



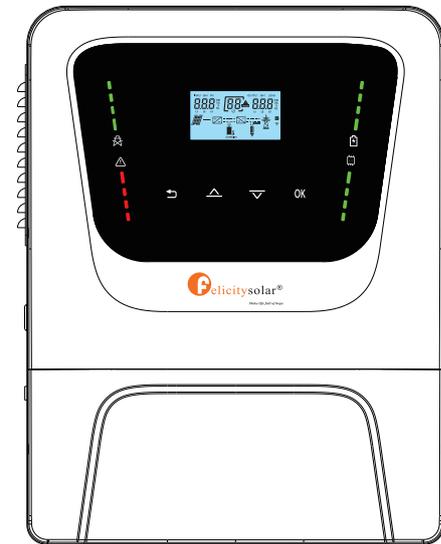
Make life full of hope

USER GUIDE

Solar inverter

IVCM P1G2 Series(2KW~3.2KW)

Solar inverter



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1. ABOUT THIS MANUAL

Purpose

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

Scope

This manual provides safety and installation guidelines as well as information on tools and wiring.

2. SAFETY INSTRUCTIONS

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

1. Before using the unit, read all instructions and cautionary markings on the unit, the batteries and all appropriate sections of this manual.
2. **CAUTION** --To reduce risk of injury, charge only deep-cycle lead acid type rechargeable batteries. Other types of batteries may burst, causing personal injury and damage.
3. Do not disassemble the unit. Take it to a qualified service center when service or repair is required. Incorrect re-assembly may result in a risk of electric shock or fire.
4. To reduce risk of electric shock, disconnect all wirings before attempting any maintenance or cleaning. Turning off the unit will not reduce this risk.
5. **CAUTION** – Only qualified personnel can install this device with battery.
6. **NEVER** charge a frozen battery.
7. For optimum operation of this inverter/charger, please follow required spec to select appropriate cable size. It's very important to correctly operate this inverter/charger.
8. Be very cautious when working with metal tools on or around batteries. A potential risk exists to drop a tool to spark or short circuit batteries or other electrical parts and could cause an explosion.
9. Please strictly follow installation procedure when you want to disconnect AC or DC terminals. Please refer to INSTALLATION section of this manual for the details.
10. Fuses (150A or 200A) are provided as over-current protection for the battery supply.
11. **GROUNDING INSTRUCTIONS** -This inverter/charger should be connected to a permanent grounded wiring system. Be sure to comply with local requirements and regulation to install this inverter.
12. **NEVER** cause AC output and DC input short circuited. Do NOT connect to the mains when DC input short circuits.
13. **Warning!!** Only qualified service persons are able to service this device. If errors still persist after following troubleshooting table, please send this inverter/charger back to local dealer or service center for maintenance.

3. WARNING MARKS

Warning marks inform users of conditions which can cause serious physical injury or death, or damage to the device. They also tell users how to prevent the dangers. The warning marks used in this operation manual are shown below:

Symbols	Name	Instruction
	Danger	Serious physical injury or even death may occur if not follow the relative requirements
	Warning	Physical injury or damage to the devices may occur if not follow the relative requirements
	Electrostatic sensitive	Damage may occur if not follow the relative requirements
	Hot surface	Sides of the device may become hot. Do not touch.
NOTE	Note	The procedures taken for ensuring proper operation.

4. INTRODUCTION

This multifunctional inverter/charger integrates the operations of an inverter, an MPPT solar charger, and a battery charger into a portable unit, delivering uninterruptible power supply support. Its comprehensive LCD display allows for user-configurable and easily accessible button operations. Based on different application scenarios, users can effortlessly configure parameters such as battery charging current, AC/solar charging priority, and acceptable input voltage range.

4.1 Features

- Pure sine wave inverter
- Built-in MPPT solar charging controller, with an MPPT tracking efficiency of 99%
- Configurable input voltage range for home appliances and personal LCD computers via LCD setting
- Configurable battery charging current based on applications via LCD setting
- Configurable AC/Solar Charger priority via LCD setting
- Compatible to mains voltage or generator power
- Auto restart while AC is recovering
- Overload / Over temperature/ short circuit protection
- Cold start function
- Supports battery-free mode
- Supports silent mode

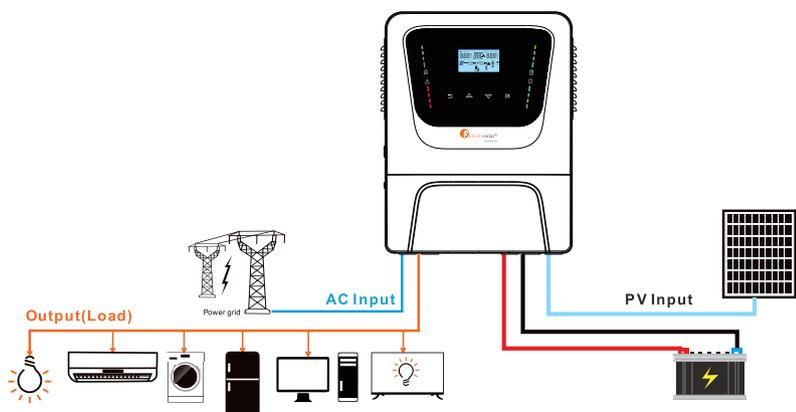
4.2 Basic System Architecture

The following illustration shows basic application for this inverter/charger, it also includes following devices to have a complete running system:

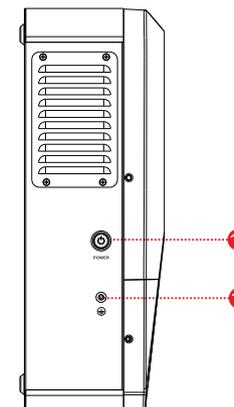
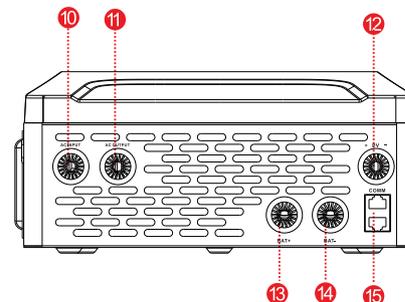
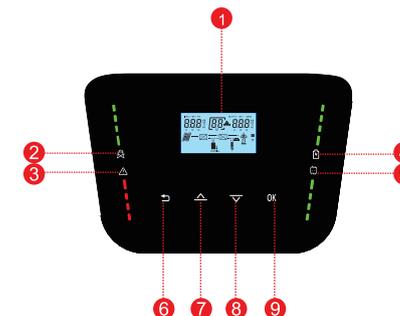
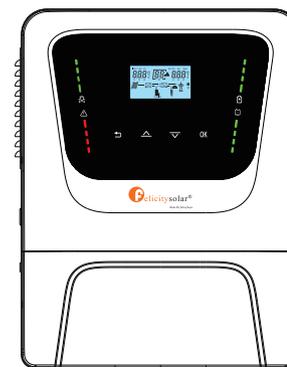
- Generator or Utility.
- PV modules(option)

Consult with your system integrator for other possible system architectures depending on your requirements.

