

Solar pump inverter



USER MANUAL

Chapter 1 Product Overview

1.1 Product Specifications

Model	-S2 Products	-2 Products	-4 Products
Output voltage	1AC 220V	3AC 220V	3AC 380~440V
Ac Input voltage (V)	1AC/3AC 220 (15%) ~ 240(+10%)		3AC 380(15%) ~440(+10%)
Maximum DC voltage (V)	440	440	800
Starting voltage (V)	200	200	300
Minimum operating voltage (V)	150	150	250
Recommended DC input voltage range (V)	200 ~ 400	200 ~ 400	300 ~ 750
Recommended MPP voltage (V)	330	330	550

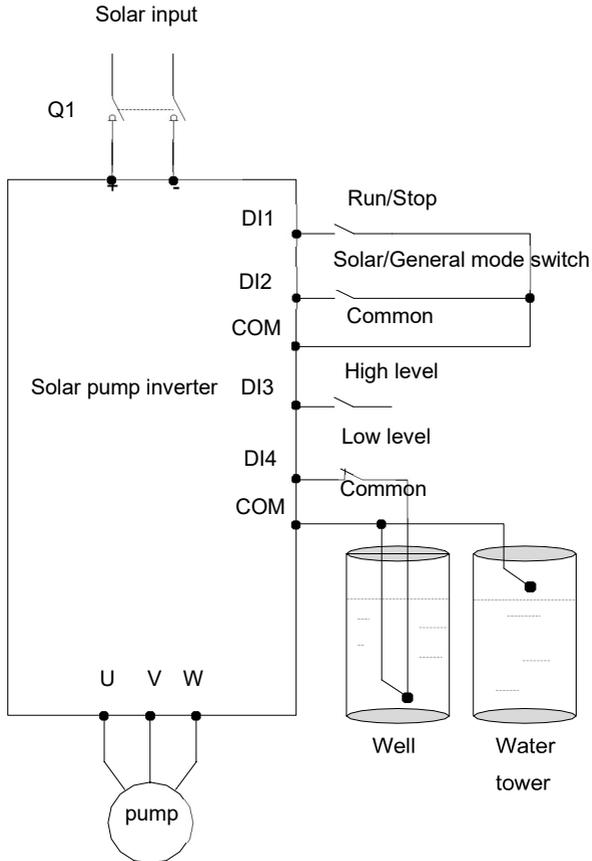
1.2 Product rating

Series	Rated output power (kW)	Rated input current (A)	Rated output current (A)	Maximum DC input current (A)
-S2 model single phase 220V output (0.4 to 2.2kW)	0.4	6.5	2.5	9
	0.75	9.3	4.2	9
	1.5	15.7	7.5	12
	2.2	24	10	12
-2 model three-phase 220V output (1.5 to 7.5kW)	1.5	7.7	7.5	12
	2.2	11	10	12
	4	17	16	20
	5.5	25	20	30
	7.5	33	30	40
-4 model three-phase	0.75	3.4	2.5	9
	1.5	5.0	4.2	9

380V output (0.75 to 500kW)	2.2	5.8	5.5	12
	4.0	13.5	9.5	16.5
	5.5	19.5	14	23.9
	7.5	25	18.5	30.6
	11	32	25	39.2
	15	40	32	49
	18.5	47	38	50
	22	51	45	60
	30	70	60	81
	37	80	75	90
	45	98	92	130
	55	128	115	150
	75	139	150	200
	90	168	180	250
	110	201	215	300
	132	265	260	360
	160	310	305	430
	185	345	340	500
	200	385	380	550
	220	430	425	480
	250	485	480	525
	280	545	530	600
	315	610	600	690
	355	625	650	760
400	715	720	870	
450	840	820	970	
500	890	860	1100	

Chapter 2 Wiring and terminals

2.1 Standard Wiring

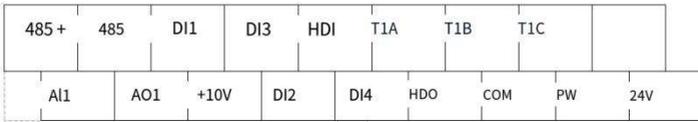


- ✧ The DC circuit breaker Q1 must be installed as a protection switch for the PV DC input.
- ✧ When the components are connected in parallel, the photovoltaic special bus box should be selected.
- ✧ When the distance between the photovoltaic cell module and the frequency converter exceeds 10m, the DC input end needs to be configured with Type II lightning arrester.
- ✧ If the distance between the water pump and the frequency converter is greater than 50m, you are advised to configure an output reactor.
- ✧ The frequency converter runs automatically by default. If you need to set parameters, strictly follow

5 Commissioning Guide.

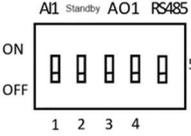
Terminals	Terminal name	Terminal Function Description
R, S, T (L, N)	Ac input	Three-phase (single-phase) AC input terminals, connected to the power grid Note: Cables need to be connected using the screws that came with the cable.
(+), (-)	Pv DC input	Photovoltaic panel input terminals
U, V, W	Inverter output	Three-phase (single-phase) AC output terminal, generally connected to the pump motor.
T	Safety protection grounding	Safety protection ground terminal, each machine must be reliably grounded.

2.2 Description of control terminals



Terminals description for 22kW and below power ratings

Terminal	Instructions
+10V	The +10.5V power supply provided by the machine, 10V/5V power supply can be provided for models above 22KW
AI1	1, input range: AI1 voltage and current optional 0 ~10V, 0(4) ~20ma 2, input impedance: voltage input 20kΩ, current input 250Ω, AI1 voltage or current input by the code switch SW1 set 3. Resolution: When 10V corresponds to 50Hz, the minimum resolution is 5mV 4, 25°C, input 5V or 10ma above, error ±0.5% 2 channels of analog input can be added through the access expansion card
GND	+10.5V reference ground
AO1	1, output range: 0~10V voltage or 0(4) ~20mA current 2, AO0 and AO1 voltage or current output is set by the code switch SW1 3, 25°C, output 5V, error ±0.5% 4, can be extended by access to the expansion card to expand 1 analog output
T1A	1, relay output; T1A-T1B normally closed, T1A-T1B normally open,

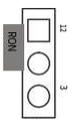
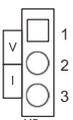
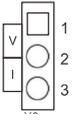
T1B	2, end contact capacity: 3A/AC250V, 1A/DC30V		
T1C	3, can be connected to the expansion card to expand 1 relay output		
COM	+24V reference place		
485 +	485 communication port, 485 differential signal port, standard 485 communication port		
485 -	please use shielded twisted pair cable, 485 through Communication 120 Ohm terminal matching resistor through the code switch SW1 select access.		
PE	Ground terminal		
PW	Switching quantity of external power input terminals, voltage range: 12~30V		
24V	Inverter provides user power supply, 24V (-10%~+15%), maximum output current 200ma		
DI1	Digital input 1	1, internal impedance: 3.3kΩ 2, can accept 12~30V voltage input 3, the terminal is a two-way input terminal, support NPN and PNP connection 4, the maximum input frequency: 1kHz 5, all for the programmable digital input terminal, the user can set the terminal function through the function code 6, can be extended by access expansion card 4 switch input	
DI2	Digital input 2		
DI3	Digital input 3		
DI4	Digital input 4		
HDI	In addition to the switching input function, it can also be used as a high-frequency pulse input channel maximum input frequency: 50kHz duty cycle: 30%~70%		
		AI1 Input voltage	1 Dial to ON: 0ma ~ 20ma input; 1 Dial to OFF: 0V ~ - current 10V input
		AO1 Output voltage	3 Unplug to ON, 4 Unplug to OFF: 0-10V voltage output
		AO1 Output current	3 Unplug to OFF, 4 Unplug to ON: 0-20ma current output
		RS485 Terminal resistor	5 Unplug to ON: RS485 connects to 120Ω terminal resistor

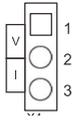
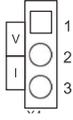
Terminals description for 30kW and above power ratings

Types	Terminal	Terminal function Description	Technical specifications
Digital input	+24V	+24V power supply	24V±10%, isolated from GND internally. Max load: 200mA

	PW	External power input terminal (digital input terminal power supply)	Factory shorting with +24V
	DI1 ~ DI7	Switch quantity input terminals 1 to 7	Input specifications: 24V, 5ma
	HDI	High speed pulse input or switching quantity input	Pulse input frequency range: 0 ~ 50KHz High level voltage: 24V
	COM	+24V power source or external power source ground	Interior isolated from GND
Digital output	DO	Open collector output with CME at the common end	External voltage range: 0 ~ 24V
	CME	Open collector output common end	Factory shorting with COM
	HDO	High speed pulse output or open collector output with COM on the common end	Pulse output frequency range: 0 ~ 50KHz
	COM	HDO public end	Interior isolated from GND
Analog input	+10/5V	The +10V or +5V power output provided by the unit	Output voltage :10V or 5V via X13 optional. Output current range: 0 ~ 50mA (If +10V or +5V and GND indirect potentiometer, potentiometer resistance should not be less than 2K ohm)
	AI1~AI2	Analog input terminal	Input voltage and current optional Input voltage range: 0V ~ 10V Input current range: 0/4 ~ 20ma
	GND	Simulatively	Internally isolated from COM
Analog output	AO1 ~ AO2	Analog output terminal	Output voltage and current optional Output voltage range: 0 ~ 10V Output current range: 0/4 ~ 20ma
Relay output	T1A/T1B/ T1C	Relay output	T1A-T1B: Normally closed T1A-T1C: normally open Contact capacity: 250VAC/3A, 30VDC/1A

	T2A/T2B/ T2C	Relay output	T2A-T2B: Normally closed T2A-T2C: normally open Contact capacity: 250VAC/3A, 30VDC/1A
Communication interface	485+ 485-	RS485 communication interface	RS485 communication interface

Bit number	Instructions	
X1	RS485 terminal matches resistance Settings	
		<p>The X1 first 1,2 pin using short circuit module short circuit, RS485 bus using terminal matching resistance, 120 euros;</p> <p>Short-circuit module is used to short-circuit pin X1, pin 2, pin 3, and RS485 bus does not use terminal matching resistor;</p> <p>When the short circuit module is not used, the RS485 bus does not use the terminal matching resistor.</p>
X2	Analog input 1 Current voltage selection	
		<p>Short-circuit module is used to short-circuit pin 1,2 of X2, analog input 1 is voltage input (0 ~ 10V), short-circuit module is used to short-circuit pin 2,3 of X2, analog input 1 is current input (0/4 ~ 20mA); When short circuit module is not used, analog output 1 is voltage input (0 ~ 10V).</p>
X3	Analog input 2 Current voltage select	
		<p>Short-circuit module is used to short-circuit X3 pins 1,2, and voltage input (0 ~ 10V) is used to short-circuit X3 pins 2,3, and current input (0/4 ~ 20mA) is used to short-circuit module. When no short circuit module is used, the analog output 2 is the voltage input (0 ~ 10V).</p>
X8	10V/5V supply voltage selection	
		<p>The X8 pin 1,2 is shorted using the short circuit module, and the terminal 10V/5V provides +10V power output; Short-circuit module is used to short-circuit pin 2,3 of X8, and terminal 10V/5V provides +5V power output externally.</p>
X14	Analog output 1 Current voltage selection	

		<p>The X14 pin 1,2 is shorted using the short circuit module, and the analog output 2 is the voltage output (0 ~ 10V); Short-circuit module is used to short-circuit pin 2,3 of X14, analog output 2 is current output (0/4 ~ 20mA).</p>
	<p>Analog output 2 Current voltage selection</p>	
X15		<p>Short-circuit module is used to short-circuit pin 1,2 of X15. Analog output 2 is voltage output (0 ~ 10V); Short-circuit module is used to short-circuit pin 2,3 of X15, analog output 2 is current output (0/4 ~ 20mA).</p>
X5	<p>Expansion card interface</p>	
J2	<p>Control board CPU download special pin (has been set before the factory, the user does not need to change)</p>	
J9	<p>Native keyboard interface</p>	
J1	<p>External keyboard interface</p>	

Chapter 3 Keyboard introduction

3.1 Keyboard operation basic content

This chapter introduces the use of the frequency converter keyboard and the debugging steps of the common functions of the frequency converter.

3.2 Keyboard introduction

This series of solar water pump inverter 22KW with the subscript LCD keyboard, 22KW above the standard dual display LED keyboard, you can control the start and stop of the inverter through the keyboard, read status data and parameter Settings. Can also be optional LCD keyboard, LCD keyboard support multi-language display, with parameter copy function, can support 6 lines of high-definition display, its overall size and LED keyboard the same.



