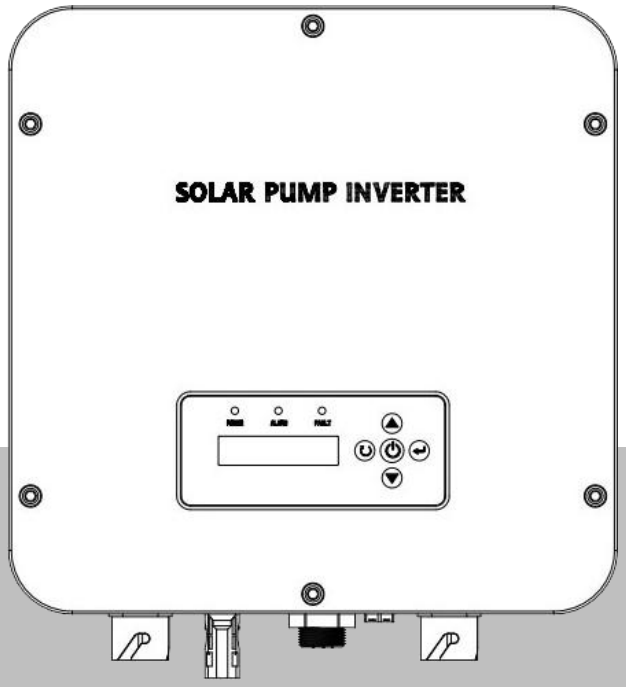
User Manual

Solar Pump Inverter

750W-4000W



Version: 1.0

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Information on this Manual

Validity

This manual is valid for the following devices:
750ST2, 1500ST2, 2200ST2, 4000ST2

Scope

This manual describes the assembly, installation, operation and troubleshooting of this unit. Please read this manual carefully before installations and operations.

Target Group

This document is intended for qualified persons and end users. Tasks that do not require any particular qualification can also be performed by end users. Qualified persons must have the following skills:

- Knowledge of how a pump inverter works and is operated
- Training in how to deal with the dangers and risks associated with installing and using electrical devices and installations
- Training in the installation and commissioning of electrical devices and installations.
- Knowledge of the applicable standards and directives
- Knowledge of and compliance with this document and all safety information

Safety Instructions

WARNING: This chapter contains important safety and operating instructions.
Read and keep this manual for future reference.

Inspection

If missing components or damaged inverter is found after receiving, please do NOT install or operate it. Otherwise, it may cause human injury or equipment damage.

Installation

1. Before installation, please make sure if the voltage range of PV panel meets the requirement.
2. Check if all wires are firmly connected without short circuit. Otherwise, it will cause equipment damage.
3. Do NOT install this inverter under direct sunlight because high temperature may cause equipment damage.
4. Please install the inverter away from inflammable and explosive objectives. Please ensure no liquid can enter the inverter.
5. Please install the inverter on metal non-combustible surface.

1. **CAUTION!!** Only qualified personnel can install and operate this inverter.
2. To reduce risk of electric shock, disconnect power source before making wire connection. Otherwise, it may cause electrical shock.

3. To reduce risk of electric shock, NEVER touch any terminals on electric circuits.
4. If connection cable between inverter and water pump is more than 50m, please be sure to install a three-phase AC reactor. Inductance value for each phase is about 1mH. Otherwise, water pump would be easily to be damaged.

Operation

1. Only after wire connection is complete and put cover back to the inverter, it's Enter to do commissioning. Otherwise, it will cause electric shock
2. If sunlight is sufficient but little water is pumped, maybe the wires on motor connection are reversely connected. Please reverse any two wires of them.
3. When testing water pump, be sure to install water pump at appropriate water level. Never allow water pump in dry running. Otherwise, the inverter will activate protection.

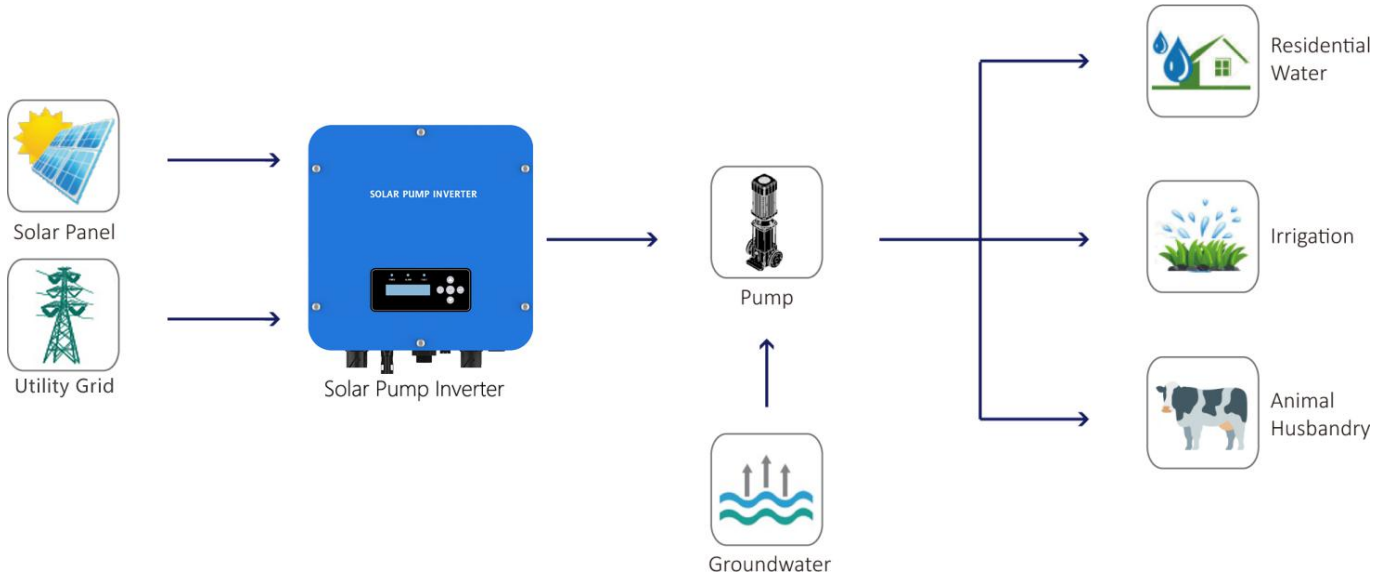
Maintenance

1. Only qualified personnel can maintain, repair, inspect the inverter and replace any components.
2. It may still contain energy after disconnecting power source within 5 minutes. Only service after the bus voltage is within safe range.

Symbols

	Grounding Wire of Equipment
	AC Value
	DC Value
	Phase
	Before operating inverter, please read the instruction.
 5 minutes	In order to avoid electric shock, breack off machine with PV terminal and AC terminal for at least 5 minutes, then contact the wire of machine output terminal and input terminal
	Warning: when machine works, the temperature of metal shell may be very high.

Introduction



Solar Pumping System

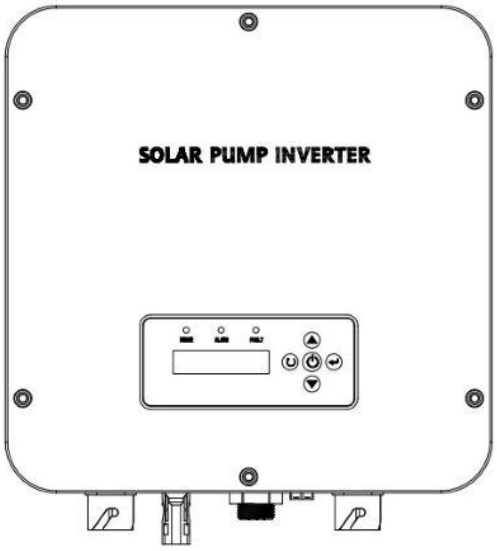
This is a solar pump inverter which allows power to be switched from the AC/DC power obtained from solar panels and gird to the AC power needed to control the pump.

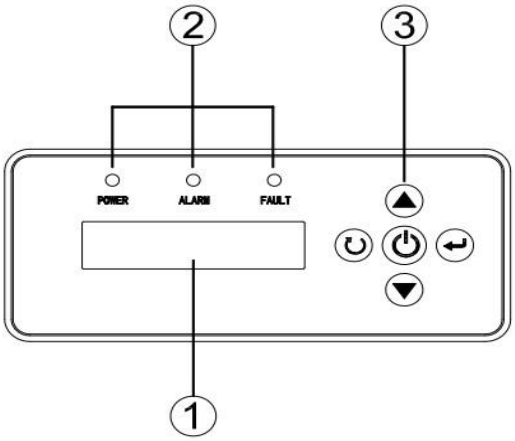
This series solar pump inverters are built-in with Boost circuit for MPPT solar charger to maximize solar power,and able to set the priority of PV and utility grid input. The inverter is suitable for submersible pumps, ground pumps, swimming pool pumps and other pumps using three phase asynchronous motors.

