the pump	0.0~2000.0 m3/h $Q = Q_N * F* / F_N$ Unit: cubic meter/hour		×
F51.33	Current head of	0.0~2000.0 m		×

	water pump	$H = 0.9\ H_N * (F/F_N)^2$ Unit: meter		
F51.34	Pump total flow high	0~65535 m3 This function code displays the upper 16 bits of the total flow of the pump. Unit: cubic meter.		×
F51.35	Total pump flow rate low	0.0~6553.5 m3 This function code displays the lower 16 bits of the total flow of the pump. Total pump flow = F51.32 * 6553.5 + F51.33 Unit: cubic meter.		×
F51.36	Power failure restart selection enable	0: Invalid 1: Valid	1	●
F51.37	Power failure restart delay time	0.0~600.0 S	15.0 S	●
F51.38	Kp	0.00~100.00 PID proportional adjustment parameters	10.00	●
F51.39	Ki	0.00~100.00 PID integral adjustment parameters	0.50	×
F51.40	Kd	0.00~100.00 PID differential adjustment parameters	0.00	×
F51.41	Rapid frequency reduction	0.00~50.00 Hz When the solar input voltage is lower than (F51.14+50 V), the output frequency will be reduced by the value set by this function code every 1ms.	0.50 Hz	×
F51.42	Main and auxiliary winding voltage ratio	1.00~5.00 This function code sets the voltage ratio of the main winding and the auxiliary winding. When the motor shakes, adjusting this function code appropriately can reduce the motor shaking.	1.00	●

F51.43	Output voltage gain	0.00~1.00 This function sets the output voltage gain. When the motor current is too large, the value of this function code can be appropriately reduced.	1.00	●
F51.44	MPPT step time	0.01~10.00 MPPT dynamically adjusts the time period of output frequency	0.05s	●
F51.45	MPPT frequency adjustment	0.00~5.00 MPPT increases the reference value of the frequency when dynamically adjusting the output frequency. When the output frequency needs to be increased, the frequency increases by the value set by this function code for each time period set by F51.44.	0.05 Hz	●
F51.46	Voltage regulation ratio in mode 4	1~100 When dynamically adjusting the output frequency, the solar input voltage will fluctuate. This function code sets the ratio of the difference of normal voltage fluctuation to the reference voltage of F51.25. When the voltage fluctuation difference is greater than this function code, the frequency will not be increased.	10	●
F51.47	Fast frequency reduction detection times	0~50 If the solar input voltage decreases continuously within the N MPPT cycles set by this function code, the frequency reduction process will be performed quickly. N is the value set by this function code.	3	●
F51.48	Fast frequency reduction gain	0~100 Each time the output frequency needs to be quickly reduced, the output frequency is reduced by N times the adjustment frequency set by F51.45. N is the value set by this function code.	2 0	●
F53	**AC/DC switching mode**			
F53.00	AC/DC switching mode	0: Invalid 1: Mode 1, AC conditional access and disconnection 2: Mode 2, AC fixed access	0	○
F53.01	Mode 1 switching type	0: Voltage frequency switching 1: Valid	0	○
F53.02	AC connection	0.00~50.00hz	30.00HZ	●

	frequency	In mode 1, when the output frequency is lower than value set by this function code, after the delay time set by F53.05, the output of output terminal function 62 is valid, the main contactor is controlled to be closed, and the AC power supply is connected.		
F53.03	frequency AC disconnection	0.00~50.00hz In mode 1, F53.01 is set as 0. When the time cycle set by F53.06 is reached, the output frequency is switched to the value set by this function code. If the current bus voltage value is greater than value set by F53.04, after a fixed delay of two minutes, the output frequency is reduced to 0, the output of output terminal function 62 is invalid, and the main contactor is controlled to open. AC power is disconnected. The inverter resumes the PV mode control output frequency operation.	35.00HZ	●
F53.04	AC disconnection voltage	0~ 750V. Ditto	670V	●
F53.05	AC connection delay time	In mode 1, when the output frequency is lower than value set by the function code F53.02, after the delay time set by the function code, the output of the output terminal function 62 is valid, the main contactor is controlled to be closed, and the AC power supply is connected.	10.0s	●
F53.06	Switching detection period	In mode 1, start timing after AC voltage is connected. After the time period set by this function code is reached, judge whether to disconnect the AC power supply according to the switching mode set by F53.01. When F53.01 is set to 1, the output frequency is directly reduced to 0 after the timing is reached, the AC is disconnected, and the frequency converter is restored to operation.	1.00H	○
F53.07	Remaining time for switching detection	After the AC is connected, it is determined whether the AC is disconnected for the remaining time.	1.00H	×
F53.08	Forced AC switching status	In mode 1/2, set this function code to 1, and the output of terminal function 62 is forced to be valid. When set to 0, the terminal function 62 determines whether or not to output a valid parameter.	0	○

F53.09	AC switching status	Valid state of terminal function 62 0: Invalid 1: Valid	0	×
F53.10	Mode 2 frequency source selection	0：Mode 2 frequency source is controlled by F00.07 1：Mode 2 frequency source is controlled by digital potentiometer 2: Constant pressure water supply mode control	0	○

Notes:

① After restoring the factory values, you need to set F51.00 to 1, 2 or 4 to use the solar water pump special function normally.