Figure 5-3 Optional LCD keyboard

3.3 LED keyboard display and operation

The display state of FD590 frequency converter series keyboard is divided into stop parameter display state, running parameter display state, fault alarm display state and function code editing state.

Various operations can be carried out on the inverter through the keyboard. The specific function code structure description, can see the function code brief table

Keyboard description of 22KW and lower ratings

Keyboard Identification		Name	Meaning
Unit indicator light	HZ	Frequency indicator	The unit of the current display parameter is Hz
	A	Current indicator	The unit of the current display parameter is A
	V	Voltage indicator light	The unit of the current display parameter is V
	%	%	The unit of the current displayed parameter is %
Status indicator	FWD	Forward running	Bright: The inverter is running in positive rotation
	REV	Reverse run	Flash: The inverter runs in reverse
	RUN	Running	Bright: The frequency converter is running
	ERR	Malfunctions	On: Frequency converter is faulty
	LO/RE	Run command given	<ul style="list-style-type: none"> ● Off: The operation panel runs the command in the set mode ● Blinking: The terminal runs the command in the specified mode ● On: The command mode is set for communication

Dual display keyboard of 30kW and above ratings

Keyboard Identification		Name	Meaning
Unit indicator light	Hz	Frequency indicator	The unit of the current display parameter is Hz
	A	Current indicator	The unit of the current display parameter is A
	V	Voltage indicator light	The unit of the current display parameter is V
	%	%	% when the 2 lights corresponding to A and V are on
	RPM	RPM	RPM when 2 lights corresponding to HZ and A
Status indicator	F/R	Reverse and reverse	On: The inverter is running in positive rotation

		operating status indicator	Blinking: The frequency converter is running in reverse Off: The frequency converter is switched over or stops
	LO/RE	Run command given indicator light	Off: The command mode of the operation panel is set. Blinking: The command mode of the terminal is set Off: The communication command mode is set
	Fault	Alarm indicator light	The first row of units and status lights are all on

3.4 Keyboard function key description

Keyboard Identification	Name	Meaning
	Program/exit key	Level 1 menu Enter or exit; Level 2 menu Returns to Level 1 menu; Level 3 menu returns Level 2 menu.
	Multi-function Key	Operate according to the multifunction selection
	Run Key	Operation panel run command under the given mode, used for inverter start control; After setting the parameter self-identification, it is used to start the frequency converter for parameter self-identification.
	Confirm key	First level menu function group confirm, enter the second level menu; Second level menu function code confirmation, enter the third level menu; Three-level menu function code set value confirmation, return to the two-level menu; Password verification state, password input completed.
	Shift Key	First level menu, function group edit step size selection; Two level menu, function code editing step selection; Three-level menu, function code set value editing step selection; Stop parameter display state, running parameter display state, fault display state, display parameter selection;

		Password verification state, edit bit selection.
	Stop/reset key	Operation panel run command under the given mode, used for inverter stop control; Other running commands under the given mode, for the frequency converter operation protection stop control; When it is faulty and has been stopped, it is used as the reset key to clear the fault alarm display.
	Incrementing key	Level 1 menu function group increments; The second level menu function code increases; Three level menu function code set value increasing; Set frequency increment.
	Decrement key	The function group of the first-level menu decreases. Secondary menu function code decrement; Three level menu function code set value decline; Set frequency decline.
	Digital potentiometer	Adjustable frequency, also acts as ENT confirmation key

3.5 Stop parameter displays status

The frequency converter can display a variety of state parameters in the shutdown, fault and running state. The function code F05.10 can be used to select whether the parameter is displayed according to the bits of binary.

In the shutdown state, a total of 12 shutdown state parameters can be selected whether to display, respectively: Set frequency, bus voltage, input terminal state, output terminal state, panel potentiometer value, analog input AI1 value, high speed pulse HDI frequency, PID setting, PID feedback, PLC or number of multi-speed steps, torque setting value, Whether to display by the function code F05.10 bit (converted to binary) selection, press the "key to the right to switch the selected parameters, press the MF key to the left to switch the selected parameters.

3.6 Run parameter display status

Inverter in the running state, a total of 22 state parameters can be selected whether to display, respectively: Running frequency, set frequency, bus voltage, output current, Output voltage, running

speed, line speed, output power, output torque, input terminal state, output terminal state, PID set, PID feedback, high-speed pulse HDI frequency, meter value, PLC and the number of speed steps, torque set value, panel potentiometer value, analog input AI1 value, motor overload percentage, inverter overload percentage, Whether to display by the function code F05.08, F05.09 according to the bit (converted to binary) selection, press the "key to the right to switch the selected parameters, press **MF** key to the left to switch the selected parameters.

3.7 Fault alarm display status

When the frequency converter detects the fault signal, it enters the fault alarm display state. The ERR light of the keyboard below 22KW is on and the fault code is displayed. The unit light and indicator of the first row of the keyboard above 22KW are all on, and the fault code is displayed in the second row.

3.8 How to modify the function code of the frequency converter

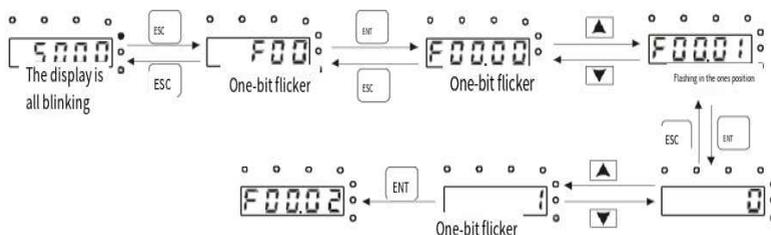
Frequency converter has three menus, three menus are:

- 1, function code group number (level 1 menu)
- 2, function code label (level 2 menu)
- 3, function code setting value (level 3 menu)

Steps: In the running or shutdown state, press ESC to enter the level-1 menu when parameter needs to be modified and F00 is displayed, \wedge and \vee are used to enter the group number to be modified, ENT is used to enter the level-2 menu, and \wedge and \vee are used to enter the function code label to be modified. Then press ENT to enter the three-pole menu and modify it through \wedge and \vee .

Note: In the three-level menu state, if the parameter does not blink bit, it indicates that the function code cannot be modified. The possible causes are as follows:

- ✧ **The function code is an unmodifiable parameter. Such as actual detection parameters, running record parameters, etc.**
- ✧ **The function code cannot be modified in the running state, and can be modified only after stopping. Example: Example of changing the function code F00.01 from 0 to 1.**



3.9 Basic Operating Instructions

3.9.1 General debugging steps



Before connecting terminals of the frequency converter, cut off all power supplies connected to the frequency converter. The waiting time after the power supply is cut off is not less than the time marked on the frequency converter.

The frequency converter has a high voltage when it is running. No operation is allowed on the frequency converter except for keyboard setting.

The frequency converter is powered on automatically by default. If you need to set parameters, strictly follow the instructions in this chapter.

3.9.2 Check before operation

Be sure to confirm the following items before switching on the power supply.

1. Check whether the frequency converter is reliably grounded;
2. check whether the wiring is correct and reliable;
3. Check whether the selection of AC and DC circuit breaker is correct;
- 4, check whether the photovoltaic DC input voltage is within the allowable range of the inverter;
5. Check whether the type, voltage and power of the motor match the type, voltage and power of the inverter.

3.9.3 Trial Run

Close the DC circuit breaker, the inverter will delay about 10s after automatic operation, observe the water output of the pump, if the water output is normal, the trial run is successful; If the water output is small, switch any two motor wires and then run.

Chapter 4 functional parameters list

List of the function parameters

Function codes	Name	Parameter description and options	Factory Defaults
F00 Group Basic Function Group			
F00.00	First motor control mode	0: no speed sensor vector control 1: Speed sensor vector control 2: V/F control	2
F00.01	Command Source Selection	0: Command channel of operation panel (LED off) 1: Terminal command channel (LED blinking) 2: Serial port communication command channel (LED flashing)	0
F00.02	Master frequency source X Select	0: Digital setting (preset frequency F00.09, UP/DOWN Modifiable, no memory after power failure) 1: Digital setting (preset frequency F00.09, UP/DOWN Modifiable, power down memory) 2: AI1 3: AI2 4: Panel potentiometer 5: High speed pulse setting 6: Multi-step command 7: Simple PLC 8: PID 9: Communication given	0
F00.03	Auxiliary frequency source Y selection	Same as F00.02 primary frequency source	0
F00.04	Auxiliary frequency source Y range selection	0: Relative to the maximum frequency 1: relative to the frequency source X	0

F00.05	Frequency Source Selection	<p>Units bit: Frequency source selection</p> <p>0: Master</p> <p>1: result of primary and secondary operations (the operation relationship is determined by the tens place)</p> <p>2: main <--> auxiliary</p> <p>3: indicates the result of the primary <- > operation</p> <p>4: secondary <--> result of primary and secondary operations</p> <p>Ten: frequency source main and auxiliary operation relationship</p> <p>0: primary + auxiliary</p> <p>1: Primary + auxiliary</p> <p>2: Maximum value of both</p> <p>3: The minimum value of both</p>	00
F00.06	Maximum frequency	50.00Hz to 500.00Hz	50.00
F00.07	Upper limit frequency	Lower limit frequency F00.08 ~ maximum frequency F00.06	50.00
F00.08	Lower limit frequency	0.00Hz ~ Upper frequency F00.07	0.00
F00.09	Preset frequency	0.00Hz to maximum frequency F00.06	50.00
F00.10	Running direction	<p>0: Consistent direction</p> <p>1: Opposite direction</p>	0
F00.11	Carrier frequency	0.5kHz to 16.0kHz	6.0
F00.12	Carrier frequency is adjusted with temperature	<p>0: No</p> <p>1: Yes</p>	1
F00.13	Motor parameter group selection	<p>0: Motor 1</p> <p>1: Motor 2</p>	0
F00.14	Speed up time 1	<p>0.00s ~ 650.00s (F00.16=2)</p> <p>0.0s ~ 6500.0s (F00.16=1)</p> <p>0s ~ 65000s (F00.16=0)</p>	20.0
F00.15	Deceleration time 1	0.00s ~ 650.00s (F00.16=2)	20.0

		0.0s ~ 6500.0s (F00.16=1) 0s ~ 65000s (F00.16=0)	
F00.16	Unit of acceleration and deceleration time	0: 1 second 1: 0.1 seconds 2: 0.01 seconds	1
F00.17	Auxiliary frequency source Y range	0% ~ 150%	100
F00.18	Upper limit frequency source	0: Set by F00.07 1: AI1 2: AI2 3: Reserved 4: High speed pulse setting 5: Communication set	0
F00.19	Upper limit frequency bias	0.00Hz ~ Maximum frequency F00.06	0.00
F00.20	Secondary group frequency source bias frequency when superimposed	0.00Hz ~ Maximum frequency F00.06	0.00
F00.21	Frequency command decimal point	1:0.1 Hz 2:0.01Hz	2
F00.22	Number set frequency memory selection	0: No memory 1: Memory	0
F00.23	Acceleration and deceleration time reference frequency	0: Maximum frequency (F00.06) 1: Set frequency 2:100 Hz	0
F00.24	Run frequency instruction UP/DOWN benchmark	0: Run frequency 1: Set frequency	1
F00.25	Command source Bundle frequency source	Units bit: Operate panel command, bind frequency source selection 0: No binding 1: Number sets frequency 2: AI1 3: AI2 4: Reserved 5: High speed pulse setting	000

		6: Multi-speed 7: Simple PLC 8: PID 9: Communication given Ten: terminal command binding frequency source selection Hundred: communication command binding frequency source selection	
F00.26	Communication protocol selection	0: Modbus-RTU protocol 1: Reserved	0
F01 Motor 1 Parameter group			
F01.00	G/P models selection	1: Model G 2: Model P	1
F01.01	Motor type selection	0: Asynchronous motor 1: Variable frequency asynchronous motor	0
F01.02	Motor rating	Model determination	
F01.03	Motor rated frequency	0.01Hz ~ Maximum frequency F00.06	50.00
F01.04	Rated motor speed	1RPM ~ 65,535RPM	1460
F01.05	Motor voltage rating	1V ~ 2000V	380
F01.06	Rated current of motor	0.01A ~ 655.35A	9.00
F01.07	Stator resistance	0.001Ω ~ 65.535Ω	1.204
F01.08	Rotor resistance	0.001Ω ~ 65.535Ω	0.908
F01.09	Leakage inductive reactance	0.01mH ~ 655.35mH	5.28
F01.10	Mutual inductance	0.1mH ~ 6553.5mH	158.6
F01.11	No-load current	0.01A ~ F01.03	4.24
F01.12	Motor parameter self-identification selection	0: no operation 1: No-load (dynamic) self-identification 2: With load (static) self-identification 1	0