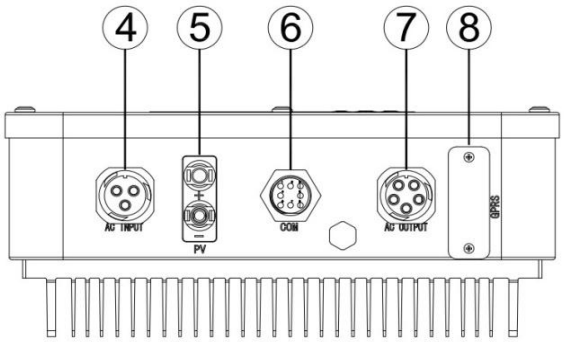
Features

- Rated power 750W to 4000W
- Inbuilt MPPT solar controller
- Inbuilt BOOST circuit for broaden PV voltage range
- Automatic selection of photovoltaic and AC power
- IP65 protection level
- Built-in full protection and self-diagnosis
- Soft start function
- Comprehensive LCD and LEDs display real-time system status
- Remote monitoring through GPRS /WIFI（optional）

Product Overview







1. LCD display
2. LED indicators
3. Function buttons
4. AC input
5. PV input
6. Water level sensor port
7. AC output
8. GPRS/WIFI communication port

Installation

Unpacking and Inspection

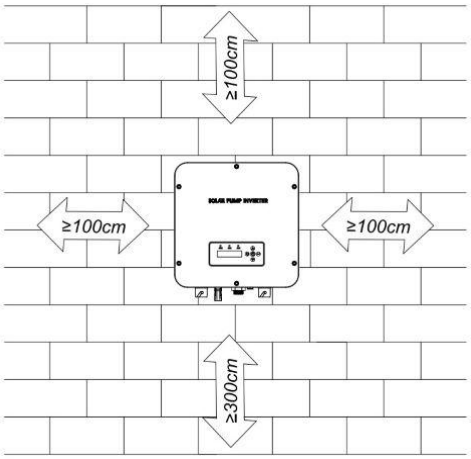
Before installation, please inspect the unit. Be sure that nothing inside the package is damaged. You should have received the following items inside of package:

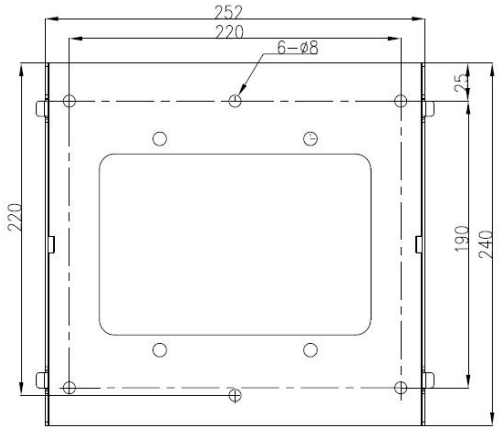
- The unit x 1
- User manual x 1
- Attachment x 1

Mounting the Unit

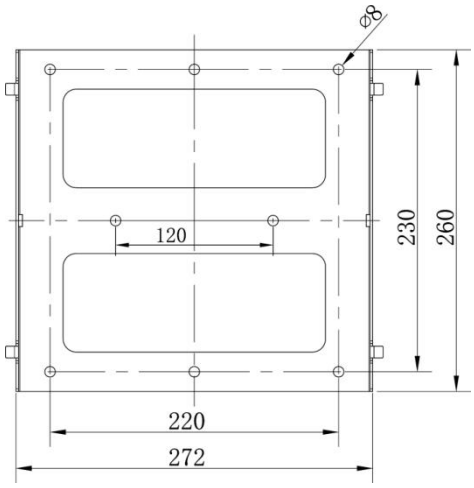
Consider the following points before selecting where to install:

- Do not mount the inverter on flammable construction materials.
- Mount on a solid metal surface.
- Avoid direct sunlight. Be sure the environment is shady and cool.
- Be sure to install the inverter into a box with waterproof and dustproof.
- Install this inverter at eye level in order to allow the LCD display to be read at all times.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.





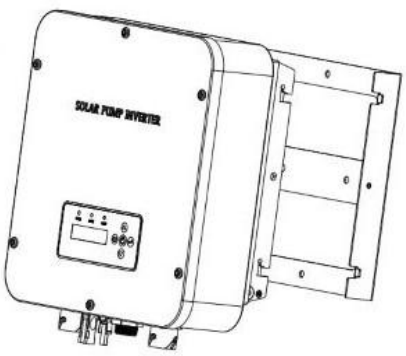
750w-2.2kw

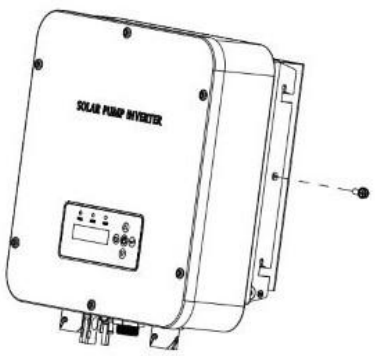


4kw

SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

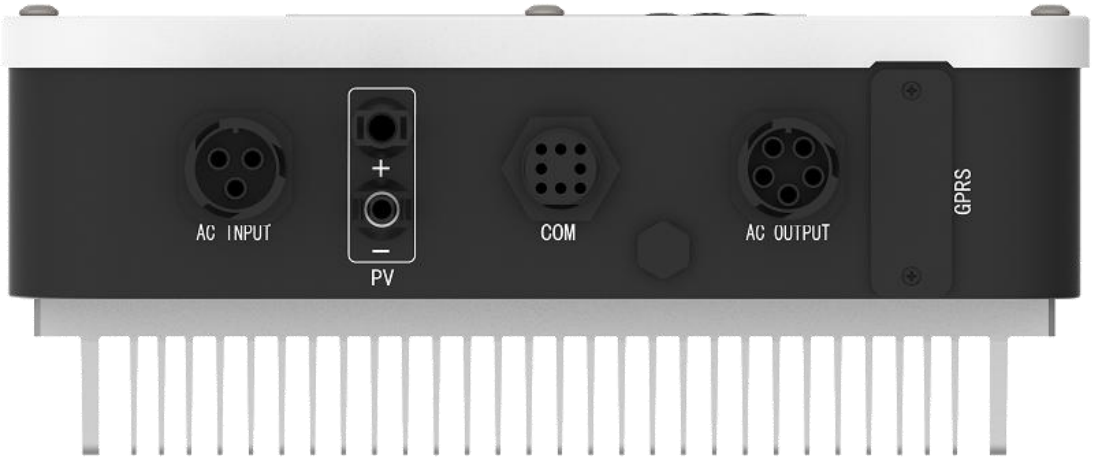
Install Safety Nut





Wiring Introduction

There is AC input,DC input, water level sensor connection terminal, GPRS (optional), and AC output terminal.



Terminal Introduction

Socket	Terminal Introduction	Wiring Introduction
PV	PV+	Connect with the positive pole of solar array
	PV-	Connect with the negative pole of solar array
AC Input	L	Connect with power grid L phase
	N	Connect with power grid N phase
	PE	Connect with protective ground wire
AC Output (3 PH motor connect 1，2，L) (1 PH motor connect 1，L)	1	Connect with motor U phase
	2	Connect with motor V phase
	L	Connect with motor W phase
	PE	Connect with protective ground wire
COM terminal	1	Connect with Sensor 2 of water tank
	2	Connect with Sensor 2 of water tank
	3	/
	4	/
	5	Connect with Sensor 1 of water well
	6	Connect with Sensor 1 of water well
GPRS connection terminal	1	+5V
	2	TXD-232
	3	RXD-232
	4	GND

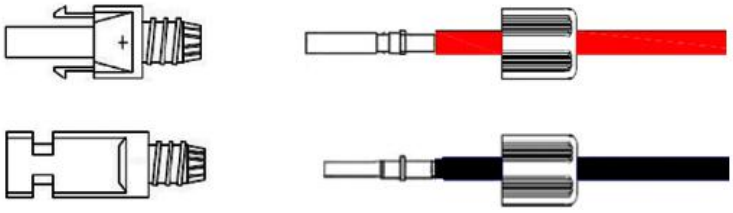
Warning: The places of input sockets of DC positive pole and negative pole of different models are different.

Warning: The signal marshalling sequence of AC output sockets of different models are different.

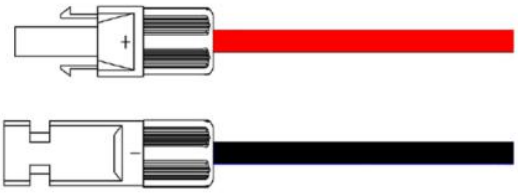
Assemble DC Connector

Strip the cable 6-8mm,then connect the bare wire core into core tube of connector.

Crimp contact barrel by using a hex crimping die. Put the contact barrel with striped cable in the corresponding crimping notch and crimp the contact. Insert the core tube into slot of connection until hear the sound indicating fit in place.



Tighten the nuts to finish the wiring.



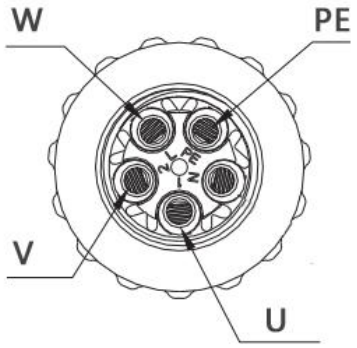
Warning: Risk of electric shock! Before shifting solar panel, disconnect the pump inverter AC and DC. Besides, allow 5-minute internal capacitance discharging.

Assemble AC Output Connector

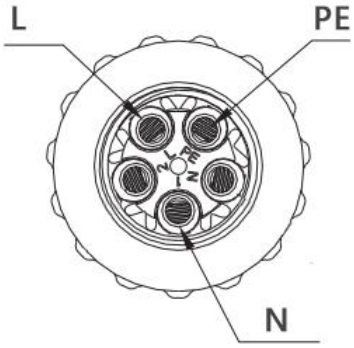
Connection to the AC output side terminal for the solar pump inverter，there are two types of AC connector mode.

