

Contents

1. Safety Precautions	- 2 -
1.1. Safety Definition	- 2 -
1.2. Warning Symbols	- 2 -
1.3. Safety Guidelines	- 3 -
2. Product Overview	- 6 -
2.1. Name Plate	- 6 -
2.2. Type Designation Key	- 6 -
2.3. Product Specifications	- 7 -
2.4. Rated Specifications	- 8 -
2.5. Products Dimensions	- 12 -
3. Installation Guidelines	- 13 -
3.1. Mechanical Installation	- 13 -
3.1.1. Installation Environment	- 13 -
3.1.2. Installation Direction	- 14 -
3.1.3. Installation Manner	- 14 -
3.2. Standard Wiring	- 15 -
3.2.1. Electrical Power Connections	- 15 -
3.2.2. Terminals of Main Circuit	- 17 -
3.2.3. Terminals of Control Circuit	- 17 -
4. Keypad Operation	- 19 -
4.1. Operation Panel	- 19 -
4.2. Description of Keys on the Operation Panel	- 20 -
4.3. Example of Key Operation	- 20 -
4.3.1. Run and Stop	- 20 -
4.3.2. Operating Displays	- 20 -
4.3.3. Changing Parameters	- 21 -
4.3.4. Selecting Parameters	- 21 -
4.3.5. Parameter Factory Reset	- 21 -
4.3.6. Commissioning	- 22 -
4.3.7. Inspection Before Operation	- 22 -
4.3.8. Trial Run	- 22 -
4.3.9. Parameter Setting	- 22 -
5. Function Parameters	- 23 -
5.1. Common Function Parameters	- 23 -
5.1.1. Parameter List	- 23 -
5.2. Description of Parameter	- 25 -
5.3. Common Function Parameters	- 35 -
6. Fault Diagnosis and Solution	- 40 -
6.1. Error and Solutions of Solar Pump Inverter	- 40 -
6.2. Common Faults and Solutions	- 49 -

1. Safety Precautions

Please read this manual carefully and follow all safety precautions before moving, installing, operating and servicing the inverter. If ignored, physical injury or death may occur, or damage may occur to the devices.

If any physical injury or death or damage to the devices occurs for ignoring to the safety precautions in the manual, our company will not be responsible for any damages and we are not legally bound in any manner.

1.1. Safety Definition

Danger: Serious physical injury or even death may occur if not follow relevant requirements







Warning: Physical injury or damage to the devices may occur if not follow relevant requirements



Note: Physical hurt may occur if not follow relevant requirements

Qualified electricians: People working on the device should take part in professional electrical and safety training, receive the certification and be familiar with all steps and requirements of installing, commissioning, operating and maintaining the device to avoid any emergency.





1.2. Warning Symbols

Warnings caution you about conditions which can result in serious injury or death and/or damage to the equipment, and advice on how to avoid the danger. Following warning symbols are used in this manual:


Symbols	Name	Instruction	Abbreviation
 Danger	Danger	Serious physical injury or even death may occur if not follow the relative requirements.	
 Warning	Warning	Physical injury or damage to the devices may occur if not follow the relative requirements.	
 Do not	Electrostatic discharge	Damage to the PCBA board may occur if not follow the relative requirements.	

 Hot sides	Hot sides	Base of the device may become hot. Do not touch.	
Note	Note	Physical hurt may occur if not follow the relative requirements	Note

1.3. Safety Guidelines

	<ul style="list-style-type: none"> Only qualified electricians are allowed to operate on the inverter. Do not carry out any wiring and inspection or changing components when the power supply is applied. Ensure all input power supply is disconnected before wiring and checking and always wait for at least the time designated on the inverter or until the DC bus voltage is less than 36V. Below is the table of the waiting time: 		
		Inverter model	Minimum waiting time
	1PH 220V	0.4KW-2.2KW	5 minutes
	3PH 220V	4KW-7.5KW	5 minutes
	3PH 380V	0.75KW-37KW	5 minutes
	<ul style="list-style-type: none"> Do not refit the inverter unauthorized; otherwise fire, electric shock or other injury may occur. 		
	<ul style="list-style-type: none"> The base of the radiator may become hot during running. Do not touch to avoid hurt. 		
	<ul style="list-style-type: none"> The electrical parts and components inside the inverter are electrostatic. Take measurements to avoid electrostatic discharge during relevant operation. 		


Delivery and Installation

	<ul style="list-style-type: none"> ● Please install the inverter on fire-retardant material and keep the inverter away from combustible materials. ● Do not operate on the inverter if there is any damage or components loss to the inverter. ● Do not touch the inverter with wet items or body, otherwise electric shock may occur.
---	---

Note:

- Select appropriate moving and installing tools to ensure a safe and normal running of the inverter and avoid physical injury or death. For physical safety, the erector should take some mechanical protective measurements, such as wearing safety shoes and working uniforms.
- Do not carry the inverter by its cover. The cover may fall off.
- Non-professionals are forbidden to open the inverter cover.
- Install away from children and other public places.
- The inverter cannot meet the requirements of low voltage protection in IEC61800-5-1 if the altitude of installation site is above 2000m.
- The leakage current of the inverter may be above 3.5mA during operation. Ground with proper techniques and ensure the grounding resistor is less than 10Ω. The conductivity of PE grounding conductor is the same as that of the phase conductor (with the same cross sectional area).

Commissioning and Running


	<ul style="list-style-type: none"> ● Disconnect all power supplies applied to the inverter before the terminal wiring and wait for at least the designated time after disconnecting the power supply. ● High voltage is present inside the inverter during running. Do not carry out any operation except for the keypad setting. ● The inverter cannot be used as “Emergency-stop device”. ● If the inverter is used to break the motor suddenly, a mechanical braking device should be provided.
---	--

Note:

- Do not switch on or off the input power supply of the inverter frequently.

- For inverters that have been stored for a long time, check and fix the capacitance and try to run it again before utilization.
- Cover the front board before running, otherwise electric shock may occur.



Maintenance and Replacement of Components

	<ul style="list-style-type: none"> ● Only qualified electricians are allowed to perform the maintenance, inspection, and components replacement of the inverter. ● Disconnect all power supplies to the inverter before the terminal wiring. ● Wait for at least the time designated on the inverter after disconnection. ● Take measures to avoid screws, cables and other conductive materials to fall into the inverter during maintenance and component replacement and anti-static measures should be taken for the inverter and internal devices.
---	---

Note:

- Please select proper torque to tighten screws.
- Keep the inverter, parts and components away from combustible materials during maintenance and component replacement.
- Do not carry out any isolation voltage-endurance test on the inverter and do not measure the control circuit of the inverter by megohmmeter .

Scrap Treatment

	<ul style="list-style-type: none"> ● There are heavy metals in the inverter. Deal with it as industrial effluent.
	<ul style="list-style-type: none"> ● When the life cycle ends, the product should enter the recycling system. Dispose of it separately at an appropriate collection point instead of placing it in the normal waste stream.

2. Product Overview

We Solar Pump Inverter have been tested and inspected before leaving the manufacturer. Before unpacking the product, please check product packaging for shipping damage caused by careless transportation and whether the specifications and type of the product complies with the order. If any questions, please contact the supplier of we products, or directly contact the company.

※ Inspect that the contents are complete (PV500 series Solar Pump Inverter , operation manual, keyboard extension line every each unit.)

※ Check the nameplate on the side of the Solar Pump Inverter to ensure that the product you have received is the right one you ordered.

2.1. Name Plate


MODEL	PV500-0022G1
POWER	2.2KW
INPUT	DC150-400V
OUTPUT	AC 3PH 220V 10A 0~500Hz
 Y0022G1DJ00013	

Figure 2-1 Name plate

Note: This is the example of PV500 standard products and the CE\TUV\IP20 certifications are marked according to the reality.