This inverter can power all kinds of appliances in home or office environment, including motor-type appliances such as tube light, fan, refrigerator and air conditioner.



4.3 Product Overview



- | | | |
|-------------------------------|------------------------------|----------------------------------|
| 1. LCD Display | 7. UP Button | 13. BAT+ |
| 2. Utility Indicator | 8. DOWN Button | 14. BAT- |
| 3. Fault or Warning Indicator | 9. ENTER Button | 15. RS485&CAN Communication Port |
| 4. Charging Indicator | 10. AC Input Port | 16. POWER Button |
| 5. Inverter Indicator | 11. AC Output Port | 17. PE |
| 6. ESC Button | 12. PV Input Connection Port | |

5. SPECIFICATIONS

Table 1 Line Mode Specifications

Line Mode Specifications		
Model	IVCM3224P1G2	IVCM2012P1G2
Rated output Power	3200VA/3200W	2000VA/2000W
Input Voltage waveform	Sinusoidal (utility or generator)	
Nominal Input Voltage	230Vac	
Low Line voltage Disconnect	170Vac±7V(UPS); 90Vac±7V(Appliances)	
Low Loss Voltage Re-connect	180Vac±7V(UPS); 100Vac±7V(Appliances)	
High Line Voltage Disconnect	280Vac±7V	
High Line Voltage Re-connect	270Vac±7V	
Nominal Input Frequency	50Hz/ 60Hz	
Low Line Frequency Disconnect	40±1Hz	
Low Line Frequency Re-connect	42±1Hz	
High Line Frequency Disconnect	65±1Hz	
High Line Frequency Re-connect	63±1Hz	
Output Voltage Waveform	As same as input waveform	
Output Short Circuit Protection	Battery mode: Electronic Circuits	
Transfer Time (Single unit)	4ms typical (UPS); 20ms typical (Appliances)	
Max Bypass Overload Current	25A	
Max Inverter/Rectifier Current	25A/5750W	15A/3450W
Utility Charge Mode Specifications		
Nominal Input Voltage	230Vac	
Input Voltage Range	90-280Vac	
Nominal Output Voltage	Dependent on battery type	
Max Charge Current	120A	
Charge Current Regulation	0~120A (Adj 5A)	
Over Charge Protection	Yes	
Solar Charging & Grid Charging		
Max PV Open Circuit Voltage	105V	
MPPT Voltage Range	30~90V	
Max Input Power	1600W	800W
Max Solar Charging Current	60A	
Max Charging Current (PV + Grid)	120A	

Charge Algorithm

Algorithm	Three stage: Buck CC (Constant current stage) -> Buck CV (Constant voltage stage) -> Float (Constant voltage stage)
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Charging curve			
Battery Type Setting	Battery Type	Buck CC/CV	Float
	AGM	Adjustable, up to 30V	
	Flooded		
	Self - defined		
	Lithium		

Inverter Mode Specifications		
Model	IVCM3224P1G2	IVCM2012P1G2
Rated output Power	3200VA/3200W	2000VA/2000W
Nominal DC Input Voltage	24V	12V
Max Discharge current	135A	165A
Output Voltage Waveform	Pure sine wave	
Nominal Output Voltage	230Vac±5%	
Nominal output Frequency (Hz)	50±0.3Hz/60Hz±0.3Hz	
Peak Efficiency	93%	90%
Over-Load Protection (SMPS load)	5s@≥150% load; 10s@110%~150% load	
Surge Rating		
Capable of Starting Electric	Yes	
output Short Circuit Protection	Yes	
Cold Start Voltage	21.0V	10.5V
Low Battery Alarm		
@ Load < 20%	22.0V	11.0V
@ 20% ≤ Load < 50%	21.4V	10.7V
@ Load ≥ 50%	20.2V	10.1V
Low Battery Alarm Recovery		
@ Load < 20%	23.0V	11.5V
@ 20% ≤ Load < 50%	22.4V	11.2V
@ Load ≥ 50%	21.2V	10.6V
Low DC Input Shut-down		
@ Load < 20%	21.0V	10.5V
@ 20% ≤ Load < 50%	20.4V	10.2V
@ Load ≥ 50%	19.2V	9.6V
High DC Input Alarm & Fault	31V	15.5V
High DC Input Recovery	29V	14.5V
General Specifications		
Operating Temperature	-10°C ~55°C	
Range Storage Temperature	-15°C ~60°C	
Net Weight (Kg)	6.5kg	
Product Size (D*W*H)	356x276x128mm	
Package Dimension (D*W*H)	438x358x202mm	

6. INSTALLATION

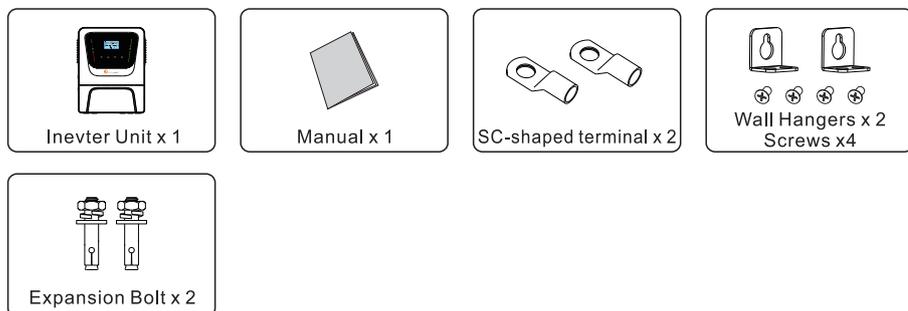
6.1 Safety Guidance

Warning marks inform users of conditions which can cause serious physical injury or death, or damage to the device. They also tell users how to prevent the dangers. The warning marks used in this operation manual are shown below:

	<ul style="list-style-type: none"> After receiving this product, first confirm the product package is intact. If any question, contact the logistic company or local distributor immediately. The installation and operation of inverter must be carried out by professional technicians who have received professional trainings and thoroughly familiar with all the contents in this manual and the safety requirements of the electrical system.
	<ul style="list-style-type: none"> Do not carry out connection/disconnection, unpacking inspection and unit replacement operations on the inverter when power source is applied. Before wiring and inspection, users must confirm the breakers on DC and AC side of inverter are disconnected and wait for at least 5 minutes.
	<ul style="list-style-type: none"> Ensure there is no strong electromagnetic interference caused by other electronic or electrical devices around the installation site. Do not refit the inverter unless authorized. All the electrical installation must conform to local and national electrical standards
	<ul style="list-style-type: none"> Do not touch the housing of the inverter or the radiator to avoid scald as they may become hot during operation.
	<ul style="list-style-type: none"> Ground with proper technics before operation.
	<ul style="list-style-type: none"> Do not open the surface cover of the inverter unless authorized. The electronic components inside the inverter are electrostatic sensitive. Do take proper anti-electrostatic measures during authorized operation.
	<ul style="list-style-type: none"> The inverter needs to be reliably grounded.
	<ul style="list-style-type: none"> Ensure that DC and AC side circuit breakers have been disconnected and wait at least 5 minutes before wiring and checking.