For type I of 3 phase AC output connector：AC connnector 1,2,L,PE gets connection with the pump through 4 wires (U wire, V wire, W wire and PE wire)

For type II of 1 phase AC output connector：AC connnector L, 1,PE gets connection with the pump through 3 wires (L wire, N wire and PE wire)

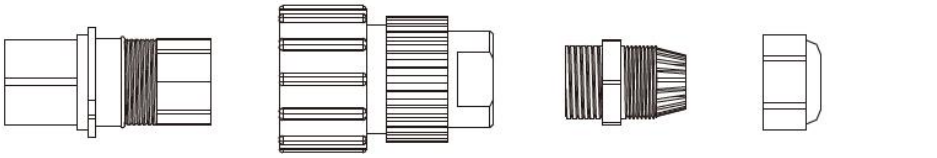


type I



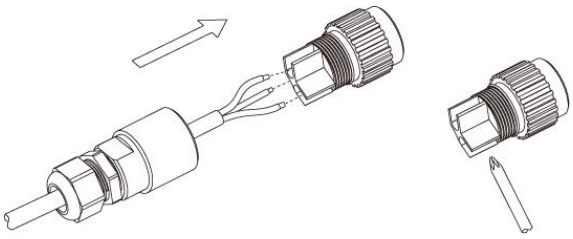
type II

Remove the parts of teh AC connection plug from the accessory bag. Guide the pressure screw sealing right, threaded sleeve over the AC cable.



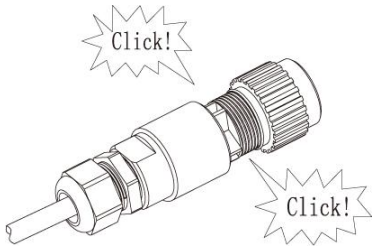
Socket element threaded sleeve sealing ring pressure screw

Insert the stripped and bared conductors U, V, W, PE in to screw terminals with sign U, V, W, PE on the socket element and tighten the screws.



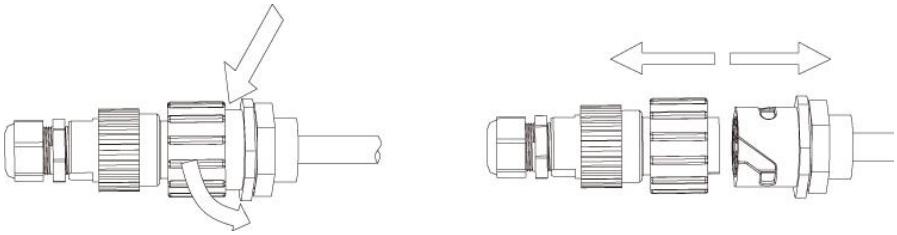
Connect the conductors

Push the threaded sleeve in to the socket element. Screw the pressue screw thightly onto the threaded sleeve.



Close the connector

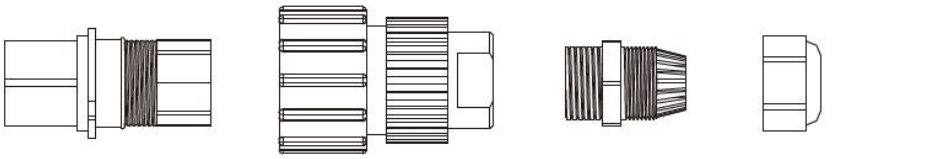
Insert the AC onnnection plug into the AC connection receptable on the inverter.



Lock the housing Unlock the housing

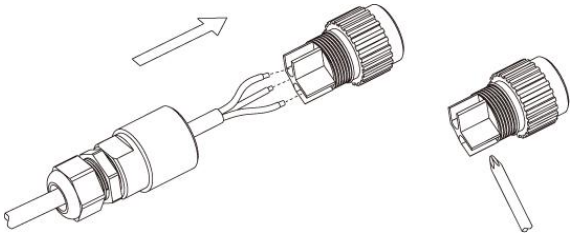
Assemble AC Input Connector

Remove the parts of teh AC connection plug from the accessory bag. Guide the pressure screw sealing right, threaded sleeve over the AC cable.



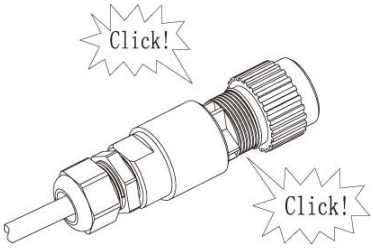
Socket element threaded sleeve sealing ring pressure screw

Insert the stripped and bared conductors L, N, PE in to screw terminals with sign L, N, PE on the socket element and tighten the screws.



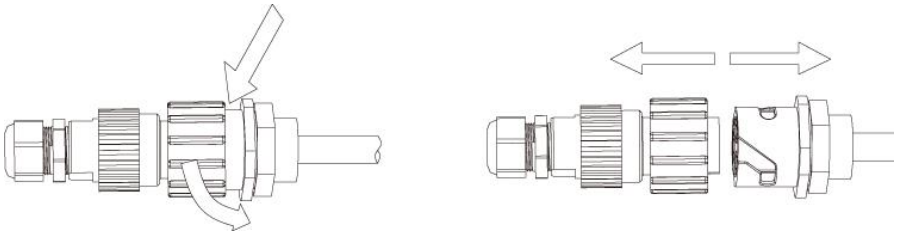
Connect the conductors

Push the threaded sleeve in to the socket element. Screw the pressue screw thightly onto the threaded sleeve.



Close the connector

Insert the AC onnnection plug into the AC connection receptable on the inverter.



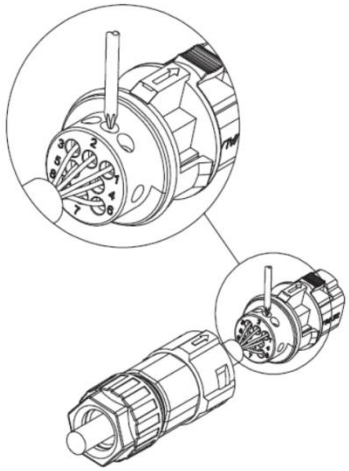
Lock the housing Unlock the housing

Assemble sensor Connector

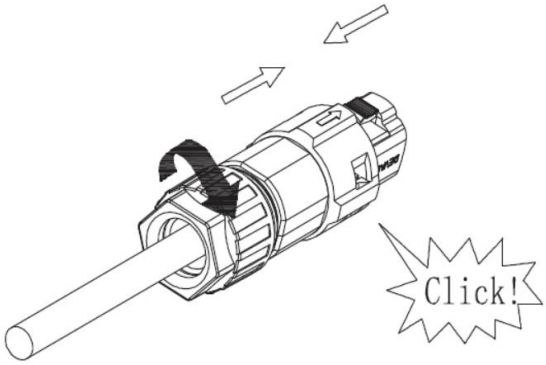
The series inverter has one 8 Pin signal connector,signal cable ports：

Pin number	Wiring Introduction
1	Connect with sensor of tank
2	Connect with sensor of tank
3	/
4	/
5	Connect with sensor of well
6	Connect with sensor of well
7	/
8	/

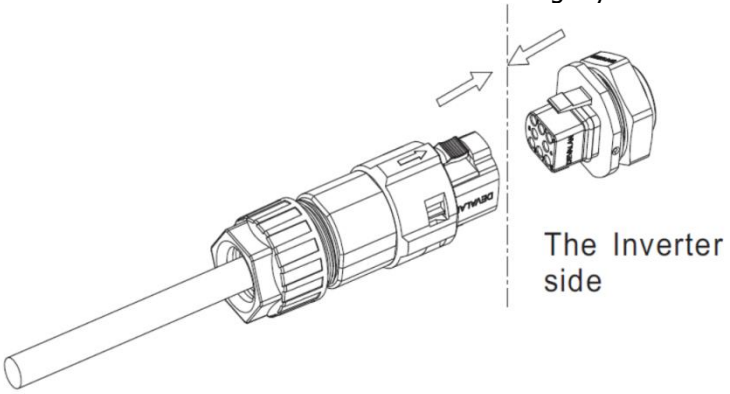
Insert the stripped and bared cable through pressure screw，seal ring，threaded sleeve in sequence，insert cables into connection terminal according to number indicates on it and tighten the screws firmly.Please try to pull out the wire to make sure the it is well connected.



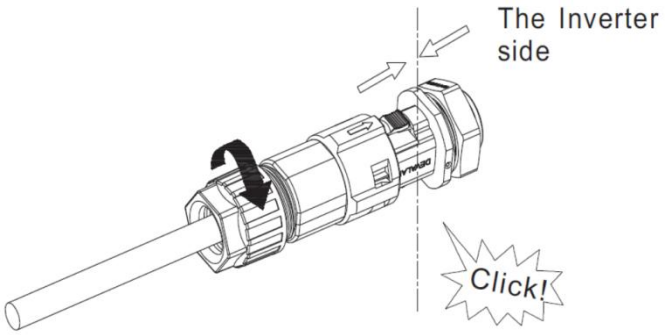
Push the threaded sleeve into the socket.Tighen up the cap on the terminal.



