

# D11 Series Frequency Inverter

## User's Manual II v2023.2



**D11 Series Frequency Converter**

# **USER'S MANUAL**

English Version V2023.2

**Anhui Zhongtuo Electric Co., Ltd**

# 1. Safety Information

## 1.1 Safety Precautions

- Do not install this equipment in an explosive gas atmosphere, or there will be explosion hazards.
- Only qualified individuals should proceed with wiring, or there will be electric shock hazards.
- Do not conduct any wiring during the system power on to avoid the electric shock.
- Do not touch control terminals, internal circuit board and its components, or there will be electric shock hazard.
- Earth terminal must be exactly grounded when using inverter. Grounding must be confirmed with the national electric safety regulation and other electric code.
- After power off, do not touch internal circuit board or any parts inside within 5 minutes after keypad display went off. Any internal operation must be after making sure of discharge off with instrument checking to avoid the electric shock.
- Do not connect AC power to output terminal (U, V, W) of inverter. The only terminal the AC power allowed to be connected is R, S, T (or R, T single-phase source inverter).
- Static electricity on human body can damage MOS device. Do not touch PCB and IGBT without anti-static measure.
- Do not lose screws, spacers and other metallic foreign bodies inside the driver to avoid fire hazard and driver damage.
- Do not connect 220V AC power to internal control terminal of the driver, or there will be serious damage to the driver.
- If overcurrent protection occurs after start the driver, confirm again the external wiring and then power on and run the driver.
- Do not switch off the power to stop the driver. Cut off power source after the motor stops running.
- Do not install the driver in places with direct sunlight.

## 1.2 Installation and Wiring



**DANGER**

- Ensure the power has been cut off before wiring, Electric shock and fire hazard.
- Ask electric engineering professionals to conduct wiring.
- Earth terminals must be reliable grounded.
- (380V class: especially the third grounding) Electric shock and fire hazard.
- Check if its action is effective after emergency brake terminal is connected.
- Injury risk (wiring responsibility should be beard by users).
- Do not touch output terminals directly. The output terminal is connected directly to motor. There should be no short circuit between output terminals.
- Install the terminal cover before power on, and ensure power off when dismantling the terminal cover Electric.

- Conduct check and maintenance after 5 to 8 minutes after power off when internal residual electricity is discharged completely.
- Hazard of residual voltage in electrolytic capacitor.



#### CAUTION

- Check if the voltage of power inlet wire agrees with rated input voltage of VFD.
- Connect brake resistor or brake unit according to wiring diagram.
- Choose screw driver and wrench with specified torque to fasten terminals.
- Do not connect the power input wire to output U, V, W terminals.
- It will cause internal damage to VFD if load the voltage on output terminals.
- Do not dismantle the front panel cover, only the terminal cover needs to be dismantled when wiring.

### 1.3 Operation Environment

- No corrosive gases, vapors, dust or oily dust, no direct sunlight.
- No floating dust and metal particle.
- Ambient humidity 20% to 90% RH.
- Vibration less than 5.9m/s<sup>2</sup>(0.6g).
- No electromagnetic interference.
- Ambient temperature -10°C to 40°C. Ensure good ventilation when ambient temperature exceeds 40°C.
- Use electric cabinet or remote control method in non-standard operation environment and ensure good ventilation and heat dissipation. The service life of VFD lies in installing environment and operation condition. But even in standard environment, a long-term continuous running can guarantee a life of no more than 5 years for electrolytic capacitor and about 3 years for cooling fan. An update or a thorough maintenance in advance is recommended.

## 2 Technical Index and Specificati

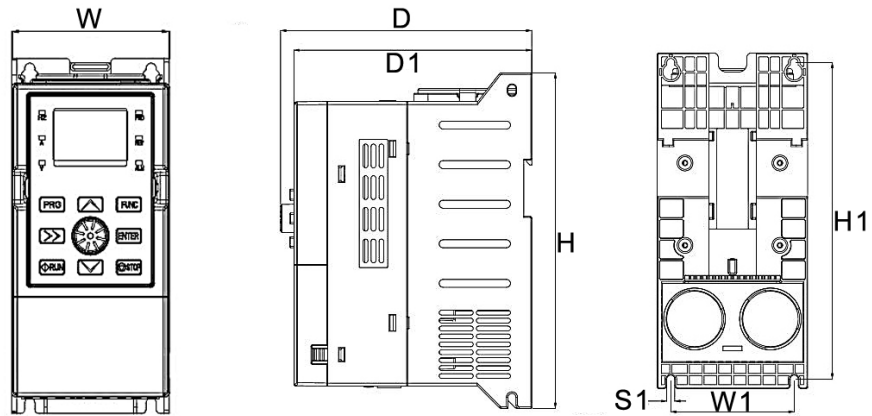
Input	Rated Voltage, Frequency	3-phase 380V; 47~63Hz 1-phase 220V; 47~63Hz		
	Allowed Voltage Range	3-phase: 320V~460V 1-phase: 160V~260V		
Output	Voltage	3-phase 380V; 0~460V 1-phase 220V; 0~260V		
	Frequency	Low frequency mode: 0~300Hz ; High frequency mode: 0~3000Hz;		
	Overload Capacity	G type: 110% for long-term, 150% for 1 min, 200% for 4s P type: 105% for long-term, 120% for 1 min, 150% for 1s		
Control Mode		V/F control, advanced V/F control, V/F separation control, electric current vector control		
Control Character	Frequency Setting Resolution	Analog Input	0.1% of maximum output frequency	
		Digital Setting	0.01Hz	
	Frequency Precision	Analog Input	Within 0.2% of maximum output frequency	
		Digital Setting	Within 0.01% of set output frequency	
	V/F Control	V/F Curve (Volt Freq character)	Reference frequency setting 5~600Hz, multipoint V/F curve setting, fixed curve of constant torque, low decreasing torque1, low decreasing torque2, square torque	
		Torque Compensation	Manual setting: 0.0~30% of rated output Automatic compensation: according to output current and motor parameter	
		Automatic Current-limiting and Voltage-limiting	During acceleration, deceleration or steady running, detect automatically the current and voltage of motor stator, and control it within boundsbased on unique algorithm, minimize fault-trip chance	
	Senseless Vector Control	Voltage Freq Character	Adjust pressure/frequency ratio according to motor parameter and unique algorithm	
Control Character	Senseless Vector Control	Torque Character	Starting torque: 3.0Hz 150% rated torque (VF control) 1.0Hz 150% rated torque (Advance VF control) 0.5Hz 150% rated torque (SVC) Operating speed precision in steady state: $\leq \pm 0.2\%$ rated synchronous speed Torque response: $\leq 20\text{ms}$ (SVC)	
		Motor Parameter Self-measurement	Being able to detect parameter automatically under static state and dynamic state of motor, thus guarantee an optimum control.	
		Current and Voltage Restrain	Current closed-loop control, free from current impact, perfect restrain function of overcurrent and overvoltage	
	Undervoltage Restrain during Running	Specially for users with a low or unsteady voltage power grid: even lower than the allowable voltage range, the system can maintain the longest possible operating time based on its unique algorithm and residual energy allocation strategy		

Typical Function	Multi-speed and SF Operation	16 segments programmable multi-speed control, multiple operation mode. Swing frequency operation: preset frequency and center frequency adjustable, parameter memory and recovery after power cut.		
	PID Control 485 Communication	Built-in PID controller (able to preset frequency). Standard configuration RS485 communication function, multiple communication protocol for choice, synchronizing control function.		
	Frequency Setting	Analog Input	Direct voltage 0~10V, direct current 0~20mA (optional up limit and lower limit)	
		Digital Input	Operation panel setting, RS485 port setting, UP/DW terminal control, or combined with analog input	
	Output Signal	Digital Input	2 channel Y output and 2 channel relay output (TA, TB, TC), up to 61 choices	
		Analog Input	2 channel analog signal output, output ranging within 0~20mA or 0~10V with flexibly setting, achievable output of physical quantities like set frequency, output frequency	
	Automatic Steady-voltage Operation	Dynamic steady state, static steady state, and unsteady voltage for choices to obtain the steadiest operation		
Acceleration Deceleration Time Setting	0.1s~3600min continuous setting, S type and linear type mode for choice.			
Typical Function	Brake	Dynamic Braking	Dynamic braking initial voltage, backlash voltage and dynamic braking continuous adjustable	
		DC Braking	Halt DC braking initial frequency: 0.00~[F0.13] upper limit frequency Braking time: 0.0~100.0s; Braking current: 0.0%~150.0% of rated current	
		Flux Restraint	0~100 0: invalid	
	Low Noise Run	Carrier frequency 1.0kHz~16.0kHz continuous adjustable, minimize motor noise		
	Speed Tracking Restart Function	Smooth restart during operation, instantaneous stop and restart		
	Counter	A built-in counter, facilitate system integration		
Display	Operation Panel Display	Running State	Output frequency, output current, output voltage, motor speed, set frequency, module temperature, PID setting, feedback, analog input and output.	
		Alarm	The latest 6 faults record; running parameters record when the latest fault tripping happens including output frequency, set frequency, output current, output voltage, DC bus voltage and module temperature.	
Protective Function	Overcurrent, overvoltage, undervoltage, module fault, electric thermal relay, overheat, short circuit, phase-loss of input and output, motor parameter adjustment abnormality, internal memory fault, etc.			
Environment	Ambient Temperature	-10°C~+40°C (please run the VFD in derated capacity when ambient temperature is 40°C~50°C)		
	Ambient Humidity	5%~95%RH, without condensing drops		
	Surroundings	Indoors (without direct sunlight, corrosive or flammable gas, oil fog and dust)		
	Altitude	Running in derated capacity above 1000m, derate 10% for every 1000m rise.		
Structure	Protection Level	IP20		
	Cooling Method	Air cooling with fan control		
Installation Method	Wall-hanging type, cabinet type			

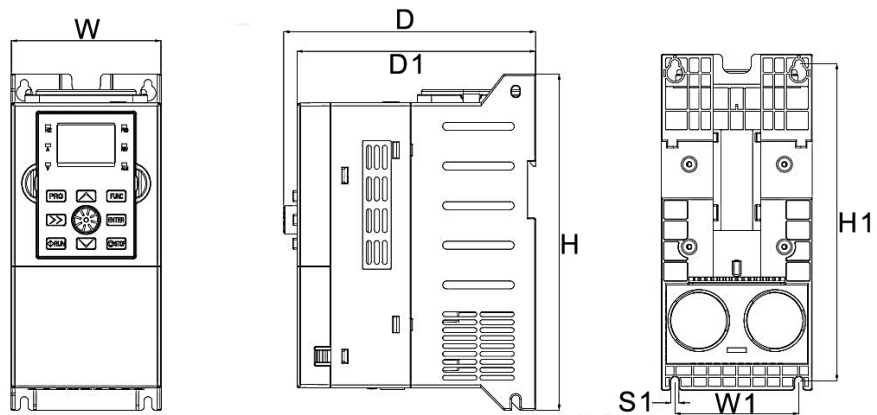
### 3. Inverter Series Type

Voltage Classes	Model No.	Rated Power (KW)	Rated Output Current (A)
220V 1-phase	D11-S2-1R5G	1.5	7
220V 1-phase	D11-S2-2R2G	2.2	10
380V 3-phase	D11-T3-0R7G	0.75	2.5
380V 3-phase	D11-T3-1R5G	1.5	3.7
380V 3-phase	D11-T3-2R2G	2.2	5
380V 3-phase	D11-T3-4G	4/5.5	9/13
380V 3-phase	D11-T3-5R5G	5.5/7.5	13/17
380V 3-phase	D11-T3-7R5G	7.5/11	17/25
380V 3-phase	D11-T3-11G	11/15	25/32
380V 3-phase	D11-T3-15G	15/18.5	32/37
380V 3-phase	D11-T3-18R5G	18.5/22	37/45
380V 3-phase	D11-T3-22G	22/30	45/60
380V 3-phase	D11-T3-30G	30/37	60/75
380V 3-phase	D11-T3-37G	37/45	75/90
380V 3-phase	D11-T3-45G	45/55	90/110
380V 3-phase	D11-T3-55G	55/75	110/150
380V 3-phase	D11-T3-75G	75/90	150/176
380V 3-phase	D11-T3-90G	90/110	176/210
380V 3-phase	D11-T3-110G	110/132	210/253
380V 3-phase	D11-T3-132G	132/160	253/300
380V 3-phase	D11-T3-160G	160/185	300/340
380V 3-phase	D11-T3-185G	185/200	340/380
380V 3-phase	D11-T3-200G	200/220	380/420
380V 3-phase	D11-T3-220G	220	420
380V 3-phase	D11-T3-250G	250	470
380V 3-phase	D11-T3-280G	280	520
380V 3-phase	D11-T3-315G	315	600
380V 3-phase	D11-T3-355G	350	640
380V 3-phase	D11-T3-400G	400	750
380V 3-phase	D11-T3-450G	450	830
380V 3-phase	D11-T3-500G	500	930

### 3.1 Product Overall Dimension and Installation Dimension

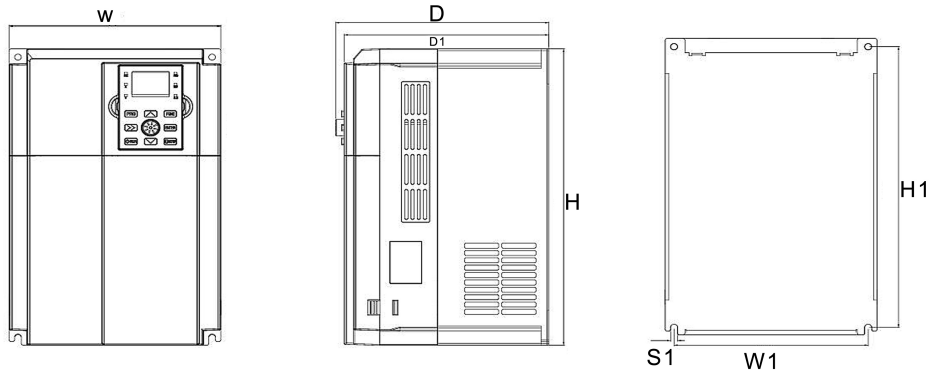


Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	D1(mm)	S1(mm)
D11-S2-1R5G	78	170	142	60	160	133.6	Ø5
D11-S2-2R2G	78	170	142	60	160	133.6	Ø5
D11-T3-0R7G	78	170	142	60	160	133.6	Ø5
D11-T3-1R5G	78	170	142	60	160	133.6	Ø5
D11-T3-2R2G	78	170	142	60	160	133.6	Ø5

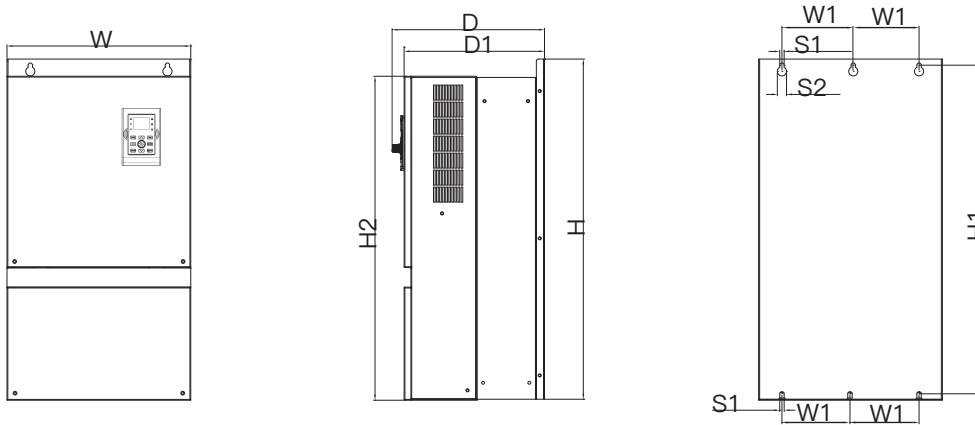


Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	D1(mm)	S1(mm)
D11-T3-4G	95	212	158.7	78	200	150	Ø5
D11-T3-5R5G	95	212	158.7	78	200	150	Ø5

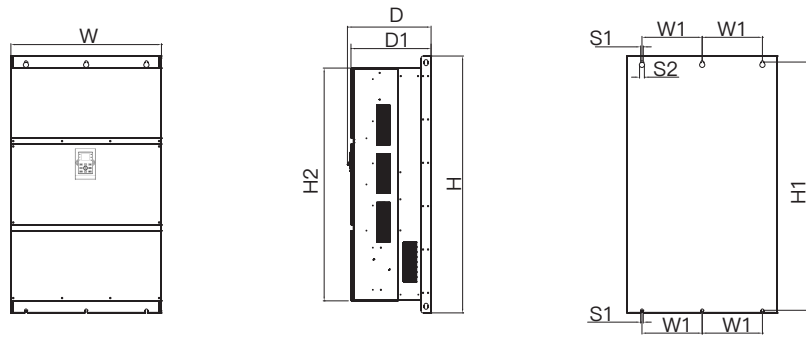




Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	D1(mm)	S1(mm)
D11-T3-7R5G	140	240	187.7	129	229.1	179	Ø5.5
D11-T3-11G	140	240	187.7	129	229.1	179	Ø5.5
D11-T3-15G	205	322	206.5	188	305	198.1	Ø6.5
D11-T3-18R5G	205	322	202.1	188	305	189.4	Ø6.5
D11-T3-22G	205	322	202.1	188	305	189.4	Ø6.5