		3: With load (static) self-identification 2	
F01.13	Number of encoder pulse lines		1024
F01.14	Encoder type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Rotary encoder 3: Sine-cosine encoder 4: Provincial line mode UVW encoder	0
F01.15	Speed Feedback PG selection	0: Local PG 1: Extended PG 2: HDI high speed pulse input	0
F01.16	ABZ Encoder AB phase sequence	0: Forward 1: Reverse	0
F01.17	Encoder mounting position Angle	0.0 ° ~ 359.9°	0.0
F01.18	UVW signal phase sequence	0: Forward 1: Reverse	0
F01.19	UVW signal zero position Angle	0.0 ~ 359.9°	0.0
F01.20	Rotational pole log	1 ~ 65535	1
F01.21	Reserved	Reserve	0
F01.22	Speed feedback break detection time	0.0: No action 0.1s ~ 10.0s	0.0
F01.23 ~ F01.38	Reserved		0
F02 group start stop control			
F02.00	Start mode	0: Direct start 1: Speed tracking restarts 2: Asynchronous motor pre-excitation start 3: SVC fast start	0
F02.01	Start delay time	0.0s ~ 1000.0s	0.0

F02.02	Starting frequency	0.00Hz ~ 10.00Hz	5.00
F02.03	Start frequency hold time	0.0s ~ 100.0s	2.0
F02.04	Initiate DC braking/pre-excitation current	0% ~ 100%	0
F02.05	Start DC braking/pre-excitation time	0.0s ~ 100.0s	0.0
F02.06	Acceleration and deceleration mode	0: linear acceleration and deceleration 1: S curve acceleration and deceleration A 2: S curve acceleration and deceleration B	0
F02.07	Whether the DI terminal is valid or not after power-on	0: Invalid 1: Valid	0
F02.08	Power switch-off restart selection	0: Invalid 1: Valid	0
F02.09	Power outage restart wait time	0.0s ~ 100.0s	0.0
F02.10	Shutdown mode	0: Deceleration to stop; 1: Coast to stop	0
F02.11	Reverse turn dead zone time	0.0s ~ 3000.0s	0.0
F02.12	Stop DC braking starting frequency	0.00Hz ~ Maximum frequency F00.06	0.00
F02.13	Stop DC brake wait time	0s ~ 100.0s	0.0
F02.14	Stop DC brake current	0.0% ~ 100%	0
F02.15	Stop DC braking time	0.0s ~ 100.0s	0.0
F02.16	Brake utilization rate	0% ~ 100%	100
F02.17	Hibernation delay time	0.0 ~ 6500.0s	0.0
F02.18	Frequency is lower than the lower limit frequency operation	0: Run at lower limit frequency 1: Stop 2: Run at zero speed	0
F02.19	Wake up delay time	0.0s ~ 6500.0s	0.0

F02.20	Rev tracking method	0: Start with stop frequency 1: Start at power frequency 2: Start at the maximum frequency 3: Magnetic field oriented speed tracking 4: Magnetic field directional speed tracking (static tuning required, F01.12 set to 1)	0
F02.21	RPM tracks fast or slow	1 ~ 100	20
F02.22	Speed tracking KP	0 ~ 1000	500
F02.23	Speed tracking KI	0 ~ 1000	800
F02.24	Speed tracking current	30% ~ 200%	100
F02.25	Limit value under RPM trace	10 ~ 100%	30
F02.26	RPM tracks voltage rise time	0.5 ~ 3.0	1.1
F02.27	Demagnetizing time	0.00 ~ 15.00s	0.50
F02.28	S-curve beginning period ratio	0.0% ~ (100.0% - F06.29)	30.0
F02.29	S-curve end period ratio	0.0% ~ (100.0% - F06.28)	30.0
F03 group motor 1 vector control parameters			
F03.00	VF curve Settings	0: linear VF curve 1: multipoint VF curve 2: Square VF curve 3:1.2 VF curve 4:1.4 VF curve 6. 1.6 VF curve 8:1.8 VF curve 10: VF complete separation mode 11: VF Semi-detached mode	0
F03.01	Torque boost	0.0%: Automatic torque boost 0.1% ~ 30.0%VF is not effective when separated	Models to determine

F03.02	Torque boosts cutoff frequency	0.00Hz ~ Maximum frequency F00.06	50.00
F03.03	Multipoint VF frequency point 1	0.00Hz ~ F03.05	0.00
F03.04	Multipoint VF voltage point 1	0.0% ~ 100.0%	0.0
F03.05	Multipoint VF frequency point 2	F03.03 ~ F03.07	0.00
F03.06	Multipoint VF voltage point 2	0.0% ~ 100.0%	0.0
F03.07	Multipoint VF frequency point 3	F03.05 ~ Motor rated frequency (F01.03)	0.00
F03.08	Multipoint VF voltage point 3	0.0% ~ 100.0%	0.0
F03.09	Slip compensation factor	0.0% ~ 200.0%	0.0
F03.10	VF overexcitation gain	0 ~ 200	64
F03.11	Oscillation suppression gain	0 ~ 100	40
F03.12	Oscillating suppresses gain mode	0 ~ 4	3
F03.13	VF separated voltage source	0: Digital setting (F03.14) 1: AI1 2: AI2 3: Reserved 4: HDI high speed pulse setting 5: Multi-step command 6: Simple PLC 7: PID 8: Communication given 100.0% corresponds to the rated voltage of motor	0
F03.14	VF separated voltage source digital setting	0V ~ Motor rated voltage F01.05	0
F03.15	VF separation voltage acceleration time	0.0s ~ 1000.0s Indicates the time from 0V change to the	0.0

		rated voltage of the motor	
F03.16	VF separation voltage deceleration time	0.0s ~ 1000.0s Note: Indicates the time of 0V change to the rated voltage of the motor	0.0
F03.17	VF separation stop mode selection	0: Frequency/voltage independence is reduced to 0 1: The frequency is reduced after the voltage is reduced to 0	0
F03.18	Overcurrent stall quick acting current	50 ~ 200%	150
F03.19	Enable of overcurrent stall restrain	0: Invalid 1: Valid	1
F03.20	Restrain gain of overcurrent stall	0 ~ 100	20
F03.21	Double speed overcurrent stall quick action as current compensation factor	50 ~ 200%	50
F03.22	Overvoltage stalling operation voltage	200.0v ~ 2000.0v model is confirmed 220V: 380V 380V: 760V	760.0
F03.23	Enable of overvoltage stall	0: Invalid 1: Valid	1
F03.24	Overvoltage stall suppress frequency gain	0 ~ 100	30
F03.25	Overvoltage stall suppresses voltage gain	0 ~ 100	30
F03.26	Rising in frequency overvoltage stall biggest limit	0 ~ 50Hz	5
F03.27	Slip compensation time constant	0.1 ~ 10.0s	0.5
F03.28	Automatic uptick enabled	0: Invalid 1: Valid	0
F03.29	Minimum motor torque current	10% ~ 100%	50
F03.30	Maximum motor torque current	10% ~ 100%	20

F03.31	Automatic uptick KP	0 ~ 100	50
F03.32	Automatic uptick KI	0 ~ 100	50
F03.33	Inline torque compensation gain	80% ~ 150%	100
F04 group reserved			
F05 group keyboard with display			
F05.00	Reserved		0
F05.01	Parameter initialization	0: No operation 01: Restore factory parameters, excluding motor parameters 02: Clear the recorded information 04: Back up user parameters 501: Restore user parameters	0
F05.02	Reserved		0
F05.03	User password	0 ~ 65535	0
F05.04	MF key function selection	0: Invalid 1: Switch between operation panel command channel and remote command channel 2: Forward and reverse switch 3: Forward JOG 4: Reverse JOG	0
F05.05	STOP/RESET key function	0: Only in the keyboard control mode STOP/RESET key stop function is effective 1: STOP/RESET key for stop function is effective no matter in which control mode	1
F05.06	Load speed display factor	0.0001 ~ 6.5000	1.0000
F05.07	Linear speed display coefficient	0.0001 to 6.5000	1.0000

F05.08	LED run display parameter 1	0000 ~ FFFF Bit00: Operating frequency (Hz) Bit01: Setting frequency (Hz) Bit02: Bus voltage (V) Bit03: Output voltage (V) Bit04: output current (A)	0x001F
		Bit05: Output power (kW) Bit06: output torque (%) Bit07: DI input status Bit08: DO output status Bit09: AI1 Voltage (V) Bit10: AI2 voltage (V) Bit11: reserved Bit12: Count value Bit13: Length value Bit14: Load speed display Bit15: PID setting	
F05.09	LED run display parameter 2	0000 ~ FFFF Bit00: PID feedback Bit01: PLC stage Bit02: High Speed pulse input pulse frequency (kHz) Bit03: Run frequency 2 (Hz) Bit04: Remaining running time Bit05: AI1 Voltage before correction Bit06: AI2 Voltage before correction Bit07: reserved Bit08: Line speed Bit09: Current power-on time Bit10: current running time Bit11: high-speed pulse input pulse frequency, unit 1Hz Bit12: communication setting value Bit13: encoder feedback speed Bit14: main frequency X display	0x0000

		Bit15: Auxiliary frequency Y display	
F05.10	LED stop display parameters	0000 ~ FFFF Bit00: Set frequency (Hz) Bit01: Bus voltage (V) Bit02: DI input state Bit03: DO output state Bit04: AI1 Voltage (V) Bit05: AI2 Voltage (V) Bit06: Reserved Bit07: Count Value Bit08: Length Value Bit09: PLC stage Bit10: Load Speed Bit11: PID setting Bit12: High Speed pulse input pulse frequency (kHz)	0x0033
F05.11	Software version number 1	V0.0 x	0.00
F05.12	Software version number 2	V0.0 x	0.00
F05.13	Reserved		0
F05.14	Inverter module radiator temperature	0.0°C ~ 100.0°C	0
F05.15	Cumulative run time	0h ~ 65535h	0
F05.16	Load speed shows decimal places	Units bit: The number of decimal points in B00.14 0: 0 decimal place, 1: 1 decimal place 2: 2 decimal places, 3: 3 decimal places Ten bit: B00.19/B00.29 Number of decimal places 1: 1 decimal places 2: 2 decimal places	21

F05.17	Total power-on time	0h ~ 65535h	0
F05.18	Cumulative power consumption	0 ~ 65535°	0
F05.19	Reserved		0.00
F05.20	Reserved		0.00
F06 group input terminals			
F06.00	DI1 Terminal function selection	0: No function	1
F06.01	DI2 Terminal function selection	1: Forward running (FWD) 2: Reverse Run (REV) 3: Three-wire operation control	53
F06.02	DI3 Terminal function selection	4: Forward running (FJOG) 5: Reverse point motion (RJOG)	54
F06.03	DI4 Terminal function selection	6: Terminal UP 7: terminal DOWN	0
F06.04	DI5 Terminal function selection	8: Free stop 9: Fault RESET	0
F06.05	DI6 terminal function selection	10: The operation is suspended 11: External fault normally open input	0
F06.06	DI7 Terminal function selection	12: Multi-step command terminal 1 13: multi-step speed terminal 2	0
F06.07	HDI terminal function selection	14: multi-step speed terminal 3 15: multi-step speed terminal 4	0
F06.08	Reserved	16: Acceleration and deceleration Select terminal 1 17: Acceleration and deceleration select terminal 2 18: Frequency source switch 19: UP/DOWN setting clear (terminal, keyboard) 20: Run command to switch terminals 21: Disable acceleration or deceleration 22: PID pause	

		<p>23: PLC status reset</p> <p>24: Swing frequency is paused</p> <p>25: counter input</p> <p>26: The counter is reset</p> <p>27: Length count input</p> <p>28: Length reset</p> <p>29: Torque control prohibited</p> <p>30: High speed pulse frequency input (valid for DI5 only)</p> <p>31: Reserved</p>	
		<p>32: Immediate DC braking</p> <p>33: External fault normally closed input</p> <p>34: frequency setting effective terminal (if the terminal function is set, when the frequency is modified, the effective time of modification is controlled through this terminal)</p> <p>35: PID action direction is reversed</p> <p>36: External parking terminal 1 (when keyboard control, the terminal can be used to park, equivalent to the STOP key on the keyboard)</p> <p>37: Control command Switch terminal 2: Used to switch between terminal control and communication control</p> <p>38: PID integral pause terminal</p> <p>39: Frequency source X switches with preset frequency</p> <p>40: Frequency source Y switches with preset frequency</p> <p>41: Motor select terminal 1</p> <p>42: Hold</p> <p>43: PID parameter switch terminal</p> <p>44: User defined fault 1</p> <p>45: User-defined fault 2</p>	