2.2. Type Designation Key

The type designation contains information on the inverter. The user can find the type designation on the type designation label attached to the inverter or the simple name plate.

PV500	0055	G1
①	②	③

Key	Sign	Description	Remarks
Product abbreviation	①	Product abbreviation	PV500 Series
Rated power	②	Power range	0.75-500KW

Voltage degree	③	Voltage degree	<p>G1: AC 1PH 220V (-15%)~240(+10%)</p> <p>G2: AC 3PH 220V (-15%)~240(+10%)</p> <p>G3: AC 3PH 380V (-15%)~440(+10%)</p>
-----------------------	---	-----------------------	---

2.3. Product Specifications

Model	G1	G2	G3
AC Input Voltage (V)	220(-15%)~240(+10%) (1PH)	220(-15%)~240(+10%) (3PH)	380(-15%)~440(+10%) (3PH)
Max. DC Voltage (V)	400	400	800
Start-up Voltage (V)	200	200	300
Lowest Working Voltage (V)	150	150	250
Recommended DC Input Voltage Range (V)	200~400	200~400	300~750
Recommended MPPT Voltage (V)	330	330	550

2.4. Rated Specifications

Single-phase power supply: 220V, 50/60Hz					
Type	Drive Motor	Power Capacity	Input Current	Output Current	Shape Case
	KW	KVA	A	A	
PV500-0007G1	0.75	1	4.2	4	000
PV500-0015G1	1.5	2	14	7	000
PV500-0022G1	2.2	3	23	10	001
Three -phase power supply: 220V, 50/60Hz					
Type	Drive Motor	Power Capacity	Input Current	Output Current	Shape Case
	KW	KVA	A	A	
PV500-0040G2	4	5	18.1	16	002
PV500-0055G2	5.5	7.5	28	25	003
PV500-0075G2	7.5	10	37.1	32	003
PV500-0110G2	11	15	49.8	45	004
PV500-0150G2	15	20	65.4	60	005
PV500-0185G2	18.5	25	81.6	75	005
PV500-0220G2	22	30	97.7	90	006
PV500-0300G2	30	40	122.1	110	007
PV500-0370G2	37	50	157	150	007
PV500-0450G2	45	60	185	170	007
PV500-0550G2	55	70	215	210	008
PV500-0750G2	75	100	320	300	009
Input Specification					
PV Input					
Maximum Input DC Voltage		400VDC			
Recommended MPPT Voltage Range		250~350VDC			
Recommended Input Operation Voltage		310VDC			

Grid or Backup Generator Input	
Input Voltage	Single phase 220V(-15%~30%)
Output Specification	
Rated Output Voltage	3PH 220V
Output Frequency	0~500.00Hz (default: 0~50.00Hz)
Protection	
Built-in Protection	Lighting Protection, over-current, over voltage, output phase-lose, under-load, under-voltage, short circuit, overheating, water pump idling etc.

Three-phase power supply: 380V, 50/60Hz					
Type	Drive Motor	Power Capacity	Input Current	Output Current	Shape Case
	KW	KVA	A	A	
PV500-0007G3	0.75	1	3.4	2.1	A00
PV500-0015G3	1.5	2	5	3.8	A00
PV500-0022G3	2.2	3	5.8	5	A00
PV500-0040G3	4	5	10.5	9	A01
PV500-0055G3	5.5	7.5	14.6	13	A02
PV500-0075G3	7.5	10	20.5	17	A02
PV500-0110G3	11	15	26	25	A03
PV500-0150G3	15	20	35	32	A03
PV500-0185G3	18.5	25	38.5	38	A04
PV500-0220G3	22	30	46.5	45	A04
PV500-0300G3	30	40	62	60	A05
PV500-0370G3	37	50	76	75	A05
PV500-0450G3	45	60	92	90	A06
PV500-0550G3	55	70	113	110	A06
PV500-0750G3	75	100	157	150	A07

PV500-0930G3	93	125	180	170	A07
PV500-1100G3	110	150	214	210	A08
PV500-1320G3	132	175	256	250	A08
PV500-1600G3	160	210	307	300	A09
PV500-1850G3	185	250	385	340	A09
PV500-2000G3	200	260	385	380	A09
PV500-2200G3	220	300	430	415	A09
PV500-2500G3	250	350	468	470	A10
PV500-2800G3	280	370	525	520	A10
PV500-3150G3	315	400	590	585	A10
PV500-3550G3	355	470	650	650	A11
PV500-4000G3	400	530	725	725	A11
PV500-4500G3	450	595	820	820	A11
PV500-5000G3	500	595	980	980	A11

Input Specification

PV Input

Maximum Input DC Voltage	800VDC
Recommended MPPT Voltage Range	450~600VDC
Recommended Input Operation Voltage	540VDC

Grid or Backup Generator Input

Input Voltage	Three phase 380V(-15%~30%)
---------------	----------------------------

Output Specification

Rated Output Voltage	3PH 380V
Output Frequency	0~500.00Hz (Default 0~50.00Hz)

Protection

Built-in Protection	Lighting Protection, over-current, over voltage, output phase-lose, under-load, under-voltage, short circuit, overheating, water pump idling etc.
General Parameters	
Application Site	No direct sunshine, no dust, corrosive gas, combustible gas, oil mist, steam, dripping or salinity etc.
Altitude and Derating Use	0~2000 m
	Derated use above 1000m, per 100m, the rated output current decrease 1%.
Environment Temperature and Derating Use	-10℃~40℃ (Environment Temperature be 40℃~50℃, please keep derated use.)
Humidity	≤ 95%, non-condensation
Vibration	less than 5.9 m/s ² (0.6g)
Storage Temperature	-40℃~+70℃
Efficiency	Rated Power Run≥93%
Installation	Wall or rail mounting
Protection Grade	IP20
Cooling	Forced Air Cooling

2.5. Products Dimensions

Shape No.	Dimension(mm)			Installation Size(mm)		Hole
	H	W	D	H1	W1	
A00	170	86	131.5	159	75	5mm
A01	180	96	151	165.2	83.6	5mm
A02	221.6	113	166.5	202	98.7	5mm
A03	265	160	171.5	244.3	143	6.5mm
A04	302.5	192	171.5	277	172	8.5mm
A05	348.5	227	171.5	323	208.5	8.5mm
A06	490	327.5	238	459	202.5	10mm
A07	595	352	299	574	260	10mm
A08	690	370	350	635.5	302	10mm
A009	775	470	363	745	330	10mm
A10	963	600	381	933	400	12mm
A11	1361.5	818	404.5	1280	520	28mm

*Due to Product upgrade, size update without prior notice, Consult staff for details.

3. Installation Guidelines

The chapter describes the mechanical installation and electric installation.



- Only qualified electricians are allowed to carry out what described in this chapter. Please operate as the instructions in **Safety precautions**. Ignoring these may cause physical injury or death or damage to the devices.
- Ensure the power supply of the inverter is disconnected during the operation. Wait for at least the time designated after the disconnection if the power supply is applied.
- The installation and design of the inverter should be complied with the requirement of the local laws and regulations in the installation site. If the installation infringes the requirement, our company will exempt from any responsibility. Additionally, if users do not comply with the suggestion, some damage beyond the assured maintenance range may occur.