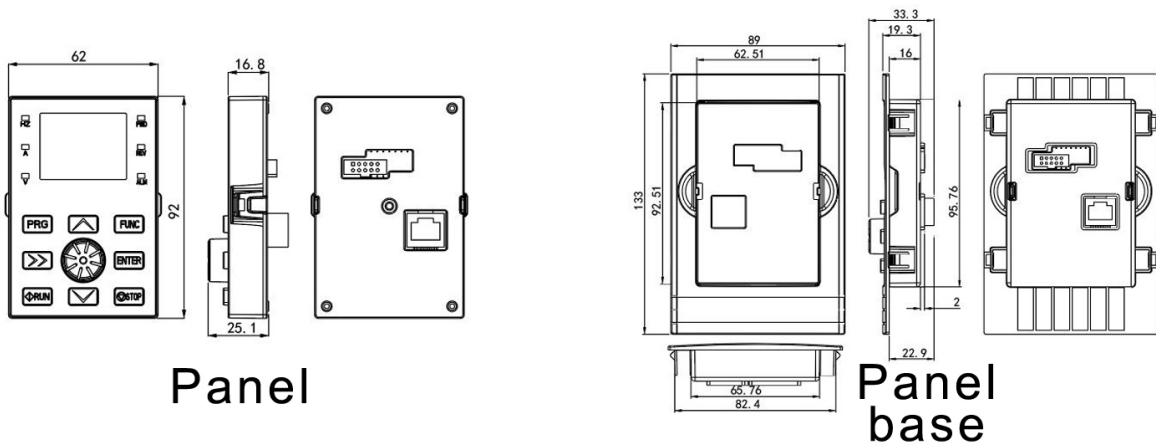


Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	H2(mm)	D1(mm)	S1(mm)	S2(mm)
D11-T3-30G	270	500	223.9	201.5	483	476.2	206.3	Ø6.5	Ø13.5
D11-T3-37G	270	500	223.9	201.5	483	476.2	206.3	Ø6.5	Ø13.5
D11-T3-45G	320	522	257.6	100	499	489	240	Ø9	Ø16.5
D11-T3-55G	320	522	257.6	100	499	489	240	Ø9	Ø16.5
D11-T3-75G	380	720	305.6	130	700.5	663	288	Ø9	Ø16.5
D11-T3-90G	380	720	305.6	130	700.5	663	288	Ø9	Ø16.5
D11-T3-110G	380	720	305.6	130	700.5	663	288	Ø9	Ø16.5
D11-T3-132G	380	720	305.6	130	700.5	663	288	Ø9	Ø16.5
D11-T3-160G	520	850	342.1	175.1	821	763	324.5	Ø13	Ø26
D11-T3-185G	520	850	342.1	175.1	821	763	324.5	Ø13	Ø26
D11-T3-200G	520	850	342.1	175.1	821	763	324.5	Ø13	Ø26



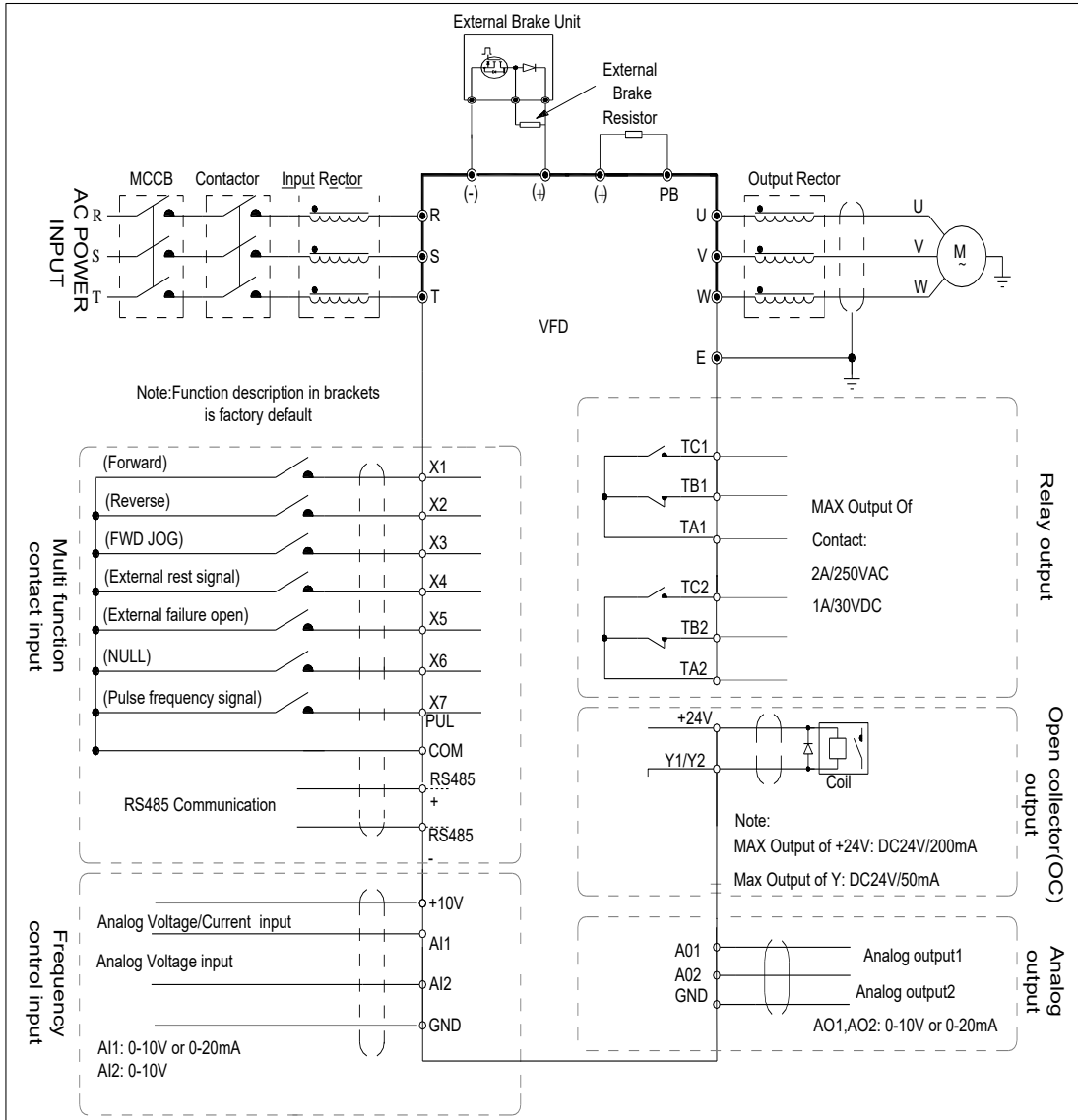
Model No.	W(mm)	H(mm)	D(mm)	W1(mm)	H1(mm)	H2(mm)	D1(mm)	S1(mm)	S2(mm)
D11-T3-220G	650	1090	455.6	210	1061.5	1000	438	Ø13	Ø26
D11-T3-250G	650	1090	416.6	210	1061.5	1000	438	Ø13	Ø26
D11-T3-280G	650	1090	416.6	210	1061.5	1000	438	Ø13	Ø26
D11-T3-315G	650	1090	416.6	210	1061.5	1000	438	Ø13	Ø26
D11-T3-350G	750	1280	435.6	300	1237	1160	418	Ø13	Ø26
D11-T3-400G	750	1280	435.6	300	1237	1160	418	Ø13	Ø26
D11-T3-450G	750	1280	435.6	300	1237	1160	418	Ø13	Ø26
D11-T3-500G	750	1280	435.6	300	1237	1160	418	Ø13	Ø26

### 3.3 Panel size and panel base size



## 4. Basic Running Wiring

The wiring parts of VFD include major loop and control loop. Open the cover of I/O terminals, users can see the major loop terminal and control loop terminal, and must conduct the wiring according to the following diagram.




**Note:**

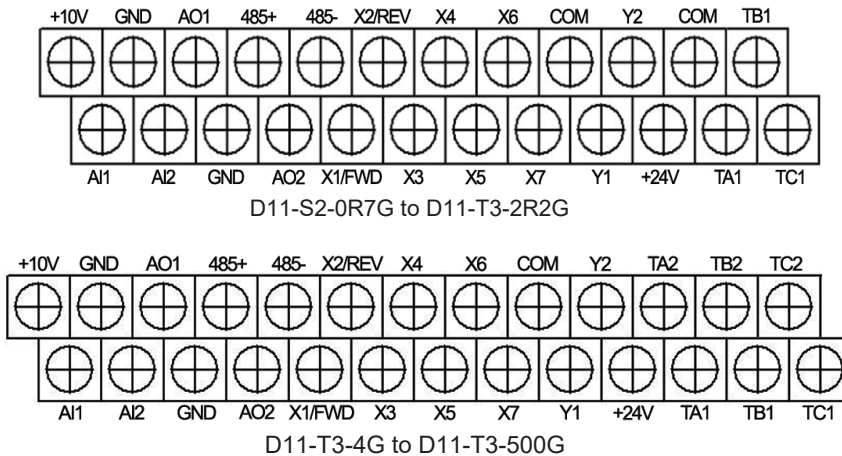
For T3 models with power of 22 kW and below, and models with built-in braking unit, braking resistors can be connected as required; for models without built-in braking unit, external braking units can be installed as needed.

## 4.1 Diagram Terminal Diagram and Function Description

### (1) Function Description of Main Circuit Terminal

Terminal	Name	Function
R、S、T	AC input	3PH 380/220V AC input terminals, connected to the grid
L1、L2	AC input	1PH 220V AC input terminals, connected to the grid
(+)、(-)	DC bus terminals	Connected to external braking unit with AC drive units of 45kW (G) and above.
(+)、PB	Braking resistor connection	Connected to external braking resistor for AC drive units of 37kW (G) and below.
U、V、W	Inverter output	3PH AC output terminals, connected to motor.
	Safety grounding	Safety grounding terminal. Each inverter must be grounded properly. Note: It is at the bottom of the chassis.

### (2) Control Terminal description

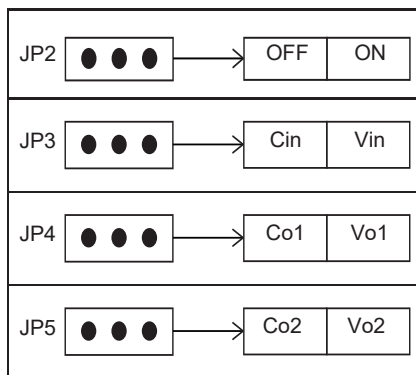


### (3) Control Loop Terminal Function Table

Functional Specification of Control Loop Terminal			
Category	Terminal Number	Functions	Specification
Multi-functional Digital Input Terminal	X1	Effective when short circuit between (X1、X2、X3、X4、X5、X6、X7、X8) ~COM, and the functions are set by parameters F7.00~F7.07 (common port: COM)	INPUT, 0~24V level signal, low level effective, 5mA.
	X2		
	X3		
	X4		
	X5		
	X6		
Digital Output Terminal	Y1	Multi-functional programmable collector open circuit output channel 2, can be programmed as DO terminal of various functions (common port: COM)	OUTPUT, maximum load current ≤ 50mA.
	Y2		
Analog Input / Output Terminal	AI1	AI1 receives voltage/current input. Jumper CN4 (for jumper terminal AI1) can select voltage or current input mode, and voltage input is the default one. For current input, just short the middle and another pin with the jumper cap. AI 2 only receives voltage input. Measuring range setting is function code F6.00~F6.11 (reference ground: GND)	INPUT, input voltage range: 0~10V (input impedance: 100KΩ), input current range 0~20mA (input impedance: 500Ω).
	AI2		

Category	Terminal Number	Functions	Specification
Analog Input / Output Terminal	AO1	AO1 is able to output analog voltage/current (total 13 kinds of signals). Jumper JP4 (for jumper terminal AO1) can select voltage or current output mode, and voltage output is the default one. For current output, just short the middle and another pin with the jumper cap. See F6.21, F6.22. (Reference ground: GND)	OUTPUT, 0~10V DC voltage. Output voltage of AO1, AO2 came from PMW waveform of CPU. Output voltage is in direct proportion to the width of PWM waveform.
	AO2		
Relay Output Terminal	TA1/TA2	Multi-functional programmable collector open circuit output channel 2	TA-TB: normal close; TA-TC: normal open. Contact compacity: 250VAC/2A (COSΦ=1); 250VAC/1A (COSΦ=0.4), 30VDC/1A.
	TB1/TB2		
	TC1/TC2		
Power		24V is the common power for circuits of all digital signal input terminals.	Maximum output current 200mA

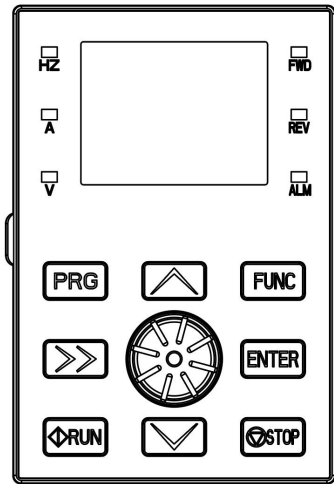
#### (4) Dial Switch



JP2	OFF	Non-connecting for matched resistance of 485 communication
	ON	Connecting for matched resistance of 485 communication
JP3	Cin	AI1 input current signal
	Vin	AI1 input voltage signal
JP4	VO1	AO1 output voltage signal
	CO1	AO1 output current signal
JP5	Vo2	AO2 output voltage signal
	Co2t	AO2 output current signal

## 5. Operation Panel and Operation Method

### (1) Operation Panel Keys



Key	Name	Function Description
	Programming/ Escape key	Enter or escape from programming
	Increase key	Data or function code increase (speed up the increasing rate by keeping pressing the key)
	Decrease key	Data or function code decrease (speed up the decreasing rate by keeping pressing the key)
	Shift /Monitor key	Choose the bit of the data which is to be set and modified when the VFD is in edit status; Switch monitor parameter to be shown when the VFD is in other modes.
	Enter key	Enter into sub-menu items or confirm data.
	Run key	Enter into run mode under keypad model.
	Function key	According to the setting of function parameter FE.01, jog or reverse run, and frequency clearance is available when pressing this key under keypad mode.
	Stop /Reset key	In common run status the VFD will be stopped according to set mode after press this key if run command channel is set as keyboard stop effective mode. The VFD will be reset and resume normal stop status after pressing this key when the VFD is in malfunction status.
	Panel potentiometer	Set the frequency; when F0.07=0, digital encoder can set the frequency as linkage control with increase/decrease key.

### (2) LED and Indicator Light Description

Item		Function Description	
Display Function	Digital Display	Display current run status parameter and set parameter.	
	LED Indicator	Hz、A、V	Displayed physical quantity unit (current A, voltage V, frequency Hz)
		ALM	Alarm indicator light, indicate that the VFD is in over current or over voltage suppressing status or failure alarm status currently.
		FWD	This indicator light turns green when the VFD is in forward running status.
		REV	This indicator light turns red when the VFD is in reverse running status.

# Chapter 6 Function Manual

F00group-Basic Parameters				
Function code	Name	Description	Setting range	Factory default
F00.00	LCD language (Only valid for LCD panel)	0: Chinese 1: English	0~1	0
F00.01	Application macro	0: General purpose mode 1: Single pump constant pressure water supply mode 2: 1 variable frequency pump + 2 power frequency pumps constant pressure water supply mode 3: 3 sets of water pumps cycle frequency conversion power frequency start constant pressure water supply mode 4: Photovoltaic water pump water supply mode 5: CNC machine control mode 6: Fire inspection mode 7: EPS power mode 8~100: Reserved Note: Initialize the parameters first(F14.12=2), and then set the macro function.	0~100	0
F00.02	Control Mode	0: Normal V/F control (manual torque boost) 1: Advanced V/F control (automatic torque boost) 2: Open loop current vector control (SVC) 3: Reserved 4: Separatable V/F Control Note: This parameter cannot be initialized, please modify it manually	0~4	0
F00.03	Running order channel selection	0: Keyboard command channel 1: Terminal command channel 2: Communication command channel	0~2	0
F00.04	Main frequency A source selection	0: Digital setting 1 (press keyboard key ▲/▼ to regulate) 1: Digital setting 2 (UP/DOWN terminals regulate) 2: Digital setting 3 (Communication setting) 3: AI1 analog setting (0~10V/0~20mA) 4: AI2 analog setting (0~10V) 5: Pulse setting (0~50KHZ)	0~11	9
F00.05	Auxiliary frequency B source selection	6: Simple PLC 7: Multi-speed setting 8: PID control 9: Keyboard potentiometer 10: MPPT given 11: Keyboard potentiometer	0~11	3

Function code	Name	Description	Setting range	Factory default
F00.07	Digital setting1	LED one place: power down store 0: store 1: not store LED ten place: stop keep 0: keep 1: stop not keep	000~111	000
F00.08	Digital setting2	LED hundred place: ▲/▼key、UF/DOWN negative frequency regulation 0: Invalid 1: Valid LED thousand place: Reserved		000
F00.09	Digital frequency 1 setting	Set the initial value of frequency digital setting 1	0.00Hz~ 【F0.13】	50.00
F00.10	Digital frequency 2 setting	Set the initial value of frequency digital setting 2	0.00Hz~ 【F0.13】	50.00
F00.11	Auxiliary frequency source coefficient K setting	K is the auxiliary frequency source weight coefficient	0.01~10.00	1.00
F00.12	Max output frequency	The maximum output frequency is the highest frequency that the inverter allows to output, and it is the basis for setting the acceleration and deceleration time.	Low frequency band: 0~ 300.00 High frequency band: 0~ 3000.0	50.00
F00.13	Upper limit frequency	The operating frequency cannot exceed this frequency	【F00.14】 ~ 【F00.12】	50.00
F00.14	Lower limit frequency	The operating frequency cannot be lower than this frequency	0.00Hz~ 【F00.13】	0.00
F00.15	Frequency output mode	LED one place: High and lower frequency mode selection 0: Lower frequency mode(0.00~300.00Hz) 1: High frequency mode(0.0~3000.0Hz) LED ten place: Acceleration and deceleration reference sele 0: Maximum output frequency 1: Target output frequency LED hundred place: Reserved LED thousand place: Reserved Note: High frequency mode is only effective for VF control	00~11	00
F00.16	Acceleration Time 1	The time required for the inverter to accelerate from zero frequency to the maximum output frequency	0.1 ~ 3600.0s	Type setting
F00.17	Deceleration Time 1	The time required for the inverter to decelerate from the maximum output frequency to zero frequency	0.1 ~ 3600.0s	Type setting



Function code	Name	Description	Setting range	Factory default
F00.18	Running direction selection	0: Forward direction 1: Reverse direction 2: Forbidden reverse operation Note: This function code setting is valid for the running direction control of all running command	0~2	0
F00.19	Carrier frequency	For occasions that require silent operation, the carrier frequency can be appropriately increased to meet the requirements, but increasing the carrier frequency will increase the heat generated by the inverter.	1.0~16.0KHz	Type setting
F00.20	User password	Note1: 0~9: No password protection Note2: Password is set successfully, waiting for 3 minutes to take effect Note3: Write protection is not valid for this parameter and cannot be initialized	0~65535	0
<b>F01group: Run/Stop Control Parameters</b>				
F01.00	Startup mode	0: Start up with starting frequency 1: DC brake+Start up with starting frequency 2: Start up with speed tracking	0~2	0
F01.01	Start frequency		0.00~50.01Hz	1.00
F01.02	Holding time of start frequency		0.0~100.0s	0.0
F01.03	Start DC braking level		0.0~150.1% *Rtd current	0.0%
F01.04	Start DC braking time		0.0~100.1s	0.0
F01.05	Acceleration/Deceleration mode	0: Straight Acceleration/Deceleration 1: Curve Acceleration/Deceleration	0~1	0
F01.06	S-Curve start time	Set the time ratio of the initial segment of the S-curve	10.0~50.0%	20.0%
F01.07	S-Curve end time	Set the time ratio at the end of the S-curve	10.0~50.0%	20.0%
F01.08	Stop mode	0: Decelerate stop 1: Free stop	0~1	0