		46: Speed control/torque control switch 47: Emergency stop 48: External parking terminal 2 (under any control mode, the terminal can be stopped, according to the deceleration time 4 to stop) 49: deceleration DC braking 50: The running time is cleared to zero 51: two-wire/three-wire switch 52: Reverse is prohibited 53: photovoltaic pump mode/universal mode switch 54: Water full signal	
F06.09	Reserved		0
F06.10	DI filtering time	0.000s ~ 1.000s	0.010
F06.11	Terminal command mode	0: Two-wire type 1 1: Two-wire style 2 2: Three-wire type 1 3: Three-wire type 2	0
F06.12	Rate of change of terminal UP/DOWN per s	0.001Hz/s ~ 65.535Hz/s	1.000
F06.13	Curve 1 Min input	0.00V ~ F06.15	0.00
F06.14	Curve 1 Min input corresponds to setting	-100.0% ~ 100.0%	0.0
F06.15	Curve 1 Max input	F06.13 ~ 10.00V	10.00
F06.16	Curve 1 Max input corresponds to Settings	-100.0% ~ 100.0%	100.0
F06.17	AI1 Filter time	0.00s ~ 10.00s	0.10
F06.18	Curve 2 Min input	0.00V ~ F06.20	0.00
F06.19	Curve 2 Min input corresponds to setting	-100.0% ~ 100.0%	0.0

F06.20	Curve 2 Max input	F06.18 ~ 10.00V	10.00
F06.21	Curve 2 Max input corresponds to Settings	-100.0% ~ 100.0%	100.0
F06.22	AI2 Filter time	0.00s ~ 10.00s	0.10
F06.23	Curve 3 Minimum input	-10,00V ~ F06.25	10.00
F06.24	Curve 3 Min input corresponds to setting	-100.0% ~ 100.0%	100.0
F06.25	Curve 3 Max input	F06.23 ~ 10.00V	10.00
F06.26	Curve 3 Max input corresponds to Settings	-100.0% ~ 100.0%	100.0
F06.27	Reserved	0.00s ~ 10.00s	0.10
F06.28	High speed pulse minimum input	0.00kHz ~ F06.30	0.00
F06.29	High speed pulse minimum input setting	-100.0% ~ 100.0%	0.0
F06.30	High speed pulse Max input	F06.28 ~ 100.00kHz	50.00
F06.31	High speed pulse maximum input setting	-100.0% ~ 100.0%	100.0
F06.32	High speed pulse filtering time	0.00s ~ 10.00s	0.10
F06.33	AI Set curve selection	Unit bit: AI1 curve selection 1: Curve 1 (2 points, see F06.13 ~ F06.16) 2: Curve 2 (2 points, see F06.18 ~ F06.21) 3: Curve 3 (2 points, see F06.23 ~ F06.26) 4: Curve 4 (4 points, see A06.00 ~ A06.07) 5: Curve 5 (4 points, see A06.08 ~ A06.15) Ten bit: AI2 curve selection, ditto above Hundreds bit: Reserved	321
F06.34	AI below minimum input setting selection	Unit bit: AI1 is below the minimum input setting selection 0: The minimum input corresponds to the	000

		setting 1:0.0% Ten bit: AI2 below minimum input setting selection, same as above hundred: reserved	
F06.35	DI1 Delay time	0.0s ~ 3600.0s	0
F06.36	DI2 Delay time	0.0s ~ 3600.0s	0
F06.37	DI3 Delay time	0.0s to 3600.0s	0
F06.38	DI1-DI5 Input terminal effective mode selection	0: High level 1: Low level Unit bit: DI1 Ten bit: DI2 Hundred bit: DI3 Thousand bit: DI4 Ten thousand bit: DI5	00000
F06.39	DI6-DI8 (HDI) Input terminal Effective Mode selection	0: High level 1: Low level Units bit: DI6 Ten bit: DI7 Hundred bit: DI8 (HDI) Thousands bit: reserved Ten thousand bit: reserved	00000
F07.00	HDO terminal output selection	0: Pulse output 1: Digital output	0
F07.01	HDO digital output selection	0: No output	0
F07.02	Relay 1 output function Selection	1: The frequency converter is running 2: fault output (fault shutdown)	2
F07.03	Relay 2 output function Selection	3: Frequency level detection FDT1 output 4: Frequency reached	0
F07.04	DO output function selection	5: zero speed running (no output when stopping) 6: motor overload forecast alarm	1

		<p>7: inverter overload forecast alarm</p> <p>8: set the meter value arrived</p> <p>9: The specified count value is reached</p> <p>10: Length arrived</p> <p>11: PLC cycle complete</p> <p>12: Run time arrived</p> <p>13: Frequency limited</p> <p>14: Torque qualified</p> <p>15: Ready for operation</p> <p>16: AI1>AI2</p> <p>17: Upper limit frequency reached</p> <p>18: Lower limit frequency reached (run related)</p> <p>19: Undervoltage state output</p> <p>20: Communication Settings</p> <p>21: Positioning complete (reserved)</p> <p>22: Positioning close (reserved)</p> <p>23: Zero speed running 2 (also output when shut down)</p> <p>24: power-on time arrived</p> <p>25: Frequency level detection FDT2 output</p> <p>26: Frequency reaches 1 output</p> <p>27: Frequency reaches 2 output</p> <p>28: Current reaches 1 output</p> <p>29: Current reaches output 2</p> <p>30: Timed to reach output</p> <p>31: AI1 input out of limit</p> <p>32: load dropped</p> <p>33: Running in reverse</p> <p>34: Zero current state</p> <p>35: Module temperature reached</p> <p>36: The output current exceeds the limit</p> <p>37: Lower limit frequency reached (run independent)</p> <p>38: Fault output (all faults)</p>	
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		39: motor overtemperature forecast alarm 40: The running time has arrived 41: Fault output (free shutdown fault and undervoltage No output) 42: Mppt maximum voltage limiting medium	
F07.05	Reserved		4
F07.06	HDO pulse output selection	0: Running frequency	0
F07.07	AO1 output selection	1: Set frequency	0
F07.08	AO2 output Selection	2: Output current 3: Output torque 4: Output power 5: output voltage 6: High speed pulse input (100.0% corresponds to 100.0kHz) 7: AI1 8: AI2 9: Reserved 10: Length 11: Count value 12: communication Settings 13: motor speed 14: Output current (100.0% for 1000.0A) 15: Output voltage (100.0% for 1000.0V) 16: motor output torque (actual value, as a percentage of rated current of the motor) 17: frequency converter output torque (actual value, relative to the frequency converter Percentage of rated current)	1
F07.09	HDO pulse output maximum frequency	0.01kHz ~ 100.00kHz	50.00

F07.10	AO1 zero bias coefficient	-100.0% ~ 100.0%	0.0
F07.11	AO1 gain	-10.00 ~ 10.00	1.00
F07.12	AO2 zero bias coefficient	-100.0% ~ 100.0%	0.0
F07.13	AO2 Gain	-10.00 ~ 10.00	1.00
F07.14	HDO switch quantity output delay time	0.0s ~ 3600.0s	0.0
F07.15	Relay 1 output delay time	0.0s ~ 3600.0s	0.0
F07.16	Relay 2 output delay time	0.0s ~ 3600.0s	0.0
F07.17	DO output delay time	0.0s ~ 3600.0s	0.0
F07.18	Reserved		
F07.19	DO output terminal valid status selection	0: Positive Logic 1: Negative logic Unit bit: HDO Ten bit: Relay 1 Hundred bit: Relay 2 Thousand bit: DO Ten thousand bit: reserved	00000
F08 Group Faults and Protection			
F08.00	Motor overload protection selection	0: Disable 1: Enable	1
F08.01	Motor overload protection gain	0.20 ~ 10.00	1.00
F08.02	Motor overload warning coefficient	50% ~ 100%	80
F08.03	Overload warning detection time	0.20s ~ 10.00s	1.00
F08.04	Overload warning action selection	0: Does not detect	1

		<p>1: overload warning is effective during operation, and continue to operate after detection</p> <p>2: overload warning in operation is effective, alarm after detection (OL3) and shut down</p> <p>3: overload warning is effective in constant speed operation, and continue to run after detection</p> <p>4: overload warning in constant speed operation is effective, and report after detection alarm (OL3) and stop</p>	
F08.05	Overvoltage stall gain	0 ~ 100	30
F08.06	Overvoltage stall protection voltage	<p>200.0 ~ 2000.0V model is confirmed</p> <p>220V: 380V</p> <p>380V: 760V</p>	760.0
F08.07	Over drain rate gain	0 ~ 100	20
F08.08	Over-drain rate protects current	100% ~ 200%	150
F08.09	Prompt stop non-stop gain Kp	0 ~ 100	40
F08.10	Prompt stop non-stop integration coefficient Ki	0 ~ 100	30
F08.11	Prompt stop non-stop action deceleration time	0.0 ~ 300.0s	20.0
F08.12	Input phase loss detection	<p>0: Disable</p> <p>1: Enable</p>	1
F08.13	Output Phase out protection selection	<p>Units bit: Output phase loss protection selection during running time</p> <p>0: Disable 1: Enable</p> <p>Ten bit: Output phase loss protection selection before run</p> <p>0: Disable 1: Enable</p>	01
F08.14	Number of fail-automatic resets	0 ~ 20	0

F08.15	Automatic reset interval	0.1s ~ 100.0s	1.0
F08.16	First fault type	0: No fault	0
F08.17	Second failure type	1: Inverter unit U phase protection (E.UT1) 2: Inverter unit V phase protection (E. oUt2)	0
F08.18	Third failure (most recent) type	3: Inverter unit W phase protection (E. oUt3) 4: Acceleration overcurrent (E. oC1) 5: Decelerating overcurrent (E. OCC2) 6: Constant speed overcurrent (E. OCC3) 7: Accelerating overvoltage (E.o 3) 8: Decelerating overvoltage (E.o U1) 9: Constant speed overvoltage (E.O3) 10: Bus undervoltage fault (E.Lv) 11: Motor overload (E. oL1) 12: Inverter overload (E. oL2) 13: input side out of phase (E. LF) 14: Out phase (E. LF) 15: Rectifier module overheating (E. oH1) 16: Inverter module overheat fault (E.OH1) 17: External fault (E.EFF) 18:485 Communication failure (E.485) 19: Current Detection Fault (E.TE) 20: Motor parameter identification fault (E.OUT) 21: EEPROM operation fault (E. EP) 22: PID feedback disconnection fault (E.IDE) 23: Brake unit failure (E.BAC) 24: Run time reached (E. ND) 25: Electronic overload (E.L3) 26: Panel communication error (E.L3) 27: Parameter upload error (E. FE) 28: Parameter download error (E.NE) 29-31: Hold 32: Short circuit fault to ground 1 (E.AH1)	0

		33: Short circuit fault to ground 2 (E.AH2) 34: Speed Deviation fault (E.EU) 35: Misalignment fault (E.TO) 36: Underload fault (E.L) 37-39: Hold 40: Fast Current Limiting fault (E. BC) 41: Running time switching motor (E. CP) 42: User Defined Fault 1 (E. uD1) 43: User Defined Fault 2 (E. uD2) 44: Power-on time arrived (E.TO) 45: Motor overhear (E. oH3) 46: Motor overspeed (E.OPE)	
F08.19	Frequency at third failure		0.00
F08.20	Current at the third failure		0.00
F08.21	Bus voltage at third failure		0.0
F08.22	Enter terminal status on third failure		0
F08.23	Output terminal status on third failure		0
F08.24	Inverter state when the third failure		0
F08.25	Third failure time (timed from this power-on)		0
F08.26	Third failure time (timed from run time)		0.0
F08.27	Frequency at second failure		0.00
F08.28	Current at second fault		0.00
F08.29	Bus voltage at second fault		0.0
F08.30	Enter terminal status on second failure		0