3.1. Mechanical Installation

3.1.1. Installation Environment

The installation environment is the safeguard for a full performance and long-term stable functions of the inverter. Check the installation environment as follows:

Environment	Conditions
Installation site	Indoor
Environment temperature	<p>The ambient temperature of inverter is -10°C~50°C while air temperature change should be less than 0.5°C per minute.</p> <p>The inverter will be derated once ambient temperature exceeds 40°C. It is not recommended to use the inverter if ambient temperature is above 50°C.</p> <p>To ensure reliability, do not use the inverter if the ambient temperature changes frequently. Provide cooling fan or air conditioner to control the internal ambient temperature below the required one if the inverter is used in a close space such as in the control cabinet.</p> <p>When the temperature is too low, if the inverter needs to restart to run after a long stop, it is necessary to provide an external heating device to increase the internal temperature, otherwise damage to the devices may occur.</p>

Humidity	RH≤95%. No condensation is allowed.
Storage temperature	-40°C~+70°C. The temperature change rate is less than 1°C/minute.
Running environment condition	The installation site of the inverter should: Keep away from the electromagnetic radiation source; Keep away from contaminative air, such as corrosive gas, oil mist and flammable gas; Ensure foreign objects, such as metal power, dust, oil, water cannot enter into the inverter (do not install the inverter on the flammable materials such as wood); Keep away from direct sunlight, oil mist, steam and vibration environment.
Pollution	Pollution degree 2
Altitude	Below 1000m If the altitude is above 1000m, please derate 1% for every additional 100m.
Vibration	≤ 5.8m/s ² (0.6g)
Installation direction	The inverter should be installed on an upright position to ensure sufficient cooling effect.

Note:

- PV500 series inverters should be installed in a clean and ventilated environment according to enclosure classification.
- Cooling air must be clean, free from corrosive materials and electrically conductive dust.

3.1.2. Installation Direction

The inverter may be installed on the wall or in a cabinet.

The inverter needs be installed in the vertical position. Check the installation site according to the requirements below.

3.1.3. Installation Manner

The clearance that needs to be reserved varies with the power class of the PV500 Series, as shown in the following figure.

Figure 3.1.2 Clearance around the PV500 Series for installation

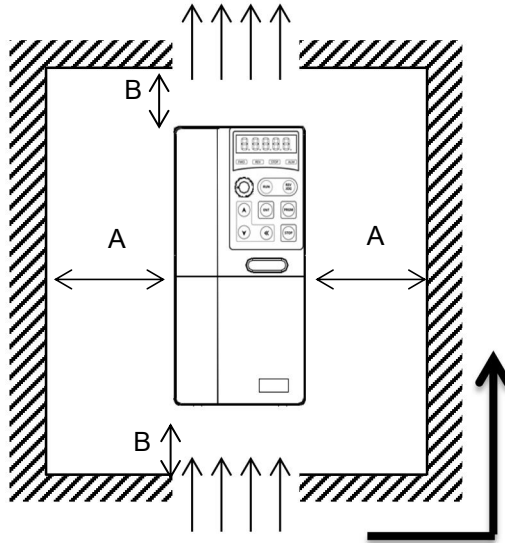


Figure 3.1.2

Installation clearance requirements on the M550 series Solar Pump Inverter of different power classes.

Power Class	Clearance Requirements	
18.5kW~22kW	A≥10	B≥200
30kW~37kW	A≥50	B≥200
45kW~110kW	A≥50	B≥300

- ※ When transporting Solar Pump Inverter , right lifting tools are required to prevent Solar Pump Inverter.
- ※ Please don' t run the Solar Pump Inverter if there is damage or lacking of components.
- ※ Do not place heavy objects on the Solar Pump Inverter.
- ※ Please prevent screw, cable pieces or other conductive objects or oil inflammable objects invading the Solar Pump Inverter.
- ※ Do not make it fall or have a strong impact.
- ※ Confirm if the installation location and object could withstand the weight of the Solar Pump Inverter.

3.2. Standard Wiring

3.2.1. Electrical Power Connections

The figure below shows the standard wiring of inverter.

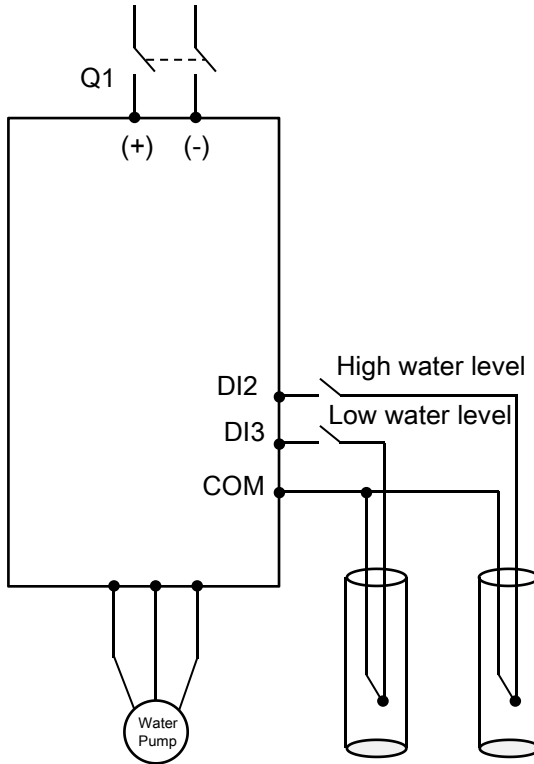



Figure 3-3 Standard wiring diagram



- The DC breaker Q1 must be installed as the protection switch for PV input.
- In parallel connection, the combination box special for PV must be used.
- When the distance between the PV input component and inverter exceeds 10 meters, type-II surge protection devices must be configured at the DC side.
- When the distance between the pump and inverter exceeds 50 meters, it is recommended to configure output reactors.
- The inverter automatically runs after being powered on. If parameters need to be set, follow the parameter setting instructions in chapter 6.
- Before connecting the braking resistor cable, remove the yellow labels of PB, (+), and (-) from the terminal blocks. Otherwise, poor connection may occur.

3.2.2. Terminals of Main Circuit

Terminal	Name	Function
R, S, T (L, N)	AC input	3PH (1PH) AC input terminals, connected to the grid Note: Use the screws equipped with the inverter for wiring.
(+), (-)	PV input	Solar cell panel input terminals
U, V, W	Inverter output	3PH/1PH AC output terminals, connected to the pump motor Note: 1PH motors must connect to terminals U and W.
	Safety grounding	Safety protection grounding terminal. Each inverter must be grounded

3.2.3. Terminals of Control Circuit

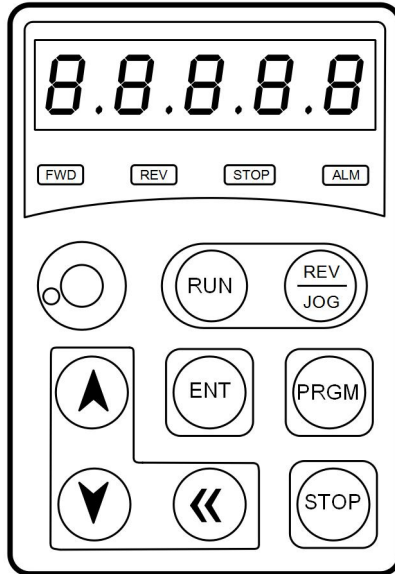
Category	Terminal symbol	Terminal name	Terminal function
Power supply	24V	24V power supply	It provides the power of $24V \pm 10\%$ and maximum current of 200mA.
	COM	Common terminal	It functions as the working power supply of digital input and output or externally connects to the sensor power supply.

Category	Terminal symbol	Terminal name	Terminal function
Digital input	DI1	Digital Input 1	Terminal feature parameters: Internal impedance: 3.3kΩ Acceptable voltage input: 12~24V Maximum input frequency: 1kHz DI1: DI1 Running Enable. DI2: It connects to the high-water switch of the normally open contact by default. DI3: It connects to the low-water switch of the normally closed contact. DI4: Reserved
	DI2	Full-water alarm	
	DI3	Empty-water alarm	
	DI4	Reserved	
Modbus RTU	RS485+ RS485-	485 communication	485 communication terminals, using the Modbus RTU protocol
Relay output	TA、TB	Normally open contact of relay 1	Contact capacity: 3A/AC250V, 1A/DC30V They cannot be used for high frequency switch output. During the application of auto power frequency & PV switching, the AC input contactor coil is controlled by the normally closed contact of the relay.
	TB、TC	Normally closed contact of relay 1	

4. Keypad Operation

4.1. Operation Panel

You can modify the parameters, monitor the working status and start or stop the Solar Pump Inverter by operating the operation panel, as shown in the following figure.