Function code	Name	Description	Setting range	Factory default
F01.09	Initial frequency for shutdown DC braking		0.00~ 【F00.14】 Upper limit frequency	0.00
F01.10	Time frequency for shutdown DC braking		0.0~100.1s	0.0
F01.11	Shutdown DC Braking level		0.0~150.0% *Rtd current	0.0%
F01.12	Shutdown DC Braking DC Brake time		0.0~100.0s	0.0
F01.13	Acceleration Time 2	Set acceleration time 2	0.1 ~ 3600.0S	Type setting
F01.14	Deceleration Time 2	Set deceleration time 2		
F01.15	Acceleration Time 3	Set acceleration time 3		
F01.16	Deceleration Time 3	Set deceleration time 3		
F01.17	Acceleration Time 4	Set acceleration time 3		
F01.18	Deceleration Time 4	Set deceleration time 3		
F01.19	Acceleration/Deceleration Time unit	0: second 1: minute 2: 0.1second	0~2	0
F01.20	Jog forward running frequency setting	Set jog forward and reverse running frequency	0.00~ 【F00.13】	5.00
F01.21	Jog reverse operation frequency setting		0.00~ 【F00.13】	5.00
F01.22	Jog Acceleration time	Set jog acceleration time setting	0.1 ~ 3600.0s	Type setting
F01.23	Jog Deceleration time	Set jog deceleration time setting		Type setting
F01.24	Jog interval time setting	Set jog interval time	0.0~100.0s	0.1
F01.25	Jump frequency1		0.00~ 【F00.13】	0.00
F01.26	Jump frequency1 range			
F01.27	Jump frequency2			
F01.28	Jump frequency2 range			
F01.29	Jump frequency3			
F01.30	Jump frequency3 range			

Function code	Name	Description	Setting range	Factory default
F01.31	Action when the set frequency is lower than the lower limit frequency	0: Low frequency operation 1: Delay then zero frequency(nodelay at startup) 2: Delay then zero stop(nodelay at startup)	0~2	0
F01.32	Stop delay time when the frequency is lower than the lower limit frequency (simple sleep)	Set the stop delay time when the frequency is lower than the lower limit frequency (simple sleep).	0.0~3600.0s	10.0
F01.33	Zero frequency braking current	0.0~150.0%*Rtd current	0.0~150.0% *Rtd current	0.0
F01.34	Forward reverse dead time	The waiting time for the inverter to transition from forward operation to reverse operation, or from reverse operation to forward operation.	0.0~100.0s	0.0
F01.35	Forward and reverse switching mode	0: Zero-cross frequency switching 1: Switch over starting frequency	0~1	0
F01.36	Emergency stop Backup deceleration time	Only valid for No. 10 function in digital input terminals (F07.00 ~ F07.06).	0.1~3600.0s	1.0
F01.37	DC braking current maintenance time at stop	Set the holding time of DC braking current at stop.	0.0~100.0s	0.0
<b>F02group-Motor Parameters</b>				
F02.00	Motor mode	0: AC asynchronous motor. 1: (Reserved) Note: not initialization please manual modification	0~1	0
F02.01	Motor rated power	Set according to the parameters on the motor nameplate. Please configure the corresponding motor according to the power of the inverter. If the power difference is too large, the control performance of the inverter will drop significantly.	0.4~999.9KW	Type setting
F02.02	Motor rated frequency		0.01Hz~ 【F00.13】	50.00
F02.03	Motor ratedspeed		0~60000RFM	Type setting
F02.04	Motor rated voltage		0~999V	
F02.05	Motor rated current		0.1~6553.5A	
F02.06	Stator resistance		If the motor is tuned, the set values of F02.06~F02.10 will be updated after the tuning is completed.	0.001~ 20.000Ω
F02.07	Rotor resistance	0.001~ 20.000Ω		
F02.08	Stator inductance	0.1~ 6553.5mH		
F02.09	Rotor inductance	0.1~ 6553.5mH		
F02.10	Motor no-load current	0.01~655.35A		
F02.11-F02.15(Reserved)				
F02.16	Auto tuning option	0: no action 1: static tuning 2: No-load full tuning	0~2	0
F02.17	Asynchronous motor pre-excitation holding time	This parameter is invalid for VF control	0.00~10.00s	Type setting
<b>F03group-Reserved</b>				

Function code	Name	Description	Setting range	Factory default
<b>F04group- SVR and Torque Parameters</b>				
F04.00	Speed (ASR1) proportional gain	Function codes F01.00~F01.07 are valid in the vector control mode without PG. In vector control mode, the speed response characteristics of vector control can be changed by setting the proportional gain P and integral time I of the speed regulator.	0.000~6.000	3.000
F04.01	Speed (ASR1) integration time		0.000~32.000S	0.500
F04.02	ASR1 filter time constant		0.000~0.100S	0.000
F04.03	low frequency switch		0.00Hz~ <b>【F04.07】</b>	5.00
F04.04	Speed (ASR2) proportional gain		0.000~6.000	2.000
F04.05	Speed (ASR2) integration time		0.000~32.000S	0.500
F04.06	ASR2 filter time constant		0.000~0.100s	1.000
F04.07	High frequency switch		<b>【F04.03】</b> ~ <b>【F00.13】</b>	10.00
F04.08	Vector control positive slip compensation coefficient (electric state)	In the vector control mode, this function code parameter is used to adjust the steady speed accuracy of the motor. When the motor is heavily loaded and the speed is low, increase this parameter, otherwise decrease this parameter. Among them, the positive slip coefficient compensates the speed when the motor slip rate is positive, and the negative slip coefficient compensates the speed when the motor slip rate is negative. The setting value is the percentage of the rated slip frequency of the motor.	50.0%~200.0%	100.0%
F04.09	Vector control negative slip compensation coefficient (break state)		50.0%~200.0%	100.0%
F04.10	Speed and torque control	0: Speed      1: Torque 2: Condition valid (terminal switching)	0~2	0
F04.11	Speed and torque switch delay	Set the speed and torque switching delay	0.01~1.00S	0.05
F04.12	Torque command	0: Panel digital given 1: AI1      2: AI2 3: Communicate given	0~3	0
F04.13	keyboard digital torque set	The setting value is the percentage of the rated current of the motor	-200.0%~200.0%	0.0%
F04.14	Torque control mode Speed limited channel selection 1(forward)	0: Keyboard digital given1 1: AI1 2: AI2	0~2	0
F04.15	Torque control mode Speed limited channel selection 2(reverse)	0: Keyboard digital given2 1: AI1 2: AI2	0~2	0
F04.16	Keyboard digital limit speed 1	The limited value of keyboard digital limited speed 1 is relative to the maximum output frequency. This function code corresponds to the size of the forward speed limit value when F04.14=0.	0.0~100.0%	100.0%

Function code	Name	Description	Setting range	Factory default
F04.17	Keyboard digital limit speed 2	The limited value of keyboard digital limited speed 2 is relative to the maximum output frequency. This function code corresponds to the reverse speed limit value when F04.15=0.	0.0~100.0%	100.0%
F04.18	Torque rise time	The torque rise/fall time defines the time when the torque rises from 0 to the maximum value or falls from the maximum value to 0.	0.0~10.0S	0.1
F04.19	Torque fall time		0.0~10.0S	0.1
F04.20	Vector control mode Electric torque limit	Set the motor torque limit in vector mode, the setting value is the percentage of the rated current of the motor.	G type: 0.0~200.0% P type: 0.0~200.0%	Type setting
F04.21	Vector control mode Brake torque limit	Set the braking torque limit of vector mode, the setting value is the percentage of the rated current of the motor.	G type: 0.0~200.0% P type: 0.0~200.0%	Type setting
F04.22	Torque detection action selection	0: Detection invalid 1: Speed over torque run 2: Run over torque run 3: Speed over torque cut off 4: Run over torque cut off 5: Speed under torque run 6: Run under torque run 7: Speed under torque cut off 8: Run under torque cut off	0~8	0
F04.23	Torque detection action level	When the actual torque is continuously greater than F04.23 (torque detection level) within F04.24 (torque detection time), the inverter will take corresponding actions according to the setting of F04.22. When the torque detection level setting value is 100%, it corresponds to the rated torque of the motor.	G type: 0.0~200.0% P type: 0.0~200.0%	Type setting
F04.24	Torque detection action time		0.0~10.0S	0.0
F04.25	Static friction coefficient cut-off frequency	Since the starting torque of the motor is not enough, increasing the setting value of F04.26 can increase the starting torque amount. When the speed exceeds the setting value of F04.25, the increased torque amount is slow within the setting time of F04.27. Slowly decrease to the given torque.	0.00~ 300.00Hz	10.00
F04.26	Static friction coefficient setting		0.0~200.0	0.0
F04.27	Static friction coefficient maintenance time		0.00~600.00s	0.00
<b>F05Group-V/F Control Parameter</b>				
F05.00	V/F curve set	0: Linear curve 1: Drop torque curve1(1.3Sub-power) 2: Drop torque curve2(1.5Sub-power) 3: Drop torque curve3(1.7Sub-power) 4: Square curve 5: User set V/F curve (F05.03~F05.08)	0~5	0
F05.01	Torque boost setting	Manual torque boost, the setting is the percentage relative to the rated voltage of the motor.	0.0~30.0%	Type setting
F05.02	Torque Boost Cutoff Frequency	Set the torque boost cut-off frequency	0.00~ motor rated frequency	15.00

Function code	Name	Description	Setting range	Factory default	
F05.03	V/F frequency1		0.00~ Frequency valueF2	12.50	
F05.04	V/F votlage1		0.0~V2	25.0%	
F05.05	V/F frequency2		Frequency valueF1~ Frequency valueF3	25.00	
F05.06	V/F votlage2		V1~V3	50.0%	
F05.07	V/F frequency3		Frequency valueF2~ motor rated power	37.50	
F05.08	V/F votlage3		V2~100.0% *motor rated voltage	75.0%	
F05.09	V/F control slip frequency compensation		After the asynchronous motor is loaded, the speed will drop, and the use of slip compensation can make the motor speed close to its synchronous speed, so that the motor speed control accuracy is higher.	0.0~200.0% *Rtd speed	0.0%
F05.10	V/F control slip compensation filter coefficient		This parameter is used to adjust the response speed of slip frequency compensation. The larger the value is set, the slower the response speed and the more stable the motor speed.	0.0~10	3
F05.11	V/F control torque compensation filter coefficient	During free torque boost, this parameter is used to adjust the response speed of torque compensation. The larger the value is set, the slower the response speed and the more stable the motor speed.	0~10	Type setting	
F05.12	Separate V/F control selection	0: VF semi-separated mode, voltage open-loop output 1: VF semi-separated mode, voltage closed-loop output 2: VF complete separation mode, voltage open-loop output 3: VF complete separation mode, voltage closed-loop output Note 1: When VF separation control is selected, please turn off the dead zone compensation function of the inverter Note 2: The concept of semi-separation is that the frequency and voltage of the inverter still maintain the relationship of variable frequency and voltage during the starting process. When the frequency reaches the set frequency, the voltage and frequency are separated.	0~3	0	
F05.13	Voltage given channel	0: Digital given    1: AI1    2: AI2	0~2	0	
F05.14	Closed-loop Voltage feedback channel(Reserved)	0: AI1 1: AI2	0~1	0	

Function code	Name	Description	Setting range	Factory default
F05.15	Output voltage ratio	In open-loop output mode, the maximum output voltage is 100.0% of the rated voltage of the motor.	0.0~200.0% *Motor Rated voltage	100.0%
F05.16	Reserved			
F05.17	VF curve of semi-separated mode Maximum voltage	This voltage represents the output voltage of the inverter	0.0~100.0% *Motro Rated voltage	80.0%
F05.18	Reserved			
F05.19	Voltage rise time	F05.19~F05.20 are only valid for the fully separated voltage open-loop output mode.	0.1~3600.0S	10.0
F05.20	Voltage drop time			10.0
F05.21~F05.24				
F05.25	Bus voltage Undervoltage detection value	If bus voltage less than the parameter value,the system will report "E-34". If the parameter value set 0,the function is invalid.	0~1000V	0
F05.26	Bus undervoltage fault reset value	if bus voltage is the equals of the parameter value,the system will reset the fault "E-34"and run automatically.	0~1000V	0
<b>F06group-Analog Terminal</b>				
F06.00	AI1 input correspond setting	0: Speed command (output frequency, -100.0%~100.0%) 1: Torque command (output torque, -200.0%~200.0%) 2: Voltage command (output voltage, 0.0%~200.0%*Rated voltage)	0~2	0
F06.01	AI1 lower limit	Set AI1 lower limit	0.00~10.00	0.00
F06.02	AI1 lower limit set	Set AI1 lower limit corresponding setting	-200.0%~200.0%	0.0%
F06.03	AI1 upper limit	Set AI1 upper limit	0.00~10.00	10.00
F06.04	AI1 upper limit set	Set AI1 upper limit corresponding setting	-200.0%~200.0%	100.0%
F06.05	AI1 Filter time	Set AI1 input filter time	0.00~10.00s	0.05
F06.06	AI2 input correspond setting	0: Speed command (output frequency, -100.0%~100.0%) 1: Torque command (output torque, -200.0%~200.0%) 2: Voltage command (output voltage, 0.0%~200.0%*Rtd volt)	0~2	0
F06.07	AI2 lower limit	Set AI2 lower limit	0.00~10.00V	0.00
F06.08	AI2 lower limit set	Set AI2 lower limit corresponding setting	-200.0%~200.0%	0.0%
F06.09	AI2 upper limit	Set AI2 upper limit	0.00~10.00V	10.00

Function code	Name	Description	Setting range	Factory default
F06.10	AI2 upper limit set	Set AI2 upper limit corresponding setting	-200.0%~ 200.0%	100.0%
F06.11	AI2 Filter time	Set AI2 input filter time	0.00~10.00s	0.05
F06.12	Analog input anti-shake deviation limit	When the analog input signal fluctuates frequently near the given value, the frequency fluctuation caused by this fluctuation can be suppressed by setting F06.12.	0.00~10.00V	0.00
F06.13	Zero frequency threshold	When F00.15=1 (high frequency mode), the upper limit of this function code is 500.0Hz.	Zero frequency threshold~ 50.00Hz	0.00
F06.14	Zero frequency difference	Set zero frequency difference	0.00~Zero frequency threshold	0.00
F06.15	External pulse input command selection	0: Speed command (output frequency, -100.0%~100.0%) 1: Torque command (output torque, -200.0%~200.0%)	0~1	0
F06.16	External pulse input lower limit	Set the lower limit frequency of external pulse X7 input	0.00~ 50.00kHz	0.00
F06.17	External pulse lower limit setting	Set the corresponding setting of the lower limit of external pulse X7, which is the percentage relative to the maximum output frequency.	-200.0%~ 200.0%	0.0%
F06.18	External pulse input upper limit	Set the upper limit frequency of external pulse X7 input.	0.00~ 50.00kHz	50.00
F06.19	External pulse upper limit setting	Set the corresponding setting of the upper limit of external pulse X7, which is the percentage relative to the maximum output frequency.	-200.0%~ 200.0%	100.0%
F06.20	External pulse input filter time	Set external pulse input filter time	0.00~10.00s	0.05
F06.21	AO1 Function	0: Output frequency1(Before slip compensation) 1: Output frequency2(After slip compensation) 2: Set frequency 3: Motor speed 4: Output current 5: Output Voltage 6: Bus Voltage 7: PID given 8: PID feedback 9: AI1 10: AI2 11: Pulse input frequency 12: Torque current 13: Flux current 14: Communication setting	0~14	0
F06.22	AO2 Function			4
F06.23	Reserved			
F06.24	AO1 lower limit set	Set the lower limit percentage of AO1 output	-200.0%~ 200.0%	0.0%
F06.25	AO1 lower limit	Set AO1 output lower limit	0.00~10.00	0.00

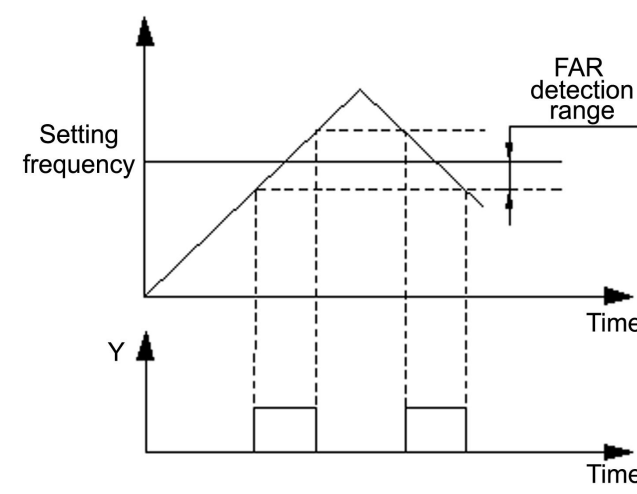
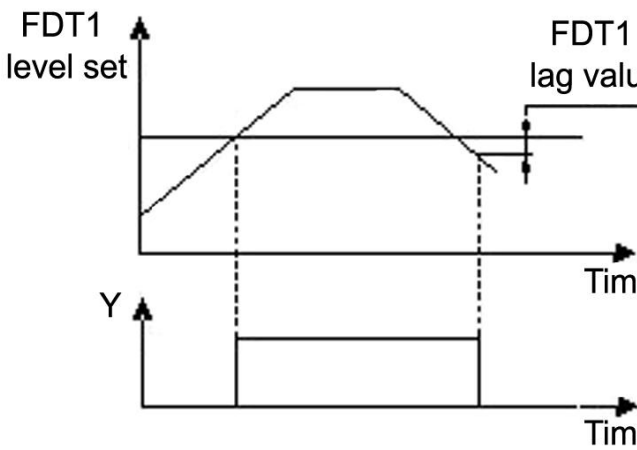