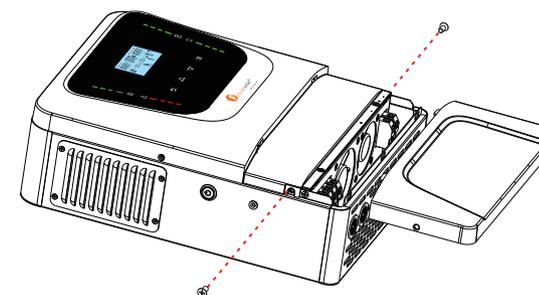
6.2 Unpacking and Inspection

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:



6.3 Unit Preparation

Before connecting all wirings, please take off bottom cover by removing two screws as shown below.



6.4 Cable Preparation

WARNING! All wiring must be performed by a qualified personnel.

WARNING! Using the correct cables for battery, AC, and PV connections is essential for system safety and operational efficiency. To prevent injury and equipment damage, always use the recommended cable types and specifications.

Recommended battery cable and terminal size:

Model	Typical Amperage	Wire Size	Torque Value
3.2KW/2KW	150A	2AWG(33.63mm ²)	4.73 Nm

Suggested cable requirement for AC wires:

Model	Typical Amperage	Wire Size	Torque Value
3.2KW/2KW	30A	12AWG(3.31mm ²)	1.2 ~ 1.6 Nm

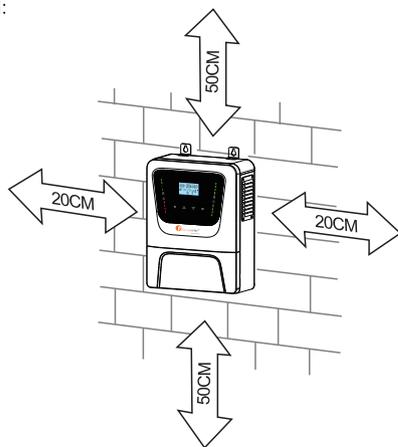
Suggested cable requirement for PV wires:

Model	Typical Amperage	Wire Size	Torque
3.2KW/2KW	60A	8AWG(8.37mm ²)	1.4~1.6 Nm

6.5 Mounting the Unit

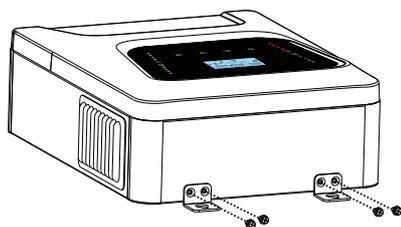
Consider the following points before selecting where to install:

- Do not mount the inverter on flammable construction materials.
- Mount on a solid surface
- Install this inverter at eye level in order to allow the LCD display to be read at all times.
- The ambient temperature should be between -10°C and 55°C to ensure optimal operation.
- The recommended installation position is to be adhered to the wall vertically.
- Be sure to keep other objects and surfaces as shown in the right diagram to guarantee sufficient heat dissipation and to have enough space for removing wires.

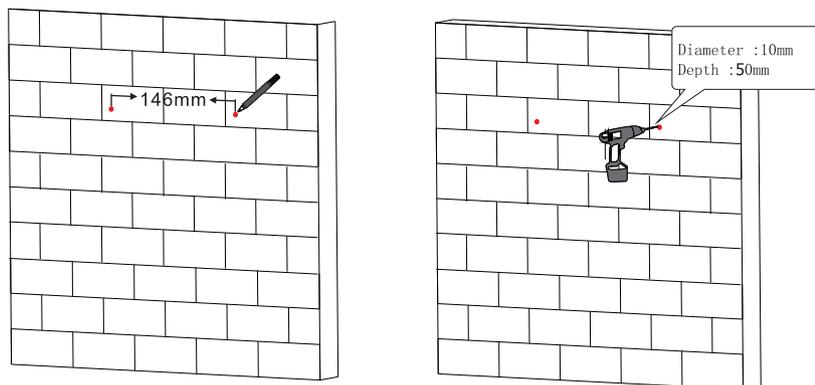


! SUITABLE FOR MOUNTING ON CONCRETE OR OTHER NON-COMBUSTIBLE SURFACE ONLY.

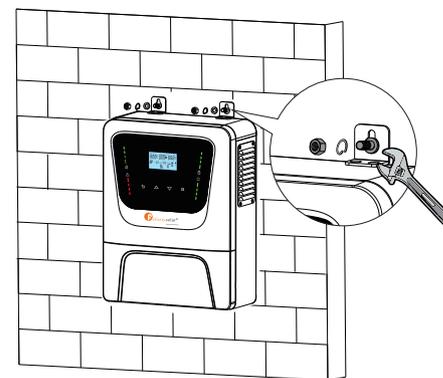
Step 1: First, fix the wall mount (included in the packaged accessories) to the inverter using M4 screws.



Step 2: Use a 10 mm drill bit (10 mm in diameter, 50 mm in depth) to drill 2 holes at the correct position on the wall. Insert the M6 expansion screws into the wall and tighten the nuts—after confirming they are secure, remove the nuts temporarily.



Step 3: Attach the wall mount of the inverter to the expansion screws, then retighten the nuts to fix the inverter in place.

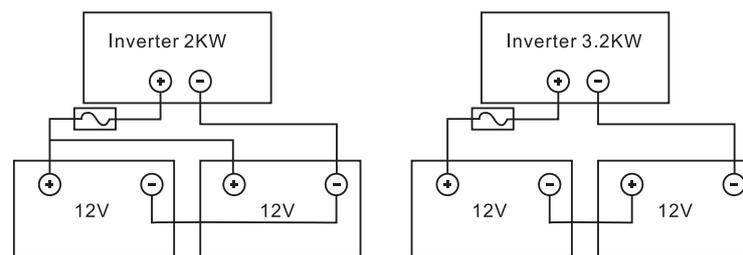


6.6 Battery Connection

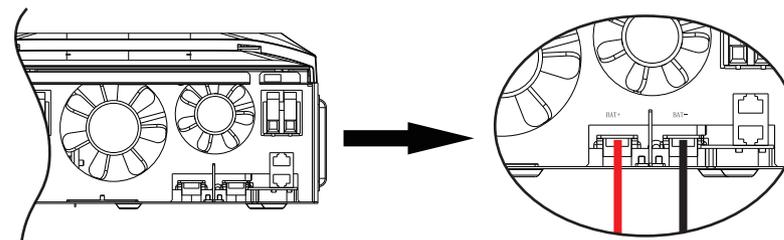
CAUTION: For safety operation and regulation compliance, it's requested to install a separate DC over-current protector or disconnect device between battery and inverter. It may not be requested to have a disconnect device in some applications, however, it's still requested to have over-current protection installed. Please refer to typical amperage in below table as required fuse or breaker size.

Please follow below steps to implement battery connection:

1. Assemble battery ring terminal based on recommended battery cable and terminal size.



2. Insert of battery cable flatly into battery connector of inverter and make sure the bolts are tightened with torque of 2-3 Nm. Make sure polarity at both the battery and the inverter/charge is correctly connected and are tightly screwed to the battery terminals.



WARNING: Shock Hazard
Installation must be performed with care due to high battery voltage in series.