F08.31	Output terminal status on second failure		0
F08.32	Inverter state when the second failure		0
F08.33	Second failure time (timed from this power-on)		0
F08.34	Second failure time (from run Start timing at hour)		0.0
F08.35	Frequency at first failure		0.00
F08.36	Current at first failure		0.00
F08.37	Bus voltage at first failure		0.0
F08.38	Enter terminal status at first failure		0
F08.39	Output terminal state at first failure		0
F08.40	Inverter status at first failure		0
F08.41	Time at first failure (timed from this power-on)		0
F08.42	Time at first failure (timed from run time)		0.0
F08.43	Power on the ground Short Circuit protection selection	Units bit: Select short circuit protection to ground during power-on 0: invalid 1: valid Tens: pre-run short-circuit protection to ground selection 0: invalid 1: valid	01
F08.44	Braking starting voltage	200.0 ~ 2000.0v model confirm 220V: 360V 380V: 690V	690.0

F08.45	Fault DO action selection during fault automatic reset	0: No action 1: Action	0
F08.46	Failsafe Action Option 1	Units position: Motor overload (E. oL1) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running Ten bit: Input out of phase (E. LF) Hundred bit: Output out of phase (E. LF) Thousand bit: External fault (E.EFF) Ten thousand bit: Abnormal communication (E.485)	00000
F08.47	Failsafe Action Option 2	Unit bit: Encoder fault (E.PGL) 0: Coast stop Ten bit: EEPROM operation fault (E. EP) 0: Coast to stop 1: Stop as the set stop mode Hundred bit: reserved Thousand bit: Motor overheating (E.o 3) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running Ten thousand bit: run time arrived (E. ND)	00000
F08.48	Failsafe Action Option 3	One bit: User Custom Fault 1 (E.D1) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running Ten bit: User Defined Fault 2 (E. uD2) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running Hundred bit: Power-on time arrived (E. PTo) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running Thousand bit: Underload fault (E.L)	00000

		0: Free stop 1: Slow down to stop 2: Decelerate to 7% of the rated frequency of the motor and continue to run, and automatically restore to the set frequency when the load is not dropped 10 million: PID feedback disconnected fault (E.IDE) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running	
F08.49	Failsafe Action Option 4	One bit: Excessive speed deviation (E.EU) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running Ten bit: Motor Overspeed (E. SP) Hundred bit: Hold Thousand bit: Reserved Ten thousand bit: Panel communication error (E.FCE) 0: Coast to stop 1: Stop as the set stop mode 2: Continue running	20000
F08.50	Reserved		
F08.51	Continue to run frequency selection in case of failure	0: Run at the current operating frequency 1: Run at the set frequency 2: Run at the upper limit frequency 3: Run at the lower limit frequency 4: Run at the standby frequency when abnormal	0
F08.52	Abnormal standby frequency setting	0.0% ~ 100.0% (current target frequency)	100
F08.53	Motor temperature sensor type	0: No temperature sensor 1: PT100	0

		2: PT1000	
F08.54	Motor over-heat protection threshold	0°C ~ 200°C	110
F08.55	Motor overheating forecast alarm threshold	0°C ~ 200°C	90
F08.56	Prompt Stop Non-stop action selection	0: Invalid 1: Slow down 2: Slow down and stop	1
F08.57	Instantaneous stop action pauses to judge voltage	80.0% ~ 100.0%	85.0
F08.58	Instantaneous stop non-stop voltage rebound judgment time	0.0s ~ 100.0s	0.5
F08.59	Prompt stop non-stop action to determine voltage	60.0% ~ 100.0% (standard bus voltage)	80.0
F08.60	Drop load protection option	0: Invalid 1: Valid	0
F08.61	Drop load detection level	0.0 ~ 100.0%	10.0
F08.62	Drop load detection time	0.0 ~ 60.0s	1.0
F08.63	Reserved	0 ~ 65536	0
F08.64	Overspeed detection value	0.0% ~ 50.0% (maximum frequency)	20.0
F08.65	Overspeed detection time	0.0s: Not detected 0.1 ~ 60.0s	1.0
F08.66	Speed deviation is too large to detect value	0.0% ~ 50.0% (maximum frequency)	20.0
F08.67	Speed deviation too large detection time	0.0s: Do not detect 0.1 ~ 60.0s	5.0
F09 Group PID function			
F09.00	PID given Source	0: Function code F09.01 set 1: AI1 2: AI2	0

		3: Reserved 4: High speed pulse setting 5: communication set 6: Multi-step speed given 7: Pressure setting	
F09.01	PID value given	0.0% ~ 100.0%	50.0
F09.02	PID Feedback Source	0: AI1 1: AI2 2: Reserved 3: AI1-AI2 4: High speed pulse setting 5: Communication given 6: AI1+AI2 7: MAX (AI1 , AI2) 8: MIN (AI1 , AI2)	0
F09.03	Direction of PID action	0: Positive action 1: Negative action	0
F09.04	PID gives feedback range	0 ~ 65535	1000
F09.05	PID inversion cutoff frequency	0.00Hz ~ Maximum frequency F00.06	0.00
F09.06	Proportional Gain P1	0.0 ~ 100.0	20.0
F09.07	Integral time I1	0.01s ~ 10.00s	2.00
F09.08	Derivative time D1	0.000s ~ 10.000s	0.000
F09.09	Reserved	0 ~ 65535	0
F09.10	PID Deviation Limit	0.0% ~ 100.0%	0.0
F09.11	PID feedback lost detection value	0.0%: Feedback loss is not judged 0.1% ~ 100.0%	0.0
F09.12	PID feedback lost detection time	0.0s ~ 20.0s	0.0
F09.13	PID differential clipping	0.00% ~ 100.00%	0.10

F09.14	PID given change time	0.00 ~ 650.00s	0.00
F09.15	PID feedback filter time	0.00 ~ 60.00s	0.00
F09.16	PID output filtering time	0.00 ~ 60.00s	0.00
F09.17	Proportional Gain P2	0.0 ~ 100.0	20.0
F09.18	Integral time I2	0.01s ~ 10.00s	2.00
F09.19	Differential time D2	0.000s ~ 10.000s	0.000
F09.20	PID parameter switching condition	0: Do not switch 1: DI terminal 2: Switch automatically according to deviation 3: Automatic switching according to the operating frequency	0
F09.21	PID parameter switching deviation 1	0.0% ~ F10.22	20.0
F09.22	PID parameter switching deviation 2	F10.21 ~ 100.0%	80.0
F09.23	Initial PID value	0.0% ~ 100.0%	0.0
F09.24	PID initial hold time	0.00 ~ 650.00	0.00
F09.25	Two output deviations positive maximum	0.00 ~ 100.00%	1.00
F09.26	Double output deviation reverse maximum	0.00% ~ 100.00%	1.00
F09.27	PID Integral Properties	Units BIT: integral separation 0- Invalid; 1- Valid Tens: Output to limit value, whether to stop integrating 0- Continue integrating; 1- Stop scoring	00
F09.28	PID shutdown operation	0: Stop no operation 1: Stop operation	0

F10 group reserved			
F11 group multi-step speed, simple PLC			
F11.00	Multi-step speed 0	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.01	Multistep speed 1	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.02	Multistep speed 2	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.03	Multistep speed 3	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.04	Multistep speed 4	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.05	Multistep speed 5	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.06	Multistep speed 6	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.07	Multistep speed 7	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.08	Multistep speed 8	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.09	Multistep speed 9	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.10	Multistep speed 10	-100.0% ~ 100.0%	0

		(100.0% corresponds to maximum frequency F00.06)	
F11.11	Multistep speed 11	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.12	Multistep speed 12	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.13	Multistep speed 13	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.14	Multistep speed 14	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.15	Multistep speed 15	-100.0% ~ 100.0% (100.0% corresponds to maximum frequency F00.06)	0
F11.16	Simple PLC mode of operation	0: Stop at the end of a single run 1: End after a single run 2: Keep cycling	0
F11.17	Easy PLC power down memory selection	The unit bit: 0: No memory after power failure 1: Memory after power failure Ten bit: 0: Stop without memory 1: Stop memory	0
F11.18	Step 0 run time	0.0s (h) ~ 6553.5s (h)	0
F11.19	PLC step 0 acceleration and deceleration time selection	0 ~ 3	0
F11.20	Step 1 run time	0.0s (h) ~ 6553.5s (h)	0
F11.21	PLC step 1 acceleration and deceleration time selection	0 ~ 3	0
F11.22	Section 2 run time	0.0s (h) ~ 6553.5s (h)	0

F11.23	PLC step 2 acceleration and deceleration time selection	0 t~ 3	0
F11.24	Section 3 Run time	0.0s (h) ~ 6553.5s (h)	0
F11.25	PLC step 3 Acceleration and deceleration time selection	0 ~ 3	0
F11.26	Section 4 Run time	0.0s (h) ~ 6553.5s (h)	0
F11.27	PLC step 4 acceleration and deceleration time selection	0 ~ 3	0
F11.28	Section 5 running time	0.0s (h) ~ 6553.5s (h)	0
F11.29	PLC step 5 acceleration and deceleration time selection	0 ~ 3	0
F11.30	Section 6 running time	0.0s (h) ~ 6553.5s (h)	0
F11.31	PLC step 6 acceleration and deceleration time selection	0 ~ 3	0
F11.32	Section 7 running time	0.0s (h) ~ 6553.5s (h)	0
F11.33	PLC step 7 acceleration and deceleration time selection	0 ~ 3	0
F11.34	Section 8 running time	0.0s (h) ~ 6553.5s (h)	0
F11.35	PLC step 8 acceleration and deceleration time selection	0 ~ 3	0
F11.36	Section 9 running time	0.0s (h) ~ 6553.5s (h)	0
F11.37	PLC step 9 acceleration and deceleration time selection	0 ~ 3	0
F11.38	Section 10 running time	0.0s (h) ~ 6553.5s (h)	0
F11.39	PLC step 10 acceleration and deceleration time selection	0 ~ 3	0
F11.40	Section 11 running time	0.0s (h) ~ 6553.5s (h)	0
F11.41	PLC step 11 acceleration and deceleration time selection	0 ~ 3	0

F11.42	Section 12 running time	0.0s (h) ~ 6553.5s (h)	0
F11.43	PLC step 12 acceleration and deceleration time selection	0 ~ 3	0
F11.44	Section 13 running time	0.0s (h) ~ 6553.5s (h)	0
F11.45	PLC step 13 acceleration and deceleration time selection	0 ~ 3	0
F11.46	Section 14 running time	0.0s (h) ~ 6553.5s (h)	0
F11.47	PLC step 14 acceleration and deceleration time selection	0 ~ 3	0
F11.48	Section 15 run time	0.0s (h) ~ 6553.5s (h)	0
F11.49	PLC step 15 acceleration and deceleration time selection	0 ~ 3	0
F11.50	PLC run time unit	0: s (seconds) 1: h (hours)	0
F11.51	Multi-step speed 0 given mode	0: Function code F11.00 is given 1: AI1 2: AI2 3: Reserved 4: High speed pulse 5: PID 6: Preset frequency (F00.09) Given, UP/DOWN Modifiable	0
F12 group communication parameters			
F12.00	Local address	1 ~ 247,0 Broadcast address	1
F12.01	Baud Rate	Units bit: MODBUS 0: 300 BPS 1: 6,00 BPS 2: 12,00 BPS 3: 24,00 BPS 4: 48,00 BPS	5006

		5: 9,600 BPS 6: 19,200 BPS 7: 38,400 BPS 8: 57,600 BPS 9: 115,200 BPS Ten bit: reserved Hundred bit: reserved Thousand bit: reserved	
F12.02	Data format	0: None check (8-N-2) 1: Parity check (8-E-1) 2: Odd check (8-O-1) 3: 8-N-1	1
F12.03	Response delay	0ms ~ 20ms	2
F12.04	Communication timeout	0.0 (invalid) 0.1s ~ 60.0s	0.0
F12.05	Data transfer format selection	Unit bits: Non-standard MODBUS-RTU protocol 0: Non-standard MODBUS protocol 1: Standard MODBUS protocol Tens bit: Reserved	31
F12.06	Communication read current resolution	0: 0.01A 1: 0.1A	0
F12.07	Reserved		
F12.08	Extend the cartoon interrupt detection time	0.0s: Invalid 0.1 ~ 60.0s	0.0
F12.09	Slave address	0 ~ 512	1
F13 Group auxiliary functions			
F13.00	JOG run frequency	0.00Hz ~ Maximum frequency F00.06	2.00
F13.01	Acceleration time of JOG run	0.0s ~ 6500.0s	20.0
F13.02	Deceleration time of JOG run	0.0s ~ 6500.0s	20.0