② For the timing problem of meeting multiple alarm conditions at the same time, such as water shortage alarm, full water alarm, weak light alarm, dry run alarm, when each condition is met at the same time, each will start delay timing, which is not related. When a certain alarm delay time is reached, the alarm is valid and dormant. The other 3 alarm delay timings will be maintained. After the alarm is reset and restored to normal, if the other 3 alarm conditions are still met, the last timing will continue, and so on. If an alarm condition is not met in the middle, the alarm delay timing will be reset.

6.7 Quick Debugging Solution

1. **Set the corresponding motor parameters according to the motor nameplate.**
2. **If you use an external start/stop button, you need to set F00.02 = 1 and F02.00 = 1, and then connect the start/stop button to X1 and com port.**
3. **Set the solar water pump parameter group**

In solar water pump control, we have 3 different solar water pump modes:

F51.00 = 1 CVT mode

F51.00 = 2 PID-regulated MPPT mode

F51.00 = 4 frequency disturbance-regulated MPPT mode

2.1 Set F51.00 = 1.

① Introduction to working logic

In this mode, function code F51.01 is used as the given value of the PID regulator, the current input voltage is used as the feedback of the PID regulator, and the output of the PID regulator is used as the increment of the given frequency of the inverter. The execution cycle of the PID module is set by function code F51.44.

During the startup phase, the inverter starts running at a fixed motor rated frequency, and the input

voltage decreases accordingly. When the voltage decreases by the value set by F51.17, that is, the input voltage is lower than the initial reference voltage of F51.23 PI regulation, it enters the dynamic adjustment phase.

In the dynamic adjustment stage, the given value of the PID regulator is a fixed value, which is displayed by function code F51.25 and modified by function code F51.01. The user can modify it manually. The feedback of the PID regulator is the current solar input voltage, which is displayed by function code F51.24.

② Set digital given reference voltage F51.01

If the user uses this mode, a suitable reference voltage needs to be set.

If the reference voltage is set too low, the solar input voltage and the inverter output frequency will oscillate significantly. At this time, the F51.01 digital given reference voltage can be appropriately increased until there is no obvious oscillation.

If the reference voltage is set too high, the inverter output frequency is relatively stable in intuitive performance. The F51.01 digital given reference voltage can be appropriately reduced to obtain a higher output frequency.

③ PID parameter adjustment

The default parameters can basically meet most conditions.

If you want to increase the response speed, you can increase Kp F51.38 appropriately. However, a larger Kp will cause a sharp drop in input voltage during the startup process, resulting in a false alarm of weak light sleep failure. Reducing Kp can get a more stable output frequency.

Increasing Kif51.39 can eliminate steady-state errors and suppress fluctuations in output frequency and solar input voltage to a certain extent.

④ F51.41 Rapidly reduce frequency

During operation, it is inevitable that the solar input voltage will drop rapidly in an instant. At this time, if the PID regulator cannot respond quickly to reduce the output frequency, a weak light fault may easily occur.

At this time, you can set the function code F51.41. When the input voltage is close to the weak light sleep voltage F51.14, generally the difference is within 50V, the output frequency of the inverter will decrease rapidly, and the pump-up voltage of the motor deceleration will increase the solar input voltage to maintain the normal operation of the system. The frequency reduction every 1 ms is set by F51.41.

This function is only valid when F51.00 = 1 or 2

4. Set F51.00 = 2.

① Introduction to working logic

In this mode, function code F51.25 displays the given value of the PID regulator, the current input voltage is used as the feedback of the PID regulator, and the output of the PID regulator is used as the increment of the given frequency of the inverter. The execution cycle of the PID module is set by function code F51.44.

During the startup phase, the inverter starts running at a fixed motor rated frequency, and the input voltage decreases accordingly. When the voltage decreases by the value set by F51.17, that is, the input voltage is lower than the initial reference voltage of F51.23 PI regulation, it enters the dynamic adjustment phase.

In the dynamic adjustment stage, the given reference voltage of the PID regulator is displayed by function code F51.25. The system adjusts the given reference voltage of the PID according to the fluctuation of the output frequency. The feedback of the PID regulator is the current solar input voltage, which is displayed by function code F51.24.

② PID given voltage automatic adjustment

PID The given voltage of the regulator is automatically adjusted based on the initial reference voltage of F51.23. It is automatically adjusted according to the time period set by F51.20 S. The voltage amplitude of each adjustment is set by function code F51.22 .

When the output frequency fluctuates greatly, and the frequency fluctuation is greater than the range set by F51.21, the given voltage is automatically increased. When the output frequency has no fluctuation or fluctuates slightly, and is less than the value set by F51.45, the given voltage is automatically reduced to obtain a higher output frequency.

③ PID parameter adjustment

The default parameters can basically meet most conditions.

If you want to increase the response speed, you can increase Kp F51.38 appropriately . However, a larger Kp will easily cause a sharp drop in input voltage during the startup process, resulting in a false alarm of weak light sleep failure. Reducing Kp can get a more stable output frequency.

Increasing Ki F51.39 can eliminate steady-state errors and suppress fluctuations in output frequency and solar input voltage to a certain extent .

④ F51.41 Rapidly reduce frequency

During operation, it is inevitable that the solar input voltage will drop rapidly in an instant. At this time,

if the PID regulator cannot respond quickly to reduce the output frequency, a weak light fault may easily occur.