CAUTION!! Do not place anything between the flat part of the inverter terminal and the. Otherwise, overheating may occur.

CAUTION!! Do not apply anti-oxidant substance on the terminals before terminals are reconnected tightly.

CAUTION!! Before making the final DC connection or closing DC breaker/disconnector, be surpositive (+) must be connected to positive (+) and negative (-) must be connected to negative(-).

6.7 AC Input/Output Connection

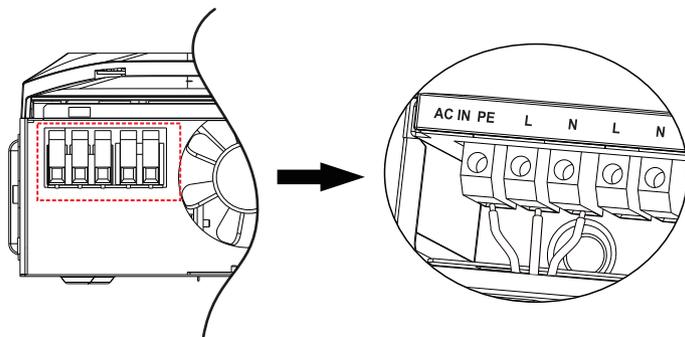
CAUTION!! Before connecting to AC input power source, please install a separate AC breaker between inverter and AC input power source. This will ensure the inverter can be securely disconnected during maintenance and fully protected from over current of AC input. The recommended spec of AC breaker is 10A for 1KW.

CAUTION!! There are two terminal blocks with "IN" and "OUT" markings. Please do NOT mis-connect input and output connectors.

Please follow below steps to implement AC input/output connection:

1. Before making AC input/output connection, be sure to open DC protector or disconnector first.
2. Remove insulation sleeve 10mm for six conductors. And shorten phase L and neutral conductor N 3 mm.
3. Insert AC input wires according to polarities indicated on terminal block and tighten the terminal screws. Be sure to connect PE protective conductor (⊕) first.

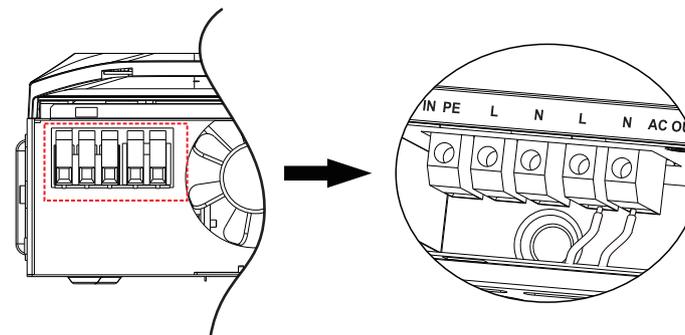
⊕ → Ground (yellow-green)
L → LINE (brown or black)
N → Neutral (blue)



WARNING:
Be sure that AC power source is disconnected before attempting to hardwire it to the unit.

4. Then, insert AC output wires according to polarities indicated on terminal block and tighten terminal screws. Be sure to connect PE protective conductor (⊕) first.

⊕ → Ground (yellow-green)
L → LINE (brown or black)
N → Neutral (blue)



5. Make sure the wires are securely connected.

CAUTION : Important

Be sure to connect AC wires with correct polarity. If L and N wires are connected reversely, it may cause utility short-circuited when these inverters are worked in parallel operation.

CAUTION: Appliances such as air conditioner are required at least 2~3 minutes to restart because it's required to have enough time to balance refrigerant gas inside of circuits. If a power shortage occurs and recovers in a short time, it will cause damage to your least 2~3 connected appliances. To prevent this kind of damage, please check manufacturer of air conditioner if it's equipped with time-delay function before installation. Otherwise, this inverter/charger will trig overload fault and cut off output to protect your appliance but sometimes it still causes internal damage to the air conditioner.

6.8 PV Connection

CAUTION: Before connecting to PV modules, please install separately a DC circuit breaker between inverter and PV modules.

PV Module Selection:

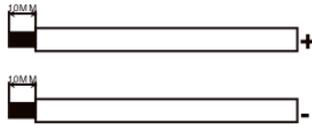
When selecting proper PV modules, please be sure to consider below parameters:

1. Open circuit Voltage (Voc) of PV modules not exceeds max. PV array open circuit voltage of inverter.
2. Max. power voltage (Vmp) should be during PV array MPPT voltage range.

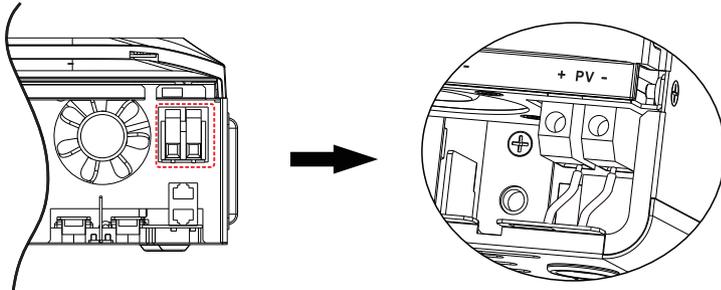
Solar Charging Mode	
INVERTER MODEL	3.2KW/2KW
Max.PV Array Open Circuit Voltage	105V
PV Array MPPT Voltage Range	30Vdc~90Vdc

Please follow below steps to implement PV module connection:

1. Remove insulation sleeve 10 mm for positive and negative conductors.
2. Check correct polarity of connection cable from PV modules and PV input



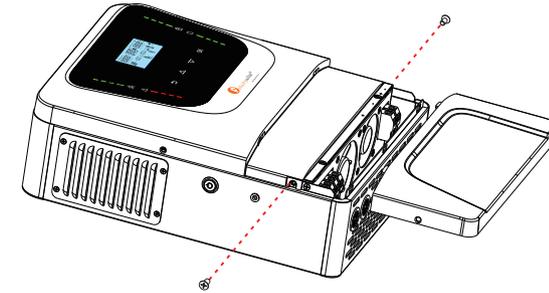
connectors. Then, connect positive pole(+) of connection cable to positive pole(+) of PV input connector. Connect negative pole (-) of connection cable to negative pole (-) of PV input connector.



3. Make sure the wires are securely connected.

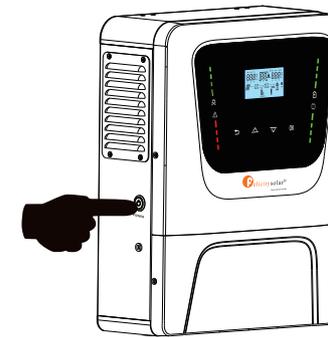
6.9 Final Assembly

After connecting all wirings, please put bottom cover back by screwing two screws as shown below.



7. OPERATION

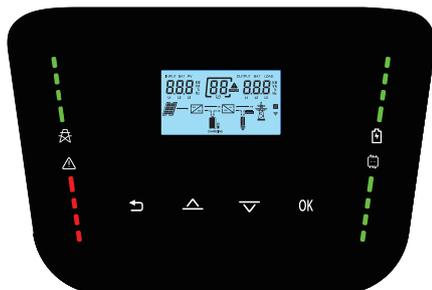
7.1 Power ON/OFF



Once the unit has been properly installed and the batteries are connected well, simply press On/Off switch (located on the Left side of the case) to turn on the unit.