Function code	Name	Description	Setting range	Factory default
F06.26	AO1 upper limit set	Set the upper limit percentage of AO1 output	-200.0%~ 200.0%	100.0%
F06.27	AO1 upper limit	Set AO1 output upper limit	0.00~10.00	10.00
F06.28	AO2 lower limit set	Set the lower limit percentage of AO2 output	-200.0%~ 200.0%	0.0%
F06.29	AO2 lower limit	Set AO2 output lower limit	0.00~10.00	0.00
F06.30	AO2 upper limit set	Set the upper limit percentage of AO2 output	-200.0%~ 200.0%	100.0%
F06.31~F06.35(Reserved)				
F06.36	AI-related parameter selection	LED one place: AI1 Multi point curve selection 0: Invalid 1: Valid LED ten place: AI2 Multi point curve selection 0: Invalid 1: Valid LED hundred place: Reserved LED thousand place: Reserved	000~311	000
F06.37	AI1 min input		0.00~ 【F06.39】	0.00
F06.38	AI1 min set		-200.0%~ 200.0%	0.0%
F06.39	AI1 inflection point1		【F06.37】~ 【F06.41】	3.00
F06.40	AI1 inflection point1 set		-200.0%~ 200.0%	30.0%
F06.41	AI1 inflection point2		【F06.39】~ 【F06.43】	6.00
F06.42	AI1 inflection point2 set		-200.0%~ 200.0%	60.0%
F06.43	AI1 max input		【F06.41】~ 10.00	10.00
F06.44	AI1 max set		-200.0%~ 200.0%	100.0%
F06.45	AI2 min input		0.00~ 【F06.47】	0.00
F06.46	AI2 min set		-200.0%~ 200.0%	0.0%
F06.47	AI2 inflection point1		【F06.45】~ 【F06.49】	3.00
F06.48	AI2 inflection point1 set		-200.0%~ 200.0%	30.0%
F06.49	AI2 inflection point2		【F06.47】~ 【F06.51】	6.00
F06.50	AI2 inflection point2 set		-200.0%~ 200.0%	60.0%
F06.51	AI2 max input		【F06.49】~ 10.00	10.00
F06.52	AI2 max set		-200.0%~ 200.0%	100.0%

Function code	Name	Description	Setting range	Factory default
F06.53	AI1 up limit voltage protect	When the value of the analog input AI1 is greater than F06.53, or the AI1 input is less than F06.54, the Y terminal of the inverter or the relay R outputs the ON signal of "AI1 input over limit", which is used to indicate whether the input voltage of AI1 is within the set range .	0.00V/0.00mA ~ 10.00V/20.00 mA	6.80
F06.54	AI1 low limit voltage protect		0.00V/0.00mA ~ 10.00V/20.00 mA	3.10
<b>F07group-Digital Terminal</b>				
F07.00	Input X1 Function (When F00.01 is 2 or 3, the default function is No. 58)	0: Control end idle 1: Forward rotation contrl (FWD) 2: Reverse rotation contrl (REV) 3: Three-line control 4: Forward jog control 5: Reverse jog control 6: Shoudown freely control 7: External rest signal input(RST) 8: External failure open input 9: External failure close input 10: Emergency stop function 11: Externa shutdown control 12: Frequency increase control(UP) 13: Frequency decelerase control(DOWN) 14: UP/DOWN terminal 15: Multi-speed selection1 16: Multi-speed selection2 17: Multi-speed selection3 18: Multi-speed selection4 19: Acceleration or deceleration time selection TT1 20: Acceleration or deceleration time selection TT2 21: Run command1 22: Run command2 23: Inverter Forbidden acceleration/deceleration command 24: Inverter run forbidden command 25: Switch panel command 26: Switch terminal command 27: Switch commuciation command 28: Auxiliary freq reset 29: Frequency source A switch to K*B 30: Frequency source A switch to A+K*B 31: Frequency source A switch to A-K*B 32: Reserverd	0~65	1
F07.01	Input X2 Function (When F00.01 is 2 or 3, the default function is No. 59)		0~65	2
F07.02	Input X3 Function (When F00.01 is 2 or 3, the default function is No. 60)		0~65	4
F07.03	Input X4 Function (When F00.01 is 2 or 3, the default function is No. 61)		0~65	7

Function code	Name	Description	Setting range	Factory default
F07.04	Input X5 Function (When F00.01 is 2 or 3, the default function is No. 62)	33: PID control input 34: PID control pause 35: Swing frequency control input 36: Swing frequency control pause 37: Rest Wobble frequency mode 38: PLC control input 39: PLC pause 40: PLC reset 41: Count clearance signal 42: Count trigger signal 43: Timing trigger signal 44: Timing clearance signal 45: Pulse frequency signal 46: Length clearance 47: Length count signal 48: Speed torque switch 49: Torque ctrl forbid 50~57: Reserved 58: Start/Stop 59: Operating permits 60: Inter lock1 61: Inter lock2 62: Inter lock3 63: PFC start/stop 64: A frequency switch to B 65: PID1 switch PID2	0~65	8
F07.05	Input X6 Function (When F00.01 is 2 or 3, the default function is No. 63)		0~65	0
F07.06	Input X7 Function (High speed pulse input)		0~65	45
F07.07	Reserved			
F07.08	Terminal input filter times	1: Represents 2ms scanning time unit	1~10	5
F07.09	Terminal function detection selection at power-on	0: Terminal run command is invalid when power on 1: Terminal run command is valid when power on	0~1	0
F07.10	Input terminal effective logic setting (X1~X7)	0 means positive logic, that is, the connection between the Xi terminal and the common terminal is valid, and the disconnection is invalid 1 means negative logic, that is, the connection between the Xi terminal and the common terminal is invalid, and the disconnection is valid	0~7FH	00
F07.11	FWD/REV terminal control mode	0: Two-line control mode1 1: Two-line control mode2 2: Three-line control mode1 3: Three-line control mode2	0~3	0
F07.12	UF/DOWN terminal frequency change rate	When F00.15=1 (high frequency mode), the upper limit of this function code is 500.0Hz/s.	0.01~50.00Hz/s	1.00
F07.13	Reserved			
F07.14	Y1 output delay time	This function code defines the delay from the state change of the digital output terminals Y1, Y2 and relay R1, R2 to the change of the output.	0.0~100.0s	0.0
F07.15	Y2 output delay time		0.0~100.0s	0.0
F07.16	R1 output delay time		0.0~100.0s	0.0
F07.17	R2 output delay time		0.0~100.0s	0.0

Function code	Name	Description	Setting range	Factory default
F07.18	Collector open circuit output terminal Y1 setting	0: NO output 1: Inverter FWD 2: Inverter REV 3: Fault output 4 Frequency/speed detection signal (FDT1) 5: Frequency/speed detection signal (FDT2) 6: Frequency/speed arrival signal(FAR) 7: Inverter running at zero speed indication 8: Output frequency reaches the upper limit 9: Output frequency reaches the lower limit 10: Frequency reaches the lower limit during running 11: Inverter overload alarm signal	0~62	0
F07.19	Collector open circuit output terminal Y2 setting	12: Counter detection signal output 13: Counter reset signal output 14: Inverter ready to run 1 15: One cycle of multi-speed operation is completed 16: Multi-speed phase running is completed 17: Swing frequency upper and lower limit limit 18: Current limiting action 19: Over voltage stall action 20: Under voltage lockout stop 21: Dormant 22: Inverter alarm signal (PID disconnection, RS485 communication failure, panel communication failure, EEPROM read and write failure, encoder disconnection alarm, etc.)	0~62	0
F07.20	Relay R1 output setting	23: AI1 > AI2 24: length reach output 25: Timing time arrives 26: Energy breaking action 27: DC breaking action 28: Flux breaking action 29: Torque limit 30: Over-torque indication 31: Auxiliary motor1 32: Auxiliary motor2 33: Accumulated running time reached 34~49: Multi-speed or simple PLC operation section number indication	0~62	3
F07.21	Relay R2 output setting	50: Running indication signal 51: Temperature arrival indication 52: Inverter stop or zero speed running indication 53~54: Reserved 55: Communication Setting 56: Inverter ready to run 2 57: AI1 input over limit 58: Output current over limit 59: Interlock1 output 60: Interlock2 output 61: Interlock3 output 62: Frequency and current detection level reach the output at the same time	0~62	0

Function code	Name	Description	Setting range	Factory default
F07.22	Output terminal effective logic setting (Y1~Y2)	0 means positive logic, that is, the connection between the Xi terminal and the common terminal is valid, and the disconnection is invalid 1 means negative logic, that is, the connection between the Xi terminal and the common terminal is invalid, and the disconnection is valid	0~3H	0
F07.23	Frequency arrival(FAR) detection width		0.0~100.0% * 【F00.13】	10.0%
F07.24	Frequency/speed detection1(FDT1) mode	0: Speed set value 1: speed detection value	0~1	0
F07.25	Frequency/speed detection1(FDT1) level set		0.00Hz~ 【F00.13】	50.00
F07.26	Frequency/speed detection1(FDT1) lag value		0.0~100.0% * 【F07.25】	2.0%
F07.27	Frequency/speed detection1(FDT2) mode	0: speed set value 1: speed test value	1	0
F07.28	Frequency/speed detection1(FDT2) level set	Refer to the schematic diagram of F07.25~F07.26.	0.00Hz~ 【F00.14】	25.00
F07.29	Frequency/speed detection1(FDT2) lag value		0.0~100.0% * 【F07.29】	4.0%
F07.30	Counter reach select	0: stop counting, stop output 1: stop counting, continue to output 2: Cycle counting, stop output 3: Cycle counting, continue to output	0~3	3
F07.31	Counter start condition	0: Always start 1: Start when running, stop when stopping	0~1	1

Function code	Name	Description	Setting range	Factory default
F07.32	Counter reset value setting	This function code defines the counting reset value and detection value of the counter. When the count value of the counter reaches the value set by function code F11.21, the corresponding multi-function output terminal (counter reset signal output) outputs a valid signal and clears the counter.	【F07.33】 ~ 65535	0
F07.33	Counter detection value setting		0~ 【F07.32】	0
F07.34	Timing reach select	0: Stop Timing, stop output 1: Stop Timing, continue to output 2: Cycle Timing, stop output 3: Cycle Timing, continue to output	0~3	3
F07.35	Timing start condition	0: Always start 1: Start when running, stop when stopping	0~1	1
F07.36	Timing time setting	Set timing time	0~65535S	0
F07.37	Y1 cut off delay time	This function code defines the delay from the state change of the digital output terminals Y1, Y2 and relay R1, R2 to the change of the output.	0.0~100.0s	0.0
F07.38	Y2 cut off delay time		0.0~100.0s	0.0
F07.39	R1 cut off delay time		0.0~100.0s	0.0
F07.40	R2 cut off delay time		0.0~100.0s	0.0
<b>F08group-PID Control Parameter</b>				
F08.00	PID mode	0: Automatic 1: Manual input through defined multi-function terminals	0~1	0
F08.01	PID setting channel selection	0: Digital given 1: AI1      2: AI2      3: Pluse given 4: RS485 communication 5: Pressure given 6: Keyboard potentiometer given	0~6	0
F08.02	Digital quantity setting	When using analog feedback, this function code realizes setting the given of closed-loop control by the operation panel, and this function is valid only when the closed-loop given channel selects digital given (F08.01 is 0).	0.0~100.0%	50.0%
F08.03	PID feedback channel selection	0: AI1                                      1: AI2 2: AI1+AI2                                3: AI1-AI2 4: MAX {AI1, AI2}                        5: MIN {AI1, AI2} 6: Pressure given 7: RS485 communication	0~7	0
F08.04	PID senior set	LED one place: PID polarity selection 0: Positive 1: Negative LED ten place: Reserved LED hundred: Integral regulation characteristic 0: when the frequency reaches the upper and lower limit,stop the integral adjustments 1: when the frequency reaches the upper and lower limit,continue the integral adjustments LED thousand: Reserved	000~111	000

Function code	Name	Description	Setting range	Factory default
F08.05	Proportional gain(KP1)	The speed of PID adjustment is set by the two parameters of proportional gain and integral time. If the adjustment speed is fast, the proportional gain should be increased and the integral time should be reduced. If the adjustment speed is slow, the proportional gain should be reduced and the integral time should be increased. Generally, the differential time is not set; 0.0: no differentiation.	0.01~100.00	2.50
F08.06	Integration time(Ti1)		0.01~10.00s	0.10
F08.07	Differential time(Td1)		0.01~10.00s	0.00
F08.08	Sample cycle	The sampling period is the sampling period of the feedback quantity. The regulator calculates once in each sampling period. The larger the sampling period, the slower the response, but the better the suppression effect on the interference signal. Generally, it does not need to be set; 0.00: Automatic.	0.01~10.00s	0.10
F08.09	PID error band	The deviation limit is the ratio of the absolute value of the deviation between the system feedback amount and the given amount to the given amount. When the feedback amount is within the range of the deviation limit, PID regulation will not act.	0.0~100.0%	0.0%
F08.10	Closeloop frequency	This function code defines the running frequency and running time of the inverter before PID is put into operation when PID control is valid. In some control systems, in order to make the controlled object quickly reach the preset value, the inverter will forcefully output a certain frequency value F08.10 and frequency holding time F08.11 according to the setting of this function code. That is, when the control object is close to the control target, the PID controller is used to improve the response speed.	0.00~Upper limit frequency	0.00
F08.11	Preset frequency time		0.0~3600.0s	0.0
F08.12	Sleep mode	0: Invalid 1: Sleep when the feedback pressure exceeds or falls below the sleep threshold 2: Sleep when feedback pressure and output frequency are stable	0~2	1
F08.13	Sleep stop mode	0: Deceleration stop 1: Free downtime	0~1	0

Function code	Name	Description	Setting range	Factory default
F08.14	Press error band		0.0~10.0%	0.5%
F08.15	Sleep threshold		0.0~200.0%	100.0%
F08.16	Wake threshold	<p>Note: F08.14 the function parameter is only valid for the second sleep mode</p> <p>Note: F08.15 the threshold is the percentage of the given pressure.This function parameter is only valid for the first sleep mode</p> <p>Note:F08.16 the threshold is a percentage of the given pressure</p>	0.0~200.0%	90.0%
F08.17	Sleep delay time		0.0~3600.1s	100.0
F08.18	Wake delay time		0.0~3600.1s	5.0
F08.19	Proportional gain(KP1)	<p>The speed of PID adjustment is set by the two parameters of proportional gain and integral time. If the adjustment speed is fast, the proportional gain should be increased and the integral time should be reduced. If the adjustment speed is slow, the proportional gain should be reduced and the integral time should be increased. Generally, the differential time is not set;0.0: no differentiation.</p>	0.01~100.00	1.00
F08.20	Integration time(Ti1)		0.01~10.00s	0.10
F08.21	Differential time(Td1)		0.01~10.00s	0.00



Function code	Name	Description	Setting range	Factory default
F08.22	PID upper limit cut-off frequency	Set the PID upper limit cut-off frequency	【F08.23】 ~ 300.01Hz	50.00
F08.23	PID lower limit cut-off frequency	Set the PID lower limit cut-off frequency	-300.00Hz ~ 【F08.03】	0.00
F08.24	Sleep frequency	Set the sleep frequency	0.00Hz ~ 【F00.14】	0.00
<b>F09Group-PLC、Multistage speed、Swing frequency and Fix length control</b>				
F09.00	PLC Run mode selection	0: Single cycle stop 1: Keep running with final value after single loop 2: Finite continue cycle 3: Continue cycle	0~3	0
F09.01	PLC input mode	0: Automatic 1: Manual input through defined multi-function terminals	0~1	0
F09.02	PLC running power-off memory	0: no memory 1: Memorize the stage and frequency of power-off time	0~1	0
F09.03	PLC start mode	0: Restart from the first segment 1: Start from the stage at the moment of stop (failure) 2: Start from the stage and frequency at the moment of stop (fault)	0~2	0
F09.04	Finite cycle number	Set PLC finite cycle number	1~65535	1
F09.05	PLC running time unit	0: s 1: m	1	0
F09.06	Multi-speed frequency0	Set multi-speed frequency0	-Upper limit frequency ~ Upper limit frequency	5.00
F09.07	Multi-speed frequency1	Set multi-speed frequency1		10.00
F09.08	Multi-speed frequency2	Set multi-speed frequency2		15.00
F09.09	Multi-speed frequency3	Set multi-speed frequency3		20.00
F09.10	Multi-speed frequency4	Set multi-speed frequency4		25.00
F09.11	Multi-speed frequency5	Set multi-speed frequency5		30.00
F09.12	Multi-speed frequency6	Set multi-speed frequency6		40.00
F09.13	Multi-speed frequency7	Set multi-speed frequency7		50.00
F09.14	Multi-speed frequency8	Set multi-speed frequency8		0.00
F09.15	Multi-speed frequency9	Set multi-speed frequency9		0.00
F09.16	Multi-speed frequency10	Set multi-speed frequency10		0.00
F09.17	Multi-speed frequency11	Set multi-speed frequency11		0.00
F09.18	Multi-speed frequency12	Set multi-speed frequency12		0.00
F09.19	Multi-speed frequency13	Set multi-speed frequency13		0.00
F09.20	Multi-speed frequency14	Set multi-speed frequency14		0.00
F09.21	Multi-speed frequency15	Set multi-speed frequency15		0.00
F09.22	Acceleration and deceleration time selection of stage0	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.23	Run time of stage0	Set stage0 running time	0~6553.5s/m	0.0

Function code	Name	Description	Setting range	Factory default
F09.24	Acceleration and deceleration time selection of stage1	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.25	Run time of stage1	Set stage1 running time	0~6553.5s/m	0.0
F09.26	Acceleration and deceleration time selection of stage2	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.27	Run time of stage2	Set stage2 running time	0~6553.5s/m	0.0
F09.28	Acceleration and deceleration time selection of stage3	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.29	Run time of stage3	Set stage3 running time	0~6553.5s/m	0.0
F09.30	Acceleration and deceleration time selection of stage4	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.31	Run time of stage4	Set stage4 running time	0~6553.5s/m	0.0
F09.32	Acceleration and deceleration time selection of stage5	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.33	Run time of stage5	Set stage5 running time	0~6553.5s/m	0.0
F09.34	Acceleration and deceleration time selection of stage6	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.35	Run time of stage6	Set stage5 running time	0~6553.5s/m	0.0
F09.36	Acceleration and deceleration time selection of stage7	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.37	Run time of stage7	Set stage7 running time	0~6553.5s/m	0.0
F09.38	Acceleration and deceleration time selection of stage8	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.39	Run time of stage8	Set stage8 running time	0~6553.5s/m	0.0
F09.40	Acceleration and deceleration time selection of stage9	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.41	Run time of stage9	Set stage9 running time	0~6553.5s/m	0.0
F09.42	Acceleration and deceleration time selection of stage10	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0