At this time, you can set the function code F51.41. When the input voltage is close to the weak light sleep voltage F51.14, generally the difference is within 50V, the output frequency of the inverter will decrease rapidly, and the pump-up voltage of the motor deceleration will increase the solar input voltage to maintain the normal operation of the system. The frequency reduction every 1ms is set by F51.41.

This function is only valid when F51.00 = 1 or 2

5. Set F51 . 00 = 4.

① Set F51.14 and F51.16 according to the actual output voltage of the solar panel

720V in the morning when not running , and the voltage is about 680V after running, then you can set F51.14 = 580V, F51.16 = 700V.

When the input voltage is less than (F51.14 + 20V That is, when the voltage is 600V), after a delay of 3 ms, the output frequency is reduced to 1 Hz and the output frequency is readjusted after 1s.

If a weak light alarm occurs and the F51.24 input voltage shows about 700V (a higher voltage when not running), you can increase F51.15 appropriately.

If the inverter is completely powered off instantly, you need to increase the value of F51.14, reduce the value of F51.15, reduce the deceleration time (F00.15), set F04.19 = 1 for free stop. Adjust F51.48.

Taking the single-phase camera model as an example, if the solar input voltage is 400V when not running in the morning, and the voltage is about 360V after running, you can set F51.14 =280V, F51.16 = 390V.

When the input voltage is less than (F51.14 + 20V That is, 300V), after a delay of 3 ms, the output frequency is reduced to 1 Hz, and the output frequency is readjusted after 1s.

If a weak light alarm occurs and the input voltage of F51.24 is displayed as about 400V (a higher voltage when not in operation), F51.15 can be appropriately increased.

If the inverter is completely powered off instantly, you need to increase the value of F51.14, reduce the value of F51.15, reduce the deceleration time (F00.15), set F04.19 = 1 for free stop. Adjust F51.48.

The above F51 group parameters are all modified during operation and adjusted according to actual conditions.

② Setting F51.46

During operation, if the output frequency is stable and F51.24 solar input voltage is stable without fluctuation or with very small fluctuation, you can check the value of F18.55 function code and set F51.46 to

a value slightly larger than F18.55. Then observe the output frequency and F51.22 solar input voltage.

If it is still in a relatively stable state and the output frequency rises significantly, F51.46 can be increased again .

If the output frequency or F51.24 PV input voltage starts to fluctuate or the fluctuation increases, please reduce the value of F51.46 .

If the output frequency and F51.24 PV input voltage do not change significantly, and the output frequency does not rise significantly after a period of time, please restore F51.46 to the previous setting value.

③ Setting F51.48

During normal operation, the lighting conditions remain unchanged and there is no obvious cloud cover. Observe the output frequency and F51.24 solar input voltage.

If the frequency fluctuates greatly, the value of this function code can be reduced. After the reduction, it is still necessary to observe that the output frequency decreases when the clouds cover the sun for a moment. If F51.24 fluctuates too much, the light is weak, or the inverter is completely powered off, the value of F51.48 cannot be reduced or the value of F51.48 still needs to be increased. At the same time, check the function code F00.15 deceleration time and F04.19 stop mode. The deceleration time can be reduced and the stop mode can be changed to free stop (F04.19 = 1).

Increasing the value of F51.48 will lead to an increase in the jitter of the output frequency when the solar input power does not meet the conditions for the motor to operate at the rated frequency. The user needs to set it reasonably.

Part 7 Special function settings

7.1 AC/DC Switching

In solar water pump mode, two types of AC access are supported. F53.00 = 1 and F53.00 = 2.

7.1.1 AC/DC Switching Mode .

Operating Logic:

1. The inverter starts normally, controlling the output frequency according to the settings defined in F51.00.

2. When the output frequency drops below the value set in F53.02, after the delay time set in F53.05, the output terminal function 62 becomes active, controlling the main contactor to close, and AC power is connected. The output frequency is controlled to the motor's rated frequency.

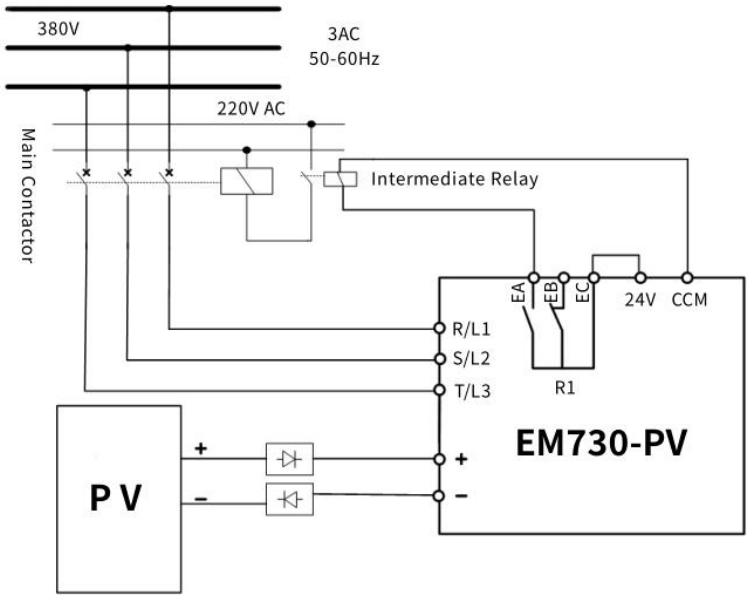
3. The system starts a timer according to the time period set in F53.06. The output frequency is maintained at the motor's rated frequency.

