

User Manual

Solar Hybrid Inverter

PVBAT L2P 12K



PV BAT



POWER TODAY. SUSTAIN TOMORROW.

Version: 1.0

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About This Manual

The manual mainly describes the product information, guidelines for installation, operation and maintenance. The manual cannot include complete information about the photovoltaic (PV) system.

How to Use This Manual

Read the manual and other related documents before performing any operation on the inverter.

Documents must be stored carefully and be available at all times.

Contents may be periodically updated or revised due to product development. The information in this manual is subject to change without notice.

1. Safety

1.1 How to use this manual

This manual contains important information, guidelines, operation and maintenance for the following products : PVBAT series L2P 12K.

This manual must be followed during installation, use and maintenance.

1.2 Symbols in this manual



DANGER indicates a hazardous situations which if not avoided will result in death or serious injury.



WARNING indicates a hazardous situations which if not avoided could result in death or serious injury.



CAUTION indicates a hazardous situations which if not avoided could result in minor or moderate injury.



NOTICE provide some tips on operation of products.

1.3 Safety instruction

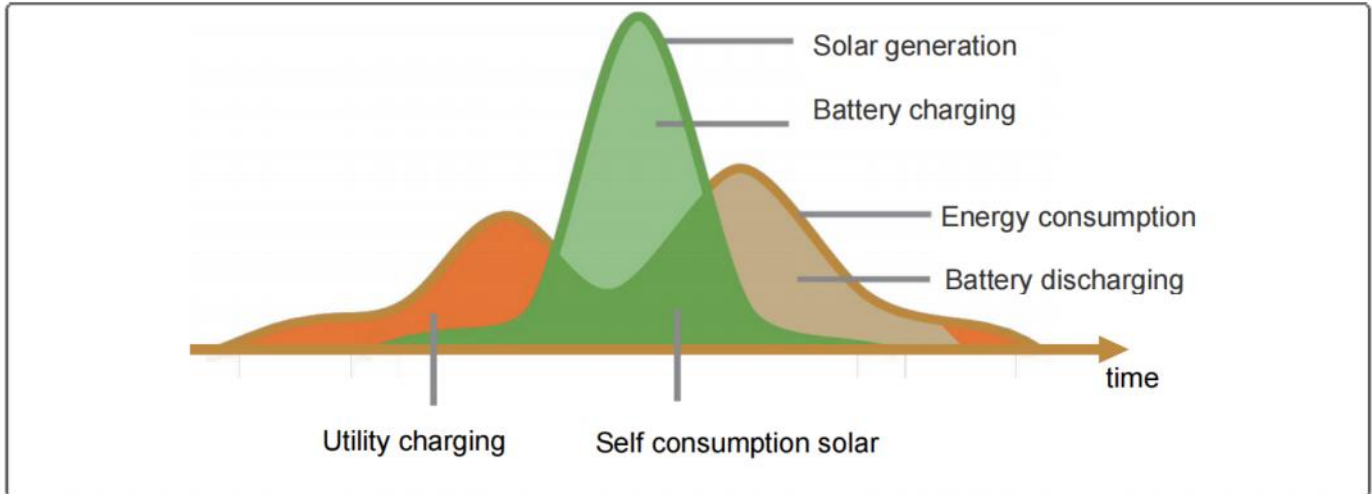


- This chapter contains important safety instructions. Read and keep this manual for future reference.
- Be sure to comply the local requirements and regulation to install this inverter.
- Beware of high voltage. Please turn off the switch of each power sources before and during the installation to avoid electric shock.
- For optimal operation of this inverter, select the appropriate cable size and the necessary protective devices as specified.
- Do not connect or disconnect any connections when the inverter working.
- Do not open the terminal cover when the inverter working.
- Make sure the inverter is well grounding.
- Be careful not to cause short-circuiting of the AC output and DC input.
- Do not disassembly this unit, for all repair and maintenance, please take it to the professional service center.
- Never charge a frozen battery

2. Production Instructions

2.1 Instructions

This is a new type of solar energy storage inverter control inverter integrating solar energy storage & utility charging and energy storage, AC sine wave output. It adopts DSP control and features high response speed, reliability, and industrial standard through an advanced control algorithm.