Function code	Name	Description	Setting range	Factory default
F09.43	Run time of stage10	Set stage10 running time	0~6553.5s/m	0.0
F09.44	Acceleration and deceleration time selection of stage11	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.45	Run time of stage11	Set stage11 running time	0~6553.5s/m	0.0
F09.46	Acceleration and deceleration time selection of stage12	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.47	Run time of stage12	Set stage12 running time	0~6553.5s/m	0.0
F09.48	Acceleration and deceleration time selection of stage13	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.49	Run time of stage13	Set stage13 running time	0~6553.5s/m	0.0
F09.50	Acceleration and deceleration time selection of stage14	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.51	Run time of stage14	Set stage14 running time	0~6553.5s/m	0.0
F09.52	Acceleration and deceleration time selection of stage15	0: Acceleration/deceleration Time1(F00.16~F00.17) 1: Acceleration/deceleration Time2(F01.13~F00.14) 2: Acceleration/deceleration Time3(F01.15~F00.16) 3: Acceleration/deceleration Time3(F01.17~F00.18)	0~3	0
F09.53	Run time of stage14	Set stage15 running time	0~6553.5s/m	0.0
F09.54	Reserved	—	—	0
F09.55	Swing frequency control	0: Invalid 1: Valid	0~1	0
F09.56	Swing frequency input mode	0: Automatic 1: Manual input through defined multi-function terminals	0~1	0
F09.57	Swing control	0: Fixed swing 1: Variable swing	0~1	0
F09.58	Swing frequency stop mode	0: Start according to the state memorized before stop 1: Restart	0~1	0
F09.59	Swing frequency loss store	0: store 1: not store	0~1	0
F09.60	Swing frequency preset	The running frequency of the inverter before entering the swing frequency operation mode or when leaving the swing frequency operation mode and the running time at this frequency point. If the function code F09.61≠0 (waiting time for wobble frequency preset frequency) is set, then the inverter will directly enter the wobble frequency preset frequency operation after starting, and enter the wobble frequency operation after the wobble frequency preset frequency waiting time.	0.00Hz~ Upper limit frequency	10.00
F09.61	Holding time of the preset Swing frequency		0.0~3600.0s	0.0

Function code	Name	Description	Setting range	Factory default
F09.62	Swing frequency range	The swing frequency amplitude is determined by F09.62 as its reference value, and the swing frequency operating frequency is restricted by the upper and lower limit frequencies. If the setting is improper, the swing frequency will not work normally.	0.0~100.0%	0.0%
F09.63	Kick frequency	This function code refers to the range of rapid drop after the frequency reaches the upper limit of the swing frequency during the swing frequency process, and of course it also refers to the range of rapid rise after the frequency reaches the lower limit of the swing frequency. If it is set to 0.0%, there will be no kick frequency.	0.0~50.0% (Relative swing frequency amplitude)	0.0%
F09.64	Swing frequency raise time	This function code defines the running time from the lower limit of the swing frequency to the upper limit of the swing frequency during swing operation and the running time from the upper limit of the swing frequency to the lower limit of the swing frequency during swing operation.	0.1~3600.0s	5.0
F09.65	Swing frequency fall time		0.1~3600.0s	5.0
F09.66	Reserved			
F09.67	Fixed length contrl	0: Invalid 1: Valid	0~1	0
F09.68	Length set	This group of functions is used to realize the fixed-length stop function. The frequency converter inputs counting pulses from the terminal (X7 is defined as function 47), and calculates the length according to the number of pulses per revolution of the speed measuring shaft (F09.73) and the circumference of the shaft (F09.72). Calculation length = number of counting pulses ÷ number of pulses per revolution × circumference of the measuring shaft. And the calculated length is corrected by length magnification (F09.70) and length correction coefficient (F09.71) to obtain the actual length. Actual length = Calculated length × Length magnification ÷ Length correction coefficient. When the actual length (F09.69) ≥ the set length (F09.68), the inverter will automatically send a stop command to stop. Before running again, the actual length (F09.69) needs to be cleared or modified so that the actual length (F09.69) < the set length (F09.68), otherwise it cannot start.	0.000~65.535(KM)	0.000
F09.69	Actual length		0.000~65.535(KM)	0.000
F09.70	Length ratio		0.100~30.000	1.000
F09.71	Length correct		0.001~1.000	1.000
F09.72	Measure axis		0.10~100.00CM	10.00
F09.73	Pluse num (X7)		1~65535	1024

Function code	Name	Description	Setting range	Factory default
<b>F10group-Protect Parameters</b>				
F10.00	Overload protect	LED one place: Motor overload protect mode: 0: Invalid 1: Common motor (Electronic thermal relay mode, low speed with compensation) 2: Variable frequency motor (Electronic thermal relay mode, low speed without compensation) 3: User defined mode LED ten place: Inverter overload protect mode: 0: Invalid 1: Common mode 2: User defined mode LED hundred place: Inverter overload alarm : 0: Invalid 1: Valid LED thousand place: Reserved	000~123	11
F10.01	Motor overloaded protection coefficient	Set as a percentage of the motor's rated current on the motor nameplate	20.0% ~120.0%	100.0%
F10.02	Undervoltage protect selection	0: Invalid 1: Valid(Undervoltage is regarded as a fault)	0~1	0
F10.03	Under-voltage protect level	This function code specifies the allowable lower limit voltage of the DC bus when the inverter is working normally.	220V: 180~280V 380V: 330~480V	Type setting
F10.04	Over-voltage limit level	The overvoltage limit level defines the operating voltage for overvoltage stall protection.	220V: 350~390V 380V: 600~780V	Type setting
F10.05	Decompression voltage ratio	During the deceleration process, the larger the value, the stronger the ability to suppress overvoltage; 0: Over voltage stall protection invalid	0~100	Type setting
F10.06	Current limit level(Only VF mode is valid)	The overvoltage limit level defines the operating voltage for voltage stall protection. G type: 80%~200%*INV Rtd current 160% P type: 80%~200%*INV Rtd current 120%	80%~200%	Type setting
F10.07	Magnetic current	0: Limited by F10.06 current limit level 1: Limited by the converted current limit level of F10.06	0~1	0
F10.08	Accelerate current coefficient	During the acceleration, the larger this value is, the stronger the ability to suppress overcurrent 0: Acceleration current limit invalid	0~100	Type setting
F10.09	Constant speed current limit coefficient	0~100 means automatic frequency reduction, the larger the coefficient, the faster the frequency reduction rate; 101~5000 is manual frequency reduction, 101 means 0.01Hz/S, and so on, 5000 means 50.00/s.	0~5000	40

Function code	Name	Description	Setting range	Factory default
F10.10	Offload detection time.	The load-off detection time (F10.10) defines the output of the load-off signal after the output current of the inverter is continuously lower than the load-off detection level (F10.11) for a certain period of time; 0: Load drop detection is invalid.	0.1S~60.0S	5.0
F10.11	Offload detection level		0~100% *Inverter Rated current	0%
F10.12	Overload Alarm level	Through the setting of parameters F10.12 and F10.13, when the output current of the inverter is greater than the overload pre-alarm level (F10.12), after delay (F10.13) processing, the inverter outputs a pre-alarm signal, that is The operation panel displays "A-09". G type: 20%~200%*INV Rtd current 160% P type: 20%~200%*INV Rtd current 120%	20%~200%	Type setting
F10.13	Overload Alarm delay		0.0s~60.0s	10.0
F10.14	Temperature detection threshold	By setting the No. 51 function in function codes F07.18~F07.21, when the temperature reaches this setting, an indication signal will be output.	0.0°C~90.0°C	65.0°C
F10.15	Input Output Phase loss protection selection	0: Input disabled, output disabled 1: Input disabled, output enabled 2: Input enabled, output disabled 3: Input enabled, output enabled	1	Type setting
F10.16	Input phaserloss protect delay	When the input phase loss protection is selected to be valid and an input phase loss fault occurs, after the time defined by F10.16, the inverter will take the protection action "E-12" and free to stop.	0.0~30.0s	1.0
F10.17	Output phase loss protection detection reference	When the actual output current of the motor is greater than the rated current*【F10.17】, if the output phase loss protection is valid, after a delay time of 5S, the inverter will take protection action [E-13] and free to stop.	0%~100%	50%
F10.18	Output current unbalance detection coefficient	If the coefficient of the maximum value to the minimum value of the three-phase output current is greater than this coefficient and lasts for more than 10 seconds, the inverter will report output current imbalance fault E-13.	1.00~50.00	10.00
F10.19	Reserved			
F10.20	PID loss feedback action	0: no action 1: Alarm and keep running at the frequency of disconnection 2: Protection action and free stop 3: Alarm and decelerate to zero speed according to the set mode	0~3	0

Function code	Name	Description	Setting range	Factory default
F10.21	Feedback disconnection detection value	The maximum value of the PID given value is used as the upper limit of the feedback disconnection detection value. During the feedback disconnection detection time, when the PID feedback value is continuously lower than the feedback disconnection detection value, the inverter will take corresponding protection actions according to the setting of F09.20.	0.0%~100%	0.0%
F10.22	Feedback disconnection detection time	After the feedback disconnection occurs, the duration before the protection action.	0.0~3600.0s	10.0
F10.23	Reserved			
F10.24	RS485 communication abnormal action selection	0: Protect action and free stop 1: Alarm and keep running 2: Alarm and stop according to the set stop mode	0~2	1
F10.25	RS485 communication timeout detection time	If the RS485 communication fails to receive the correct data signal within the time interval defined by this function code, it will be considered that the RS485 communication is abnormal, and the inverter will take corresponding actions according to the setting of F10.24. When this value is set to 0.0, no RS485 communication timeout detection will be performed.	0.1~100.0s	5.0
F10.26	Panel communication abnormal action selection	0: Protect action and free stop 1: Alarm and keep running 2: Alarm and stop according to the set stop mode	0~2	1
F10.27	Panel communication timeout detection time	If the panel communication fails to receive the correct data signal within the time interval defined by this function code, it is considered that the panel communication is abnormal, and the inverter will take corresponding actions according to the setting of F10.26.	0.0~100.0s	1.0
F10.28	EEPROM read and write error action selection	0: Protect action and free stop 1: Alarm and keep running	0~1	0
F10.29	Motor overload protect threshold	When the unit digit of F10.00 is 3, after the output current reaches the motor overload protection threshold (F10.29), delay the motor overload protection detection time (F10.30) and report motor overload "E-08".	0%~ 200%*Motor Rated current	150%
F10.30	Motor overload protect detection times		0~60000s	100
F10.31	Inverter overload protect threshold	When the tens place of F10.00 is 2, after the output current reaches the inverter overload protection threshold (F10.31), delay the inverter overload protection detection time (F10.32) and then report the inverter overload "E-09".	0%~ 200%*INV Rtd current	150%
F10.32	Inverter overload protection detection times		0~60000s	60
F10.33	Error Reset times for OC&IGBT	When the number of OC and module faults exceeds the set value, it needs to be powered on again to reset.	0~9999	5
F10.34~F10.35(Reserved)				

Function code	Name	Description	Setting range	Factory default
<b>F11Group-RS485 communication parameters</b>				
F11.00	Agreement selection	0: MODBUS 1: Reserved	0~1	0
F11.01	Local address	0: Broadcast address 1~247: Slave station	0~247	1
F11.02	Baudrate	0: 2400BPS 1: 4800BPS 2: 9600BPS 3: 19200BPS 4: 38400BPS 5: 115200BPS	0~5	3
F11.03	Date format	0: No check (N, 8, 1) for RTU 1: Parity check (E, 8, 1) for RTU 2: Odd parity check (O, 8, 1) for RTU 3: No check (N, 8, 2) for RTU 4: Parity check (E, 8, 2) for RTU 5: Odd parity check (O, 8, 2) for RTU ASCII mode temporary Reserved	0~5	1
F11.04	local answer delay	This function code defines the intermediate time interval between the inverter receiving the data frame and sending the response data frame to the upper computer. If the response time is less than the system processing time, the system processing time shall prevail. If the delay is greater than the system processing time, after the system processes the data, it must wait for a delay until the response delay time expires before sending the data to the host computer.	0~200ms	5
F11.05	Transmission response	0: Write response 1: Write not response	0~1	0
F11.06	Proportional linkage coefficient	This function code is used to set the weight coefficient of the frequency command received by the inverter as a slave through the RS485 interface. The actual operating frequency of the machine is equal to the value of this function code multiplied by the frequency setting command value received through the RS485 interface. In linkage control, this function code can set the ratio of operating frequency of multiple inverters.	0.01~10.00	1.00
F11.07	Reserved			
F11.08	Reserved			
<b>F12Group-Advanced functions and performance parameters</b>				
F12.00	Brake function setting	0: Invalid 1: Whole process 2: Valid only decelerate	0~2	1



Function code	Name	Description	Setting range	Factory default
F12.01	Braking threshold voltage	<p>Bus voltage</p> <p>Starting voltage</p> <p>Braking hysteresis</p> <p>Time</p> <p>Break signal</p> <p>ON OFF</p> <p>Time</p> <p><math>F12.03 = \frac{ton}{ton+toff} * 100\%</math></p>	220V: 340~380V 380V: 660~760V	Type setting
F12.02	Energy Consumption Braking Hysteresis Voltage		220V: 10~100V 380V: 10~100V	Type setting
F12.03	Braking action ratio		10~100%	100%
F12.04	Power failure restart setting	0: Invalid 1: Starting from starting frequency 2: Speed tracking start	0~2	0
F12.05	Power failure restart waiting time	During the waiting time of restart, inputting any running command is invalid. If the stop command is input, the inverter will automatically cancel the speed tracking and restart state, and return to the normal stop state.	0.0~60.0s	5.0
F12.06	Fault automatic reset times	The times of automatic fault reset are set by F12.06. When the number of fault resets is set to 0, there is no automatic reset function, and only manual reset is possible. When F12.06 is set to 100, it means that the number of times is not limited, that is, countless times.	0~100	0
F12.07	Fault Auto Reset Interval	When a fault occurs during operation, the inverter stops outputting and displays the fault code. After the reset interval set by F12.07, the inverter automatically resets the fault and restarts to run according to the set start mode.	0.1~60.0s	3.0
F12.08	Cooling fan control	0: Automati contrl mode 1: The power-on process has been running 2: The fan operates when the temperature is higher than 50°C, and the fan does not operate when the temperature is lower than 45°C.	0~2	0
F12.09	Run limit password	By default, the password is 0, and the settings of F12.10 and F12.11 can be performed; when there is a password, the settings of F12.10 and F12.11 can only be performed after the password is verified to be correct.	0~65535	0
F12.10	Run limitt function	0: Invalid 1: Vallid	1	0
F12.11	Run limit time	Set time limit Note: The function parameter cannot be initialized.	0~65535(h)	0

Function code	Name	Description	Setting range	Factory default
F12.12	Momentary power down frequency drop point	If the bus voltage of the inverter drops below the F12.12* rated bus voltage value, and the instantaneous power failure control is valid, the instantaneous power failure will start to act.	220V: 180~330V 380V: 300~550V	Type setting
F12.13	Momentary power loss frequency drop coefficient	The larger the value, the faster the frequency reduction rate; 0: Instantaneous stop and non-stop function is invalid.	1~100	0
F12.14	Dropping contrl	0.00: The droop control function is invalid. When multiple frequency converters drive the same load, the load distribution will be unbalanced due to different speeds, so that the frequency converter with higher speed bears a heavier load. The characteristic of droop control is to change the speed droop as the load increases, which can make the load evenly distributed; this parameter adjusts the frequency change of the frequency converter with the drooping speed.	0.00~10.00Hz	0.00
F12.15	Speed tracking waiting time	Before the speed tracking of the inverter starts, the tracking will start after the delay.	0.1~5.0s	1.0
F12.16	Speed tracking current limit level	During the speed tracking process, this function code plays the role of automatic current limiting. When the actual current reaches the threshold (F12.16), the frequency converter will reduce the frequency and limit the current, and then continue to track the acceleration; Its setting value is the percentage relative to the rated current of the inverter.	80%~200% *Inverter Rated current	100%
F12.17	Track speed	When the speed tracking is restarted, select the speed of the speed tracking. The smaller the parameter, the faster the tracking speed. But too fast may cause tracking to be unreliable.	1~125	25
F12.18	PWM mode	LED one place: Synthesis mode 0: Full frequency seven segment 1: The seven segment turns to the five segment LED ten place: temperature correlation 0: Invalid 1: Valid LED hundred place: Frequency correlation 0: All invalid 1: Low frequency adjustment,High frequency adjustment 2: Low frequency doesn't adjust,High frequency adjustment 3: Low frequency adjustment,High frequency doesn't adjust LED thousand place: Soft PWD function 0: Invalid 1: Valid	0~1311	0001

Function code	Name	Description	Setting range	Factory default
F12.19	Voltage control function	LED one place: AVR functio 0: Invalid 1: All Valid 2: Invalid only in decelerate LED ten place: Overmodulation selection 0: Invalid 1: Valid LED hundred place: Choice of death compensation 0: Invalid 1: Valid LED thousand place: Shock suppression selection 0: Invalid 1: Shock suppression 1 2: Shock suppression 2 3: Shock suppression 3	0000~3112	1102
F12.20	Oscillation suppression start frequency	Set the oscillation suppression start frequency	0.00~300.00Hz	Type setting
F12.21	Flux brake selection	This parameter is used to adjust the magnetic flux braking capability of the inverter during deceleration. The larger the value, the stronger the flux braking capability. To a certain extent, the shorter the deceleration time, the parameter generally does not need to be set. When the value is 0, it means that the function is invalid. When the overvoltage limit level is set low, turning on this function can shorten the deceleration time appropriately. When the overvoltage limit level is set higher, it is not necessary to enable this function.	0~100	0
F12.22	Saving contrl coefficient	0: Invalid 1: Automatic Note: Energy-saving operation is only valid for common V/F control	0~100	0
F12.23	Multi-speed priority selection	0: Invalid 1: Multi segment speed takes precedence over F0.07	0~1	0
F12.24	Jog priorty selection	0: Invalid 1: When the inverter is running, the jog priority is the highest	0~1	0
F12.25	Special function	LED one place: AO2 and do input selection 0: AO2 valid 1: Reserved LED ten place: IPM Fault setting 0: Shield the fault 1: The fault is valid LED hundred place: Input phase failure rest selection 0: Unable to reset 1: it can be reset after the power supply is normal LED1000 digit: Reserved	000~110	010
F12.26	Oscillation suppression upper limit frequency	Set the upper limit frequency of oscillation suppression	0.00~300.00Hz	50.00