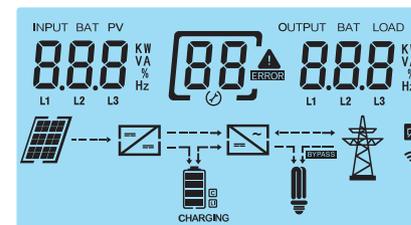
7.2 Operation and Display Panel

The operation and display panel, shown in below chart, is on the front panel of the inverter. It includes four indicators, four function keys and a LCD display, indicating the operating status and input/output power information.



Function Key	Icon	Description
ESC		To previous page
UP		To go to previous selection
DOWN		To go to next selection
ENTER		To confirm the selection or go to next page
LED Indicator	Icon	Description
Inverter		The inverter operates in off-grid or grid-connected mode, and the LED lights remain on continuously. The inverter is not operating in off-grid or grid-connected mode, and the led light is not on.
Battery		Charging the battery, the LED flicker. battery is full, the LED light will always-on. The battery is not charged, the LED light will go out.
Fault		If inverter in fault event, the LED light will always-on. If inverter in warning event, the LED light will flash. Inverter work normally, the LED light will go out.
Grid		The inverter operates in on-grid mode, and the LED light remains constantly on. The inverter is not operating in on-grid mode and the led light is not on.

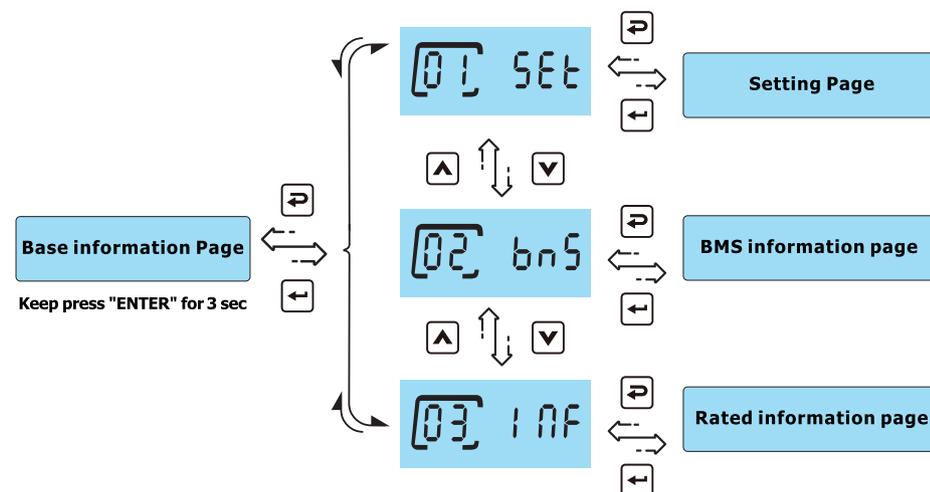
7.3 LCD Display Icons



Icon	Function description
Input Source Information	
	Indicate input voltage, input frequency, PV voltage, PV power, battery voltage and charger current.
Configuration Program and Fault Information	
	Indicates the setting programs.
	Indicates the warning and fault codes. Warning: flashing with warning code. Fault: lighting with fault code
output Information	
	Indicate output voltage, output frequency, load percent, load in VA, load in Watt and discharging current.
Battery Information	
	Indicates battery level by 0-24%, 25-49%, 50-74% and 75-100%.
	Indicates Lithium battery type.
	Indicates communication is built between inverter and battery.

Mode operation Information	
	Indicates the utility.
BYPASS	Indicates load is supplied by utility directly.
	Indicates that the load has an output.
	Indicates the inverter/charger is working.
	Indicates the PV panels.
	Indicates PV MPPT is working.
	Indicates the WIFI link.
Mute Operation	
	Indicates unit alarm is disabled.

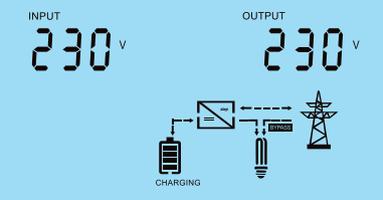
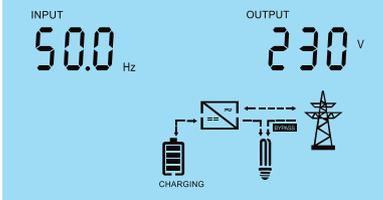
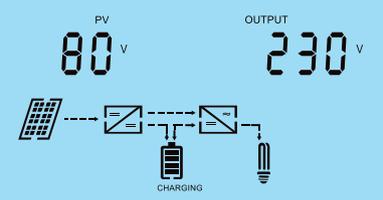
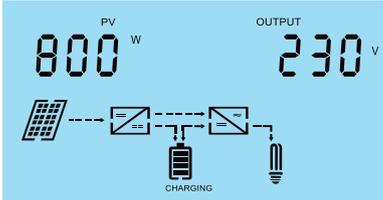
7.4 LCD Operation Flow Chart

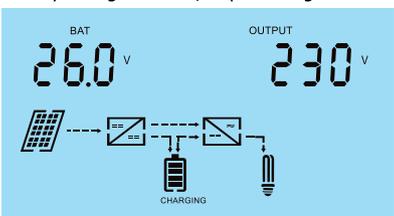
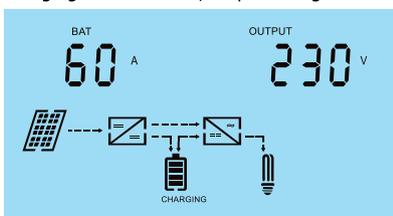
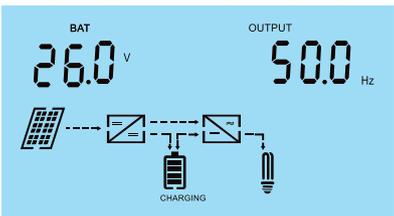
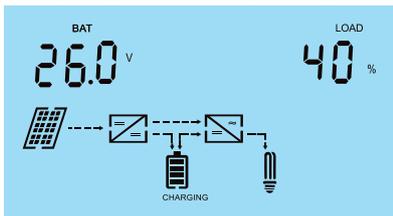
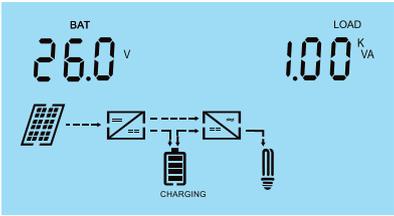
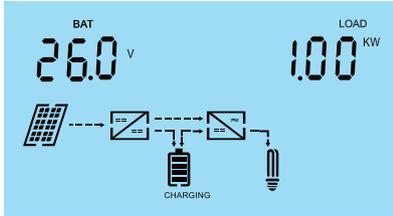
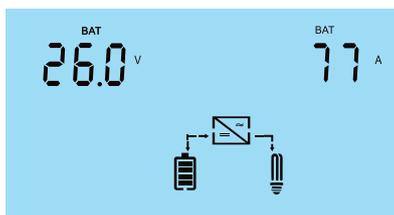


On base information page, pressing and holding "ENTER" key for 3 sec, the unit will enter parameters page. Press "UP" or "DOWN" key to switch the selection and press "ENTER" key to enter selected page. Press "ESC" key to back to previous page.