Operation panel figure

Function indicator lamp instructions

FWD: Solar pump inverter forward indicator lighting

REV: Solar pump inverter reset indicator lighting

STOP: Solar pump inverter pause indicator lighting

ALM : Solar pump inverter fault indicator lighting

4.2. Description of Keys on the Operation Panel

Key sign	Name	Function description
PRGM	Program	Enter or exit menu.
ENTER	Confirm	Enter the menu interfaces level by level, and confirm the parameter setting.
▲	Increase	Increase the data or the function code.
▼	Decrease	Decrease the data or the function code.
<<	Shift	Select the displayed parameters in turn in the stop or running state, and select the digit to be modified when modifying parameters.
RUN	Run	Start the Solar Pump Inverter in the operation panel control mode.
STOP/ RESET	stop/reset	Stop the Solar Pump Inverter when it is in the running state and perform the reset operation when it is in the fault state.
REV/JOG	Multi-function selection	In keypad control mode, it is used to switch forward and reverse.

4.3. Example of Key Operation

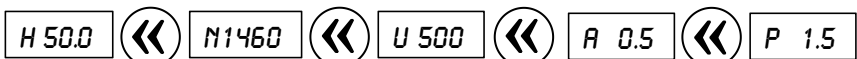
4.3.1. Run and Stop

After power on, press the start key to run the inverter, and the stop key to stop the inverter. The operation indicator is always on when the inverter is running; when the inverter is stopped, the stop indicator is always on.

4.3.2. Operating Displays

When the inverter is running, the lower display screen displays the output frequency by default. Press the "<<" , and the display screen will switch between various operation interfaces, starting from the output frequency, and then display the motor speed, DC bus voltage, output current, output power in turn.

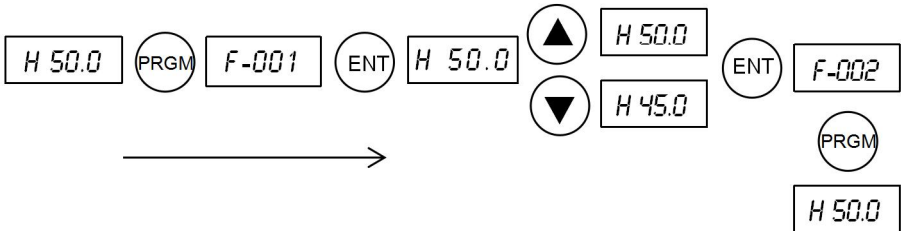
Examples are shown in the figure below.



4.3.3. Changing Parameters

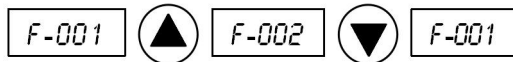
When the inverter displays the main interface, press "PRGM" to enter the first-level menu interface, and then select the parameters to access at the primary menu interface through "▼/▲"; press "ENT" to enter the secondary menu interface, where the value can be inquired or modified.

When the inverter displays the secondary menu interface, press "PRGM" or "ENT" can be sent back to the primary menu interface, but press "PRGM" will not save the modified parameters. When the inverter displays the primary menu interface, press "PRGM" to return to the main interface.

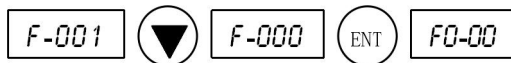


4.3.4. Selecting Parameters

When the inverter displays the primary menu interface, press "▲" or "▼" to switch the parameters you want to access.



The inverter also has the monitoring parameters. The method to view them is to first select the parameters as F-001 at the first-level parameter interface, and then press "ENT" to enter the access interface of the monitoring parameters.



4.3.5. Parameter Factory Reset

The parameter F-064 can be used to default the inverter. F-064 default value is 0, when setting to 1 and press "ENT" to reset the parameters to the factory default value.

4.3.6. Commissioning



- Disconnect all power supplies applied to the inverter before the terminal wiring and wait for at least the designated time after disconnecting the power supply.
- High voltage is present inside the inverter during running. Do not carry out any operation except for the keypad setting.
- The inverter automatically runs once power on. If parameters need to be set, follow the guidelines in this chapter.

4.3.7. Inspection Before Operation

Before powering on the inverter, ensure that:

- a. The inverter is grounded reliably.
- b. The wiring is correct and reliable.
- c. The AC/DC breaker is selected correctly.
- d. The PV input voltage is in the allowed range of the inverter.
- e. The type, voltage, and power of the motor match those of the inverter.

4.3.8. Trial Run

Close the DC breaker. The inverter automatically runs with a delay of 10 seconds. Check the water yield of the pump. If the water yield is normal, the trial run is successful. If the water yield is under the normal value, exchange any two motor cables, connect the cables, and perform trial run again.

4.3.9. Parameter Setting

After the inverter is powered on, if you need to set parameters, press the

PRGM key, enter the parameter modification interface to set parameters,

press **ENT** to save, disconnect the power switch and close it, and then put

it into operation again.

5. Function Parameters

“○”: means the set value of the parameter can be modified on stop and running state;

“⊙”: means the set value of the parameter cannot be modified on the running state;

“●”: means the value of the parameter is the real detection value which cannot be modified;

Note: The inverter implements auto checking and restriction on the parameter modification property. This prevents users from modifying parameters by incorrect operation.

5.1. Common Function Parameters

5.1.1. Parameter List

Parameter	Name	Parameter	Name
F-001	Maximum frequency	F-034	Weak light recovery voltage
F-002	Minimum frequency	F-035	Weak light restart time
F-003	Preset frequency	F-036	Water shortage detection time
F-004	Output phase sequence	F-037	Water shortage detection frequency
F-005	Acceleration time	F-038	Water shortage detection current
F-006	Deceleration time	F-039	Water shortage restart time
F-007	Stop mode	F-040	DI terminal logic
F-008	Start command source	F-041	DI1&2 terminal function selection
F-009	Auto-start enable	F-042	DI3&4 terminal functional selection
F-010	Auto-start enable delay	F-043	Terminal command mode
F-011	Target frequency setting source	F-044	DO terminal logic
F-012	Rated power		
F-013	Rated voltage	F-045	Relay output function selection
F-014	Rated current	F-046	Relay output adjust threshold

F-015	Rated frequency	F-047	Relay 1 output delay time
F-016	Rated speed	F-048	Relay 2 output delay time
F-017	VF curve setting	F-049	Analog input / output signal format
F-018	VF torque boost	F-050	AI curve 1 gain
F-019	VF torque boost cutoff frequency	F-051	AI curve 1 zero-bias coefficient
F-020	Carrier frequency	F-052	AI Curve 2 gain
F-021	VMPP voltage setting source	F-053	AI curve 2 zero-bias coefficient
F-022	VMPP voltage keypad setting	F-054	AO function selection
		F-055	AO1 zero-bias coefficient
F-023	Acceleration PID proportional gain Kp	F-056	AO1 gain
F-024	Acceleration PID integration time Ki	F-057	Device address
F-025	Deceleration PID proportional gain Kp	F-058	Baud rate
F-026	Deceleration PID integration time Ki	F-059	Data format
F-027	PID type	F-060	Communication loss timeout
F-028	VMPP voltage upper limit	F-061	Fault enable selection
F-029	VMPP voltage lower limit	F-062	Fault auto-reset times
F-030	MPPT initial voltage	F-063	Fault Auto-reset interval time
F-031	PV open circuit voltage	F-064	Factory parameter default
F-032	Weak light sleep frequency	F-065	User password
F-033	Weak light sleep delay time	F-066-F-108	Reserved