Function code	Name	Description	Setting range	Factory default
F12.27	Oscillation suppression coefficient	When F12.19 thousand bit=1 (oscillation suppression mode 1), the PWM mode is forced to five-stage; when F12.19 thousand bit=2 (oscillation suppression mode 2), the original mode remains unchanged. These two modes can be adjusted through the oscillation suppression coefficient (F12.27). In special occasions, if the first two modes cannot suppress oscillation, use oscillation suppression mode 3 (F12.19 1000digital=3) and adjust through parameters F12.27 (oscillation suppression coefficient) and F12.28 (oscillation suppression voltage).	1~500	50
F12.28	Oscillation suppression voltage		0.0~25.0% *Inverter rated voltage	5.0
F12.29	Wave-by-wave current limiting and overvoltage protection action selection	LED one place: Selection of wave by wave current limiting acceleration 0: Invalid 1: Valid LED ten place: Selection in wave by wave current limiting deceleration 0: Invalid 1: Valid LED hundred place: Selection of wave by wave current limiting and constant speed 0: Invalid 1: Valid LED thousand place: Ant-overvoltage action selection 0: Invalid 1: Valid	0000~1111	0011
F12.30	Dedicated Function Selection	LED one place: Straight up function selection 0: Invalid 1: Valid LED ten digits: Display selection of over-torque warning code "A-05" 0: Display 1: Do not display LED hundreds: reserved LED thousand digit: reserved	00~11	Type setting
<b>F13Group-Reserved</b>				
<b>F14Group-Panel function setting and parameter management</b>				
F14.00	M-FUNC key function	0: JOG(Point control) 1: Forward/Reverse rotation switch 2: Clear panel UP/DOWN key frequency setting 3: Reserved 4: Reverse direction	0~4	0
F14.01	STOP/RST function selection	0: only valid for panel control 1: Valid for panel and terminal control 2: Valid for panel and communication control time 3: Valid for all control modes	0~3	3
F14.02	STOP key + RUN key emergency stop function	0: Invalid 1: Free stop	0~1	1
F14.03	Reserved			

Function code	Name	Description	Setting range	Factory default
F14.04	load speed display coefficient	This function code is used to correct the display error of the speed scale, and has no effect on the actual speed.	0.01~100.00	1.00
F14.05	Line speed coefficient	This function code is used to correct the display error of the linear speed scale, and has no effect on the actual speed.	0.01~100.00	1.00
F14.06	Reserved			
F14.07	Running status monitoring parameter selection 1 (main display)	By changing the setting values of the above function codes, the monitoring items of the main monitoring interface can be changed, for example: set F14.07=5, that is, select the output current d-05, then when running, the default display item of the main monitoring interface is the current output current.	0~57	0
F14.08	Running status monitoring parameter selection 2 (auxiliary display)		0~57	5
F14.09	STOP status monitoring parameter selection 1 (main display)	By changing the setting values of the above function codes, the monitoring items of the main monitoring interface can be changed, for example: set F14.09=6, that is, select the output voltage d-06, then when the machine stops, the default display item of the main monitoring interface is the current output voltage	0~57	1
F14.10	STOP status monitoring parameter selection 2 (auxiliary display)		0~57	13
F14.11	Parameter display mode selection	<p>LED Single digit: Function parameter display mode selection</p> <p>0: Display all function parameters</p> <p>1: Display only parameters different from coefficienty values</p> <p>2: Reserved</p> <p>LED10 digit: Monitor parameter display mode selection</p> <p>0: Display main monitoring parameters only</p> <p>1: Master and auxiliary display alternately (interval time 1S)</p> <p>LED100 digit: Ajust frequency display selection</p> <p>0: Display frequency</p> <p>1: Display status monitoring parameters only</p> <p>LED1000 digit: Panel ▲/▼ key adjustment enable</p> <p>0: Valid      1: Invalid</p>	0000~1112	0000
F14.12	Parameter initialization	<p>0: No operation</p> <p>1: All user parameters except motor parameters are restored to factory settings</p> <p>2: All user parameters are restored to factory settings</p> <p>3: Clear fault records</p>	0~3	0
F14.13	Parameter protect	<p>0: All parameters are allowed to be modified (some parameters cannot be modified during operation)</p> <p>1: Only the frequency setting F00.07, F00.10 and this function code are allowed to be modified</p> <p>2: All parameters except this function code are forbidden to be modified</p> <p>Note: The above restrictions are invalid for this function code and F14.13</p>	0~2	0

Function code	Name	Description	Setting range	Factory default
F14.14	Parameter copy	0: No operation 1: Upload parameters to the panel 2: Download all function code parameters to the inverter 3: Download all function code parameters except motor parameters to the inverter Note 1: When selecting parameter download, the software will judge whether the inverter power specifications are consistent, if not, the parameters related to the model will not be modified. Note 2: Only the LCD panel has the copy function.	0~3	0
F14.15	Control software version	Read only	1.00~99.100	4.12
F14.16	Panel software version		1.00~99.100	1.00
F14.17	Inverter Rated power		0.4~999.9KW (G/P)	Type setting
F14.18	G/P type display	0: G type (constant torque load type) 1: P type (fan, water pump type load model) Note 1: After setting as a P-type machine, the motor parameters will be refreshed automatically, and it can be used as a special inverter for fans and pumps with a higher gear without changing any parameters. Note 2: This parameter cannot be initialized, please modify it manually	0~1	0
<b>F15Group-Multiple pumps water supply parameters</b>				
F15.00	Terminal access and disconnection delay	Terminal access and disconnection delay Water pump input and disconnection delay time.	0.0~6000.0s	0.1
F15.01	Polling time	The polling time is the time for regularly switching the variable frequency pump, and this time is only valid when a single pump is working.	0.0~6000.0h	48.0
F15.02	Reduce pump lower limit frequency	When the feedback pressure is higher than the set pressure, when the frequency drops to the lower limit frequency of pump reduction, the pump will be reduced after the pump reduction delay time.	0.0~600.00Hz	35.00
F15.03	Main pump start delay	This parameter is used in "one drive three constant pressure water supply", after the main and auxiliary pumps switch, the main pump start delay.	0.0~3600.0s	0.3
F15.04	Auxiliary pump start mode selection	0: Direct start 1: Soft start	0~1	0
F15.05	Add pump delay	Set add pump delay time	0.0~3600.0s	10.0
F15.06	Decrease pump delay	Set decrease pump delay time	0.0~3600.0s	10.0
F15.07	Sensor range	If F08.01=5, select the sensor range (F15.07), given pressure (F15.08) according to the site conditions.	0.00~60.00 (MPa, Kg)	10.00
F15.08	Pressure setting		0.00~ 【F15.07】 (MPa, Kg)	5.00

Function code	Name	Description	Setting range	Factory default
<b>F16Group-MPPT parameters</b>				
F16.00	Lack of water detection times for MPPT	<p>If the bus voltage (d-12) is higher than the set value of the MPPT high point operating voltage (F16.02), it will run at the maximum frequency;</p> <p>If it is lower than the MPPT high point operating voltage (F16.01) setting value, it will run at the frequency obtained by (bus voltage/MPPT high point operating voltage)*maximum frequency.</p> <p>If the bus voltage reaches the MPPT low point operating voltage (F16.01), it will run at the minimum operating frequency of water outlet (F16.04).</p> <p>If the frequency converter runs above the minimum water output frequency, and the output current is less than the no-load current of the motor * photovoltaic water pump water shortage detection current corresponds to the no-load current ratio (F16.03), after the photovoltaic water pump water shortage detection time (F16.00).</p> <p>The inverter reports water shortage fault E-32.</p>	0~250s	10s
F16.01	MPPT low point operating Voltage		0~ 【F16.02】	350/200 V
F16.02	MPPT high point operating Voltage		【F16.01】 ~ 1000/500V	537/311 V
F16.03	Lack of water detect Current Ratio		80%~300.0% *motor no-load current	150.0%
F16.04	MPPT Low limit frequency		0.00~ 【F00.13】	20.00
<b>FFFGroup-Reserved</b>				

**DGroup-Monitoring parameter group and fault record**

Function code	Name	Set scope
d-00	Output frequency	0.00~Max output frequency 【F0.13】
d-01	Settings frequency	0.00~Max output frequency 【F0.13】
d-02	Motor estimated frequency	0.00~Max output frequency 【F0.10】 Note: The operating frequency of the motor is converted from the estimated speed of the motor
d-03	Master settings frequency	0.00~Max output frequency 【F0.13】
d-04	Auxiliary settings frequency	0.00~Max output frequency 【F0.13】
d-05	Output current	0.0~6553.5A
d-06	Output voltage	0~999V
d-07	Output Torque	-200.0~+200.0%
d-08	Motor rotation speed(RPM/min)	0~36000 (RPM/min)
d-09	Motor power factor	0.00~1.00
d-10	Running speed(m/s)	0.01~655.35(m/s)
d-11	Setting line speed(m/s)	0.01~655.35(m/s)
d-12	Bus volage(V)	0~999V
d-13	Input voltage(V)	0~999V
d-14	PID setting value(V)	0.00~10.00V
d-15	PID feedback value(V)	0.00~10.00V
d-16	Analog input A1(V/mA)	0.00V/0.00mA~10.00V/20.00mA
d-17	Analog input A2(V/mA)	0.00~10.00V
d-18	Pulse frequency input(KHz)	0.00~50.00kHz
d-19	Analog output AO1(V/mA)	0.00~10.00V
d-20	Analog output AO2(V/mA)	0.00~10.00V
d-21	Input terminal status	0~7FH Note: After expanding into binary, it means X7/X6/X5/X4/X3/X2/X1 from high to low
d-22	Output terminal status	0~FH Note: After expanding into binary, it means R2/R1/Y2/Y1 from high to low



Function code	Name	Set scope
d-23	Operation status of frequency converter	0~FFFFH BIT0: Start/Stop BIT1: Forward /Reverse rotation BIT2: Zero speed operation BIT3: Reserved BIT4: Acceleration BIT5: Deceleration BIT6: Constant speed operation BIT7: Pre-excitation BIT8: Motor parameter tuning BIT9: Over current limiting BIT10: Over voltage limiting BIT11: Torque limiting BIT12: Speed limiting BIT13: Speed control BIT14: Torque control BIT15: Reserved
d-24	Multi-speed current segment number	0~15
d-25	Reserved	
d-26	Reserved	
d-27	Current count	0~65535
d-28	Set count value	0~65535
d-29	Current timing value(S)	0~65535S
d-30	Setting timing value(S)	0~65535S
d-31	Current length	0.000~65.535(KM)
d-32	Setting length	0.000~65.535(KM)
d-33	Radiator temperature1	0.0°C~+110.0°C
d-34	Radiator temperature2	0.0°C~+110.0°C
d-35	Accumulated running time of the machine(h)	0~65535H
d-36	Accumulated electrify time of the machine(h)	0~65535H
d-37	Accumulated running time of the fan(h)	0~65535H
d-38	Accumulated electricity consumption (Low position)	0~9999KWH
d-39	Accumulated electricity consumption (High position)	0~9999KWH (*10000)

Function code	Name	Set scope
d-41	Output power	0.0~6553.5KW
d-42	PID Pressure setting	0.00~60.00 (MPa、Kg)
d-43~d-47	Reserved	
d-48	First three fault types	0~27
d-49	Type of previous secondary fault	0~27
d-50	Previous fault type	0~27
d-51	Current fault type	0~27
d-52	Current fault operation frequency	0.00~ 【F0.11】 Upper limit frequency
d-53	Current fault operation current	0.0~6553.5A
d-54	Current fault operation bus voltage	0~999V
d-55	Input terminal status at fault	0~7FH
d-56	Output terminal status at fault	0~FH
d-57	Operation status of frequency converter in current fault	0~FFFFH

# 7.Troubleshooting

## (1) Fault information and Troubleshooting

Any abnormality occurs during operation, the driver will lock PWM output immediately and enter protection status. Meanwhile, the keypad will display function codes indicating the current fault, and the ALM indicator light will be on. Follow the method described in the form below check the fault cause and conduct according actions. If the problem remains, contact us directly.

Fault code	Fault descriptions	Possible reasons	Actions
E-01	Over-current in Acc process	Too short Acc time (including tuning process)	Prolong the Acc time
		Restart the rotating motor	Start after setting as DC brake, or rotational speed tracking start
		Inverter power is too small	Select a higher power Inverter
		V/F curve is not suitable	Adjust V/F curve or torque boost
E-02	Over-current in Dec process	Too short Dec time (including tuning process)	Prolong the Dec time
		Inverter power is too small	Select a higher power Inverter
		The load inertia is too high	Connect suitable braking resistor or brake unit
E-03	Over-current in constant speed	Grid voltage is low	Check the power supply
		Sudden change or abnormal of load	check load or reduce mutation of load
		Inverter power is too small	Select a higher power Inverter
E-04	Over voltage in Acc process	Abnormal supply voltage (including tuning process)	Check the power supply
		The driver is restarted with a rotating motor	Start after setting as DC braking, or start with the speed tracking
		Special potential energy load	Connect suitable braking resistor or brake unit
E-05	Over voltage in Dec process	Too short Dec time (including tuning process)	Prolong the Dec time
		The load inertia is too high	Connect suitable braking resistor or braking unit
		Abnormal of supply voltage	Check the power supply
E-06	Over voltage in constant-speed	Abnormal of supply voltage	Check the power supply
		Special potential energy load	Connect suitable braking resistor or brake unit
E-07	Bus undervoltage	Abnormal of supply voltage or disconnecting of built-in contactor	Check supply voltage or seek help from manufacturer
E-08	Motor overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost value
		Grid voltage is low	Check network voltage
		Motor blocked or load sudden change	Check load
		Incorrect setting of motor overload protection factor	Correct the setting

<b>Fault code</b>	<b>Fault descriptions</b>	<b>Possible reasons</b>	<b>Actions</b>
E-09	Driver overload	Improper setting of V/F curve or torque boost	Adjust V/F curve and torque boost value
		Grid voltage is low	Check network voltage
		Too short Acc time	Prolong Acc time
		Too heavy load	Select a higher power Inverter
E-10	Inverter load drop	Output current lower than load drop detection	Check load
E-11	IGBT module fault	Short circuit or grounded of inverter output	Check motor wiring
		Inverter instantaneous overcurrent	Refer to actions of over current
		Air duct is blocked or the fan is damaged	Unclog the duct or replace the fan
		Control board is abnormal or seriously interfered	Seek help from manufacturer
		Power device damage	Seek help from manufacturer
E-12	Input phase loss	Phase loss of power supply	Check power supply and wiring
E-13	Output phase loss or current imbalance	Output phase failure among phase U, V, W	Check the inverter's output wiring
E-14	Short trouble of output to ground	Reserved	Reserved
E-15	Overheat 1	Ambient over-temperature	Lower the ambient temperature
		Fan damage	Replace the fan
E-16	Overheat 2	Air duct is blocked	Clear the Air duct
E-17	RS485 communication failure	Not match the baud rate of the host computer	Adjust the baud rate
		RS485 channel interference	Check whether the communication wiring is shield, whether the wiring is correct; consider connecting filter capacitor if necessary.
		Communication timeout	Retry
E-18	Panel communication failure	Connecting line between keypad and control board is damage	Replace the connecting line.
E-19	External device fault	Input terminal of external device fault is closed	Disconnect the terminal and clear the faults (check the fault cause)
E-20	Current detection fault	Hall device or amplification circuit fault	Seek help from manufacturer
		Auxiliary power supply is damage	
		Hall or power board wiring is bad contact	

<b>Fault code</b>	<b>Fault descriptions</b>	<b>Possible reasons</b>	<b>Actions</b>
E-21	Motor tuning fault	Wrong setting of motor	Reset the motor parameter
		Not match of power specification between driver and motor	Seek help from manufacturer
		Tuning timeout	Check motor wiring
E-22	EEPROM R/W fault	EEPROM fault	Seek help from manufacturer
E-23	Parameter copy fault	Upload fault of the driver parameter to panel	Check wiring of operation panel
		Download fault of parameter panel to inverter	Check wiring of operation panel
		Parameter download without upload in advance	Upload parameters first, then download
E-24	PID feedback disconnectin	PID feedback wire is loosen	Check feedback wiring
		Feedback value lower than disconnection detection value	Adjust detection input threshold
E-25	Voltage feedback	Feedback value lower than disconnection	Adjust detection input threshold
E-26	Arrival of operation limit	Arrival of operation limit time	Seek help from agent
E-27	EEPROM detection failure	EEPROM detection failure	Seek help from manufacturer
E-32	Lack of water detection fault	PV Pump lack of water detection fault	Refer the parameter F16.00~F16.04
E-34	Bus undervoltage automatic reset fault	DC bus voltage is too low	Refer the parameter F05.25~F05.26

## (2) Exception handling

During the operation of the inverter, common abnormal phenomena and countermeasures are shown in the table below

Phenomena		Possible reasons of fault and actions to take
Motor not running	LED no display	Check whether there is a power failure, whether the input power supply is out of phase, and whether the input power line is connected incorrectly.
	LED no display, but the internal charging indicator is on	Check whether there is any problem with the wiring and sockets related to the keyboard, and measure the voltage of each control power supply in the machine to confirm whether the switching power supply is working normally. If the switching power supply is not working properly, check whether the switching power supply (+, -) socket is loose. Whether the vibration is damaged or whether the voltage regulator tube is normal.
	Motor droning	The motor load is too much. Reduce the load.
	No abnormal phenomem	Check if it is in trip status or hasn't reset after tripping, check whether it is in restart status after power down, whether the keypad is reset, whether it is in program running status, multi-speed operation status, some specific operation status or non-operation status. Try recovering factory set.
		Check whether the running command is sent.
	Check whether the operation frequency is set at 0.	
The motor can not Acc/Dec successfully		Improper setting of Acc/Dec time. Increase the value of Acc/Dec time.
		The current limit is set too low. Increase the value.
		Over-voltage protection action during decelerating. Increase the decelerating time.
		Improper setting of carrier frequency, too much load may cause oscillation.
		The load is too heavy and the torque is not enough. Increase the torque boost value in V/F mode, if it still cannot meet the requirements, you can switch to the automatic torque boost mode, at this time, pay attention to the motor parameters must be consistent with the actual value. If the requirements are still not met, it is recommended to switch to the advanced V/F control method. At this time, it is still necessary to pay attention to whether the motor parameters are consistent with the actual values. At the same time, it is best to tune the motor parameters.
		Mismatching of motor power and driver power. Set the motor parameters at actual value.
		One driver for several motor. Please change the torque boost mode to manual mode.