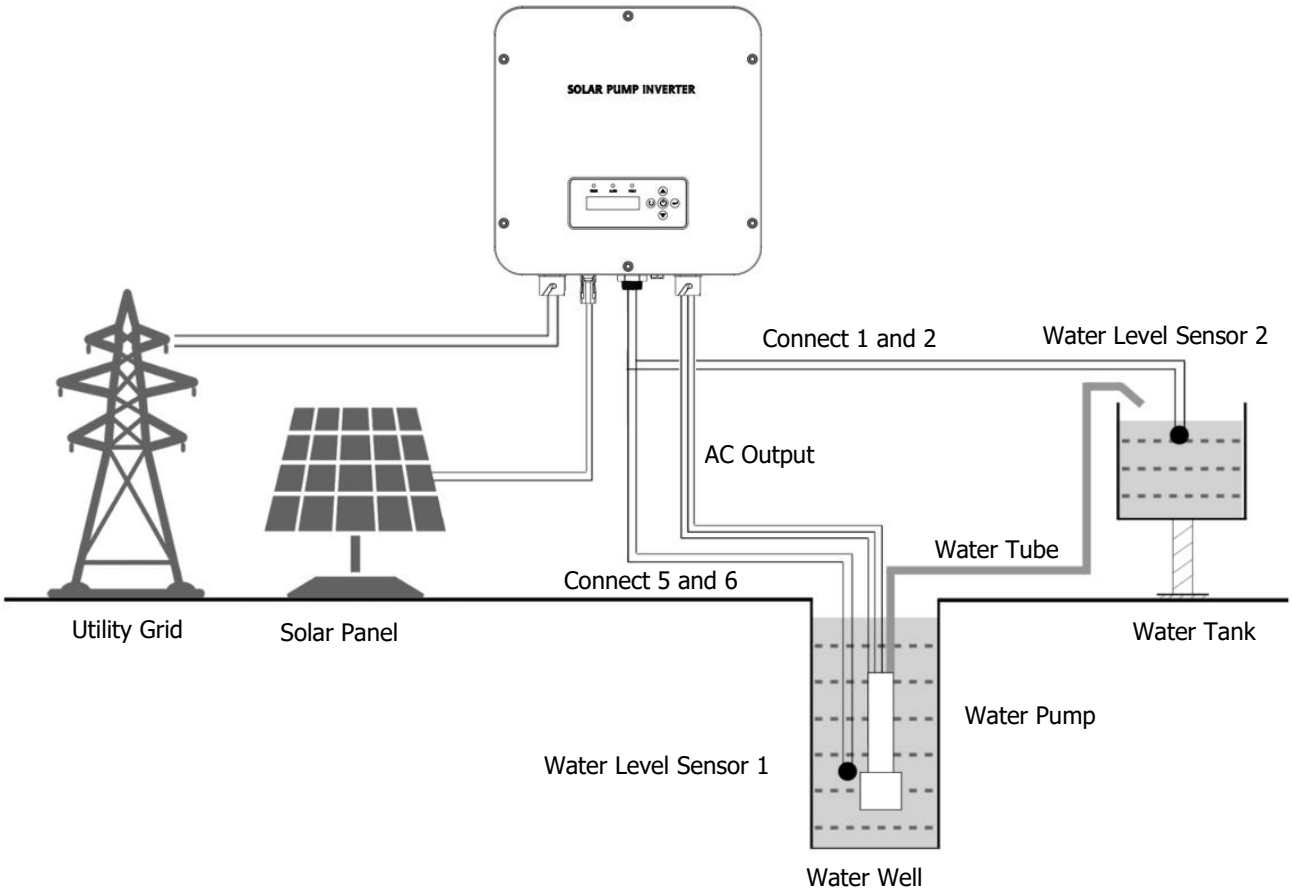
Push the threaded sleeve to connection terminal until both are locked tightly on the inverter



Press the fasteners and pull it out form the inverter.



Wiring of Water Level Sensor



Notice: connect water level sensor 1 and detect water shortage. Respectively connect two signal lines of sensor with 5 and 6 of COM terminal. When water level sensor 1 detects that the water level of well is lower than the level set by sensor, the pump inverter will delay for 5s, then turn off output protection pump. The water level recovers. Wait for 20s, then the pump inverter re-works normally.

Notice: connect water level sensor 2 to defect whether water is full. Connect two signal lines of sensor with 1 and 2 of COM terminal. When water level sensor 2 detects that the water level of water tank exceeds the level set by sensor, the pump inverter delays for 5s and turns off output; when water level is lower than set level, wait for 20s, then pump inverter re-starts to work normally.

Recommended Diameter of Wire

Model	Recommended output current(A)	Output voltage(V)	length≤ 30m	length≤ 60m	length≤ 90m	length≤ 120m	length≤ 150m	length≤ 180m	length≤ 210m
750ST2	4.2A (3PH) / 5.1A (1PH)	220V	1	1.5	2.5	4	4	4	6
1500ST2	7.5A (3PH) / 10.2A (1PH)	220V	1.5	2.5	2.5	6	6	6	6
2200ST2	10A (3PH) / 14A (1PH)	220V	2.5	2.5	4	6	6	6	6
4000ST2	16A (3PH) / 25A (1PH)	220V	4	4	6	8	8	8	8
Units: mm^2									

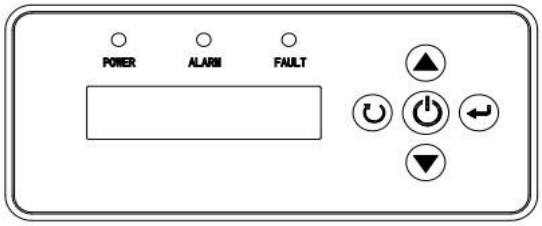
Notice: The environment temperature for the above recommended wire dimension should ≤50°C.

Notice: Large-power wall-mounted model uses multiple-channel DC input. The dimension of DC wire of each channel shall be selected according to the above table.

Operation

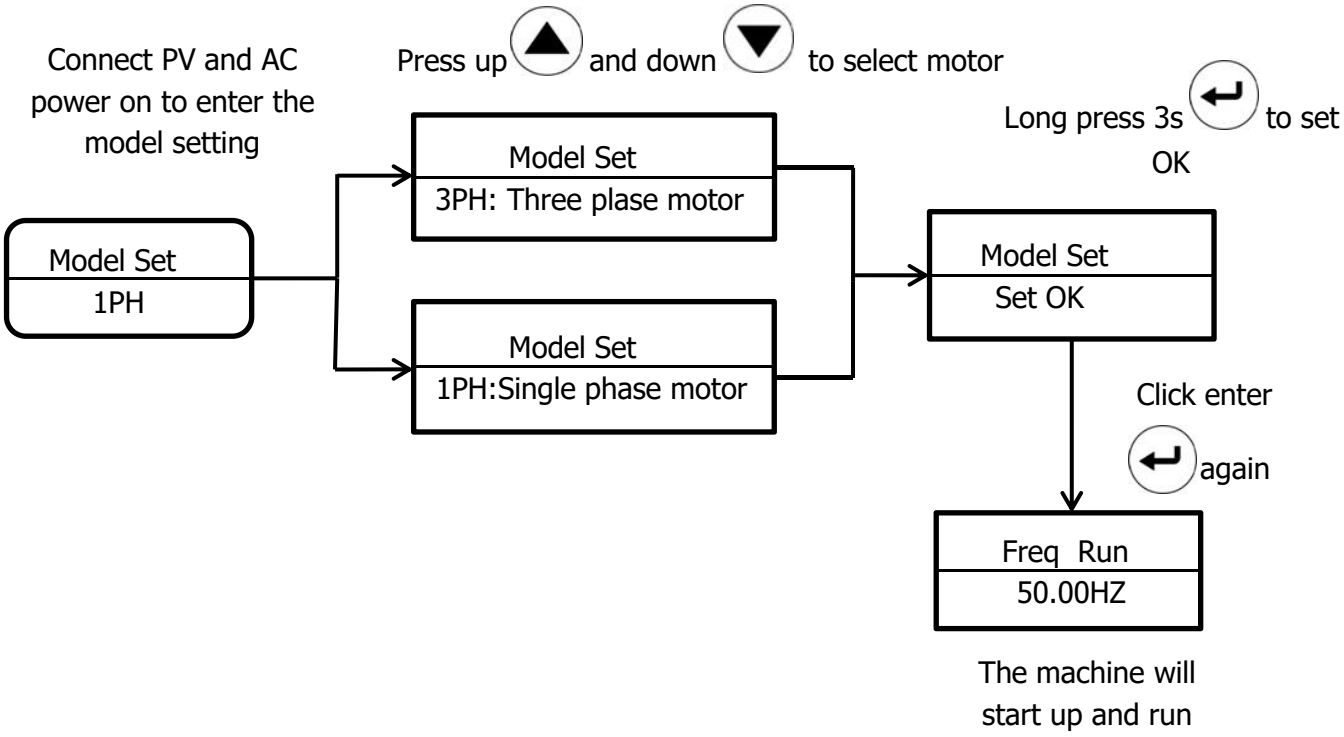
Display Panel

Solar pump inverter uses LCD operation panel. The operation panel is shown in the figure, including 3 LED lights, LCD display and 5 keys.