4. Once the time period ends, the system checks whether AC should be disconnected based on the setting in F53.01.

5. If F53.01 = 0, after the time period ends, the output frequency is reduced to the value set in F53.03. After stabilizing, if the bus voltage is higher than the value set in F53.04 (after a 2-minute delay), the system enters step 6 to perform the AC disconnection logic. If the bus voltage is not higher than the set value, the motor's rated frequency is resumed, and the system returns to step 3.

If F53.01 = 0, after the time period ends, proceed to step 6 to disconnect AC.

6. The control output frequency is reduced to 0, the terminal function 62 output is invalid, and the main contactor is disconnected. Re-enter step 2.



7.1.2 AC Fixed Access Mode

In this mode, the AC power can be directly connected to the inverter's RST power input through the main circuit breaker. The output from the solar panels is connected to the inverter's + and - terminals after passing through a diode. When the input voltage from the solar panels exceeds 537V (theoretical value: 380 * 1.414 = 537V), the inverter's internal rectifier diodes will not conduct. The AC input power will supply energy. When the solar input voltage drops below 537V, the rectifier diodes will conduct, and the AC input power will participate in the energy supply. The bus voltage will not drop below 537V.

In this mode, the frequency source is controlled by function code F53.10.

F53.10	Mode 2 frequency source selection	0:Mode 2 frequency source is controlled by F00.07 1:Mode 2 frequency source is controlled by digital potentiometer 2: Constant pressure water supply mode control	1.00	•

7.2 Constant Pressure Control

In this mode, parameters F51.00 = 1/2/4, F53.00 = 2, and F53.10 = 2; AC/DC are both connected to the inverter.

In this mode, the output of the PID module is used as the set frequency. The setpoint for the PID module is defined by F09.01, which is the digital pressure setpoint. The PID feedback comes from AI1/AI2. The user should choose the appropriate feedback signal type based on the actual output signal of the pressure sensor (voltage-type or current-type).

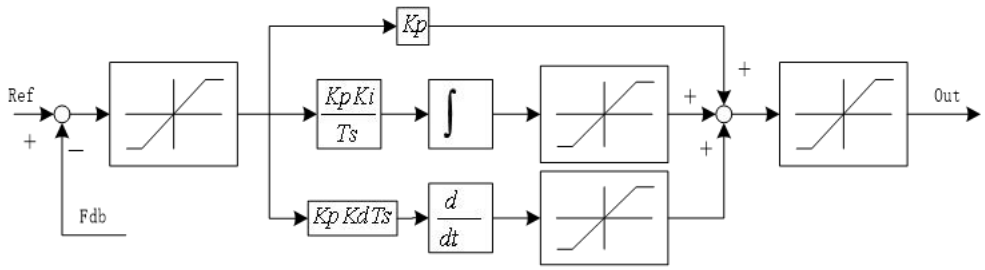


Fig. 9-1 Process PID Block Diagram Description

PID control is a closed-loop control method in which the system's output signal (Out) is fed back to the PID controller. After PID computation, the controller's output is adjusted, forming one or more closed loops. The purpose is to make the system's output value (Out) match the set target value (Ref). The specific principle diagram is shown in Figure 7-27.

The PID controller calculates the control output based on the difference between the system's set target (Ref) and the feedback signal (Fdb), using three computation factors: Proportional (P), Integral (I), and Derivative (D). The characteristics of each computation factor are as follows:

Proportional (P):

Proportional control is the simplest control method. The controller's output is directly proportional to the input error signal. When only proportional control is used, the system output will have steady-state error.

Integral (I):

In integral control, the controller's output is proportional to the integral of the input error signal. This can eliminate steady-state error, ensuring that the system has no steady-state error once it stabilizes. However, it cannot track rapid changes.

Derivative (D):

In derivative control, the controller’s output is proportional to the derivative of the input error signal (i.e., the rate of change of the error). It predicts the trend of error change, quickly responds to rapid variations, and improves the system’s dynamic performance during the regulation process.

Function Code	Function code name	Parameter description	Unit	Factory value	Attribute
F09.00	PID given source	0: digital PID given 1: AI1 2: AI2 3: Reserved 4Reserved 5: PULSE High Frequency Pulse (X5) 6: Communication given (percentage given)		0	○
F09.01	Digital PID setting	0.0 ~ PID given feedback range F09.03		0.00	●
F09.02	PID feedback source	1: AI1 2: AI2 3: Reserved 4: Reserved 5: PULSE High Frequency Pulse (X5) 6: Communication given		1	○
F09.03	PID given feedback range	0.1～6000.0		10.00	●

F09.00 = 0: Digital PID Setpoint F09.01

The PID setpoint is set by the digital PID setpoint (F09.01), and the specific percentage is calculated as F09.01 / F09.03 * 100.00%.

F09.02 = 1: AI1

F09.02 = 2: AI2

The PID feedback percentage is directly determined by the AI (percentage).

Function Code	Function code name	Parameter description	Unit	Factory value	Attribute
F09.16	Upper Limit of PID Output	F09.17～+100.0	%	100.0	●
F09.17	Lower Limit of PID Output	–100.0～F09.16	%	0.0	●

PID Output Limiting The entire process of the PID module has an output range defined by (F09.17, F09.16). If the actual adjustment result falls outside this range, the output will be limited to the boundaries.