7.5 Base Information Page

The base information will be switched by pressing "UP" or "DOWN" key. The selectable information is switched as below order:

<p>Input voltage / output voltage Utility voltage is 230v, output voltage is 230V</p> 	<p>Input frequency / output voltage Utility frequency is 50.0Hz, output voltage is 230V</p> 
<p>PV voltage / Output voltage PV voltage is 80V, output voltage is 230V</p> 	<p>PV power / Output voltage PV power is 800W, output voltage is 230V</p> 

<p>Battery voltage / Output voltage Battery voltage is 26.0v,output voltage is 230V</p> 	<p>Charging current / Output voltage Charging current is 60A, output voltage is 230V</p> 
<p>Battery voltage / Output frequency Battery voltage is 26.0v,output frequency is 50.0Hz</p> 	<p>Battery voltage / Load percentage Battery voltage is 26.0V, load percentage is 40%</p> 
<p>Battery voltage / Load VA Battery voltage is 26.0V,output wattage is 1.00kVA</p> 	<p>Battery voltage / Load wattage Battery voltage is 26.0v,output wattage is 1.00kW</p> 
<p>Battery voltage / Discharging current Battery voltage is 26.0V, discharging current is 77A</p> 	

7.6 Setting Page

Press "UP" or "DOWN" button to select setting programs. And then, press "ENTER" button to confirm the selection or ESC button to exit.

Setting items:

		Selectable option	
00	Exit setting	ESC	
01	Output voltage setting	220V 220V	Output voltage configuration
		230V 230V	
		240V 240V	
02	Output frequency setting	50Hz 50 Hz	Output frequency configuration
		60Hz 60 Hz	
03	Utility input range setting	Appliance mode APL	APL should be selected, when the utility is not well.
		UPSmode UPS	
04	Output source priority	Utility >> PV >> Battery USB	Public utilities supply power to the load first. Photovoltaic power generation and batteries will provide electricity Load only when the utility is unavailable. When there are power usage restrictions, first meet the load, and then use the remaining energy to charge the battery
		PV >> Utility >> Battery SUB	PV prioritizes load carrying and battery charging. When the grid is not restricted, the maximum load power of the inverter is the PV power. When the grid is restricted, the mains power carries the load first. If the PV energy is insufficient to carry the load, the battery will supplement. If the charging energy is greater than the load, it will automatically switch to charging

		PV >> Battery >> Utility OP5 [04] SBU	According to the parameters set by the user in steps 12 and 13, the inverter charges the battery to the set voltage /SOC through the power grid and then switches to load. When the load consumption reaches the set voltage /SOC, it switches to mains charging, and the PV energy is fully utilized at all times
05	SilentMode	Disable S1E [05] d1S	Silent and not enabled, no restrictions on the fan
		Enable S1E [05] ENA	Silent enable, fan speed limit
06	Max charging current (Utility charge current + PV charging current)	3.2KW model bCC [06] 120 ^A	Setting range is from 5A to 120A Increment of each click is 5A
07	Max utility charging current setting	3.2KW model cHC [07] 120 ^A	Setting range is from 5A to 120A Increment of each click is 5A
08	Battery type setting	The battery type is AGM bAt [08] AGn	If "Self-defined" or "Lib" is selected, battery charge voltage and low DC cut-off voltage can be set up in program 9, 10 and 11. If "Lib" is selected, inverter can charge Lithium battery when the Lithium battery need to be activated. Please make sure Lithium battery is connected before you start up inverter. If inverter doesn't connect battery or Lithium battery, do not select "Lib" battery type.
		The battery type is Flooded bAt [08] FLd	
		The battery type is self-defined bAt [08] USE	
		The battery type is Lib bAt [08] LIb	

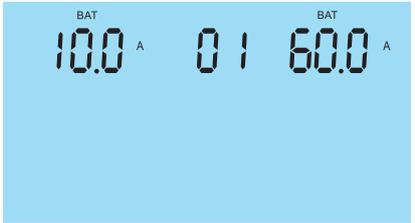
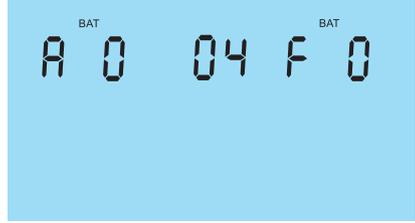
09	Bulk charging voltage setting (C.V voltage)	12V model [4] [09] 14.1 ^v	If "self-defined" or "Lib" is selected in program 8, this program is enabled. Setting range is from 12.0V to 15.0V. Increment of each click is 0.1V
		24V model [4] [09] 28.2 ^v	If "self-defined" or "Lib" is selected in program 8, this program is enabled. Setting range is from 24.0V to 30.0V. Increment of each click is 0.1V
10	Floating charging voltage	12V model FL4 [10] 13.5 ^v	If "self-defined" or "Lib" is selected in program 8, this program is enabled. Setting range is from 12.0V to 15.0V. Increment of each click is 0.1V
		24V model FL4 [10] 27.0 ^v	If "self-defined" or "Lib" is selected in program 8, this program is enabled. Setting range is from 24.0V to 30.0V. Increment of each click is 0.1V
11	Low DC cut-off voltage	12V bC4 [11] 11.5 ^v	If "self-defined" or "Lib" is selected in program 8, this program is enabled. Setting range is from 10.5v to 13.5V. Increment of each click is 0.1V
		24V bC4 [11] 23.0 ^v	If "self-defined" or "Lib" is selected in program 8, this program is enabled. Setting range is from 21.0v to 27.0V. Increment of each click is 0.1V
12	Setting battery voltage point back to utility when selecting "SBU priority" in program 4	12V bU4 [12] 11.5 ^v	Setting range is from 11.0V to 13.5V. Increment of each click is 0.1V
		24V bU4 [12] 23.0 ^v	Setting range is from 22.0V to 27.0V. Increment of each click is 0.1V
13	Setting battery voltage point back to battery mode when selecting "SBU priority" in program 4	12V bb4 [13] 13.5 ^v	Setting range is from 12.0V to 15.0V. Increment of each click is 0.1V
		24V bb4 [13] 27.0 ^v	Setting range is from 24.0V to 30.0V. Increment of each click is 0.1V
14	Overload bypass function	Disable LbP [14] d1S	If it is enabled, the inverter will switch to utility mode if overload happens in battery mode.
		Enable LbP [14] ENA	