5.2. Description of Parameter

Parameter	Instruction	Min	Default	Max	Unit	Permissions
F-001	Maximum frequency	F-002	50	500	Hz	○
	Maximum output frequency of the inverter.					
F-002	Minimum frequency	0	0	F-001	Hz	○
	Minimum output frequency of the inverter.					
F-003	Preset frequency	0	50	F-001	Hz	○
	When the target frequency is selected as “Digital Settings”, parameter sets the initial value of the target frequency of the inverter. This parameter temporarily gets invalid after modifying the target frequency with the “Up / Down” key, unless it is modified again.					
F-004	Output phase sequence	0	0	1	-	○
	0: U V W 1: U W V This parameter changes the motor direction without changing the motor wiring. Note: This parameter initializes to 0 after the parameter default, so be cautious when using in some cases when motor running direction is prohibited to change.					
F-005	Acceleration time	0	5	500	s	○
	Acceleration time required for the inverter to accelerate from 0 Hz to the maximum frequency (F-001).					
F-006	Deceleration time	0	5	500	s	○
	The deceleration time required for the inverter to decelerate from the maximum frequency (F-001) to 0 Hz.					
F-007	Stop mode	0	1	1	-	○
	0: Ramp to stop. After the stop command is valid, the inverter reduces the output frequency according to the deceleration time, and stops after the output frequency is reduced to 0.					
F-008	Start command source	0	0	2	-	○

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	0: Panel control (LED off) . Press the RUN key to run, and press the STOP key to stop. 1: Terminal control (LED on) . The inverter is directly controlled by the control terminal. By default DI1 controls forward run and DI2 controls reverse run. 2: Communication control (LED flash) . Controlled via Modbus RTU (RS485).					
F-009	Auto-start enable	0	1	1	-	○
	0: disable 1: enable					
F-010	Auto-start enable delay	0	10	120	s	○
F-011	Target frequency setting source	0	0	6	-	◎
	0: Digital setting. The initial frequency is set by F-003, and then modified by UP / DOWN. 1: Keyboard potentiometer settings. When the potentiometer rotates clockwise, the target frequency increases linearly. 2: AI1 set. When the signal of the analog input 1 increases, the target frequency increases linearly. 3: AI2 set. When the signal of the analog input 2 increases, the target frequency increases linearly. 4: Reserve 5: MPPT 6: Communication Settings. Controlled via Modbus RTU (RS485).					
F-012	Rated power	Reference model			KW	◎
	This parameter is set to the rated power of the motor (nameplate).					
F-013	Rated voltage	1	380	500	V	◎
	This parameter is set to the rated voltage of the motor (nameplate).					
F-014	Rated current	Reference model			A	◎
	This parameter is set to the rated current of the motor (nameplate).					
F-015	Rated frequency	0	50	500	Hz	◎

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	This parameter is set to the rated frequency of the motor (nameplate).					
F-016	Rated speed	1	1460	65535	Rpm	⊙
	This parameter is set to the rated speed of the motor (nameplate).					
F-017	V/F curve setting	0	2	2	-	⊙
	0: Linear V/F. Suitable for the normal constant torque load. 2: Square V/F. Suitable for centrifugal load such as fan and pumps.					
F-018	V/F torque boost	0.00%	type	30.00%	-	○
	To compensate torque characteristics at the low frequency, increasing the output voltage at the low frequency. However, if the torque boost is too large, the motor is easy to get hot, the inverter is easy to be over current. It is recommended to increase this parameter when the load is heavy and the motor starting torque is insufficient. Torque boost can be reduced when the load is light.					
F-019	V/F Torque boost cutoff frequency	0	50	F-001	Hz	⊙
	Below this frequency, the output torque increase in V / F mode, torque boost is invalid when the output frequency is over this parameter.					
F-020	Carrier frequency	0.5	type	16	kHz	○
	This parameter changes the carrier frequency of the inverter. When the carrier frequency is low, the high-order harmonics of output current increases, this leads to the increasing motor loss, and the high motor. When the carrier frequency is high, the motor loss is reduced, the motor temperature rise decreases, but the inverter loss increases, the inverter temperature rise increases, and the interference get worse.					
F-021	VMPP voltage setting source	0	1	1	-	○
	0: Keyboard reference 1: MPPT track					
F-022	VMPP voltage keypad setting	250	type	800	V	○

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	If F-021 is 0, the voltage reference is decided by the function code.(During testing, the voltage reference should be lower than the PV input voltage, otherwise the system will operate at the minimum frequency)					
F-023	Acceleration PID proportional gain Kp	0	20	100	-	○
	The proportional gain of the PID controller determines the regulatory strength of the whole PID regulator, and the larger the Kp value, the greater the regulatory strength. If this value is large, the inverter can respond quickly and the output frequency is changed greatly, even the difference between the reference and the feedback is very small. But the large value can lead to instability.					
F-024	Acceleration PID integration time Ki	0	5	500	s	○
	The PID controller integration time, which determines the intensity of the PID regulator integration adjustment, and the shorter the integration time, the greater the adjustment intensity. The system is easy to oscillate if this parameter value is too small.					
F-025	Deceleration PID proportional gain Kp	0	20	100	-	○
	Same as F-023					
F-026	Deceleration PID integration time Ki	0.01	2	10	s	○
	Same as F-024					
F-027	PID type	0	1	1	-	○
	0: common PID 1: fast PID					
F-028	VMPPT voltage upper limit	250	type	800	V	○
	220V: 310.0V 380V: 540.0V					

Parameter	Instruction	Min	Default	Max	Unit	Permissions
F-029	VMPPT voltage lower limit	250	type	800	V	○
	220V type: 250.0V 380V type: 450.0V					
F-030	MPPT initial voltage	50	70	100	%	○
F-031	PV open-circuit voltage	250	type	800	V	○
F-032	Weak light sleep frequency	F-002	30.00Hz	F-001	Hz	○
	When the output frequency is less than or equal to this parameter value, the delay timer starts, after the timer reaches F-033 value when keeping in weak light status, the inverter enters sleep mode.					
F-033	Weak light sleep delay time	5	120	1200	s	○
	Weak light sleep delay time setting. When the output frequency is less than or equal to F-032 value, the delay timer starts. After the timer reaches this parameter value when keeping in weak light status, the inverter enters sleep mode. If the weak light is discontinuous, the delay timer will be cleared automatically.					
F-034	Weak light recovery voltage	250	type	800	V	○
F-035	Weak light restart time	5	300	3600	s	○
F-036	Water shortage detection time	5	120	1200	s	○
	The interval between water pump shortage and alarm detection.					
F-037	Water shortage detection frequency	0	45	F-001	Hz	○

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	When the output frequency reaches this parameter value, and the current is less than F-038 value, inverter trips Err52 water shortage fault.					
F-038	Water shortage detection current	0	40	200	%	○
	Percentage of the motor rated current. The inverter trips Err52 water shortage fault if the output current is less than this parameter.					
F-039	Water shortage restart time	1	20	2000	Min	○
	The inverter restarts automatically after the time set by this parameter after the water shortage fault.					
F-040	DI terminal logic	0	0	1111	-	◎
	0: High level active 1: Low level active Four digits can only be set as 0 or 1 for each digit, corresponding to the valid mode of DI1~4, respectively, they are: Ones digit: DI1; Tens digit: DI2; Hundreds digit: DI3; Thousands digit: DI4					
F-041	DI1&2 terminal function selection	0	601	1616	-	◎
	Ones and tens digits: DI1 function selection; Hundreds and thousands digits: DI2 function selection. 0: No function 1: Forward running FWD 2: Reverse running REV 3: Three-line operation control. 4: Well water shortage. 5: Well water full. 6: Fault reset. 7: Free parking. Blocking the PWM output. 8: Emergency stop. When the terminal input is valid, the inverter stops in the minimum time.					