Function Code	Function code name	Parameter description	Unit	Factory value	Attribute
F09.18	PID Deviation Limit	0.00 to 100.00 (0.00 is invalid)	%	0.00	●

When the deviation between the PID setpoint and the feedback is less than or equal to the deviation limit (F09.18), the PID will stop the adjustment action. This ensures that when the deviation between the setpoint and feedback is small, the output frequency remains stable and unchanged, which is effective in some closed-loop control scenarios.

Function Code	Function code name	Parameter description	Unit	Factory value	Attribute
F09.27	PID Sleep Control Selection	0: Disabled 1: Zero-speed sleep 2: Lower frequency sleep 3: Pipe sealing sleep		0	●
F09.28	Sleep Action Point	0.00 ~ 100.00 (100.00 corresponds to the PID setpoint feedback range)	%	100.00	●
F09.29	Sleep Delay Time	0.0～6500.0	s	0.0	●
F09.30	Wake-up Action Point	0.00 ~ 100.00 (100.00 corresponds to the PID setpoint feedback range)	%	0.00	●
F09.31	Wake-up Delay Time	0.0～6500.0	s	0.0	●

In certain situations, at a specific moment, when the output and feedback signals tend to stabilize, or when the controlled variable is within the allowable range, the system may stop outputting and temporarily enter a sleep mode. When the controlled variable exceeds the allowed range, the inverter wakes up and resumes output. This cycle continues, ensuring that the controlled variable stays within the allowable range while also achieving energy savings. A detailed function description is provided in Table 7-17.

Mode		Description
Action Mode	Status	
Positive Action (e.g., constant pressure control)	Normal Operation	Sleep condition judgment: If |Feedback| > Sleep Action Point (F09.28) (Required condition: When restarting after shutdown or sleep, the feedback pressure must be greater than or equal to the set pressure), or the inverter output frequency reaches the lower limit and can no longer decrease (due to the inverter's minimum frequency or the lower limit of PID output), then, if the above conditions are met and maintained for the duration of the Sleep Delay Time (F09.29), the system will enter Sleep Mode. ★: During the delay period, PID continues to output; after the delay, output follows the function code setting.
	Sleep Mode	Wake-up condition judgment: If |Feedback| ≤ Wake-up Action Point (F09.30), and this condition is maintained for the duration of the Wake-up Delay Time (F09.31), the system will exit Sleep Mode. ★: During the delay period, output follows the function code setting; after the delay, the PID resumes normal output.
Negative Action(e.g., constant temperature control)	Normal Operation	Sleep condition judgment: If |Feedback| < Sleep Action Point (F09.28) (Required condition: When restarting after shutdown or sleep, the feedback pressure must be less than or equal to the set pressure), or the inverter output frequency reaches the lower limit and can no longer decrease (due to the inverter’s minimum frequency or PID output lower limit), then, if the above conditions are met and maintained for the duration of the Sleep Delay Time (F09.29), the system will enter Sleep Mode. ★: During the delay period, the PID continues to output; after the delay, output follows the function code setting.
	Sleep Mode	Wake-up condition judgment: If |Feedback| ≥ Wake-up Action Point (F09.30), and this condition is maintained for the

		duration of the Wake-up Delay Time (F09.31), the system will exit Sleep Mode. ★: During the delay period, output follows the function code setting; after the delay, the PID resumes normal output.

Table 7-17 Sleep and Wake-up Function Description

Suggestion:

In the case of positive action, F09.28 (sleep action point) ≥ F09.30 (wake-up action point);

In the case of negative action, F09.28 (sleep action point) ≤ F09.30 (wake-up action point).

Function Code	Function code name	Parameter description	Unit	Factory value	Attribute
F09.39	Wake-up Mode Selection	0: Target pressure (F09.01) * Wake-up Activation Point Coefficient 1: Wake-up Activation Point (F09.30)		0	○
F09.40	Wake-up Activation Point Coefficient	0.0–100.0 (100% corresponds to PID set value)	%	90.0	●

F09.39 = 0: Target pressure = F09.01 * Wake-up action point coefficient (F09.40)

F09.40 * Pre-set value

F09.39 = 1: Wake-up action point (F09.30)

When the PID is below the wake-up point F09.30 and remains there for the wake-up delay time defined by F09.31, the system will wake up.

Function Code	Function code name	Parameter description	Unit	Factory value	Attribute
F09.44	Sleep Mode Selection	0: Sleep based on Sleep Frequency (F09.45) 1: Sleep based on Sleep Activation Point (F09.28)		0	○
F09.45	Sleep Frequency	0.00 ~ Upper Limit Frequency (F00.18)	Hz	30.00	●

Part 8 Protection/Warning Solutions

8.1 Protection Content

When the inverter is in the abnormal status, the digital tube display will show the corresponding protection code and its parameters, the protection relay and protection output terminal will work, and the inverter will stop the output. In case of protection, the motor will stop rotating normally or slow down until it is stopped. The protection contents and solutions of the EM730 series inverter are shown in Table 10-1.