F13.03	Acceleration Time 2	0.0s ~ 6500.0s	20.0
F13.04	Deceleration Time 2	0.0s ~ 6500.0s	20.0
F13.05	Acceleration Time 3	0.0s ~ 6500.0s	20.0
F13.06	Deceleration time 3	0.0s ~ 6500.0s	20.0
F13.07	Acceleration time 4	0.0s ~ 6500.0s	0.0
F13.08	Deceleration time 4	0.0s ~ 6500.0s	0.0
F13.09	Jump frequency 1	0.00Hz ~ Maximum frequency F00.06	0.00
F13.10	Jump Frequency 2	0.00Hz ~ Maximum frequency F00.06	0.00
F13.11	Jump frequency amplitude	0.00Hz ~ Maximum frequency F00.06	0.00
F13.12	Reverse control	0: Inversion allowed 1: Inversion forbidden	0
F13.13	Droop control	Torque current equal to the slip at rated current of the motor 0.00Hz ~ 10.00Hz	0.00
F13.14	Set the power-on arrival time	0h ~ 65535h	0
F13.15	Set the run arrival time	0h ~ 65535h	0
F13.16	Restart function after power-on	0: Restart 1: Don't restart	0
F13.17	Frequency detection value (FDT1)	0.00Hz ~ maximum frequency F00.06	50.00
F13.18	Frequency Detection Lag value (FDT1)	0.0% ~ 100.0% (FDT1 level)	5.0
F13.19	Frequency reaches the detected width	0.0% ~ 100.0% (maximum frequency)	0.0
F13.20	Whether the jump frequency during acceleration and deceleration Valid	0: Invalid 1: Valid	0

F13.21	Run time to reach Action Selection	0: Continue to run 1: Fault indication	0
F13.22	Power-on time Arrival Action Selection	0: Continue running 1: Fault indication	0
F13.23	Speed up time 1/2 Switch frequency point	0.00Hz ~ Maximum frequency F00.06	0.00
F13.24	Slow down time 1/2 Switch frequency point	0.00Hz ~ Maximum frequency F00.06	0.00
F13.25	Terminal tapping is preferred	0: Invalid 1: Valid	0
F13.26	Frequency detection value (FDT2)	0.00Hz ~ Maximum frequency F00.06	50.00
F13.27	Frequency Detection Lag value (FDT2)	0.0% ~ 100.0% (FDT2 level)	5.0
F13.28	Arbitrary reach frequency detection value 1	0.00Hz ~ Maximum frequency F00.06	50.00
F13.29	Arbitrary arrival Frequency Detection amplitude 1	0.0% ~ 100.0% (maximum frequency)	0.0
F13.30	Arbitrary reach frequency detection value 2	0.00Hz ~ Maximum frequency F00.06	50.00
F13.31	Arbitrary arrival Frequency Detection Amplitude 2	0.0% ~ 100.0% (maximum frequency)	0.0
F13.32	Zero current detection level	0.0% ~ 300.0% 100.0% corresponds to the rated current of the motor, and is not output when shut down	5.0
F13.33	Zero current detection delay time	0.01s ~ 600.00s	0.10
F13.34	Output current exceeds limit value	0.0% (not detected) 0.1% ~ 300.0% (motor rated current)	200.0
F13.35	Output current overrun detection delay time	0.00s ~ 600.00s	0.00
F13.36	Arbitrary arrival current 1	0.0% ~ 300.0% (rated current of the motor)	100.0
F13.37	Arbitrary reach current 1 width	0.0% ~ 300.0% (rated current of the motor)	0.0

F13.38	Any reach current 2	0.0% ~ 300.0% (motor rated current)	100.0
F13.39	Any reach current 2 width	0.0% ~ 300.0% (rated current of the motor)	0.0
F13.40	Timing function Selection	0: Invalid 1: Valid	0
F13.41	Timer running time selection	0: F13.42 setting 1: AI1 2: AI2 3: Reserved Analog input ranges correspond to F13.42	0
F13.42	Timed run time	0.0min ~ 6500.0min	0.0
F13.43	AI1 Lower limit of input voltage protection value	0.00V ~ F13.44	3.10
F13.44	AI1 Upper limit of input voltage protection value	F13.43 ~ 11.00V	6.80
F13.45	Module temperature reached	0°C ~ 100°C	75
F13.46	Cooling fan control	0: Fan operation during inverter running 1: The cooling fan is always running	0
F13.47	Wake frequency	Hibernation frequency (F13.48) ~ Maximum frequency (F00.06)	0.00
F13.48	Hibernation frequency	0.00Hz ~ Wake up frequency (F13.47)	0.00
F13.49	Current running arrival time	0.0s ~ 6500.0 minutes	0.0
F13.50	Output power correction factor	0.0 ~ 200.0%	100.0
F14 Group User-defined function codes			
F15 group manufacturer parameters			
F16 Group User group			
F16.00	Function Parameter group display selection	Units bit: B00 group display selection 0: Do not display 1: display Ten bit: A00-A15 Indicates selection	11

		0: not displayed 1: displayed	
F16.01	Personality Parameter Group Display selection	Individual bit: User customized parameter group display selection 0: Not displayed 1: Display Tens: User change Parameter group display selection 0: Not displayed 1: Display	00
F16.02	Function code read-only control	0: Modifiable 1: Cannot be modified	0
Group A00 reserved			
Keep group A01			
Group A02 2nd motor parameters			
A02.00	Motor type selection	0: Ordinary asynchronous motor 1: variable frequency asynchronous motor	0
A02.01	Motor rating	0.1kW~1000.0kW (model to be determined)	3.7
A02.02	Rated frequency of motor	0.01Hz~ Maximum frequency F00.06	50.00
A02.03	Rated motor speed	1RPM~65535RPM	1460
A02.04	Motor rated voltage	1V ~ 2000V	380
A02.05	Motor current rating	0.01A ~ 655.35A (inverter power <=55kW) 0.1A ~ 6553.5A (inverter power >55kW)	9.00
A02.06	Stator resistance of asynchronous motor	0.001ohm ~ 65.535ohm (inverter power <=55kW) 0.0001ohm ~ 6.5535ohm (inverter power >55kW)	1.204
A02.07	Asynchronous motor rotor resistance	0.001ohm ~ 65.535ohm (inverter power <=55kW) 0.0001ohm ~ 6.5535ohm (inverter power >55kW)	0.908

A02.08	Induction motor leakage inductive reactance	0.01mH ~ 655.35mH (inverter power <=55kW) 0.001mH ~ 65.535mH (inverter power >55kW)	5.28
A02.09	Asynchronous motor mutual inductance	0.1mH ~ 6553.5mH (inverter power <=55kW) 0.01mH ~ 655.35mH (inverter >55kW)	158.6
A02.10	No-load current of asynchronous motor	0.01A ~ A02.03 (inverter power <=55kw) 0.1A ~ A02.03 (inverter power >55kW)	4.24
A02.11	Motor parameter self-identification selection	0: No operation 1: Asynchronous motor no-load (dynamic) self-identification 2: Asynchronous motor with load (static) self-identification 1 3: Asynchronous motor with load (static) self-identification 2	0
A02.12	Encoder pulse count	1-65535	1024
A02.13	Encoder Type	0: ABZ incremental encoder 1: UVW incremental encoder 2: Rotary encoder 3: Sine-cosine encoder 4: Provincial line mode UVW encoder	0
A02.14	Speed feedback PG selection	0: Local PG 1: Expand PG 2: HDI high speed pulse input	0
A02.15	ABZ encoder AB phase sequence	0: Forward 1: Reverse	0
A02.16	Encoder mounting position Angle	0.0 ~ 359.9°	0.0
A02.17	UVW signal phase sequence	0: Forward 1: Reverse	0
A02.18	UVW signal zero position Angle	0.0 ~ 359.9°	0.0
A02.19	Rotational pole log	1 ~ 65535	1

A02.20	Reserve		
A02.21	Speed feedback PG break detection time	0.0: No action 0.1s ~ 10.0 s	0.0
A02.22	Velocity loop proportional gain 1	1 ~ 100	30
A02.23	Velocity loop integration time 1	0.01s ~ 10.00s	0.50
A02.24	Switching frequency 1	0.00 ~ A02.27	5.00
A02.25	Velocity loop proportional gain 2	1 ~ 100	20
A02.26	Velocity loop integration time 2	0.01s ~ 10.00s	1.00
A02.27	Switching frequency 2	A02.24 ~ Max frequency F00.06	10.00
A02.28	Slip compensation factor	50% ~ 200%	100
A02.29	SVC velocity feedback filtering time	0.000s ~ 0.100s	0.015
A02.30	Vector control overexcitation gain	0 ~ 200	64
A02.31	Speed control (drive) torque upper limit Digital setting	0.0% ~ 200.0%	150.0
A02.32	Speed control (drive) torque upper limit source	0: Function code A02.31 Setting 1: AI1 2: AI2 3: Reserved 4: HDI high speed pulse setting 5: Communication given 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) The full scale of options 1 to 7 corresponds to A02.31	0

A02.33	Speed control (braking) torque upper limit source	0: Function code A02.34 set 1: AI1 2: AI2 3: Reserved 4: HDI high speed pulse setting 5: communication set 6: MIN (AI1, AI2) 7: MAX (AI1, AI2) 8: Function code A02.32 Setting (does not distinguish drive and brake) The full scale of options 1 to 7 corresponds to A02.34	0
A02.34	Speed control (braking) torque upper limit digital setting	0.0% ~ 200.0%	150.0
A02.35	M axis current loop proportional gain	0 ~ 60000	2000
A02.36	M axis current loop integral gain	0 ~ 60000	1300
A02.37	T-axis current loop proportional gain	0 ~ 60000	2000
A02.38	T-axis current loop integral gain	0 ~ 60000	1300
A02.39	Velocity loop integral properties	Units place: integral separation 0: The velocity loop integral is always valid 1: Velocity ring integral separation	0
A02.40	Synchro weak magnetic mode	0: Not weak magnetic 1: Direct calculation 2: automatic adjustment	0
A02.41	Overmodulation Enable Select	0: Disable 1: Enable	0
A02.42	Maximum output voltage coefficient	100% ~ 110%	105
A02.43	Maximum torque coefficient in weak field	50% ~ 200%	100
A02.44	Power generation (braking) torque enable selection under	0: Disable 1: Enable	0

	speed model		
A02.45	Upper limit of generating power	0.0% ~ 200.0%	Model confirmed
A02.46	Motor control mode	0: Speed sensorless vector control (SVC) 1: reserved 2: VF control	2
A02.47	Acceleration and deceleration time selection	0: same as the first motor 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
A02.48	Motor torque boost	0.0%: Automatic torque increase 0.1% ~30.0%	Model confirmation
A02.49	Reserve		0
A02.50	Oscillation suppression gain	0 ~ 100	40
A03.00	Operating status	0: Stopping 1: Running 2: hibernating 3: Low frequency protection 4: Beat dry protection medium 5: Overcurrent protection 6: Minimum power protection	Read Only
A03.01	VOC voltage	0.0V ~ 999.9V	Read Only
A03.02	Solar Pump mode	0: Variable frequency speed regulation mode 1: CVT mode 2: MPPT mode	2
A03.03	CVT target voltage	30.0% to 102.4%	85.0%
A03.04	CVT integral gain	0 ~ 65535	2000
A03.05	CVT proportional gain	0 ~ 65535	20
A03.06	CVT transition frequency	0.00 ~ 50.00 Hz	10.00 Hz