Parameter	Instruction	Min	Default	Max	Unit	Permissions
F-042	DI3&4 terminal function selection	0	504	1616	-	⊙
	Ones and tens digits: DI3 function selection; Hundreds and thousands digits: DI4 function selection. Functions are same as above.					
F-043	Terminal command mode	0	0	3	-	⊙
	0: Two lines mode 1 1: Two lines mode 2 2: Three lines mode 1 3: Three lines mode 2					
F-044	DO terminal logic	0	0	11	-	○
	0: Positive logic. It is in valid state when the relay output terminal and the corresponding common terminal are connected and in invalid state when disconnected. 1: Negative logic. It is in valid state when the relay output terminal and the corresponding common terminal are disconnected and in invalid state when connected. Ones digit: RELAY1; Tens digit: RELAY2					
F-045	Relay output function selection	0	201	1312	-	○
	ones and tens digits: RELAY1 function selection; hundreds and thousands digits: RELAY2 function selection. 0: No function 1: Inverter running. When the inverter is in running status, the output frequency can be zero, the output is ON. 2: Fault output. When the inverter is in the faulty and stop status, the output is ON. 3: Ready to run. When the power supply of the inverter main circuit and the control circuit is stable, and there is no fault detected, and the inverter is ready to run, the output is ON. 4: Maximum frequency reached. When the operating frequency reaches the maximum frequency, the output is ON.					

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	<p>5: Minimum frequency reached. When the operating frequency reaches the minimum frequency, the output is ON. The signal is OFF when the inverter is stopped.</p> <p>6: Maximum torque reached. When the inverter is in speed control mode, if the output torque reaches the torque limit, the inverter is in stall protection status and output is ON.</p> <p>7: Communication control. Relay output is controlled by Modbus RTU (RS485).</p> <p>8: Motor overload alarm. Output is ON before the motor overload protection.</p> <p>9: Inverter overload alarm. Output is ON at 10s before the inverter overload protection.</p> <p>10: Reserve</p> <p>11: Target frequency reached. When the inverter output frequency reaches the value of F-046, the output is ON.</p> <p>12: Current reached. When the inverter operating current reaches the value of F-046, the output is ON.</p> <p>13: Accumulated power-on time reached. The output is on when the accumulated power time of inverter exceeds F-046 value.</p>					
F-046	Relay output adjust threshold	0	100	200	%	○
	Adjust the threshold when the relay output function is set as 11 to 13					
F-047	Relay 1 output delay time	0	0	3600	s	○
	Set the delay time of relay 1 from the status change to the actual output change.					
F-048	Relay 2 output delay time	0	0	3600	s	○
	Set the delay time of relay 2 from the status change to the actual output change.					
F-049	Analog input / output signal format	0	0	222	-	◎
	0: 0-10V ones digit: AI1		1: 0-20mA tens digit: AI2		2: 4-20mA hundreds digit: AO1	
F-050	AI curve 1 gain	0	100	2000	%	◎
	Signal gain of analog input 1, the maximum gain is 20 times.					

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	For example, using AI1 as the target frequency setting, F-049 is set to "0:0-10V", and this parameter is set to 200%; then a 5V input signal enables the inverter to run at the maximum frequency.					
F-051	AI curve 1 zero-bias coefficient	-10	0	10	V	⊙
	The signal bias value of analog input 1, maximum + / -10V. For example, using AI1 as the target frequency setting, F-049 is set to "0:0-10V", this parameter is set to 2.0; then an 8V input signal will make inverter run at the maximum frequency. When F-049 is set to "1:0-20mA", the 10.0V indicates the offset 20mA. The other values also correspond linearly. Internal calculated value of AI1 = actual input * F-050 + F-051					
F-052	AI curve 2 gain	0	100	2000	%	⊙
	The signal gain of analog input 2, the maximum gain is 20.					
F-053	AI curve 2 zero-bias coefficient	-10	0	10	V	⊙
	The signal offset value of analog input 2, the maximum offset is + / -10V.					
F-054	AO function selection	0	0	6	-	○
	The AO terminal of the inverter can provide 7 functions: 0: Running frequency. 1: (Target) Preset frequency. 2: Output current. The 100% AO output signal corresponds to 2 times the rated current. 3: Output torque. The 100% AO output signal corresponds to 2 times the rated torque. This value is the absolute value of the torque. 4: Output power. The 100% AO output signal corresponds to 2 times the rated power. 5: Output voltage. The 100% AO output signal corresponds to 1.2 times the rated voltage. 6: Communication control. The AO output signal is controlled by the Modbus RTU (RS485).					
F-055	AO1 zero-bias coefficient	-10	0	10	V	○
	The signal offset value of the analog output, the maximum offset is + / -10V.					

Parameter	Instruction	Min	Default	Max	Unit	Permissions
F-056	AO1 gain	0	100	2000	%	○
	The signal gain of analog output, the maximum gain is 20.					
F-057	Device address	1	1	247	-	○
	Inverter address when using the communication function. If the value is set to 0, the host broadcast function is enabled.					
F-058	Baud rate	0	0	4	-	○
	ones digit: MODBUS 0: 9600BPS 1: 19200BPS 2: 38400BPS 3: 57600BPS 4: 115200BPS					
F-059	Data format	0	2	3	-	○
	0: No parity (8-N-2) 1: even parity (8-E-1) 2: odd parity (8-O-1) 3: No parity (8-N-1)					
F-060	Communication loss timeout	0	0	60	s	○
	Communication timeout detection is not enabled when the parameter is set to 0.0 seconds. When this parameter is set to 0.1 seconds or above, if the interval between current communication message and the next communication message exceeds the communication overtime time, the inverter will report a communication fault (Err18).					
F-061	Fault enable selection	0	11111	11111	-	○
	0: No protection 1: Enable protection					

Parameter	Instruction	Min	Default	Max	Unit	Permissions
	ones digit: Motor overload protection selection tens digit: Output phase loss protection selection hundreds digit: Input phase loss protection selection thousands digit: AI lower limit protection selection ten thousands digit: Power-on time reached protection selection					
F-062	Fault auto-reset times	0	0	20	-	○
	When the inverter selects fault automatic reset, this parameter is used to set the number of times of automatically reset. After this number, inverter remains in fault state.					
F-063	Fault Auto-reset interval time	0.1	1	100	s	○
	Waiting time between inverter fault alarm and fault auto-reset.					
F-064	Factory parameter default	1	-	2	-	◎
	1: Restore factory parameters 2: Clear record information					
F-065	User password	0	-	65535	-	○
	The inverter provides the user password protection function. When F-065 is set to non-zero, it is used as user password, and exiting function code editing state will enable the password protection. Press the SET key again to display "- - - -", and only input the correct user password to enter the parameter interface. To cancel password protection, only entering the correct password and set this parameter to 0. Please remember this parameter value if password protection is enable!					

5.3. Common Function Parameters

This product has monitoring parameters starting from F0-00, they can only be accessed, cannot be modified. To access monitoring parameters, enter parameter F-000 first.