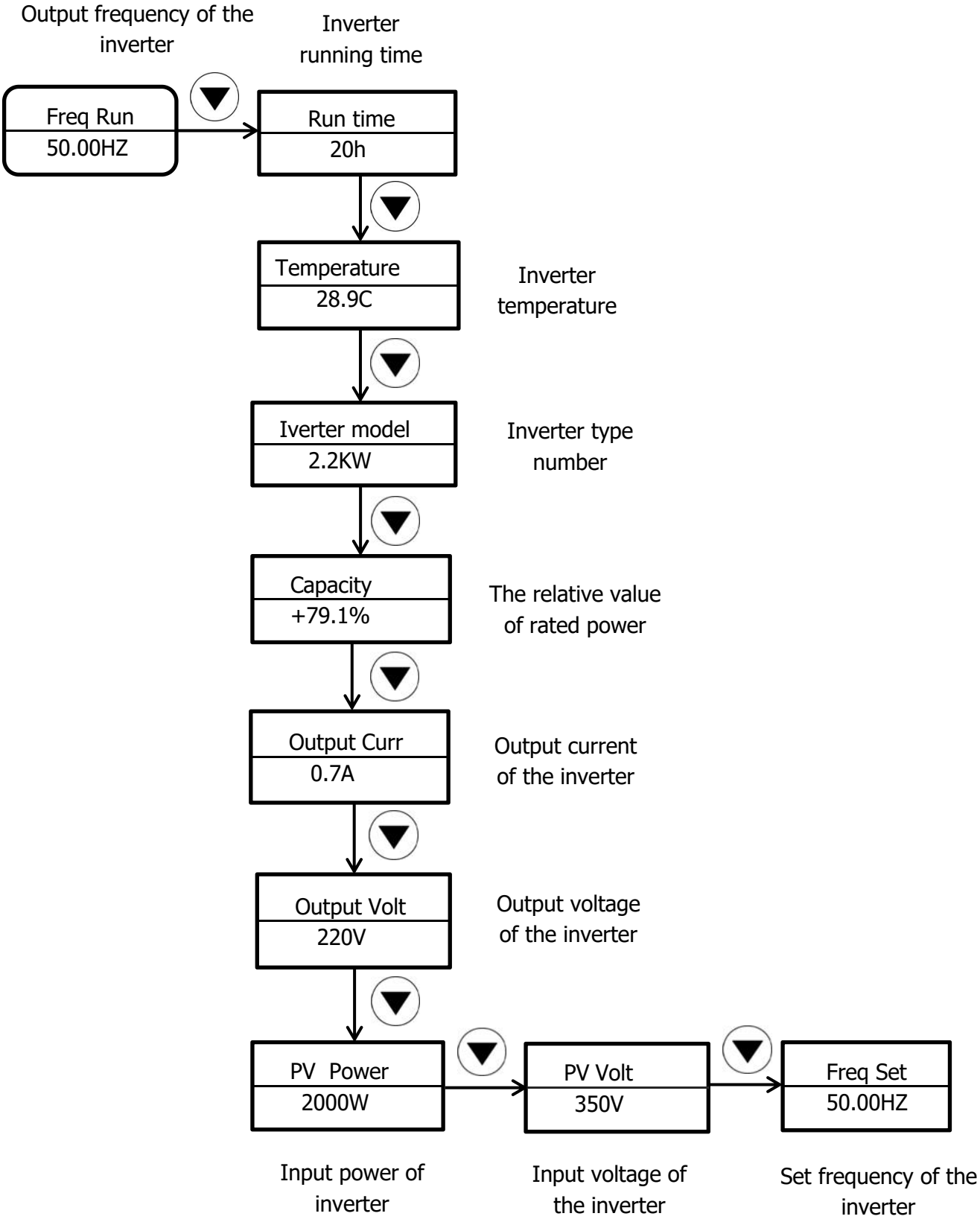
Indicator and Key	Name	Function Introduction	
POWER	System running indicator	Green	LED on, inverter is running
ALARM	Warning indicator	Yellow	LED on, warning or LED flashing in auto operation mode
FAULT	Failure indicator	Red	LED on, system failure
	Operation / Stop Key	1.Press for a short time, then the inverter starts control; 2. Press for 2s, then inverter stops control.	
	Confirm / Programming Key	1.Press for a short time to enter programming mode. After altering parameter, "press for a short time" to confirm the alteration 2. Press for 2s to enter the programming menu.	
	Increment Key	1.When control parameter displays state, increase parameter number or parameter value; 2. When operation displays data state, according to operation mode, increase output frequency or display current operation data.	
	Decrement Key	1.When control parameter displays state, press for a short time to decrease parameter number or parameter value. 2. When operation shows data state, according to operation mode, decrease output frequency or display current operation data.	
	Return Key	Return the initial display	

Boot Model Selection



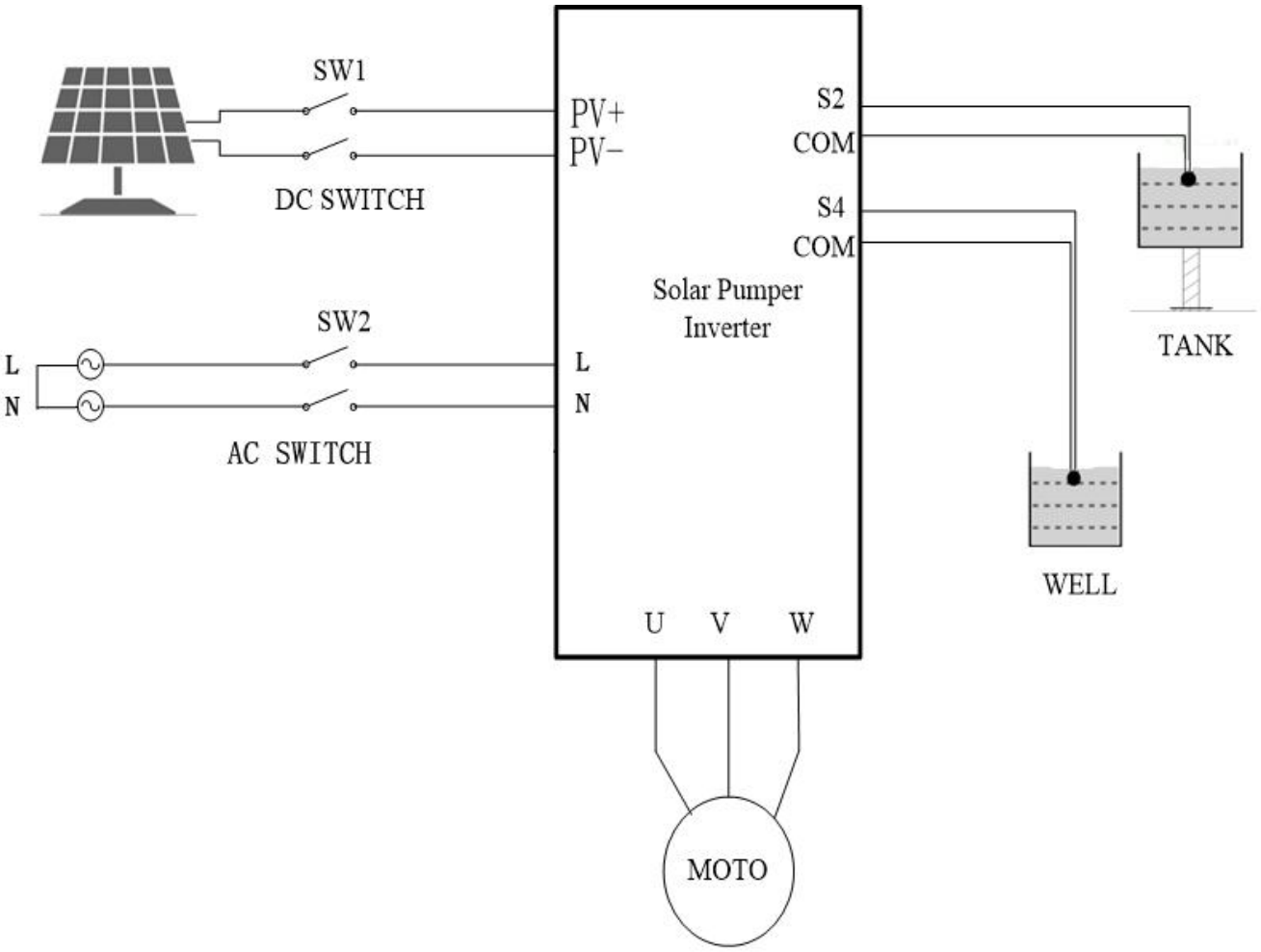
LCD Display Information

The LCD display information includes operation data, control parameters, and historical parameters.
The information on the display will be switched in turns by pressing UP/DOWN key. The selectable information will be switched as below.



Debugging Guidance

Before setting the parameters, please make sure all the wiring is correct.



a. Set P00.01=0, to set as manual operation mode .

b. Set the motor type through P00.02:0 indicates 3PH motor and 1 indicates 1PH motor.

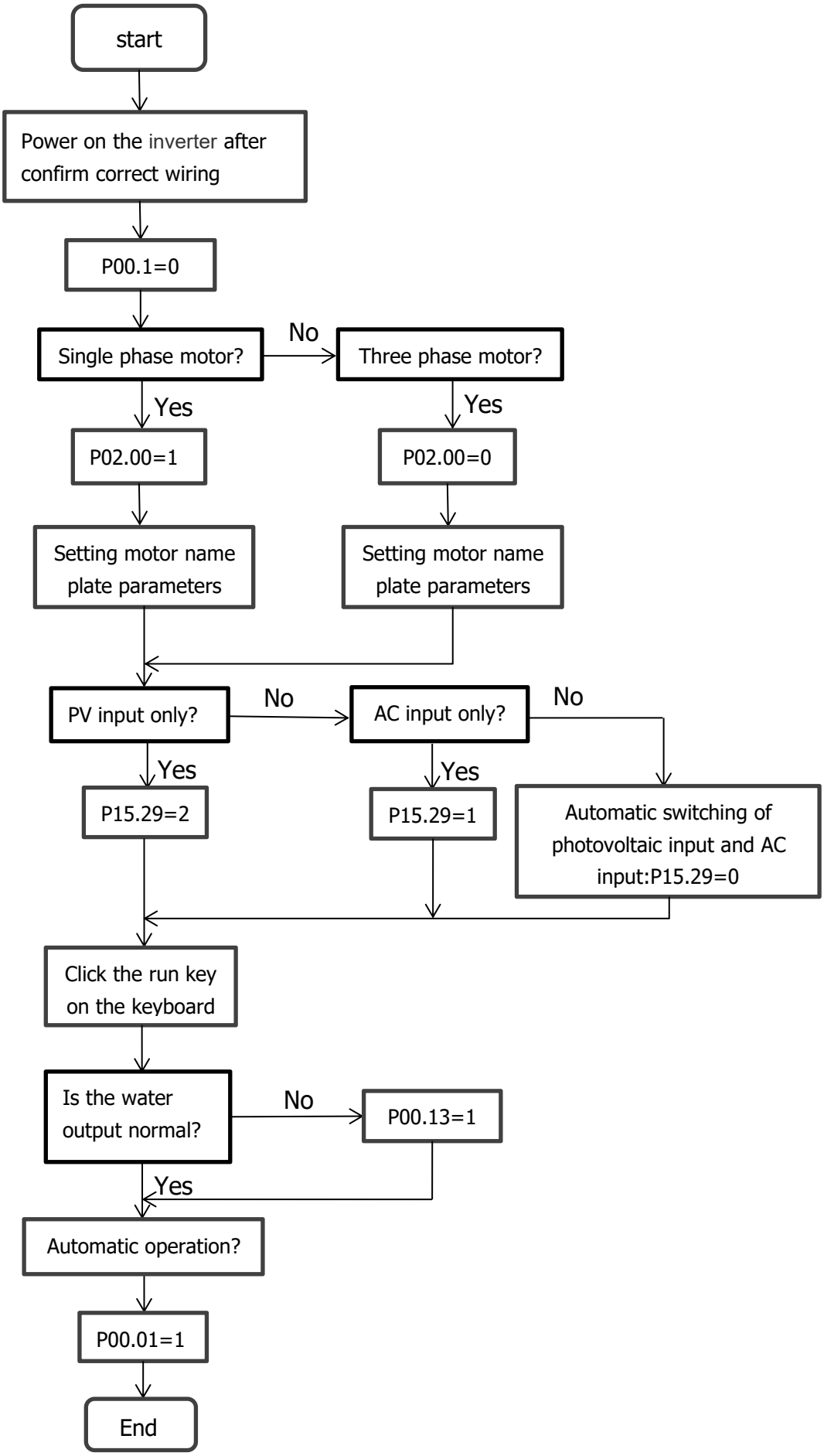
c. Set water pump nameplate parameters: P02.01 motor rated power value; P02.02 motor rated frequency value; P02.04 motor rated voltage value; P02.05 motor rated current value.