Table 10-1 Protection Contents and Solutions of EM730 Series Inverter

Protection code	Protection Type	Protection Cause	Protection Solution
E01	Short circuit protection	1. Short circuit to the ground. 2. Inter-phase short circuit 3. Short circuit of the external braking resistor. 4. The acceleration and deceleration time is too short. 5. The inverter module is damaged. 6. There is excessive on-site interference.	1. Check the wiring for short circuits. 2. Properly increase the acceleration and deceleration time. 3. Investigate the cause and reset the controller after implementing the corresponding solutions. 4. Seek technical support.
E02	Instantaneous overcurrent	1. The acceleration and deceleration time is too short. 2. In the V/F drive mode, the V/F curve setting is unreasonable. 3. The motor is running during startup. 4. The motor used is beyond the capacity of the inverter or the load is too heavy. 5. Motor parameters are not suitable and need to be identified. 6. The phases on the output side of the inverter are short-circuited. 7. The inverter is damaged.	1. Increase the acceleration and deceleration time. 2. Reasonably set the V/F curve. 3. Enable speed tracking or start DC braking. 4. Use the appropriate motor or inverter. 5. Identify the motor parameters. 6. Check the wiring for short circuits. 7. Seek technical support.
E04	Steady-state overcurrent	The same as E02	The same as E02

E05	Overvoltage	1. The deceleration time is too short, and the motor has too much regenerated energy. 2. The braking unit or braking resistor forms an open circuit. 3. The braking unit or braking resistor does not match. 4. The power voltage is too high. 5. The energy consumption braking function is not enabled	1. Increase the deceleration time. 2. Check the wiring of the braking unit and braking resistor. 3. Use a suitable braking unit/braking resistor. 4. Reduce the power voltage to the specified range. 5. For the model of the built-in braking unit, set F15.30 to 1, and enable the energy consumption braking.
E06	Undervoltage	1. The input power supply is subject to phase loss. 2. The terminals of the input power supply are loose. 3. The voltage of the input power supply drops too much. 4. The switch contacts of the input power supply are aging.	1. Check the input power supply and wiring. 2. Tighten the screws of input terminals. 3. Check the air circuit breaker and contactor.
E07	Input phase loss	1. The input power supply is subject to phase loss. 2. The input power supply fluctuates greatly.	1. Check the input power supply. 2. Check the wiring of the input power supply. 3. Check whether the terminal is loose 4. Use a voltage regulator on the input side.
E08	Output phase loss	1. The output terminals U, V and W have phase losses.	1. Check the connection between the inverter and motor. 2. Check whether the output terminal is loose. 3. Check whether the motor winding is disconnected.
E09	Inverter	1. The acceleration and deceleration time	1. Increase the acceleration and

	overload	is too short. 2. In the V/F drive mode, the V/F curve setting is unreasonable. 3. The load is too heavy. 4. The braking time is too long, the braking intensity is too high, or DC braking is enabled repeatedly.	deceleration time. 2. Reasonably set the V/F curve. 3. Use the inverter that matches the load. 4. Reduce the braking time and braking intensity. Do not enable DC braking repeatedly.
E10	Inverter overheat	1. The ambient temperature is too high. 2. The inverter is subject to poor ventilation. 3. The cooling fan fails.	1. The operating environment of the inverter should meet the specifications. 2. Improve the ventilation environment and check whether the air duct is blocked. 3. Replace the cooling fan.
E11	Parameter setting conflict	1. There is a logic conflict in parameter settings.	1. Check whether parameters set is illogical before the protection.
E13	Motor overload	1. The acceleration and deceleration time is too short. 2. In the V/F drive mode, the V/F curve setting is unreasonable. 3. The load is too heavy.	1. Increase the acceleration and deceleration time. 2. Reasonably set the V/F curve. 3. Use a motor matching the load.
E14	External protection	1. The protection terminal of the external device acts.	1. Check the external device.
E15	Inverter memory protection	1. Interference results in memory reading and writing errors. 2. The internal memory of the controller is read and written repeatedly, causing damage to the memory.	1. Press the STOP/RESET key to reset the controller and try again. 2. For the parameters (e.g. frequency setting) to be modified frequently, set F10.56 to 11 after debugging.
E16	Communication error	1. Communication timeout is enabled in the discontinuous communication system.	1. F10.03 is set to 0.0 in the discontinuous communication system.

		2. Communication is disconnected.	2. Adjust the F10.03 communication timeout. 3. Check whether the communication cable is disconnected.
E17	Abnormality of inverter temperature sensor	1. The inverter temperature sensor is disconnected or short-circuited.	2. Check whether the inverter temperature sensor is connected properly. 3. Seek technical support.
E18	The soft start relay is not engaged.	1. The power supply fails during operation. 2. The input power supply is subject to phase loss. 3. The terminals of the input power supply are loose. 4. The voltage of the input power supply drops too much. 5. The switch contacts of the input power supply are aging.	1. Stop the inverter before power-off, or directly reset the protection. 2. Check the input power supply and wiring. 3. Tighten the screws of input terminals. 4. Check the air circuit breaker and contactor.
E19	Error of current detection circuit	1. The detection circuit of the drive board or control board is damaged.	1. Seek technical support.
E20	Stall protection	1. The deceleration time is too short. 2. Error of dynamic brake for deceleration. 3. The load is too heavy.	1. Increase the deceleration time. 2. Check the dynamic brake. 3. Check whether the motor cannot be stopped as it is driven by another load.
E21	PID feedback disconnection	1. The PID feedback is greater than the upper limit (F09.24) or less than the lower limit (F09.25), depending on the type of the feedback sensor.	1. Check whether the feedback line falls off. 2. Check whether the sensor is working abnormally. 3. Adjust the detection value of feedback disconnection to a reasonable level.