Function code	Explain	Units
F0-00	inverter running state.1:Foreward 2:Reversal 3:Machine halt	-
F0-01	Fault code	-
F0-02	Set frequency	Hz
F0-03	Operating frequency	Hz
F0-04	Running speed	Rpm
F0-05	Output voltage	V
F0-06	Output current	A
F0-07	Output power	KW
F0-08	Busbar voltage	V
F0-09	Output torque	Nm
F0-10	Power factor Angle	-
F0-11	DI input state.The default display ----,The effective values of DI1-DI4 are ----↑, ----↑, ---↑, ---↑-respectively.	-
F0-12	DO output state. The default display ----, The effective values of RELAY1 are ----↑.	-
F0-13	AI simulation input value	V
F0-14	Retain	-
F0-15	AI3 voltage. Relative to the amplitude of the panel knob, 10.00 corresponds to a clockwise rotation to the end.	V
F0-16	PID parameter setting	-

Function code	Explain	Units
F0-17	PID feedback	-
F0-18	Remaining running time	Min
F0-19	Current power-on time	Min
F0-20	Current running time	Min
F0-21	Accumulated running time	Hour
F0-22	Total power-on time	Hour
F0-23	Accumulated power consumption	Kwh
F0-24	Motor temperature value	°C
F0-25	IGBT temperature value	°C
F0-26	Actual switching frequency	KHz
F0-27	True M-axis current value	A
F0-28	True T-axis current value	A
F0-29	True value of feedback speed	Hz
F0-30~F0-41Retain		
F0-42	Product serial number 16 bits lower	-
F0-43	Product serial number 16 bits higher	-
F0-44	Moter Boot version number	-
F0-45	The type of CPU	-
F0-46	Hardware version of the power board	-

Function code	Explain	Units
F0-47	Power board software version	-
F0-48	Software version number of the control board	-
F0-49	Product number	-
F0-50	Plant code	-
F0-51	Type of the third(latest)fault	-
F0-52	Type of the second fault	-
F0-53	Type of the first fault	-
F0-54	Frequency of the third fault	Hz
F0-55	Current at third fault	A
F0-56	Bus voltage of the third fault	V
F0-57	inverter status of the third fault	-
F0-58	Time of the third fault(time from this power-on)	Min
F0-59	Time of the third fault(time from runtime)	Hour
F0-60	Frequency of the second fault	Hz
F0-61	Current at second fault	A
F0-62	Bus voltage of the second fault	V
F0-63	inverter status of the second fault	-
F0-64	Time of the second fault(time from this power-on)	Min
F0-65	Time of the second fault(time from runtime)	Hour

Function code	Explain	Units
F0-66	Frequency of the first fault	Hz
F0-67	Current at first fault	A
F0-68	Bus voltage of the first fault	V
F0-69	inverter status of the first fault	-
F0-70	Time of the first fault(time from this power-on)	Min
F0-71	Time of the first fault(time from runtime)	Hour

6. Fault Diagnosis and Solution

After the fault occurs, the processing steps are as follows:

1. When the inverter fails, please confirm whether the keyboard display is abnormal? If yes, please consult our office.
2. If there is no abnormality, please check the following function codes, confirm the corresponding fault record parameters, and determine the true state when the current fault occurs through all parameters;
3. Check the table below and check whether there is any corresponding abnormal state according to the specific countermeasures.
4. Troubleshooting or asking for help from relevant personnel;
5. After confirming the troubleshooting, reset the fault and start the operation.

6.1. Error and Solutions of Solar Pump Inverter

Fault Name	Display	Possible Causes	Solutions
Inverter unit protection	Err01	<ol style="list-style-type: none"> 1. The output circuit is grounded or short circuited 2. The connecting cable of the motor is too long 3. The module overheats 4. The internal connections become loose 5. The main control board is faulty 6. The drive board is faulty 7. The inverter module is faulty 	<ol style="list-style-type: none"> 1. Eliminate external faults 2. Install a reactor or an output filter 3. Check the air filter and the cooling fan 4. Connect all cables properly 5. Contact for Technical support 6. Contact for Technical support 7. Contact for Technical support

Fault Name	Display	Possible Causes	Solutions
Over current during acceleration	Err02	<ol style="list-style-type: none"> 1. The output is grounded or short circuited 2. The control method is vector and no parameter identification 3. The acceleration time is too short 4. Manual torque boost or V/F curve is not appropriate 5. The voltage is too low 6. The startup operation is performed on the rotating motor. 7. A sudden load is added during acceleration 8. The inverter power rating is too small. 	<ol style="list-style-type: none"> 1. Eliminate external faults 2. Perform the motor auto-tuning 3. Increase the acceleration time 4. Adjust the manual torque boost or V/F curve 5. Adjust the voltage to normal range 6. Select rotational speed tracking restart or start the motor after it stops 7. Remove the added load. 8. Select a higher power rating inverter.

Fault Name	Display	Possible Causes	Solutions
Over current during deceleration	Err03	<ol style="list-style-type: none"> 1. The output is grounded or short circuited 2. The control method is vector and no parameter identification 3. The deceleration time is too short 4. The voltage is too low 5. A sudden load is added during deceleration 6. The braking unit and braking resistor are not installed 	<ol style="list-style-type: none"> 1. Eliminate external faults 2. Perform the motor auto-tuning 3. Increase the deceleration time 4. Adjust the voltage to normal range 5. Remove the added load. 6. Install the braking unit and braking resistor
Over current at constant speed	Err04	<ol style="list-style-type: none"> 1. The output is grounded or short circuited 2. The control method is vector and no parameter identification 3. The voltage is too low 4. A sudden load is added during deceleration 5. The inverter power rating is too small. 	<ol style="list-style-type: none"> 1. Eliminate external faults 2. Perform the motor auto-tuning 3. Adjust the voltage to normal range 4. Remove the added load. 5. Select a higher power rating inverter.

Fault Name	Display	Possible Causes	Solutions
Over voltage during acceleration	Err05	<ol style="list-style-type: none"> 1. The input voltage is too high 2. An external force drives the motor during acceleration 3. The acceleration time is too short 4. The braking unit and braking resistor are not installed 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor 3. Increase the acceleration time 4. Install the braking unit and braking resistor
Over voltage during deceleration	Err06	<ol style="list-style-type: none"> 1. The input voltage is too high 2. An external force drives the motor during deceleration 3. The deceleration time is too short 4. The braking unit and braking resistor are not installed 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor 3. Increase the deceleration time 4. Install the braking unit and braking resistor
Over voltage at constant speed	Err07	<ol style="list-style-type: none"> 1. The input voltage is too high 2. An external force drives the motor during running 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range 2. Cancel the external force or install a braking resistor
Control power supply fault	Err08	<ol style="list-style-type: none"> 1. The input voltage is not within the allowable range 	<ol style="list-style-type: none"> 1. Adjust the voltage to normal range

Fault Name	Display	Possible Causes	Solutions
Under voltage	Err09	<ol style="list-style-type: none"> 1. Instantaneous power failure 2. The input voltage is not within the allowable range 3. The DC bus voltage is abnormal 4. The rectifier bridge and inrush resistor are faulty 5. The drive board is faulty 6. The control board is faulty 	<ol style="list-style-type: none"> 1. Reset the fault 2. Adjust the voltage to normal range 3. Contact for Technical support 4. Contact for Technical support 5. Contact for Technical support 6. Contact for Technical support
Inverter overload	Err10	<ol style="list-style-type: none"> 1. The load is too heavy or locked-rotor occurs on the motor 2. The inverter power rating is too small . 	<ol style="list-style-type: none"> 1. Reduce the load and check the motor and mechanical condition. 2. Select a higher power rating inverter.
Motor overload	Err11	<ol style="list-style-type: none"> 1. F-014 is set improperly 2. The load is too heavy or locked-rotor occurs on the motor 3. The inverter power rating is too small. 	<ol style="list-style-type: none"> 1. Set F-014 correctly 2. Reduce the load and check the motor and mechanical condition 3. Select a higher power rating inverter.