d. Water output test of pump
Click the run button to observe the running frequency and wateroutput.Under the normal strong light condition,if the operation frequency of three-phase motor is low or the water volume is small,it indicates that the motor line may be connected reversely,so it is necessary to set function code P00.13=1 or exchange the wiring of two motor lines.

e. After finishing parameter setting of water pump, set P00.01=1. The operation code channel is altered as original automatic mode instruction.

Notice: If the inverter fails,set P00.18 to restore the factory settings.

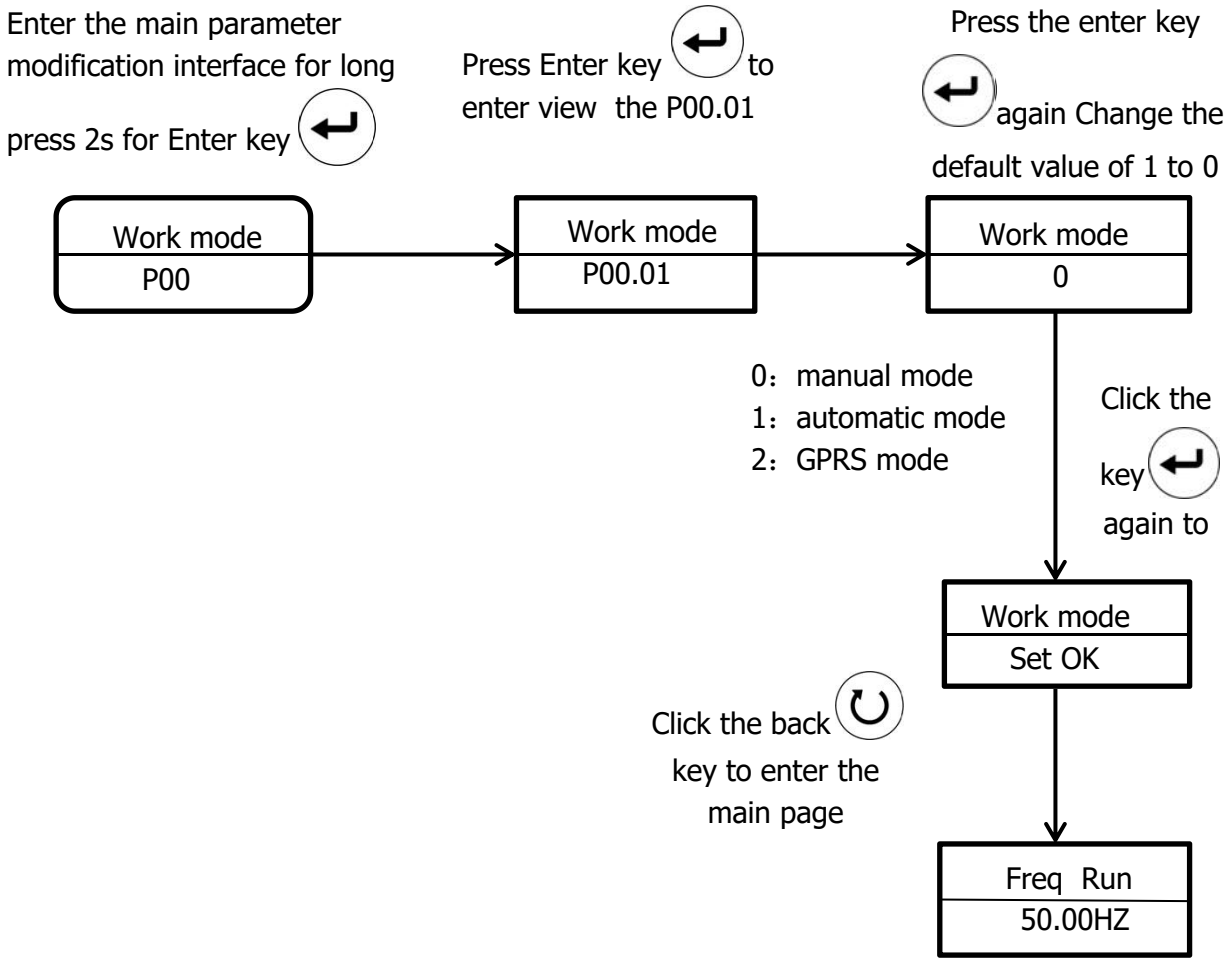
Debugging Flow Chart



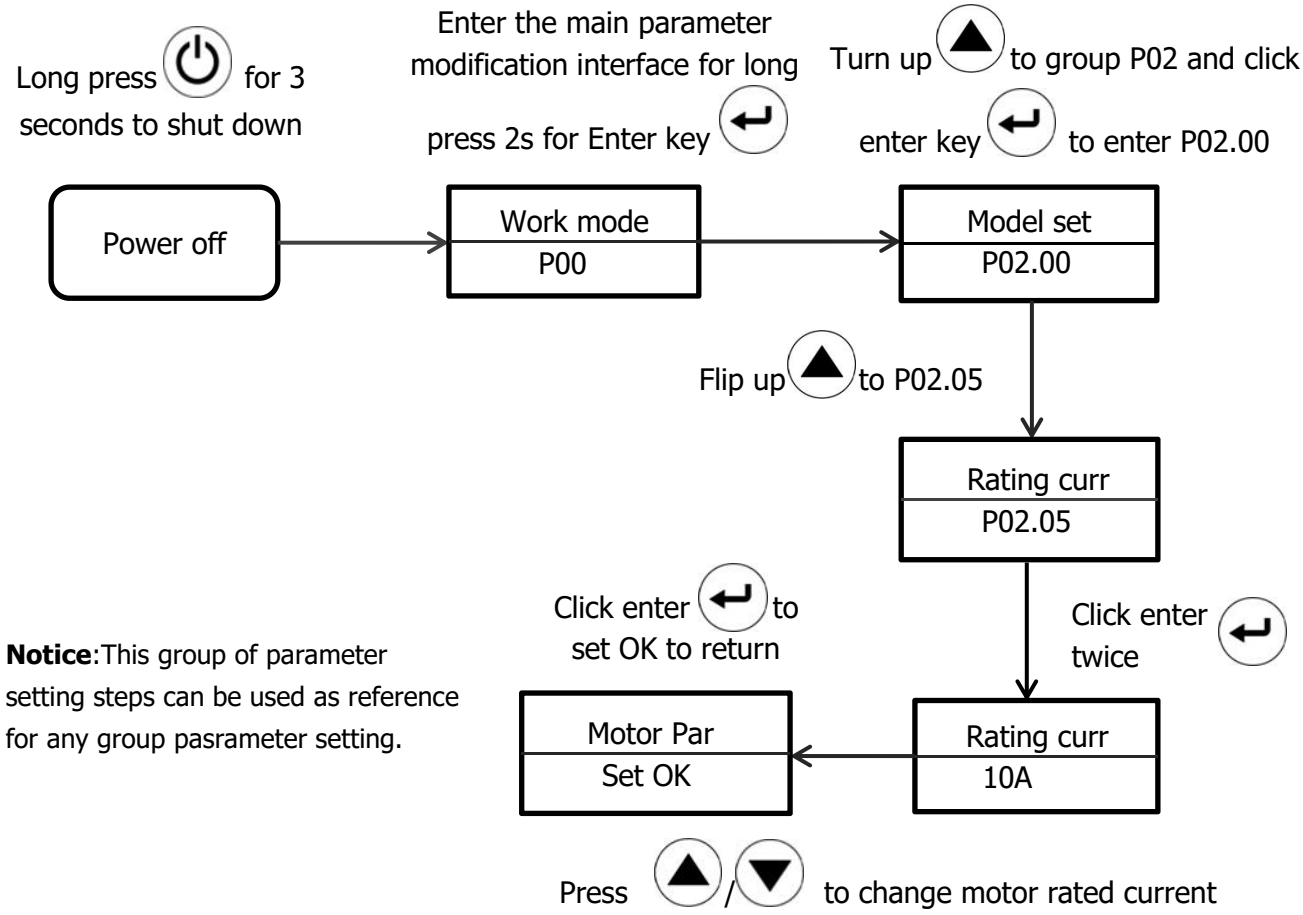
Parameters Setting

1. Work Mode Setting

The inverter includes three work modes: manual work mode, fully-automatic terminal work mode, GPRS work mode (optional). The default mode is fully-automatic terminal work mode.