A03.07	CVT voltage upper limit	0.0V ~ 1000.0V	1000.0 V
A03.08	Lower limit of CVT voltage	0.0V ~ 1000.0V	0.0 V
A03.09	MPPT Search for starting voltage	30.0% ~ 102.4%	95.0%
A03.10	MPPT search cycle	0.01s ~ 60.00s	2.00 s
A03.11	MPPT search step size	0.01s ~ 60.00s	0.50 s
A03.12	Frequency rise adjust step size	0.00Hz/s~ 300.00Hz/s	2.00 Hz/s
A03.13	Frequency drop adjust step size	0.00Hz/s ~ 300.00Hz/s	10.00 Hz/s
A03.19	Power on terminal effective	0: The power-on terminal command is invalid 1: The power on terminal command is valid	1
A03.20	Power failure restart enable	0: invalid 1: Power off and restart	1
A03.21	Blackout restart delay time	0.0 ~ 6000.0 s	10.0 s
A03.22-23	Reserve		
A03.24	Custom overcurrent protection Detect current	0.00A ~ 600.00A	0.00 A
A03.25	Customize the overcurrent protection detection time	0.0s ~ 6000.0s	10.0 s
A03.26	Customize the automatic recovery time for overcurrent protection	0.0s ~ 6000.0s	20.0 s
A03.27	Customize the minimum power protection value	0.0k W~ 1000.0kW	0.0 kw
A03.28	Customize the minimum power protection detection time	0.0s ~ 6000.0s	10.0 s
A03.29	Custom minimum power	0.0s ~ 6000.0s	10.0 s

	protection automatic recovery time		
A03.30	Custom dry protection detection current	0.00 ~ 600.00 A	0.00 A
A03.31	Customize the dry protection detection time	0.0 ~ 6000.0 s	10.0 s
A03.32	Customize the automatic recovery time for dry protection	0.0 ~ 6000.0 s	20.0 s
A03.33	Customize the sleep voltage threshold	0 ~ 1000V	0V
A03.34	Customize the sleep recovery voltage	0 ~ 1000V	400V
A03.35	Customize the hibernation stop wait time	0.0 ~ 6000.0 s	20.0 s
A03.36	Custom low frequency protection detection frequency	0.00 ~ 300.00 Hz	0.00Hz
A03.37	Customize the low frequency protection detection time	0.0 ~ 6000.0 s	10.0 s
A03.38	Custom low frequency protection auto recovery time	0.0 ~ 6000.0 s	20.0 s
A03.39	Water full protection detection time	0.0s ~ 6000.0s	10.0 s
A03.40	Water full protection time	0.0s ~ 6000.0s	10.0 s
A03.41	Alarm recovery mode	0: Auto recovery; 1: Manual recovery Units bit: Low frequency protection Ten bit: Beat dry protection Hundred bit: over and over load protection Thousand bit: Minimum power protection	H.0000
A03.42	Reserve		
A03.43	Power curve 0	0.00kw ~ 100.00kw	0.50 kw

A03.44	Power Curve 1	0.00kw ~ 100.00kw	1.00 kw
A03.45	Power curve 2	0.00kw ~ 100.00kw	1.50 kw
A03.46	Power Curve 3	0.00kw ~ 100.00kw	2.00 kw
A03.47	Power Curve 4	0.00kw ~ 100.00kw	2.50 kw
A03.48	Flow curve 0	0.0m ³ /h to 1000.0m ³ /h	0.0 m ³ / h
A03.49	Flow Curve 1	0.0m ³ /h ~ 1000.0m ³ /h	5.0 m ³ / h
A03.50	Flow Curve 2	0.0m ³ /h ~ 1000.0m ³ /h	10.0 m ³ / h
A03.51	Flow Curve 3	0.0m ³ /h ~ 1000.0m ³ /h	15.0 m ³ / h
A03.52	Flow Curve 4	0.0m ³ /h ~ 1000.0m ³ /h	20.0 m ³ / h
A03.55	Daily flow/daily power zero clearance period	0.0h ~ 24.0h	7.0 h.
A03.56	Reserve		
A03.57	Number of automatic reset times	0 to 100	000
Groups A10 to A15 reserved			
Group b00 is displayed			
b00.00	Running frequency	Unit: Hz	0.01
b00.01	Set frequency	Unit: Hz	0.01
b00.02	Bus voltage	Unit: V	0.1
b00.03	Output voltage	Unit: V	1
b00.04	Output current	Unit: A	0.01
b00.05	Output power	Unit: kw	0.1

b00.06	Output torque	Unit: %	0.1
b00.07	DI Input status		0x0000
b00.08	DO output status		0x0000
b00.09	AI1 Voltage/current	Unit: V/mA	0.01
b00.10	AI2 Voltage/current	Unit: V/mA	0.01
b00.11	Reserved	Reserve	0.01
b00.12	Count value		1
b00.13	Length value		1
b00.14	Load speed display		1
b00.15	PID Settings	Unit: %	1
b00.16	PID Feedback	Unit: %	1
b00.17	PLC stage		1
b00.18	Enter pulse frequency	Unit: kHz	0.01
b00.19	Feedback velocity	Unit: Hz	0.01
b00.20	Remaining running time	Unit: min	0.1
b00.21	AI1 Pre-correction voltage/current	Unit: V/mA	0.001
b00.22	AI2 Pre-correction voltage/current	Unit: V/mA	0.001
b00.23	Reserved		0.001
b00.24	Line speed	Units: m/min	1
b00.25	Current power-on time	Unit: min	1

b00.26	Current running time	Unit: min	0.1
b00.27	Enter pulse frequency	Unit: kHz	1
b00.28	Communication setpoint	Unit: Hz	0.01
b00.30	Master frequency X display	Unit: Hz	0.01
b00.31	Auxiliary frequency Y display	Unit: Hz	0.01
b00.32	View arbitrary memory address values		1
b00.33	Synchro rotor position	Unit: °	0.1
b00.34	Reserved		1
b00.35	Target torque	Units: %	0.1
b00.36	Reserved		1
b00.37	Power factor Angle	Units: °	0.1
b00.38	Reserved		1
b00.39	VF Separates the target voltage	Unit: V	1
b00.40	VF separate output voltage	Unit: V	1
b00.41	DI Input status visual display		1
b00.42	DO input status visual display		1
b00.43	DI Function status Visual display 1 (Function 01 ~ Function 40)		1
b00.44	DI function status Visual display (function 41 ~ Function 80)		1
b00.45	Fault information		1

b00.59	Set frequency	Unit: %	0.01
b00.60	Running frequency	Unit: %	0.01
b00.61	Inverter status		1
b00.62	Current fault code		1
b00.65	Upper torque limit	Units: %	0.1
b00.73	Motor serial number	0: Motor 1 1: Motor 2	
b00.74	Inverter output torque	Unit: %	0.1
b00.75	Device code		1
b00.76	Running RPM	Unit: RPM	1

Chapter 5 Fault tracking

5.1 Contents of this chapter

This chapter describes how to reset a fault and view the fault history. This chapter also lists all alarm and fault information, as well as possible causes and corrective actions.



Only trained and qualified professionals should perform the work described in this chapter. Follow the instructions in "1 Safety Precautions."

5.2 Alarm and failure instructions

Failure is indicated by indicator light. See "5.3 LED Keyboard Display and Operation". At that time, the alarm or fault code displayed on the keyboard indicated that the frequency converter was in an abnormal state. Using the information given in this chapter, it is possible to find out the cause of most alarms or failures and their corrective actions. If you cannot find out the cause of the alarm or malfunction, contact your local office.

5.3 Failure reset

The frequency converter can be reset by STOP/RST on the keyboard, digital input, cutting off the inverter power lamp and other ways. When the fault has been rectified, the motor can be restarted.

5.4 Fault history

Function codes F08.16 to F08.18 Record the types of the three recent faults. Function codes F08.19~F08.40 record the operation data of the frequency converter when the last three failures occurred.

5.5 Frequency converter fault content and countermeasures

After the failure, the processing steps are as follows:

Step 1 When the frequency converter fails, check whether the keyboard display is abnormal. If so, consult the office.

Step 2 If no exception exists, check the F08 function code to determine the corresponding fault record parameters, and use all parameters to determine the actual status when the latest fault occurs.

Step 3 Check the following table and check whether the corresponding abnormal state exists according to the specific solution. Step 4 Rectify the fault or ask relevant personnel for help.

Step 5 After confirming that the fault is rectified, reset the fault and start running.

5.6 Frequency converter fault contents and countermeasures

Fault code	Fault type	Possible cause of failure	Countermeasures
E. oC1	E.o. 1 Accelerate running overcurrent	1. Speed up and speed down too fast. 2, the grid voltage is low. 3, inverter power is small.	1, increase the acceleration and deceleration time. 2, check the input power supply. 3, choose the power of the inverter.
E. oC2	Slow down running overcurrent	4, load mutation or abnormal. 5, short circuit to the ground, output phase missing. 6, there is strong external interference source.	4. Check whether there is a short circuit in the load 5, (short circuit to the ground or short circuit between lines) or blocked rotation phenomenon. Check the output wiring.
E. oC3	Run overcurrent at constant speed	7. Over loss speed protection is not turned on.	6. Check for strong interference. 7, check the setting of the relevant function code.
E. oU1	Speed up the running overvoltage	1.Abnormal input voltage 2.After instantaneous power failure, restart the rotating motor Acceleration time is too fast	1.Check input power 2.Avoid downtime and restart Increase acceleration time
E. oU2	Slow down running overvoltage	1.Slow down too fast 2.Large load inertia 3.Input voltage anomaly 4.Missing energy consumption brake assembly. 5.Energy consumption brake function is not enabled.	1. Increased deceleration time 2. Increase energy consumption brake assembly 3. Check input power 4. Increased energy consumption of brake components 5. Check the Settings for the relevant function code.
E. oU3	Constant speed running overvoltage	1.The input voltage changes abnormally 2.The load inertia is large	1. Install the input reactor 2. Add a suitable energy consuming brake assembly
E. Lv	Bus undervoltage	1. Low grid voltage 2. Overvoltage stall protection is not on.	1. Check the grid input power supply 2. Check the Settings for the

			relevant function code.
E. oUt1	Inverter Unit U Phase fault	1. Accelerating too fast	1. Increase acceleration time
E. oUt2	Inverter Unit V Phase fault	2. Internal damage to the phase IGBT	2. Call for backup
E. oUt3	Inverter Unit W Phase fault	3. Interference causes misoperation 4. Whether grounding is good 5. Is it short to ground.	3. Check peripherals for strong sources of interference 4. Check the grounding 5. Check that the output is not short-circuited to the ground, virtual connection
E. oL1	Motor overload	1. Grid voltage is too low 2. Motor current rating is set incorrectly 3. Motor gridlock or excessive load mutation 4. Large horse-drawn trolley	1. Check the grid voltage 2. Reset the motor current rating 3. Check the load and adjust the torque lift 4. Choose the right motor
E. oL2	Inverter overload	1. Acceleration too fast 2. Restart the rotating motor 3. The grid voltage is too low 4. overload	1. Reduced acceleration 2. Avoid stopping and restarting 3. Check the grid voltage 4. Choose a frequency converter with more power
E. oL3	Overload alert	Heavy load The motor parameters are not lower than the grid voltage during vector control	Choose a larger frequency converter Check voltage for motor rotation parameter identification
E. oH1	The rectifier module overheats	1. The inverter overcurrent instantaneously 2. The output three phase has	1. See Overcurrent Countermeasures 2. Rewiring
E. oH2	Inverter module overheating	an interphase or ground short circuit 3. Blocked air duct or damaged fan 4. Ambient temperature is too high 5. The cable connection to the	3. Unclog the air duct or replace the fan 4. Reduce ambient temperature 5. Check and reconnect 6. Seek service 7. Seeking service 8. Seeking service

		control board or plug-in is loose 6. The auxiliary power supply is damaged and the drive voltage is undervoltage 7. Power module bridge arm straight through 8. Abnormal control board	
E. ILF	Input side phase missing	Input R, S, T has a missing phase or fluctuation.	1. Check the input power supply 2. Check the installation wiring
E. OLF	Missing phase on output side	1. U, V, W missing phase output 2. The three phases of the load are seriously asymmetrical	1. Check the output wiring 2. Check the motor and cables
E. bC	Brake unit failure	1. The brake line is faulty or the brake tube is damaged 2. The resistance value of the external brake resistor is low	1. Check the brake unit and replace it with a new brake tube 2. Increase brake resistance
E. AUT	Motor parameter identification failure	1. The motor capacity does not match the frequency converter capacity 2. The rated parameters of the motor are set improperly 3. The deviation between the identified parameters and the standard parameters is too large 4. Parameter identification times out	1. Replace the inverter model 2. Set the rated parameters according to the motor nameplate 3. Make the motor no-load, re-identify 4. Check motor wiring and parameter setting
E. PIDE	PID feedback disconnection fault	1. PID feedback disconnected 2. The PID feedback source disappears	1. Check the PID feedback signal cable 2. Check the PID feedback source
E.485	Communication breakdown	1. The baud rate is set improperly 2. Communication error using serial communication	1. Set the appropriate baud rate 2. Press the STOP/RESET key to reset and seek service Check the wiring of the

		Communication has been interrupted for a long time	communication port
E.EF	External failure	1.SI external fault input terminal action	1. Check the external device input
E.EEP	EEPROM read Write fault	1.An error occurred in reading or writing control parameters 2. The EEPROM is damaged	1. Press STOP/RESET to reset the EEPROM 2 Seek service
E.END	Run time arrived	1. User trial time arrives	1. Find the manufacturer for service
E. IIE	Current detection circuit fault	1, Control board connector is in poor contact 2, Auxiliary power supply damaged 3, Hall device damage 4, Amplifier circuit anomaly	1, Check the connector and re-plug the cable 2, Seeking Service 3, Seeking service 4, Seeking service