Fault Name	Display	Possible Causes	Solutions
Power input phase loss	Err12	<ol style="list-style-type: none"> 1. The three-phase power input is abnormal 2. The drive board is faulty 3. The lightening board is faulty 4. The control board is faulty 	<ol style="list-style-type: none"> 1. Eliminate external faults 2. Contact for Technical support 3. Contact for Technical support 4. Contact for Technical support
Power output phase loss	Err13	<ol style="list-style-type: none"> 1. The cable connecting the inverter and the motor is faulty 2. The three-phase outputs are unbalanced when the motor is running 3. The drive board is faulty 4. The module is faulty 	<ol style="list-style-type: none"> 1. Eliminate external faults 2. Check whether the motor three-phase winding is normal 3. Contact for Technical support 4. Contact for Technical support
Module overheat	Err14	<ol style="list-style-type: none"> 1. The ambient temperature is too high 2. The air filter is blocked 3. The fan is damaged 4. The thermally sensitive resistor of the module is damaged 5. The inverter module is damaged 	<ol style="list-style-type: none"> 1. Lower the ambient temperature 2. Clean the air filter 3. Replace the damaged fan 4. Replace the damaged thermally sensitive resistor 5. Replace the inverter module

Fault Name	Display	Possible Causes	Solutions
External equipment fault	Err15	<ol style="list-style-type: none"> 1. External fault signal is input via DI 2. External fault signal is input via virtual I/O 	<ol style="list-style-type: none"> 1. Reset the operation 2. Reset the operation
Communication fault	Err16	<ol style="list-style-type: none"> 1. The host computer is in abnormal state 2. The communication cable is faulty 3. The communication parameters are set improperly 	<ol style="list-style-type: none"> 1. Check the cabling of host computer 2. Check the communication cabling 3. Set the communication parameters properly
Contactor fault	Err17	<ol style="list-style-type: none"> 1. The drive board and power supply are faulty 2. The contactors is faulty 	<ol style="list-style-type: none"> 1. Replace the faulty drive board or power supply board 2. Replace the faulty contactor
Current detection fault	Err18	<ol style="list-style-type: none"> 1. The HALL device is faulty 2. The drive board is faulty 	<ol style="list-style-type: none"> 1. Replace the faulty HALL device 2. Replace the faulty drive board
Motor auto-tuning fault	Err19	<ol style="list-style-type: none"> 1. The motor parameters are not set according to the nameplate 2. The motor auto-tuning times out 	<ol style="list-style-type: none"> 1. Set the motor parameters according to the nameplate properly 2. Check the cable between inverter and the motor

Fault Name	Display	Possible Causes	Solutions
EEPROM write fault	Err21	1. The EEPROM chip is damaged	1. Replace the main control board
Short circuit to ground	Err23	1. The motor is short circuited to the ground	1. Replace the cable or motor
Accumulative running time reached	Err26	1. The accumulative running time reaches the setting value	1. Clear the record through the parameter initialization function
Accumulative power-on time reached	Err29	1. The accumulative power-on time reaches the setting value	1. Clear the record through the parameter initialization function
Pulse-by-pulse current limit fault	Err40	1. The load is too heavy or locked-rotor occurs on the motor 2. The inverter power rating is too small.	1. Reduce the load and check the motor and mechanical condition 2. Select a higher power rating inverter.
Motor switchover fault during running	Err41	1. Change the selection of the motor via terminal during running of the inverter.	1. Perform motor switchover after the inverter stops
Water shortage fault	A52	1. Whether the pressure sensor is damaged 2. Whether the parameter setting of the inverter is wrong 3. Whether the pipe network and motor are correct	1. Detection sensor 2. Check the parameter setting of the inverter 3. Check the motor and pipe network

Fault Name	Display	Possible Causes	Solutions
Over pressure fault	Err53	<ol style="list-style-type: none">1. Whether the pressure sensor is damaged2. Whether the parameter setting of the inverter is wrong	<ol style="list-style-type: none">1. Check the pressure sensor2. Check whether the inverter F5-18 is set correctly

6.2. Common Faults and Solutions

SN	Fault	Possible Causes	Solutions
1	There is no display at power-on	<ol style="list-style-type: none"> 1. There is no power supply to the inverter or the power input to the inverter is too low. 2. The power supply of the switch on the drive board of the inverter is faulty 3. The rectifier bridge is damaged. 4. The inrush resistor is faulty. 5. The control board or the operation panel is faulty 6. The cable connecting the control board and the drive board and the operation panel breaks. 	<ol style="list-style-type: none"> 1. Check the power supply 2. Check the DC bus voltage 3. Unplug the 10-core ribbon cable again. 4. Seek service from manufacturers.
2	"Err23" is displayed at power-on	<ol style="list-style-type: none"> 1. The motor or the motor output cable is short circuited to the ground. 2. The inverter is damaged. 	<ol style="list-style-type: none"> 1. Measure the insulation of the motor and the output cable with a megger 2. Contact us for technical support
3	Err14 (Module overheat) fault is reported frequently	<ol style="list-style-type: none"> 1. The setting of switching frequency is too high. 2. The cooling fan is damaged or the air filter is blocked. 3. Components inside the inverter are damaged (thermocouple or other). 	<ol style="list-style-type: none"> 1. Reduce the switching frequency (F-020) 2. Replace the fan and clean the air filter 3. Contact us for technical support

4	The motor does not rotate after the inverter runs	<ol style="list-style-type: none"> 1. Check the motor and the motor cables. 2. The inverter parameters are set improperly (Motor parameters). 3. The cable between the drive board and the control board is in poor contact. 4. The drive board is faulty. 	<ol style="list-style-type: none"> 1. Ensure the cable between the inverter and the motor is normal 2. Replace the motor or clear mechanical faults 3. Check the re-set motor parameters 4. Contact us for technical support
5	The DI terminals are disabled	<ol style="list-style-type: none"> 1. The parameters are set incorrectly. 2. The external signal is incorrect. 3. The control board is faulty. 	<ol style="list-style-type: none"> 1. Check and reset the parameters in group F1. 2. Re-connect the external signal cables 3. Contact us for technical support
6	The inverter reports over current and over voltage frequently	<ol style="list-style-type: none"> 1. The motor parameters are set improperly. 2. The acceleration / deceleration time is improper. 3. The load fluctuates. 	<ol style="list-style-type: none"> 1. Re-set motor parameters or re-perform the motor auto-tuning 2. Set proper acceleration/deceleration time 3. Contact us for technical support
7	Err17 is reported upon power-on or running	The inrush contactor is not picked up.	<ol style="list-style-type: none"> 1. Check whether the contactor cable is loose 2. Check whether the contactor is faulty 3. Check whether 24V power supply of the contactor is faulty 4. Contact us for technical support

Maintenance Bond

- (1) The free warranty only refers to the inverter itself.
- (2) In case of failure or damage within the warranty terms, our company will be responsible for the 18-month warranty (from the date of delivery, the bar code on the fuselage will prevail, and if there is a contract agreement, it will be implemented according to the agreement), and reasonable maintenance fees will be charged for more than 18 months.
- (3) During the warranty period, in case of the following situations, our company will charge a certain maintenance fee:
 - A) Machine damage caused by users' failure to comply with the regulations in the user manual;
 - B) Machine damage caused by errors in use and unauthorized maintenance and modification;
 - C) Damage caused by fire, flood, abnormal voltage, etc.;
 - D) Damage caused by using the inverter for abnormal functions;
 - E) Damage caused by artificial falling and transportation after purchase;
 - F) Failure and damage caused by obstacles outside the machine (such as external equipment factors).
- (4) The relevant service fees shall be calculated according to the unified standard of the manufacturer. If there is any contract, the contract shall take precedence.
- (5) If there is any problem in the service process, please contact the supplier in time.
- (6) Our company has the final right to interpret the warranty description.

Product Warranty Card

Customer information	Address:	
	Name:	Contact person:
	Postal code:	Contact number:
Product information	Product model:	
	Barcode (pasted here):	

Certification

This product has gone through rigorous quality control tests at factory.

Surveyor	
Approval Mark	