15	Overload restart function	Disable OLT [15] d15	If it is enabled, the inverter will auto restart when overload occurs.
		Enable OLT [15] ENA	
16	Over temperature restart function	Disable OEt [16] d15	If it is enabled, the inverter will auto restart when over temperature occurs.
		Enable OEt [16] ENA	
17	Backlight of LCD	Disable bL [17] d15	If selected, LCD backlight will be off after no button is pressed for 60s.
		Enable bL [17] ENA	If selected, LCD backlight will be always-on.
18	Auto return to the first page of display screen	Disable bFP [18] d15	If selected, the display screen will stay at latest screen user finally switches.
		Enable bFP [18] ENA	If selected, it will automatically return to the first page of display screen (Input voltage/ output voltage) after no button is pressed for 60s.
20	AC InPower En	Disable ACE [20] d15	Line In Power Limit the parameter Settings to 22 or 23 steps
		Enable ACE [20] ENA	Line In Power Unlimited
21	Max AC In Curr	3.2KW model ACC [21] 30 ^A	If the grid input exceeds this value, it will be restricted
22	Max AC In Watt	3.2KW model ACW [22] 5.75 ^{KW}	If the grid input exceeds this value, it will be restricted

23	PowerSaving En	Disable PSn [23] d15	The inverter keeps running
		Enable PSn [23] ENA	After the output power is lower than the set value for a period of time, turn off the inverter controller. Subsequently, turn on the inverter controller for scanning at regular intervals, each time for 200ms. If the power is detected, turn on the output
24	IslandDetectEn	Disable Ldt [24] d15	After the islanding disturbance is not enabled, the inverter may not exit the grid connection when an islanding is formed
		Enable Ldt [24] ENA	After the islanding disturbance is enabled, the inverter automatically exits the islanding and switches to off-grid operation when an islanding is formed
25	Charge until SOC	COc [25] 100%	Setting range is from 0% to 100% Increment of each click is 1%
26	Discharge up to SOC	DOc [26] 100%	Setting range is from 0% to 100% Increment of each click is 1%
31	Setting of the maximum discharge current of the battery	150A dbC [31] 150 ^A	Setting range is from 10A to 150A Increment of each click is 5A
32	Battery-free mode	Disable P41 [32] d15	Battery-free mode is not supported.
		Enable P41 [32] ENA	Support battery-free mode, working independently with PV
33	Set the time for switching from Inverter Mode to Line Mode	FLS [33] 15	The setting range is from 0 to 60 seconds, with an increment of 1 second per click

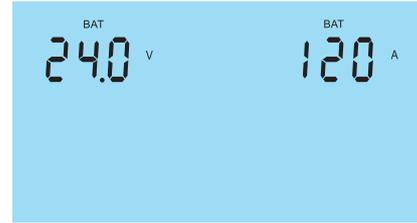
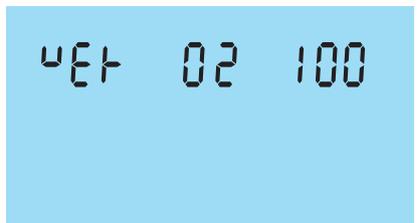
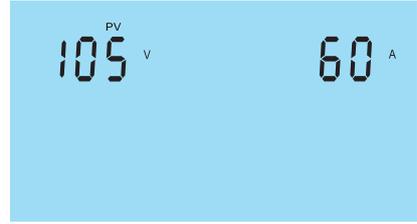
7.7 BMS information Page

The BMS information will be switched by pressing "UP" or "DOWN" key. The selectable information is switched as below order:

<p>BMS charge cut-off voltage/discharge cut-off voltage BMS charge cut-off voltage is 28.8V, discharge cut-off voltage is 24.0V on page 0.</p> 	<p>BMS charge cut-off current/discharge cut-off current BMS charge cut-off current is 10.0A, discharge cut-off current is 60.0A on page 1.</p> 
<p>BMS voltage /current BMS voltage is 26.6V, current is 0.1A on page 2.</p> 	<p>BMS SOC/SOH BMS SOC is 99%, SOH is 100% on page 3.</p> 
<p>BMS alarm code/fault code BMS alarm code is 0, fault code is 0 on page 4.</p> 	

7.8 Rated Information Page

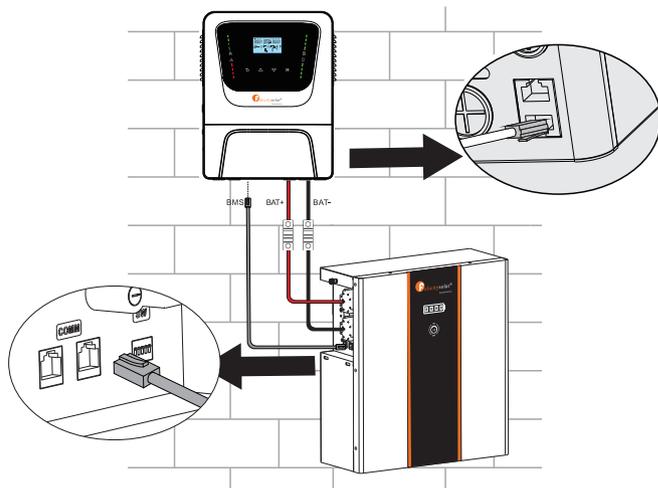
The rated information will be switched by pressing "UP" or "DOWN" key. The selectable information is switched as below order:

<p>Rated VA / WATT Rated VA is 3.2KVA, WATT is 3.2KW</p> 	<p>Rated battery voltage / Max. charge current Rated battery voltage is 24V, Max charge current is 120A</p> 
<p>Firmware version The firmware IAP version is 02, and the firmware APP version is 100</p> 	<p>Firmware sub-version The IAP version of the firmware is 02, and the sub-version of the firmware APP is 0</p> 
<p>Max PV Voltage / Max MPPT Current Max PV Voltage is 105V, Max MPPT Current is 60A</p> 	

7.9 Lithium Battery Communication

It's allowed to connect lithium battery and build communication only which it has been configured. Please follow below steps to configure communication between lithium battery and inverter.

1. Connect power cables between lithium battery and inverter. Please pay attention to the terminals of positive and negative. Make sure the positive terminal of battery is connected to the positive terminal of inverter, and the negative terminal of battery is connected to the negative terminal of inverter.
2. The communication cable is bundled with lithium battery. Both sides are RJ45 port. One port is connected to the RS485 port of inverter and another one is connected to the COMM port of lithium battery.



Pin Assignment for Inverter CAN/RS485 Communication Port

	RS485	
PIN 1	NC	
PIN 2	NC	
PIN 3	CAN-L	
PIN 4	CAN-H	
PIN 5	RS485-B	
PIN 6	RS485-A	
PIN 7	NC	
PIN 8	NC	

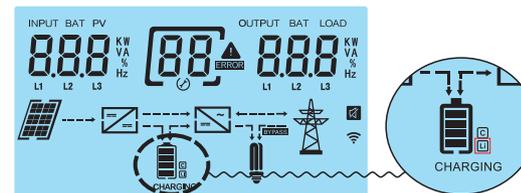
Note: That the use of lithium mode should ensure that the inverter and battery pack communication is normal

3. Configure battery type to "Lib" in LCD setting No. 08.

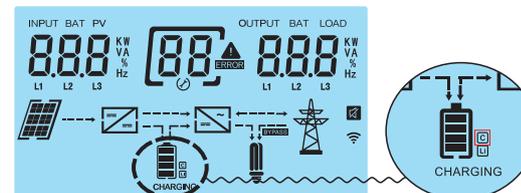
The battery type is Lib



And then LCD will show you "Li" icon.