E24	Self-identification error	1. Press the STOP/RESET key during parameter identification. 2. The external terminal stops working (FRS = ON) properly during parameter identification. 3. The motor is not connected. 4. The rotary self-learning motor is not disconnected from the load. 5. The motor fails.	1. Press the STOP/RESET key to reset. 2. The external terminal should not be operated during parameter identification. 3. Check the connection between the inverter and motor. 4. Disconnect the rotary self-learning motor from the load. 5. Check the motor.
E26	Load loss protection	1. The motor is not connected or does not match the load. 2. Load loss occurs. 3. The parameters of load loss protection are not set reasonably.	1. Check the wiring and use the appropriate motor 2. Check the equipment. 3. Change the off-load detection level F07.22 and detection time F07.23.
E27	Up to cumulative power-on time	1. The inverter maintenance time is up.	1. Please contact the dealer for technical support.
E28	Up to cumulative running time	1. The inverter maintenance time is up.	1. Please contact the dealer for technical support.
E44	Wiring protection	1. The valid time of the wiring detection terminal is too long. 2. The invalid time of the wiring detection terminal is too long.	1. Check whether the sensor can work normally. 2. Check whether the terminal is capable of properly judging the closing and opening.
E57	Overpressure in pipeline network	1. The feedback pressure in the water supply application is too high.	1. Check whether the sensor is in the abnormal status. 2. Check the analog terminal for normal detection of analog input. 3. Check the external device.
E58	Under-pressure	1. The feedback pressure in the water	1. Check whether the sensor is in the

	in pipeline network	supply application is too low.	abnormal status. 2. Check the analog terminal for normal detection of analog input. 3. Check the external device.
E76	Short circuit to the ground	1. The output is short-circuited to ground. 2. The inverter module is damaged.	1. Check whether the output cable is broken or whether the motor shell is broken down. 2. Investigate the cause and reset the controller after implementing the corresponding solutions. 3. Seek technical support.
EtSLP	Water shortage dormancy	1. The water in the water intake area is drained 2. The low-level detection sensor is damaged	1. Check whether there is water in the water intake area 2. Replace the low-level detection sensor
FuSLP	Full water storage tank sleep	1. The water level in the water storage area is full 2. The high-level detection sensor in the water storage area is damaged	1. Check whether the water level in the water storage area is full 2. Replace the high-level detection sensor
LvSLP	Weak light sleep	1. Insufficient light intensity 2. Light weak voltage value is set higher	1. Wait for the light to become stronger before it automatically recovers 2. Appropriately reduce the light detection voltage
drSLP	Dry running sleep	1. The water flow of the water pump is very small or there is no water 2. The dry-run detection current is set larger	1. Change the water source 2. Appropriately reduce the dry-run detection current

Part 9 Optional Accessories

9.1 Boost Module

9.1.1 Wiring

- PV+ and PV- of the boost module are connected to the positive and negative inputs of the DC power supply;
- +) and (-) of the boost module are connected to the input (+) and (-) of the water pump inverter ;
- 85 communication terminal A+ of the boost module is connected to the A+ of the inverter , and the A- terminal is connected to the A- ;
- After checking that the wiring is correct, it can run automatically after power-on.

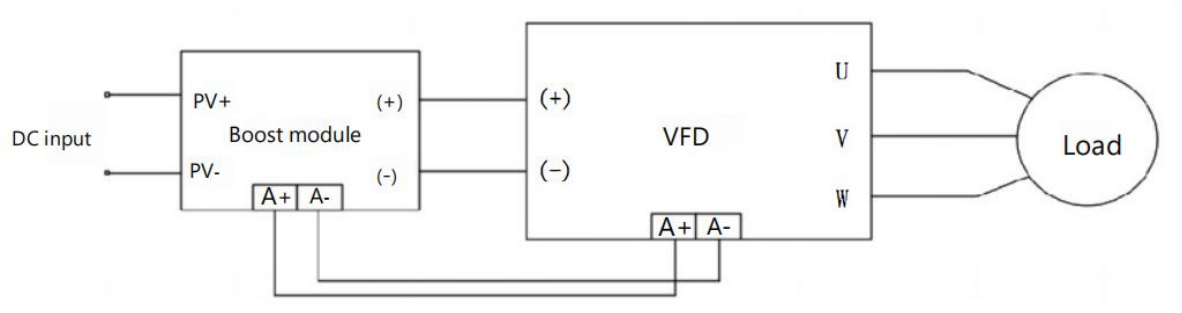


figure 1 Connection between boost module and inverter

9.1.2 Operation and Operation Process

①Automatic voltage boost

the input voltage of the boost module is below 260V , the voltage will be automatically increased to 260V ; if the input voltage is greater than 260V , the boost module will not boost the voltage temporarily; after the inverter is running and communicates successfully with the boost module, it will automatically boost the voltage according to the reference voltage of the inverter (the boost value of the inverter with a reference voltage of 220V is 350V , and the boost value of the inverter with a reference voltage of 380V is 570V).