Other forms

Solar pumping system special protection function		
Failure code	Fault type	Possible cause of failure
E.81	Sleep protection Features	When the solar panel provides DC voltage below A3.33(sleep voltage threshold), the inverter will go to sleep, and the keyboard warns "Err81"; When the DC voltage of the solar panel rises back to A3.34(hibernation recovery voltage) point, the timing starts, after A3.35(hibernation stop waiting time), the frequency converter starts to run.
E.82	Low frequency protection Features	When the output frequency is lower than A3.36(low frequency protection detection frequency), and continues A3.37(low frequency protection detection time) time, enter the protection standby state, and the keyboard warns "Err82"; After entering the protected standby state, after A3.38(low frequency protection

		automatic recovery time) time, the operation will automatically resume.
E.83	Dry protection running	When the output current is very low than A3.30(dry protection detection current), and continue A3.31 (dry protection detection time) time, enter the protection standby state, while the keyboard warning "Err83; After entering the protected standby state, after A3.32(dry protection automatic recovery time) time, the operation will automatically resume.
E.84	Overcurrent protection features	When the output current is larger than A3.24(overcurrent protection detection current), and continues A3.25(overcurrent protection detection time) time, enter the protection standby state, and the keyboard warns "Err84"; After entering the protected standby state, after A3.26(Overcurrent protection automatic recovery time) time, the operation will automatically resume.
E.85	Minimum power protection features	When the output power is very small and less than the minimum power protection value of A3.27), and continues A3.28(minimum power protection detection time) time, enter the protection standby state, and the keyboard warns "Err85"; After entering the protected standby state, it will automatically resume operation after A3.28 (minimum power automatic recovery time).
E.86	Water full protection function	Through the DI3 terminal to detect the water full alarm level and low water level to achieve automatic water level control. Among them, A3.39 is the detection time of full water protection, A3.40 is the exit time of full water protection, and DI3 terminal is the input of photovoltaic full water detection alarm signal, the warning signal is "Err86".

Alarm recovery mode: 0: automatic recovery; 1: manual recovery

This option is for low frequency protection function, beat dry protection function, over current protection function, minimum power function; The alarm recovery mode can be selected through A3.41. When the choice is 0, automatic recovery, during the fault warning display, you can also press the "STPO" key to stop the operation; When the choice is 1 manual recovery, in the fault warning display, you can manually clear by pressing the "STOP" key to achieve the stop operation.

PQ curve function:

This model provides a custom PQ curve, which can be used for users to set 5 groups of PQ corresponding points according to the pump situation, to achieve real-time flow speed, daily flow, cumulative flow, daily power generation, cumulative power consumption calculation; Among them, by default, the daily flow and daily power generation are calculated in 7h for one day.

Status view

When the photovoltaic pump enters the operating state, you can confirm the current operating status by looking at A3.00.

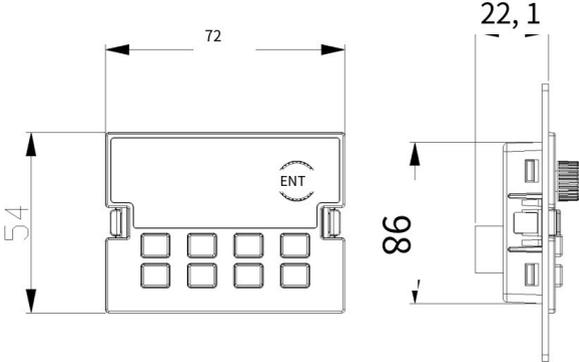
Appendix A Dimensional drawing

A.1 Contents of this chapter

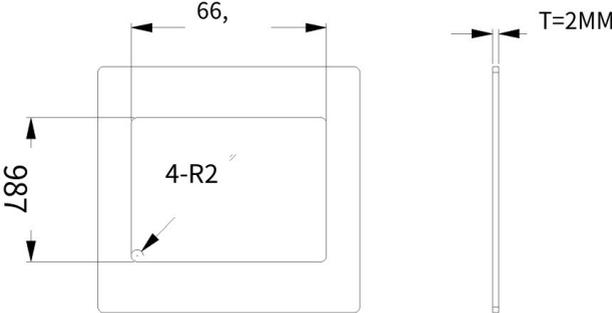
This chapter gives the size diagram of this series frequency converter. The units in the dimensional diagram are millimetres (mm).

A.2 Keyboard structure

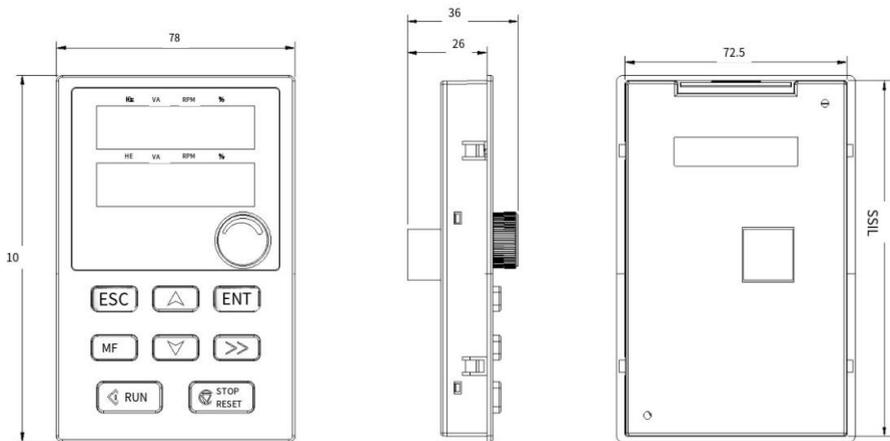
A.2.1 Keyboard structure and size



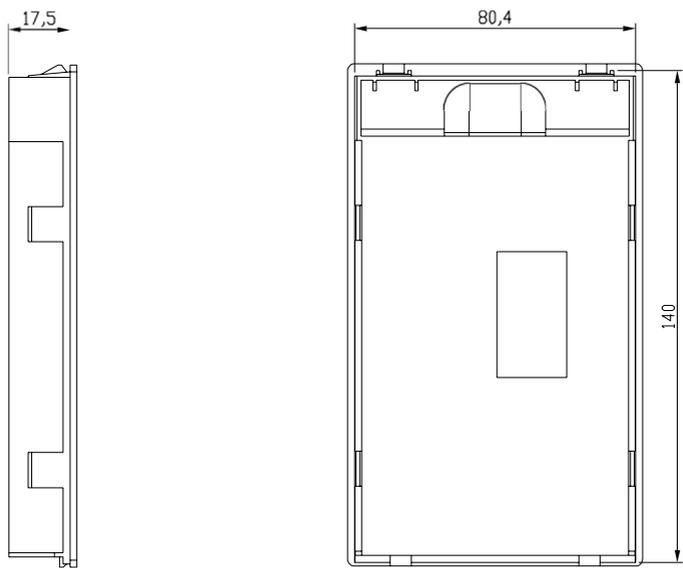
Appearance and dimensions of a keyboard with 22KW or less (unit mm)



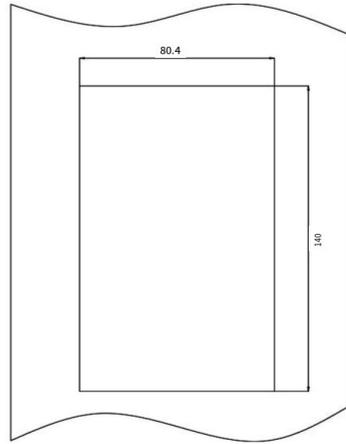
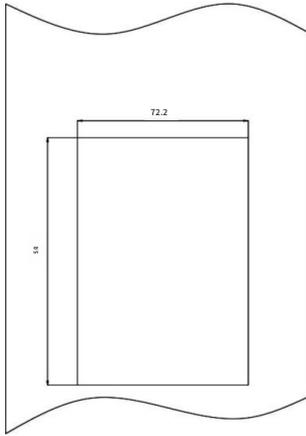
Dimensions of the 22KW or smaller keyboard opening hole (unit mm)



Dimensions of a keyboard larger than 22KW (unit mm)



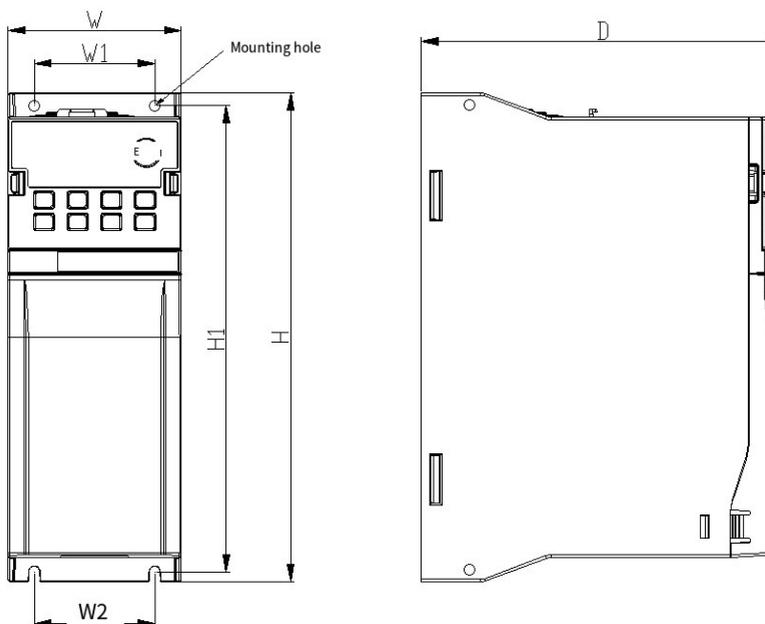
Dimensions of the external keyboard bracket (unit: mm) larger than 22KW



Left: Dimensions of opening holes on the operation panel (keyboard)

Right: Dimensions of opening holes on the operation panel support (keyboard tray)

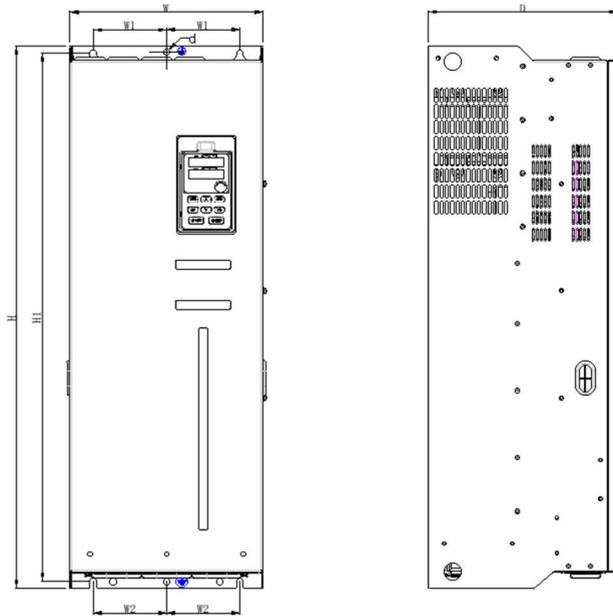
Frequency converter appearance Installation dimensions



Exterior of 1.5 to 22kW wall mount

Dimensions of the 0.7 to 22kW wall mount

Inverter specifications	Overall dimensions (mm)			Mounting hole (mm)			Mounting aperture	Screws
	W	H	D	H1	W1	W2		
0.75~2.2kW/380V	72	200	150.5	190.8	50	50	ø 4	M4
4~7.5kW/380V	100	240	160.5	230.8	70	70	ø 4	M4
11~15kW/380V	120	330	172.5	321.5	111	107	ø 4	M4
18.5~22kW/380V	142	383	227.5	373.5	120	129	ø4	M4



380V 30kW to 500kW exterior of a wall mount

30kW to 500kW wall mount dimensions

Inverter model	Without base outline and mounting dimensions (mm)						Mounting aperture	Set screws
	W	H	D	W1	W2	H1		
30-37KW/380V	172	430	230	140	140	412	Φ 7	M6
45-55KW/380V	210	500	270	150	150	480	Φ 10	M10
75-110KW/380V	290	810	285	110	110	790	Φ 10	M10
132-160KW/380V	315	970	310	125	125	940	Φ 12	M12
185-220KW/380V	360	995	480	180	180	953	Φ 18	M18
250-315KW/380V	370	1194	550	200	200	1164	Φ 18	M18
355-500KW/380V	460	1500	550	200	200	1470	Φ 18	M18