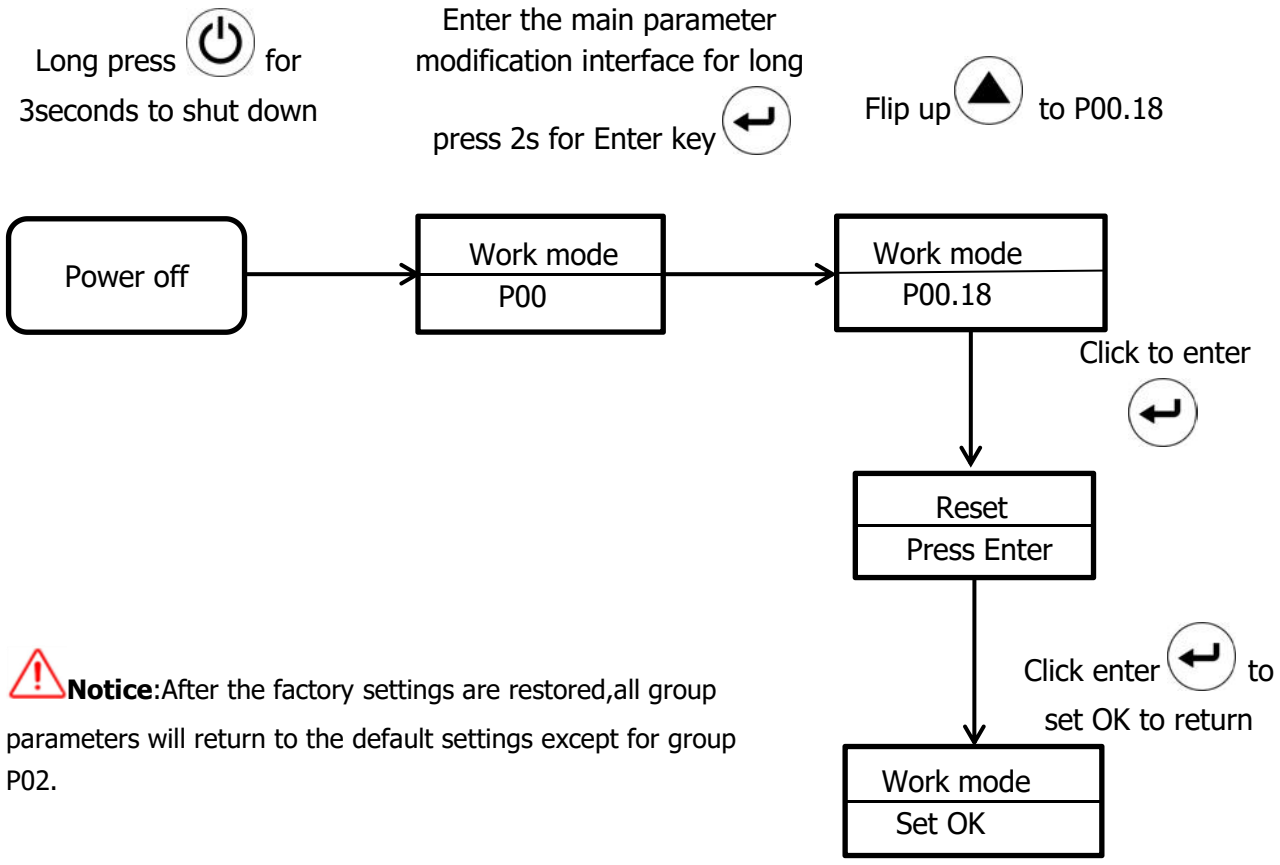


2. Parameters Setting (Example)



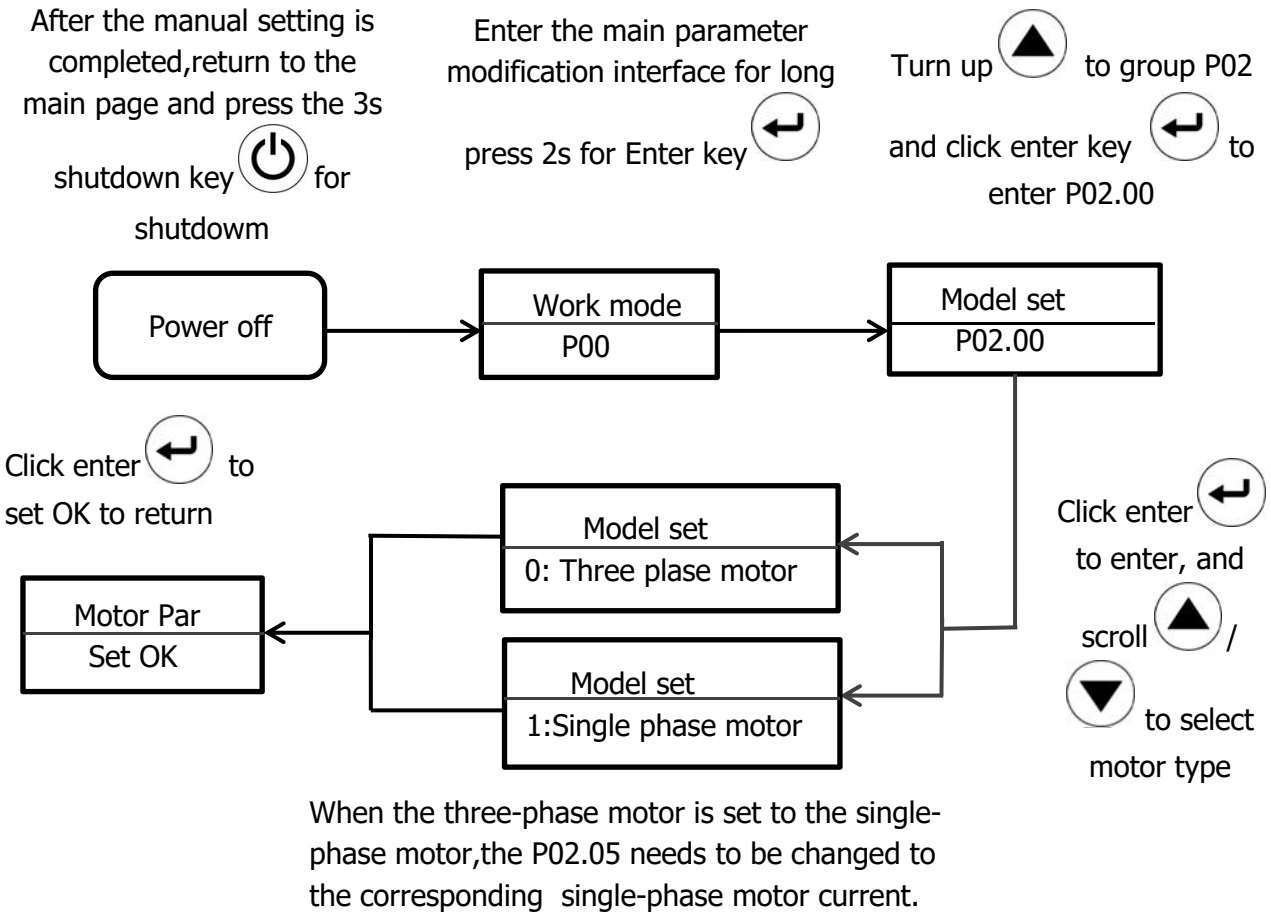
Notice:This group of parameter setting steps can be used as reference for any group pasrameter setting.

3. Factory Data Reset



Notice:After the factory settings are restored,all group parameters will return to the default settings except for group P02.

4. Model Setting



When the three-phase motor is set to the single-phase motor,the P02.05 needs to be changed to the corresponding single-phase motor current.

Notice: The set value of the parameter cannot be modified on the running state.if inverter is in auto mode，but you need to set value of the parameter. First setting P00.01=0，manual operation mode settings， press for 2s, then inverter stops control. then you can set the P00~P15 group of function parameter.

Function Parameters

SN	Name	Scope	Introduction	Default Value
P00.01	Run commamd model	0~2	0: manual operation mode 1: auto operation mode 2: communication operation mode	1
P00.03	MAX. Output frequency	P00.04~400.00Hz	The paramater is used to set the maximum output frequency of theinverter	50.00Hz
P00.04	Upper limit of the running frequency	P00.05~ P00.03	The paramater is the upper limit of the output frequency of the inverter which is lower than or equal the maximum frequency	50.00Hz
P00.05	Lower limit of the running frequency	0.00Hz~ P00.04	If the solar energy is not sufficient to power the motor,inverter will drop frequency runing. The inverter will stop run when the runing frequency lower than the lower limit frequency	0Hz
P00.11	Acceleration time	0.0~3600.0s	Acceleration time refers to the time required for the pump inverter to accelerate from 0Hz to the maximum output frequency(P00.03)	10s
P00.12	Deceleration time	0.0~3600.0s	Deceleration time refers to the time required for the pump inverter to decelerate from the maximum output frequency(P00.03) to 0Hz	10s
P00.13	Set direction	0~2	0：The inverter runs in the forward diretion 1：The inverter runs in the reverse diretion 2：Forbid to run in reverse diretion	0
P00.18	Function restore parameter	0~1	0：No operation 1：Restore the default value	0
P01.08	Stop mode	0~1	0：Decelerate to stop 1：Coast to stop	0
P02.00	Motor type	0~1	0：Three phase motor 1：Single phase motor	1
P02.01	Rated power of asynchronous motor	0.1~ 3000.0kw	Set this parameter according to rated power on the pump nameplate NOTE: when resetting the rated power of the motor(P02.01),you can initialize the motor parameter of (P02.02~P02.05)	Model confirmation
P02.02	Rated frequency of asynchronous motor	0.01Hz ~ P00.03	Set this parameter according to rated frequency on the pump nameplate	50.00Hz
P02.04	Rated voltage of asynchronous motor	0 ~ 1200V	Set this parameter according to rated voltage on the pump nameplate	Model confirmation
P02.05	Rated current of asynchronous motor	0.8 ~ 6000A	Set this parameter according to rated current on the pump nameplate	Model confirmation
P02.27	Motor overload protection factor	20.0%~120.0%	The pump motor over-load protection factor when over-load, please refer to the rated current of motor to set this parameter.	100.0%