Phenomena	Possible reasons of fault and actions to take
The motor can rotate, but speed regulation can't be realized	Improper setting of upper and lower limit of frequency.
	The frequency is set too low, or the frequency gain is set too low.
	Check whether the speed adjustment mode is in consistent with frequency setting.
	Check whether the load is too heavy, whether it is in overvoltage stalled state or overcurrent limiting state.
The speed of the motor changes during operation	Frequent fluctuation of load, Decrease the changing.
	Serious motor not match of the inverter and motor. Set motor parameters to actual values.
	Frequency setting potentiometer is in bad connect or the frequency setting signal is in fluctuation. Switch to digit setting mode or increase filter time constant of analog input signal.
The rotation direction of motor is in reverse	Adjust phase sequence of output terminal U, V, W
	Set the running direction as reverse (F0.18=1)
	Caused by phase loss of output. Check the motor wiring immediately.

## Appendix A: Modbus Communication Protocol

### 1、 RTU Mode and Format

When controller communicates via Modbus in RTU mode, each byte is divided into 2 hexadecimal characters of 4 bits. The main advantage of this mode is that it can transfer characters with higher density compared with ASCII mode given the condition of the same baud rate, and each information must be transported continuously.

#### (1) Each Byte Format in RTU Mode

Encoding system: 8 bits binary, hexadecimal 0-9, A-F.

Data bits: 1 bit of start bit, 8 bits of data (send from the lower bit), 1 bit of stop bit, optional parity check bit

#### (2) Bit Sequence of RTU Data Frame

(refer to bit sequence of RTU data frame).  
Error check zone: cyclic redundancy check (CRC)

With parity check:

Start	1	2	3	4	5	6	7	8	Par	Stop
-------	---	---	---	---	---	---	---	---	-----	------

Without parity check:

Start	1	2	3	4	5	6	7	8	Stop
-------	---	---	---	---	---	---	---	---	------

### 2、 Register Address and Function Code

#### (1)Supported Function Code

Function Code	Function Description
03	Read multiple registers
06	Write single register
10	Write multiple registers continuously
13	Read single parameter

#### (2) Register Address

Register Function	Address
Control command input	0x2000
Read monitor parameter	0xD000 (0x1D00) ~0xD039 (0x1D39)
MODBUS frequency setting	0x2001
MODBUS torque setting	0x2002
MODBUS PID frequency given	0x2003
MODBUS PID feedback setting	0x2004
MODBUS analog output AO1 control	0x2005 ( 0~7FFF represent 0%~100% )
MODBUS analog output AO2 control	0x2006 ( 0~7FFF represent 0%~100% )
MODBUS pulse DO output control	0x2007 ( 0~7FFF represent 0%~100% )
MODBUS digital output terminal control	0x2008
Parameter setting	0x0000~0x0F15

#### (3) 03H Read Multiple Parameters (8 Items Continuously at Most)

Inquiry information frame format  
(send frame) :

Analysis of this segment data:

01H is the address of the inverter  
03H is read function code  
0001H is start address, equivalent to F0.01 of control panel  
0002H is item count of menu, i.e. the two items of F0.01 and F0.02  
95CBH is 16 bits of CRC check code

Address	01H
Function	03H
Starting data address	00H
	01H
Number of Data (Byte)	00H
	02H
CRC CHK Low	95H
CRC CHK High	CBH

Response information frame  
format (return frame) :

Analysis of this segment data:

01H is the address of the driver  
03H is read function code  
04H is the product of (read item)\*2  
0000H is read the data of F0.01 read  
0001H is the data of F0.02  
3BF3H is 16 bits of CRC check code

Address	01H
Function	03H
DataNum*2	04H
Data1[2Byte]	00H
	00H
Data2[2Byte]	00H
	01H
CRC CHK Low	3BH
CRC CHK High	F3H



Example:

Name	Frame Format
Read data of F0.01 and F0.02	Send frame: 01H 03H 0001H 0002H 95CBH
	Return frame: 01H 03H 04H 0000H 0001H 3BF3H
Read data of F2.01	Send frame: 01H 03H 0201H 0001H D472H
	Return frame: 01H 03H 02H 000FH F840H
Read monitor parameter of d-00 (address D000H and 1D00H interchangeable)	Send frame: 01H 03H D000H 0001H BCCAH
	Return frame: 01H 03H 02H 1388H B512H
	Send frame: 01H 03H 1D00H 0001H 8266H
	Return frame: 01H 03H 02H 1388H B512H
Read the status when the driver stops (address A000H and 1A00H interchangeable, refer to the run status description of the driver)	Send frame: 01H 03H A000H 0001H A60AH
	Return frame: 01H 03H 02H 0040H B9B4H
	Send frame: 01H 03H 1A00H 0001H 8312H
	Return frame: 01H 03H 02H 0040H B9B4H
Read fault code E-19 (address E000H and 1E00H interchangeable, refer to the fault code table)	Send frame: 01H 03H E000H 0001H B3CAH
	Return frame: 01H 03H 02H 0013H F989H
	Send frame: 01H 03H 1E00H 0001H 8222H
	Return frame: 01H 03H 02H 0013H F989H
Read pre-alarm code A-18 (address E001H and 1E01 interchangeable, refer to the pre-alarm code table)	Send frame: 01H 03H E001H 0001H E20AH
	Return frame: 01H 03H 02H 0012H 3849H
	Send frame: 01H 03H 1E01H 0001H D3E2H
	Return frame: 01H 03H 02H 0012H 3849H

#### (4) 06H Write Single Parameter

Inquiry information frame format  
(send frame) :

Analysis of this segment data:

01H is the address of the inverter  
 06H is write function code  
 2000H is the address of control command  
 0001H is forward command  
 43A1H is 16 bits of CRC check code

Address	01H
Function	06H
Starting data address	20H
	00H
Data (2Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

Response information frame format  
(return frame) :

Analysis of this segment data:

If set right, return the same input data

Address	01H
Function	06H
Starting data address	20H
	00H
Number of Data (Byte)	00H
	01H
CRC CHK Low	43H
CRC CHK High	CAH

Example:

Name	Frame Format
Forward	Send frame: 01H 06H 2000H 0001H 43CAH
	Return frame: 01H 06H 2000H 0001H 43CAH
Reverse	Send frame: 01H 06H 2000H 0009H 420CH
	Return frame: 01H 06H 2000H 0009H 420CH
Stop	Send frame: 01H 06H 2000H 0003H C20BH
	Return frame: 01H 06H 2000H 0003H C20BH
Free stop	Send frame: 01H 06H 2000H 0004H 83C9H
	Return frame: 01H 06H 2000H 0004H 83C9H
Reset	Send frame: 01H 06H 2000H 0010H 43CAH
	Return frame: 01H 06H 2000H 0010H 43CAH

Name	Frame Format
Forward jog	Send frame: 01H 06H 2000H 0002H 03CBH
	Return frame: 01H 06H 2000H 0002H 03CBH
Reverse jog	Send frame: 01H 06H 2000H 000AH 020DH
	Return frame: 01H 06H 2000H 000AH 020DH
Set F8.00 parameter at 1	Send frame: 01H 06H 0800H 0001H 4A6AH
	Return frame: 01H 06H 0800H 0001H 4A6AH
MODBUS reference frequency 40Hz	Send frame: 01H 06H 2001H 0FA0H D642H
	Return frame: 01H 06H 2001H 0FA0H D642H
MODBUS PID reference 5V	Send frame: 01H 06H 2003H 01F4H 721DH
	Return frame: 01H 06H 2003H 01F4H 721DH
MODBUS PID feedback 4V	Send frame: 01H 06H 2004H 0190H C237H
	Return frame: 01H 06H 2004H 0190H C237H
MODBUS torque set at 80%	Send frame: 01H 06H 2002H 0320H 22E2H
	Return frame: 01H 06H 2002H 0320H 22E2H
User password check (address AD00H and 1C00H interchangeable)	Send frame: 01H 06H AD00H 0001H 68A6H
	Return frame: 01H 06H AD00H 0001H 68A6H
	Send frame: 01H 06H 1C00H 0001H 4F9AH
	Return frame: 01H 06H 1C00H 0001H 4F9AH
Check operation limit password (address AD01H and 1C01H interchangeable)	Send frame: 01H 06H AD01H 0002H 7967H
	Return frame: 01H 06H AD01H 0002H 7967H
	Send frame: 01H 06H 1C01H 0002H 5E5BH
	Return frame: 01H 06H 1C01H 0002H 5E5BH
MODBUS analog output AO1 control output 5V	Send frame: 01H 06H 2005H 3FFFH C3BBH
	Return frame: 01H 06H 2005H 3FFFH C3BBH
MODBUS analog output AO2 control output 10V	Send frame: 01H 06H 2006H 7FFFH 027BH
	Return frame: 01H 06H 2006H 7FFFH 027BH
MODBUS digital output terminal Y1 control output	Send frame: 01H 06H 2008H 0001H C208H
	Return frame: 01H 06H 2008H 0001H C208H

### (5) 10H Write Multiple Parameters Continuously

Inquiry information frame format  
(send frame) :

Analysis of this segment data:

01H is the address of the driver  
10H is write function code  
0100H is start address, equivalent  
to F1.00 of control panel  
0002H is amount of registers  
04H is bytes sum  
(2\*register amount)  
0100H is data of F1.00  
0002H is data of F1.01  
2E3EH is 16 bits of CRC check  
code

Address	01H
Function	10H
Starting data address	01H
	00H
Number of Data (Byte)	00H
	02H
DataNum*2	04H
Data1 (2Byte)	00H
	01H
Data2 (2Byte)	00H
	02H
CRC CHK Low	2EH
CRC CHK High	3EH

Response information frame  
format (return frame) :

Analysis of this segment data:

01H is address of the driver write  
10H is function code  
0100H is write data of F1.00  
0002H is item count of write menu,  
i.e.two items of F1.00 and  
F1.01  
4034H is 16 bits of CRC check  
code

Address	01H
Function	10H
Starting data address	01H
	00H
Number of Data (Byte)	00H
	02H
CRC CHK Low	40H
CRC CHK High	34H

Example:

Name	Frame Format
Set F1.00, F1.01 at 1 and 0.02 respectively	Send frame: 01H 10H 0100H 0002H 04H 0001H 0002H 2E3EH
	Return frame: 01H 10H 0100H 0002H 4034H
Forward and communicate reference frequency at 50HZ	Send frame: 01H 10H 2000H 0002H 04H 0001H 1388H 36F8H
	Return frame: 01H 10H 2000H 0002H 4A08H
Set F1.00 at 1	Send frame: 01H 10H 0100H 0001H 02H 0001H 7750H
	Return frame: 01H 10H 0100H 0001H 0035H

**(6) 13H Read Single Parameter (Including Attribute, Min.value, Max.value)**

Inquiry information frame format (send frame) :

Analysis of this segment data:

01H is address of the driver read  
 13H is function code  
 000CH is start address, equivalent to F0.12 of control panel  
 0004H is register amount  
 45CBH is 16 bits of CRC check code

Address	01H
Function	13H
Starting data address	00H
	0CH
Number of Data (Byte)	00H
	04H
CRC CHK Low	45H
CRC CHK High	CBH

Response information frame format (return frame) :

Analysis of this segment data:

01H is address of the driver write  
 13H is function code  
 08H is total bytes (2\*number of registers)  
 1388H is parameter value  
 0322H is attribute value  
 0000H is min.value  
 1388H is max.value  
 2381H is 16 bits of CRC check code

Address	01H
Function	13H
Starting data address	08H
Data1 (2Byte)	13H
	88H
Data2 (2Byte)	03H
	22H
Data3 (2Byte)	00H
	00H
Data4 (2Byte)	13H
	88H
CRC CHK Low	28H
CRC CHK High	31H

Example:

Name	Frame Format
Read parameter value of F0.12	Send frame: 01H 13H 000CH 0001H 85CAH
	Return frame: 01H 13H 02H 1388H B1D2H
Read parameter value + attribute value of F0.12	Send frame: 01H 13H 000CH 0002H C5CBH
	Return frame: 01H 13H 04H 1388H 0322H FCF0H
Read parameter value + attribute value + min.value of F0.12	Send frame: 01H 13H 000CH 0003H 040BH
	Return frame: 01H 13H 06H 1388H 0322H 0000H 628BH
Read parameter value + min.value + max.value of F0.13	Send frame: 01H 13H 000CH 0004H 45CBH
	Return frame: 01H 13H 08H 1388H 0322H 0000H 1388H 2831H

### 3、 Functions of Other Register Address

Function	Address	Description			
		byte	bit	meaning	
Inverter operation status	A000H (1A00H)	Byte1	Bit7	0: no action	1: overload pre-alarm
			Bit6~Bit5	0: INV_220V	1: INV_380V
				2: INV_660V	3: INV_1140V
			Bit4	0: no action	1: power off store
			Bit3	0: no action	1: reset
			Bit2~Bit1	0: no action	1: static tuning
				2: dynamic tuning	
Inverter operation status	A000H (1A00H)	Byte0	Bit0	0: control panel mode	1: terminal control mode
			Bit7	2: communication control mode	3: reserved
			Bit6	0: no action	1: bus voltage is normal
			Bit5	0: no action	1: undervoltage
			Bit4	0: no action	1: jog run
			Bit3	0: forward	1: reverse
			Bit2~Bit1	1: Acc	2: Dec
				3: constant speed	
Bit0	0: stop status	1: run status			
Read inverter fault code	E000H (1E00H)	Address E000H and 1E00H interchangeable (refer to fault code table and example of read function code 03H)			
Read inverter fault pre-alarm code	E001H (1E01H)	Address E001H and 1E01H interchangeable (refer to example of pre-alarm code, read function code 03H)			
User password check	AD00H (1C00H)	Address AD00H and 1C00H interchangeable (refer to example of write function code 06H)			
Operation limit password check	AD01H (1C01H)	Address AD00H and 1C00H interchangeable (refer to example of write function code 06H)			

### 4、 Fault Code

Fault Code	Displayed Code	Fault Information	Fault Code	Displayed Code	Fault Information
0000H	—	No fault	0010H	E-16	Heatsink overheat 2
0001H	E-01	Overcurrent when accelerating	0011H	E-17	RS485 communication fault
0002H	E-02	Overcurrent when decelerating	0012H	E-18	Keypad communication fault
0003H	E-03	Overcurrent at constant speed	0013H	E-19	External device fault
0004H	E-04	Overvoltage when accelerating	0014H	E-20	Current detection fault
0005H	E-05	Overvoltage when decelerating	0015H	E-21	Motor tuning fault
0006H	E-06	Overvoltage at constant speed	0016H	E-22	EEPROM read-write fault
0007H	E-07	Bus undervoltage	0017H	E-23	Parameters copy fault
0008H	E-08	Motor overload	0018H	E-24	PID feedback disconnection
0009H	E-09	Driver overload	0019H	E-25	Voltage feedback disconnection
000AH	E-10	Driver off load	001AH	E-26	Arrival of operation limit time
000BH	E-11	Function module fault	001BH	E-27	EEPROM detection failure
000CH	E-12	Input phase loss	001CH	E-28	Encoder disconnection fault
000DH	E-13	Output phase loss or current unbalance	0020H	E-32	Lack of water detection fault
000EH	E-14	Short circuit of output to earth	0022H	E-34	Bus undervoltage automatic reset fault
000FH	E-15	Heatsink overheat 1	—	—	—

### 5、 Pre-alarm Code of the Driver

Alarm Code	Displayed Code	Fault Information	Alarm Code	Displayed Code	Fault Information
0000H	—	No fault	0015H	A-21	Motor tuning alarm
0009H	A-09	Driver overload alarm	0016H	A-22	EEPROM read-write fault alarm
0011H	A-17	RS485 communication fault alarm	0018H	A-24	PID feedback disconnection alarm
0012H	A-18	Keypad communication fault alarm	—	—	—

### 6、 Control Command Format (See Function Code 06H Example)

Address	Bit	Meaning			
2000H	Bit7~Bit5	Reserved			
	Bit4	0: no action		1: reset	
	Bit3	0: forward		1: reverse	
	Bit2~Bit0	100: free stop	010: jog run	011: stop	001: run
2008H (output by position 1, closed by position 0)	Bit7~Bit4	Reserved			
	Bit3	Programmable relay R2 output			
	Bit2	Programmable relay R1 output			
	Bit1	Open collector output terminal Y2			
	Bit0	Open collector output terminal Y1			

### 7、 Parameter Attribute

Bit	Meaning			
Bit15	Reserved			
Bit14	Menu			
Bit13	System			
Bit12	Reset to factory defaults			
Bit11	EEPROM			
Bit10~Bit9	"o": 01	"x": 10	"◆": 11	"◇": 00
Bit8	Sign			
Bit7~Bit3	1: 00000 V: 00001 A: 00010 rpm: 00011 Hz: 00100 %: 00110 S: 01000	KHz: 01100 KW: 01010 om: 01110 ms: 01001 MA: 01011 KM: 01101 CM: 01111	us: 10001 Hz/S: 10000 mh: 10010 C: 10011 m/s: 10100 H: 10101 KWH: 10110	
Bit2~Bit0	Decimal point			

### 8、 Error Code from Slave Response of Abnormal Information

Error code	Description	Error code	Description
01H	Invalid function code	06H	Parameters can't be changed during running
02H	Invalid address	07H	The changes of parameters are invalid
03H	Invalid data	08H	Control command of host is invalid
04H	Invalid register length	09H	Parameter protected by password
05H	CRC validation error	0AH	Password error

## 9、Communication Address of all Parameters

Function Code	Communication Address	Function Code	Communication Address	Function Code	Communication Address
F0.00~F0.22	6000H~6014H	F6.00~F6.52	0600H~0634H	FC.00~FC.28	0C00H~0C1CH
F1.00~F1.36	0100H~0124H	F7.00~F7.40	0700H~0728H	FE.00~FE.15	0E00H~0E0FH
F2.00~F2.17	0200H~0211H	F8.00~F8.33	0800H~0821H	FF.00~FF.22	0F00H~0F16H
F3.00~F3.08	0300H~0308H	F9.00~F9.73	0900H~0949H	d-00~d-57	D000H (1D00H) D039H (1D39H)
F4.00~F4.27	0400H~041BH	FA.00~FA.35	0A00H~0A23H	—	—
F5.00~F5.24	0500H~0518H	FB.00~FB.08	0B00H~0B08H		

### Notice:

- (1) In the above examples, the driver address is 01, which makes it better for illustration; when the driver is slave, the address setting range is 1 ~ 247, and if any data of frame format is changed, the check code needs to be recalculated. The calculating tools of 16bit CRC check code can be download from internet.
- (2) Initial address of monitor item is D000, each item offset corresponding hexadecimal value based on this address, then plus it with the initial address. For example: the monitor initial item is d—00, the corresponding initial address is D000H (1D00H), now read monitor item d—18, 18-00=18, the corresponding hexadecimal of 18 is 12H, then the read address of d—18 is D000H+12H = D012H (1D00H+12H = 1D12H). Address D000H and 1D00H are interchangeable.
- (3) Frame format when the slave response information is abnormal: driver address + (80H+function code) + 16bit CRC check code; if the salve return frame is 01H + 83H + 04H + 40F3H, then 01H is slave address, 83H is 80H+03H indicating read error, 04H is invalid data length, 40F3H is 16bit CRC check code.