4. Power up lithium battery and inverter. Wait a moment, if the communication is built between them, LCD will show you "C" icon as below.



5. Press the "UP" or "DOWN" button to scroll through the LCD BMS information pages. For example, on the following screen, you can view SOC and SOH in the communication system:



The display shows a battery status of 99% SOC and 100% SOH.

7.10 Turbo Mode

In order to avoid operation failure caused by charging overload protection, Turbo mode is automatically activated when the total output power exceeds the rated output power, so that the product can power high-power devices at the rated output power. When using Turbo mode, note the following:

- Turbo is enabled by default. To disable Turbo, you can set it in the Settings or APP.
- The Turbo mode is disabled in the following three scenarios
 - The mains is connected and in mains mode
 - The mains is set to UPS mode
 - When the Turbo mode is set to off
- Turbo mode is more suitable for heating and motor equipment, but not for all electrical appliances, some electrical appliances equipped with voltage protection (such as precision instruments, etc.) do not apply to Turbo mode. To confirm whether the device can use the Turbo mode, refer to the actual test.

7.11 Battery-free Mode

In order to provide flexible power solutions where battery storage is not required or available, the Battery-Free Mode allows the product to directly convert and supply power from the AC input or solar input to the connected loads. When using Battery-Free Mode, note the following:

- This mode must be manually enabled via the LCD settings or the APP.
- In this mode, the inverter's output is entirely dependent on the available input power and cannot provide backup power during a grid outage. It is ideal for routine power conversion to reduce battery wear, but is not suitable for applications that require an uninterruptible power supply (UPS).

8. WARNING CODE TABLE

When fault event happens, the fault LED is flashing. At the same time, warning code, icon  is shown on the LCD screen.

Warning Code	Warning Information	Trouble Shooting
02	Bat_VoltLow_Alarm	The battery voltage is low. Please charge it in time
04	Bat_Open_Alarm	Connect the battery
05	Grid_VoltOver_Alarm	Please check the line voltage. It should be less than 280V.
06	Grid_VoltLow_Alarm	Please check the line voltage. It should be greater than the standard voltage. APL:90V, UPS:170V
07	Grid_FreqOver_Alarm	Please check the line frequency. It should be less than 65hz
08	Grid_FreqLow_Alarm	Please check the line frequency, which should be greater than 40hz
10	Grid_LoadOver_Alarm	Reduce the loads
11	Active island alarm	Confirm and disconnect the lines connected to the mains power
25	LoadOver_Alarm	Reduce the loads
26	Fan_1_Alarm	Check if the Fans wiring connected well.Replace the fan.
27	Fan_2_Alarm	Check if the Fans wiring connected well.Replace the fan.
34	Bat_VoltLowDerate_Alarm	Reduce the load and charge the battery
56	PV_BoostNTC_Loss	Please return to repair center.
57	PV1_VoltOver_Fault	Please check the component voltage, which should be less than 105V.
61	PV1_CurrOver_Fault	Reduce the loads and Restart the machine.
63	PV1_TempOver_Fault	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.

9. FAULT CODE TABLE

When fault event happens, inverter will cut off output, and the fault LED is solid on. At the same time, fault code, icon

 and **ERROR** are shown on the LCD screen.

Falut Code	Falut Information	Trouble Shooting
14	Bat_VoltOver_S_Fault	Check if spec and quantity of batteries are meet requirements.
21	DCDC software overcurrent fault	1. Restart the inverter. 2. If the problem persists, please contact your installer.
27	LLC_LSTempOver_Fault	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
28	LLC transformer over-temperature fault	1. Restart the inverter directly. 2. After turning off the machine and letting it stand for ten minutes, restart the inverter 3. If the problem persists, please contact your installer.
29	BUS_VoltOver_S_Fault	AC Surge or internal components failed. Restart the unit, if the error happens again, please return
31	BUS_VoltLow_Fault	Restart the unit, if the error happens again, please return to repair center.
32	BUS_Soft_Fault	Restart the unit, if the error happens again, please return to repair center.
34	INV_Soft_Fault	Restart the unit, if the error happens again, please return to repair center.
35	INV_Volt_Fault	Restart the unit, if the error happens again, please return to repair center.
36	INV_CurrOver_S_Fault	Reduce the loads and Restart the machine.
37	INV_CurrOver_H_Fault	Reduce the loads and Restart the machine.
38	INV_Short_Fault	Check if wiring is connected well and remove abnormal load.
41	INV_TempOver_Fault	Check whether the air flow of the unit is blocked or whether the ambient temperature is too high.
46	INV_Hs_NTC_Loss	Please return to repair center.
48	Load_Over_Fault	Reduce the loads and Restart the machine.
49	Low output voltage fault	1. Restart the inverter. 2. If the problem persists, please contact your installer.
50	High output voltage fault	1. Restart the inverter. 2. If the problem persists, please contact your installer.

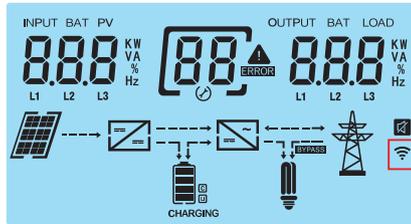
56	Eeprom_Fault	Please return to repair center.
79	INV_CurrCT_Fault	Please return to repair center.
80	OP_CurrCT_Fault	Please return to repair center.
83	The PV current sensor is faulty	1. Restart the inverter. 2. If the problem persists, please contact your installer.
85	Bootload_Fail	Please return to repair center.
89	The battery positive NTC is not connected/overheated	1. Restart the inverter directly. 2. After turning off the machine and letting it stand for ten minutes, restart the inverter 3. If the problem persists, please contact your installer.
90	The battery has negative NTC and is not connected or overheated	1. Restart the inverter directly. 2. After turning off the machine and letting it stand for ten minutes, restart the inverter 3. If the problem persists, please contact your installer.
91	The mains power is overcurrent	1. Restart the inverter. 2. Reduce the load of electrical appliances.
92	Output CurrOver Fault	1. Restart the inverter. 2. Reduce the load of electrical appliances.
93	Model identification error	1. Restart the inverter. 2. If the problem persists, please contact your installer.

10. THE WI-FI OPERATION GUIDE IN APP

10.1 Introduction

Wireless communication between the off-grid inverter and the APP can be realized through the Wi-Fi module. The APP supports Android and iOS devices.

Delivers device status during normal operation.
Allows device Settings to be configured on the APP.
Notifies users when a warning or alarm occurs.
Allows users to query inverter history data.



The status of the Wi-Fi sign on the LCD display.
After the APP is successfully connected, Wi-Fi indicator light remains constantly on.

10.2 Download and Install APP

Operating system requirement for your smart phone:

- 🍏 iOS system supports iOS 11.0 and above
- 🤖 Android system supports Android 5.0 above

APP Download
Please scan the following QR code with your smartphone to download the App.



The QR code supports Android system and iOS system

Operation Manual
Please scan the following QR code with your smartphone to view the App Operation Manual



The QR code supports Android system and iOS system