P15.00	PV Inverter Selection	0：Disable 1：Enabled	0：means the MPPT function is invalid 1：means the MPPT function is enabled	1
P15.04	PID Max. Output Frequency	P15.05~ 100.0%	P15.05~100.0%(100% corresponding to P00.03) P15.04 is used to limit the Max. value of target frequency	100.0%
P15.05	PID Min. Output Frequency	0.0%~P15.04	0.0%~ P15.04(100% corresponging to P00.03) P15.05 is used to limit the Min. value of target frequency	20.0%
P15.13	Full-water delay	0~10000S	Time setting of full-water delay	5S
P15.14	Wake-up delay when full-Water	0~10000S	During the full-water warning, if the detected full-water signal is cleared，the delay counts，after the time set by P15.14,the warning is cleared.	20S
P15.16	Operation time of water pump Dry-run	0.0~1000.0S	Set the operation time of Dry-run operation. Under the continuous Dry- run operation，the inverter will stop run，if the operation time is reached.	60.0S
P15.17	Current detection of automatic Dry-run protection	0.0~100.0%	0.0%: If it is 0.0%,it is determined by the inverter 0.1%~100.0%:It is determined by P15.17 100% corresponds to the rated motor current. If the target frequency and the absolute value of the ramp frequency is less than or equal P15.19,and the current corresponding to the current frequency is less than P15.17, after the time set by P15.16, the inverter will stop run；otherwise,it will operate normally.If the state is not continuous,the delay counting will be cleared automatically.	50.0%
P15.18	Reset delay of water pump Dry- run	0.0~1000.0S	Dry-run protection recovery time. The operation time and reset time are counted at the same time，It is bigger than P15.16.After the time set by P15.18-P15.16，the inverter will reset.	120.0S
P15.19	Lag frequency threshold	0.00~200.00Hz	P15.19 is the lag frequency for the analysis of Dry-run operation. If the target frequency and the absolute value of the ramp frequency is less than or equal P15.19，the current will be compared.	0.50Hz
P15.20	Delay Time of Weak Light	0.0~3600.0S	If the output frequency is less than or equal to the lower limit of PI output frequency and the state lasts for the set value by P15.20, the inverter will stop run.If the state is not continuous，the delay counting will be cleared automatically. NOTE:If the PV voltage is lower than software undervoltage point，it will stop run and no need to wait for the set time. If P15.29=0,the system will swith to the AC input when the light is weak.	100.0S

P15.21	Delay time of wake-up at weak light	0.0~3600.0S	If the PV voltage is higher than the starting voltage，after the delay time，it will run again. when P15.29=0, if the PV voltage is higher than 120V,after the delay time，it will switch to solar input model.	300.0S
P15.29	PV input and AC input selection	0~2	0：Automatic input，the system will switch between PV and AC input according to the detected PV voltage and threshold. 1：Forced AC input 2：Forced PV input Threshold setting for switch to AC input. For models of 220V： 0.75KW:60.0V 1.5KW~4.0KW:80.0V For models of 380V： 2.2KW~5.5KW:180.0V Threshold setting for switch to PV input. For models of 220V： 0.75KW:100.0V 1.5KW~4.0KW:120.0V For models of 380V： 2.2KW~5.5KW:240.0V	0
P15.30	Threshold setting for switching to power frequency	0V-P15.31	If the PV voltage is lower than the threshold or the light is weak,it can be switched to power frequency input through relay output.(**Note:**The minimum operation voltage of the system is 60V.) If the value is 0,the function is disabled. The default value depends on medel. For models of 220V: 0.75KW:60.0V 1.5KW,2.2Kw and 4KW:80.0V	Depend on model
P15.31	Threshold setting for switching to PV input	P15.30-400V	If PV voltage is higher than the ththreshold,after the delay time of P15.21,it can be switched to PV input through relay output. In order to avoid repeated switching,the threshold needs to be higher than the threshold of P15.30 If the value is 0.0 ,the function is disabled. The default value depends on model. For models of 220V: 0.75KW:100.0V 1.5KW,2.2KW and 4KW:120.0V	Depend on model
P15.32	Delay Time of Dry-water	0~10000S	Delay Time settiing of dry-water	5S
P15.33	Wake-up delay time of Dry-water	0~10000S	During the Dry-water warning，if the detected dry-water signal is cleared，the delay counts，after the time set by P15.33,the warning is cleared.	20S

Troubleshooting

The inverter has complete protection. When a failure occurs, the inverter will take protective measures. The general protection is to stop the motor from running and forbid it to restart within a certain period.

Fault Code	Fault type	Possible Reasons	Solution
Power off	No failure	\	\
Inc OVP Dec OVP Const OVP	Overvoltage	1.Input voltage is too high 2.There is large energy feedback	1.Check the voltage of solar array 2.Check if the DEC time of the load is too short or the inverter starts during the rotation of the motor
Bus low	Undervoltage	1.Input voltage is too low; 2.Illumination intensity is too weak	Check the voltage of solar array
Inc OCP Dec OCP const OCP	Overcurrent	1.The load of pump is too large; 2.The voltage of solar array is too low; 3.The motor wiring is too long 4.The power of the inverter is too low 5.The grounding is short circuited or the output is phase loss	1.Replace for a smaller pump; 2.Check voltage of solar array; 3.Shorten the wiring between inverter and motor 4.Select the inverter with a larger power 5. Check if the load is short curcuited
Overload Pump	Water pump is overload	1.The motor setting rated current is incorrent 2.Input voltage is too low 3.Improper motor's overload protection threshold 4.Motor block or sudden change of load	1.Reset the rated cueernt of the motor 2.Inspect the input power supply 3.Set proper motor rated current 4.Check the load and adjust torque boost
Overload VF	Inverter is overload	1.Acc time is too short 2.Restart the rotating motor 3.Input voltage is too low 4.the load is too heavy	1.Increase the Acc time 2.Avoid restart after power off 3.Check the power supply 4.Select bigger capacity inverter
IGBT short	Module overcurrent	Output short circuit or grounding module damage	1.Check the wiring 2.Get after-sells support
Inv Overtemp	Module is over-temperature	1.Air flue is blocked 2.Environment temperature is too high 3.The time of overload runing is too long. 4.Control board abnormal	1.Clean air flue or improve ventilation 2.Degree the environment temperature 3.Select a proper motor 4.Ask for support
Rec Overtemp	Module is over-temperature		
Phase out loss	Output default phase	Phase loss of U,V,W output (or a serious unbalance in 3phase input)	1.Check the output distribution 2.Check the motor and cable 3.Get after-sells support

Shortcut GND 1	Grounding short circuit	The output line may be connected with ground	Check the wiring
Curr fault	Current detection failure	1.The control board connection is in poor contact 2.The hall component is damaged The magnifying circuit is abnormal 3.The magnifying circuit is abnormal	1.Check the connector and rewire 2.replace the hall component 3.replace the main control panel 4.Get after-sells support
Lack load when set dry-power (P15.15) is not 0.0%	Water pump conducts "dry-operation"	1.Water pump's connection wires are all open circuit. 2.Water sources are lacking of water	1.Check P15.15 parameter 2.Check whether the water pump wiring condition and water pump power meet the requirements of inverter capacity
Lack Water	Water shortage	Water shortage warning	1.If the water empty alarm function is enabled,the device automatically stops after the water empty alarm remains for a certain period of time，and no processing is needed. 2. If the water empty alarm function is not enabled，check whether there are terminals misconnected
Water Full	Water full	Water full warning	1.If the water full alarm function is enabled,the device automatically stops after the water empty alarm remains for a certain period of time，and no processing is needed. 2. If the water empty alarm function is not enabled，check whether there are terminals misconnected
Com Fault	Communication failure	Device or circuit damage	Reset Get after-sells support

Warning: Try to find out the failure reason before your try reset. If it can't reset or suffers failure again after reset, please try find out the reason first. Continuously resetting could damage the inverter.

Specifications

MODE	750ST2	1500ST2	2200ST2	4000ST2
DC INPUT				
Max.DC voltage	450V			
Starting voltage	80V			
Recommended MPPT voltage	100～400V			
Max. DC current	9A	12A	12A	20A
Number of input channels	1	1	1	2
AC INPUT				
Input voltage	1PH 220～240V (-15%～+10%)			
Rated input current	9.5A	16A	24A	38A
Input frequency	47～63 Hz			
AC input terminal	L,N,PE			
AC OUTPUT				
Rated output power	750W	1500W	2200W	4000W
Rated output current	4.2A (3PH) / 5.1 (1PH)	7.5A (3PH) / 10.2A (1PH)	10A (3PH) / 14 (1PH)	16A (3PH) / 25 (1PH)
Output wiring mode	1P2L / 3P3L			
Output voltage	0～220V			
Output frequency	0～50/60Hz			
CONTROL PERFORMANCE				
Control mode	V/F			
Motor type	Asynchronous motor, 1 Phase 220V / 3 Phase 220V			
PROTECTION FUNCTIONS				
Output overcurrent	YES			
Output overlode	YES			
Output short-circuit	YES			
Dry/Overflow protection	YES			
OTHERS				
Display	LCD			
Comunication	GPRS/WiFi (Optional)			
Certificate Standard	CE			
Dimensions (W×D×H), mm	370×335×135			455×360×153
Net weight, kg	9.5			16.5
Operation temperature range	-25～60℃ (with derating above 45℃)			
Environmental Protection Rating	IP65			
Cooling	Natural cooling			
Altitude	2000m (with derating above 2000m）			
Relative humidity	0～100%			