## Appendix B: Selection of Braking Resistor

Voltage Class (V)	Rated Power (KW)	Braking Resistor (Ω)	Power of Resistor (W)	Voltage Class (V)	Rated Power (KW)	Braking Resistor (Ω)	Power of Resistor (W)	Voltage Class (V)	Rated Power (KW)	Braking Resistor (Ω)	Power of Resistor (W)
220	1.5	100	100	380	18.5	25	3000	380	185	2.5	20000
220	2.2	70	100	380	22	22	4000	380	200	2.5	20000
380	0.75	750	100	380	30	16	5000	380	220	2.5	22000
380	1.5	400	300	380	37	13	6000	380	250	2.5/2	25000
380	2.2	250	300	380	45	10	6000	380	280	2.5/2	28000
380	4	150	400	380	55	10	6000	380	315	2.5/2	32000
380	5.5	100	500	380	75	6.3	7500	380	355	2.5/2	34000
380	7.5	75	1000	380	90	9.4/2	9000	380	400	2.5/3	42000
380	11	43	3000	380	110	9.4/2	11000	380	450	2.5/3	45000
380	15	32	3000	380	132	6.3/2	13000	380	500	2.5/3	51000
				380	160	6.3/2	16000				

Appendix C: Detailed description of macro definition

Application macro	parameter setting	Automatically modify the parameter list	Debugging steps
Single pump constant pressure water supply mode	F00.01=1	F00.04=8;F08.01=5; F14.07=42;F14.08=40; F14.09=42;F14.10=40	Step1: Determine the sensor feedback type, AI1, AI2 factory default input voltage feedback signal, you can also select AI1 input current feedback signal through jumper JP3; Step2: Terminal wiring, if the pressure gauge is 0~10V output, connect the signal wire of the pressure gauge to AI1, and connect the other two wires to +10V and GND; if the output is 0~20mA, short-circuit COM and GND, connect the pressure gauge signal wire to AI1 and connect the other wire to 24V. Step3: Parameter initialization (F14.12=2); Step4: Set the sensor range (F15.07); Step5: Function macro selection (F00.01=1); Step6: Set the target pressure, which can be set by parameter F15.08, or by the up and down keys on the keyboard.
1 variable frequency pump + 2 power frequency pumps constant pressure water supply mode	F00.01=2	F00.03=1;F00.04=8; F08.01=5;F14.07=42; F14.08=40;F14.09=42; F14.10=40;F07.00=58; F07.01=59;F07.02=60; F07.03=61;F07.04=62; F07.05=63;F07.18=59; F07.19=60;F07.20=61	Step1: Determine the sensor feedback type, AI1, AI2 factory default input voltage feedback signal, you can also select AI1 input current feedback signal through jumper JP3; Step2: Terminal wiring, if the pressure gauge is 0~10V output, connect the signal wire of the pressure gauge to AI1, and connect the other two wires to +10V and GND. If the output is 0~20mA, short-circuit COM and GND, connect the pressure gauge signal line to AI1, and connect the other line to 24V. For other terminal wiring details, see appendix 3 pump circulation soft start water supply instructions. Step3: Parameter initialization (F14.12=2); Step4: Set the sensor range (F15.07); Step5: Function macro selection (F00.01=2 or 3) Step6: Set the target pressure, which can be set by parameter F15.08, or by the up and down keys on the keyboard.
3 sets of water pumps cycle frequency conversion power frequency start constant pressure water supply mode	F00.01=3		Step1: Terminal wiring, the two wires of the switch (control start and stop) are connected to X1 and COM; Step2: Parameter initialization (F14.12=2); Step3: Function macro selection (F00.01=4).
Photovoltaic water pump water supply mode	F00.01=4	F00.03=1;F00.04=10; F07.09=1;F16.00=0; F16.04=0.00;F12.13=80	Step1: Terminal wiring, connect the analog signal wire to AI1, and the other wire to GND; then connect the two wires of the switch (control start and stop) to X1 and COM; Step2: Parameter initialization (F14.12=2); Step3: Function macro selection (F00.01=5)
CNC machine control mode	F00.01=5	F00.02=2;F00.03=1; F00.04=3;F00.12=80.00; F00.13=80.00;F00.16=0.5; F00.17=2.0	Step1: Terminal wiring, the two wires of the switch (control start and stop) are connected to X1 and COM; Step2: Parameter initialization (F14.12=2); Step3: Function macro selection (F00.01=6)
Fire inspection mode	F00.01=6	F00.02=0;F00.03=1; F00.16=80.00;F01.08=1; F02.03=2950;F05.00=5; F05.01=2.0;F05.03=1.25; F05.04=2.0;F05.05=5.00; F05.06=15.0;F05.07=50.00 F05.08=100.0;F10.01=120.0; F10.06=200;F10.12=180	Step1: Terminal wiring, the two wires of the switch (control start and stop) are connected to X1 and COM; Step2: Parameter initialization (F14.12=2); Step3: Function macro selection (F00.01=7)
EPS power mode	F00.01=7	F00.02=4;F05.12=0; F05.17=100.0; F12.19=0002	Step1: Parameter initialization (F14.12=2); Step2: Function macro selection (F00.01=7).

## 1. Instructions for use of one-change two-work and three-pump cycle soft start:

( 1 ) **One variable and two working** means that the inverter only starts the first variable frequency speed regulation, and the others are directly connected to the power grid.

( 2 ) **The three-pump cycle soft start** means that the frequency converter starts for each pump, and connects to the power grid after a delay; the first one is connected to the power grid, and the second one is used for frequency conversion and speed regulation.

## 2. The use of external terminals and the working process of the adding and subtracting pumps:

( 1 ) **Input terminal X1 ~ X6 its function is fixed at the factory.**

when F00.01 choose 2 or 3, the input terminal X1 ~ X6 Fixed its water supply functionality.

( 2 ) **X terminal with Y Correspondence between terminals and relays**

X3 and COM After shorting, the corresponding F07.18 ~ F07.21 middle 59 number interlock 1 output, abbreviated as 1 number pump; X4 and COM After shorting, the corresponding F07.18 ~ F07.21 middle 60 number interlock 2 output, referred to as 2 No. pump; X5 and COM short After receiving, correspond to F07.18 ~ F07.21 middle 61 number interlock 3 output, referred to as 3 number pump.

(3) **X1 and X6 the difference**

X1 and X6 Can not select to connect at the same time, X1 It is manually controlled to start and stop, only one pump can be started at a time, and the frequency is determined by AI1 given, not to PIDs Adjustment; X6 It is to control the start and stop in the multi-pump water supply mode, and carry out PIDs adjust.

( 4 ) **Manually control the working process of starting and stopping the pump**

X1 and COM After short-circuiting, the order in which the pumps are turned on is that the ones that are put in first start first, and the ones that are put in together start the pumps with small serial numbers . For example, only access X5 After that, only enable 3 No. pump; if connected at the same time X4 and X5 After that, only enable 2 No. pump; if X3 , X4 and X5 After simultaneous access, only turn on 1 number pump.

( 5 ) **Working process of multi-pump water supply mode**

X6 and COM After short-circuiting, the order in which the pumps are turned on is that the ones that are put in first start first, and the ones that are put in together start the pumps with small serial numbers . PIDs control.

a. When F00.01=2 ( **one variable and two workings** are valid), if all three water pumps are put into operation, after the system is powered on, the 1 number pump, start up 1 No. variable frequency pump works. when 1 No. variable frequency pump working frequency reaches 50Hz time, delay adding pump time ( F15.05 ), if measured If the measured pressure does not reach the system set pressure, it will be connected 2 No. power frequency pump, when 1 No. variable frequency pump operating frequency reaches again 50Hz time delay Add pump time ( F15.05 ), if the measured pressure still does not reach the system set pressure, it will be connected 3 No. power frequency pump, at this time 1 No. pump is in variable frequency working state, 2 No. and 3 No. pump is in power frequency working state. If the measured pressure is greater than or equal to the system set pressure, 1 The working frequency of the variable frequency pump drops to the lower limit frequency of the reduced pump (F15.02), and after the delay of the reduced pump (F15.06), it will be disconnected. 3 No. power frequency pump, if the measured pressure is still greater than or equal to the system set pressure, and 1 The working frequency of the variable frequency pump is less than or equal to the lower limit frequency of the reduced pump ( F15.02), after the delay of the reduced pump ( F15.06), it will be disconnected 2 No. power frequency pump, only 1 No. variable frequency pump works.

b. When F00.01=3 ( **three-pump circulation soft start** is valid), if all three water pumps are put into operation, after the system is powered on, first turn on 1 Number pump, start 1 No. pump frequency conversion work. when 1 No. pump frequency conversion work in 50Hz When the pump is delayed ( F15.05 ), if the measured pressure does not reach the system set pressure, it will 1 No. variable frequency pump disconnected, connected 2 frequency conversion pump and 1 No. power frequency pump, at this time 1 No. pump by frequency conversion The state is converted to work in the power frequency state, 2 No. pump is in variable frequency working state. when 2 No. pump frequency conversion work in 50Hz When the pump is added ( F15.05 ), if the measured pressure still does not reach the system set pressure, it will 2 No. variable frequency pump disconnected, connected 3 No. inverter pump and 2 No. power frequency pump, at this time 2 The No. pump is converted from the variable frequency pump to work in the power frequency state, 3 No. pump is in variable frequency working state, 1 No. pump is still working at power frequency. when 3 When the working frequency of No. pump drops to the lower limit frequency of pump reduction (F15.02), after the pump reduction delay (F15.06), if the measured pressure is greater than or equal to the system set pressure, it will 1 No. power frequency pump is disconnected; when 3 The working frequency of pump No. 2 is less than or equal to the lower limit frequency of pump reduction (F15.02). After the pump reduction delay (F15.06), if the measured pressure is still greater than or equal to the system set pressure, disconnect No. 2 power frequency pump ; 3 No. variable frequency pump works.

**Note: If you need one to drive three, all three pumps are put into use; if you need one to drive two, choose two pumps to put in; if you need one to drive one, Randomly choose a pump to put in; it is all in accordance with the rule that the first to start, the first to put in, and the smaller ones to put in together.**

( 6 ) **Terminal access and disconnection delay**

Since there is a delay in the connection and disconnection of the contactor terminal, the signal is not synchronized, and it needs to be adjusted by the terminal input disconnection delay (F15.00).

( 7 ) **X2 Terminal description**

X2 It is the operation permission terminal. This terminal is connected to the normally closed point of the external fault relay. Generally, it is connected to the external water shortage or high voltage signal control. If there is no external fault detection, it is necessary to communicate with COM Short.

## 3. STOP /RST key application

( 1 ) F14.01 The factory default is 3 , that is, when the terminal controls the operating mode STOP/RST The key is valid, if the keyboard is used to stop, it needs to be restarted access X2 , X6 Terminals or re-power on to work normally.

( 2 ) F14.01=0 hour, STOP/RST The key is invalid under terminal control, and only resets the fault of the inverter. F14.01

Set as 0 , to prevent the keyboard from being shut down by misoperation, it needs to be re-connected X2 , X6 Terminals or re-power on to work normally.



**3. The working process when there is a failure in water supply**

(1) If the variable frequency pump has an external fault, stop the faulty pump first, and then switch the larger power frequency pump to the variable frequency pump, for example, 1 number, 2 No. and 3 No. pumps are turned on, 2 No. is variable frequency pump, 1 No. and 3 The numbers are all power frequency, if there is a fault with the frequency converter, then stop first 2 number pump, put again 3 No. power frequency is switched to variable frequency pump, 1 The number continues to work; if 3 After the external failure of the No. pump is removed, it can be put into use normally.  
 (2). If the frequency conversion pump has an internal fault, all the pumps will stop, and after the frequency converter fault is reset with the keyboard, it will resume normal operation state.

**4. Function setting.**

(1) To turn on the water supply function, you need to set F00.01 for 2 or 3 options, please refer to the instruction manual for details.  
 (2) To enable PID function, need to set F00.04=8, then in F08 set the required PIDs For parameters, see the manual for details.  
 (3) F14.01 is set to 0, that is, the stop key on the keyboard is invalid.

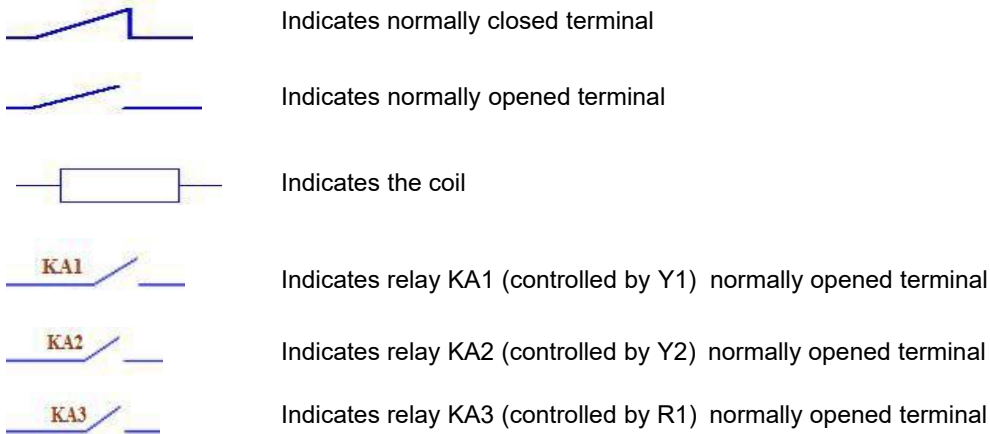
**5. Water supply wiring diagram (refer to ABB inverter ACS510 Constant pressure water supply wiring diagram).**

(1) Open collector Y1, Y2 Schematic diagram of connecting relay:



**(2) Introduction to wiring diagram symbols**

In Figure 1 and Figure 2 below, L1 and L2 represent coil power



KM1, KM2 and KM3 control respectively 1 number, 2 No. and 3 No. variable frequency pump connection Contact ; KM11, KM21 and KM31 control respectively 1 number, 2 No. and 3 No. power frequency pump contactor. ( Note: Figure 1 and Figure 2 below are just sketch logic diagrams, if you need a fault relay or indicator light, add it yourself)

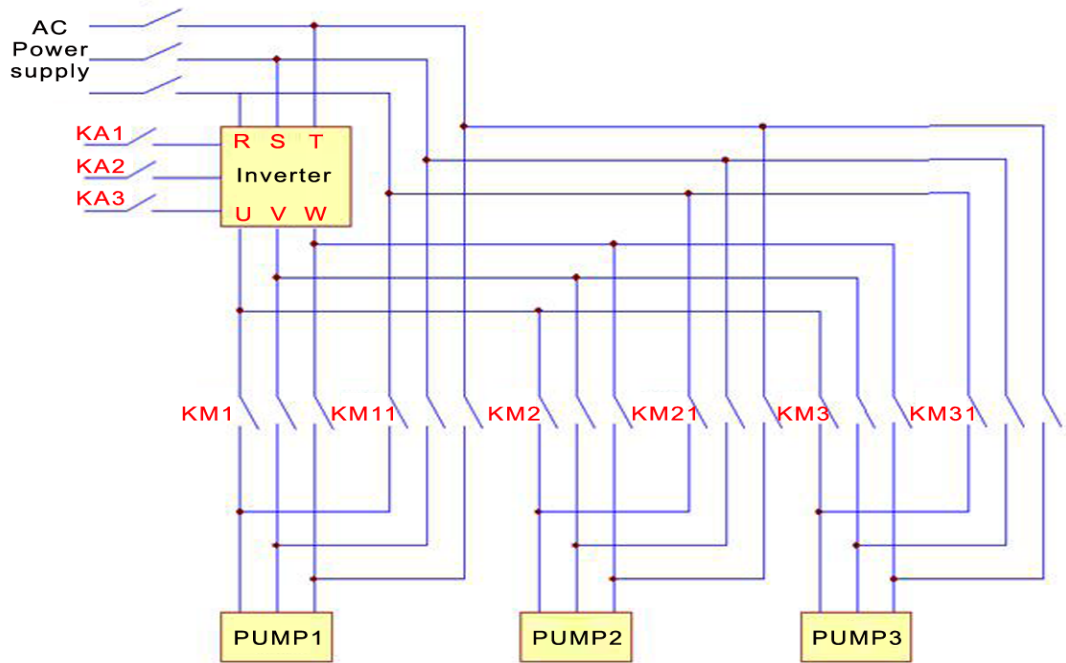
**3. Introduction of contactor interlock and self-lock (as shown in Figure 1)**

KM1 When connected, KM11, KM2 and KM3 Can't get through. KM1 When switched on, the KM1 Can't get through.  
 KM2 When connected, KM21, KM1 and KM3 Can't get through. KM2 When switched on, the KM2 Can't get through.  
 KM3 When connected, KM31, KM1 and KM2 Can't get through.

Figure 1



Figure 2



## Appendix D: Recommended Solar Module Configuration

Inverter type	Open circuit voltage level of solar cell modules			
	37±1V		45±1V	
	Panel power±5Wp	Number of series * number of parallel	Panel power±5Wp	Number of series * number of parallel
D11-S2-1R5G	250	11*1	300	9*1
D11-S2-2R2G	250	11*1	300	9*1
D11-T3-0R7G	250	18*1	300	15*1
D11-T3-1R5G	250	18*1	300	15*1
D11-T3-2R2G	250	18*1	300	15*1
D11-T3-4G	250	20*1	300	16*1
D11-T3-5R5G	250	18*2	300	15*2
D11-T3-7R5G	250	18*2	300	15*2
D11-T3-11G	250	18*3	300	15*3
D11-T3-15G	250	18*4	300	15*4
D11-T3-18R5G	250	18*5	300	15*5
D11-T3-22G	250	18*6	300	15*6
D11-T3-30G	250	18*8	300	15*8
D11-T3-37G	250	18*9	300	15*9

## Appendix E: PV Inverter Input Voltage Specifications

Type	3 PH 220V Output	3 PH 380V Output
AC input voltage (V)	220~260 (1PH)	380~480 (3PH)
DC voltage (V)	400	800
Starting voltage (V)	180	280
Minimum working voltage (V)	150	250
Recommended DC Input Voltage Range (V)	200~390	300~750
Recommended MPPT voltage (V)	330	550