②Inverter function code

F52 group boost module dedicated group

Function Code	Function code name	Parameter Description	unit	Factory default
F52.00	Whether to enable the boost module	0: Disable 1: Enable		1
F52.01	Reference voltage	0～690	V	0
F52.02	Voltage loop Kp	0.00～65.535		0.270

F52.03	Voltage loop Ki	0.00～65.535		0.135
F52.04	Current loop Kp	0.00～65.535		
F52.05	Current loop Ki	0.00 ～ 65.535		
F52.06	Carrier frequency	0 ～ 50	KZ	
F52.0 7	Light-weak voltage warning value setting	0～690	V	260
F52.0 8	Light intensity voltage warning value setting	0～690	V	6 9 0
F52.0 9	Motor overload factor	0.00～100.00	%	100.00
F52. 10	Inverter side fault flag	0: No fault 1: Fault		0
F52. 11	Boost side open circuit voltage	0～690	V	0
F52. 12	Boost side open circuit current	0.00～650.00	A	0.00
F52.1 3	Low light intensity warning sign	0: No warning 1: Low light 2: High light		0
F52.1 4	Inverter operation selection when boost module fails	0: Inverter stops working 1: Warning output continues to operate with limited power		1

illustrate:

- Function code F 52.00 should be set to 1. If the DC bus voltage does not match after the inverter is powered on, check whether the F52.00 function code is 1;
- Function code F 52.01 means the inverter automatically sets parameters according to the rated voltage, without manual setting.
- Function codes F 52.02 and F 52.03 are the Kp and Ki parameters of the voltage loop PI and do not need to be changed ;
- Function codes F52.04 and F52.05 are the Kp and Ki parameters of the current loop PI and do not need to be changed;
- Function code F52.06 is for setting the carrier frequency of the boost module.
- Function codes F 52.0 7 and F 52.0 8 can set the light-weak warning voltage value and light-intensity warning voltage value. When the input voltage is less than the light-weak

warning voltage value, the boost module fault light is on and the inverter pops up a light-weak warning; when the input voltage is greater than the light-intensity voltage value, the boost module fault light is on and the inverter pops up a light-intensity warning;

- Function code F 52.0 9 is used to set the overload factor and judge the input current for overload protection. 100% corresponds to the rated current of the boost module .
- Function code F 52. 11 displays the input voltage on the PV+ and PV- sides of the boost module; function code F 52. 12 displays the current on the PV+ and PV- sides of the boost module.
- F 52. 13 shows the warning sign on the boost module side, if the light is weak it is 1 and the light intensity is 2.

9.1.3 Working conditions

Input is the DC voltage of the solar panel

Maximum DC input voltage: 600V

Starting voltage: 80V

Minimum operating voltage: 70V

Maximum input current: 22A

9.1.4 Warnings and faults

Light intensity warning: When the light intensity is detected, the inverter pops up a warning, the red light of the boost module lights up, and the boost does not stop.

Weak light warning: When weak light is detected, the inverter pops up a warning, the red light of the boost module turns on, and the boost does not stop.

Communication failure. After the communication failure, the boost module automatically reduces the voltage to 260V (when the input voltage on the PV+ and PV- sides is less than 260V) or the input voltage on the PV + and PV- sides; the boost module automatically boosts the voltage after the communication is reconnected.

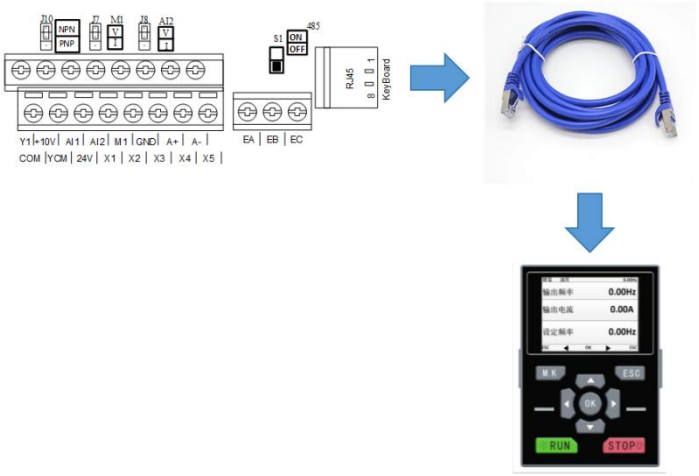
9.2 LCD keyboard

①LCD keyboard can display 3 lines of data

②Support parameter upload and download

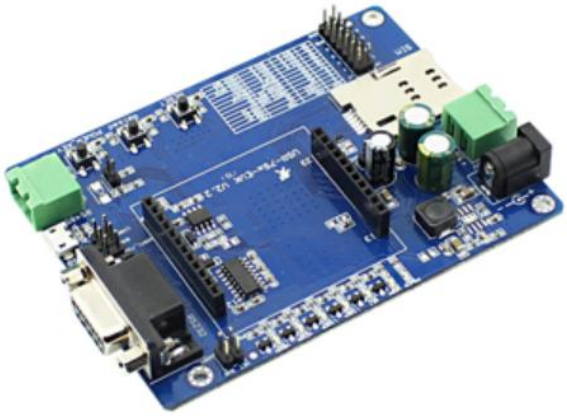
9.2.1 Wiring

Use a network cable to directly connect the inverter RJ45 network port and the LCD keyboard network port, and then the LCD keyboard can be used normally.



9.3 GPRS Module

Optional GPRS module, providing WEB for remote monitoring by customers



9.4 Output Reactor

It can increase the effective transmission distance of the frequency converter and is suitable for long cable water pump applications