2.2 Features

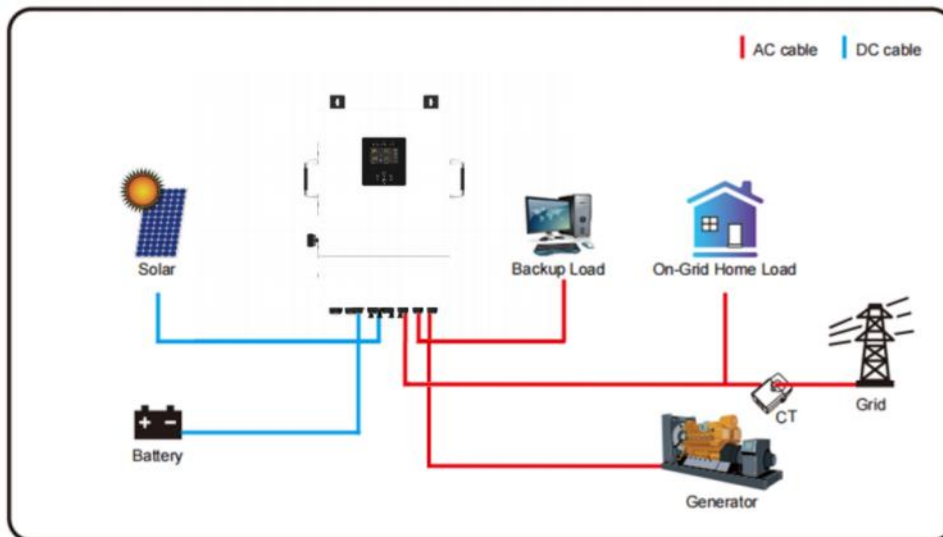
1. Supports lead-acid battery and Li-ion battery connections.
2. Smart load function.
3. AC coupling function.
4. With a dual activation function when the Li-ion battery is dormant; either mains or photovoltaic power supply access can trigger the activation of the Li-ion battery.
5. Support single-phase pure sine wave output.
6. Supports four different voltage levels of 200, 208, 220, 230, 240Vac Per phase.
7. Supports two solar inputs and simultaneous tracking of two solar maximum power charging/carrying capacity functions.
8. Dual MPPT, efficiency up to 99.9%, single maximum current of 22A, perfectly adapted to high-power modules.
9. 2 charging modes are available: solar only, grid and PV hybrid charging.
10. With the time-slot charging and discharging setting function, you can set the time period for cutting in/out of mains charging and switch the time period between battery discharging and mains bypass power supply mode.
11. Energy-saving mode function to reduce no-load energy losses.
12. With two output modes of utility bypass and inverter output, with uninterrupted power supply function.
13. LCD large screen dynamic flow diagram design, easy to understand the system data and operation status.
14. 360° protection with complete short circuit protection, over current protection, over under voltage protection, overload protection, backfill protection, etc.
15. Support CAN, USB, and RS485 communication.

2.3 System connection diagram

The diagram below shows the system application scenario of this product. A complete system consists of the following components:

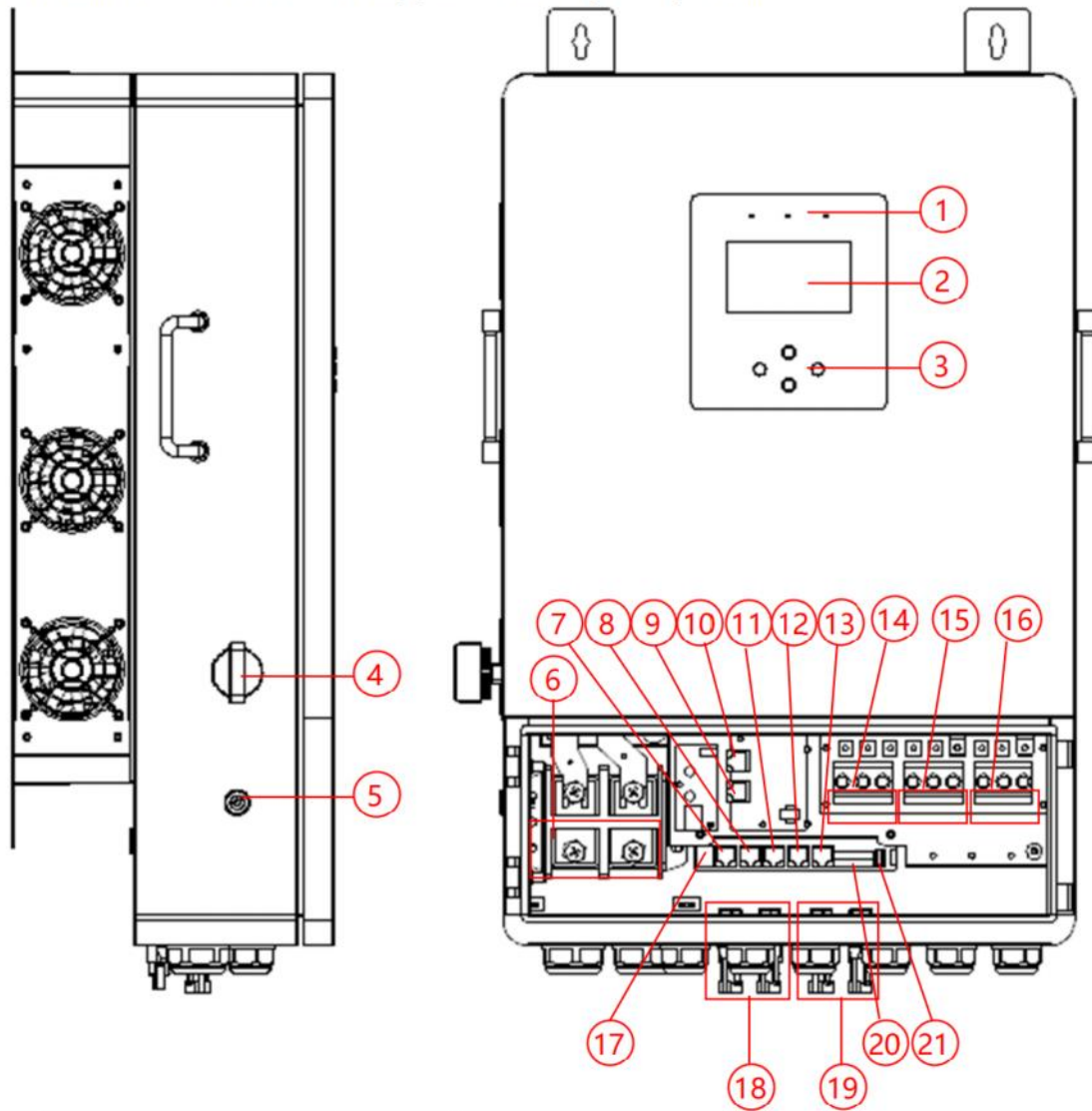
- **PV modules:** converts light energy into DC energy, which can be used to charge the battery via an inverter or directly inverted into AC power to supply the load.
- **Utility grid or generator:** connected to the AC input, it can supply the load and charge the battery at the same time. The system can also operate generally without the mains or generator when the battery and the PV module power the load.
- **Battery:** The role of the battery is to ensure the regular power supply of the system load when the solar energy is insufficient and there is no mains power.
- **Home load:** Various household and office loads can be connected, including refrigerators, lamps, televisions, fans, air conditioners, and other AC loads.
- **Inverter:** The energy conversion device of the whole system.
- **CT:** When connecting an external CT, enter the ratio on the CT specification. The CT direction is by default pointing towards the inverter. when the reading of the load power on the LCD is not correct, please reverse the CT arrow.

The actual application scenario determines the specific system cabling.



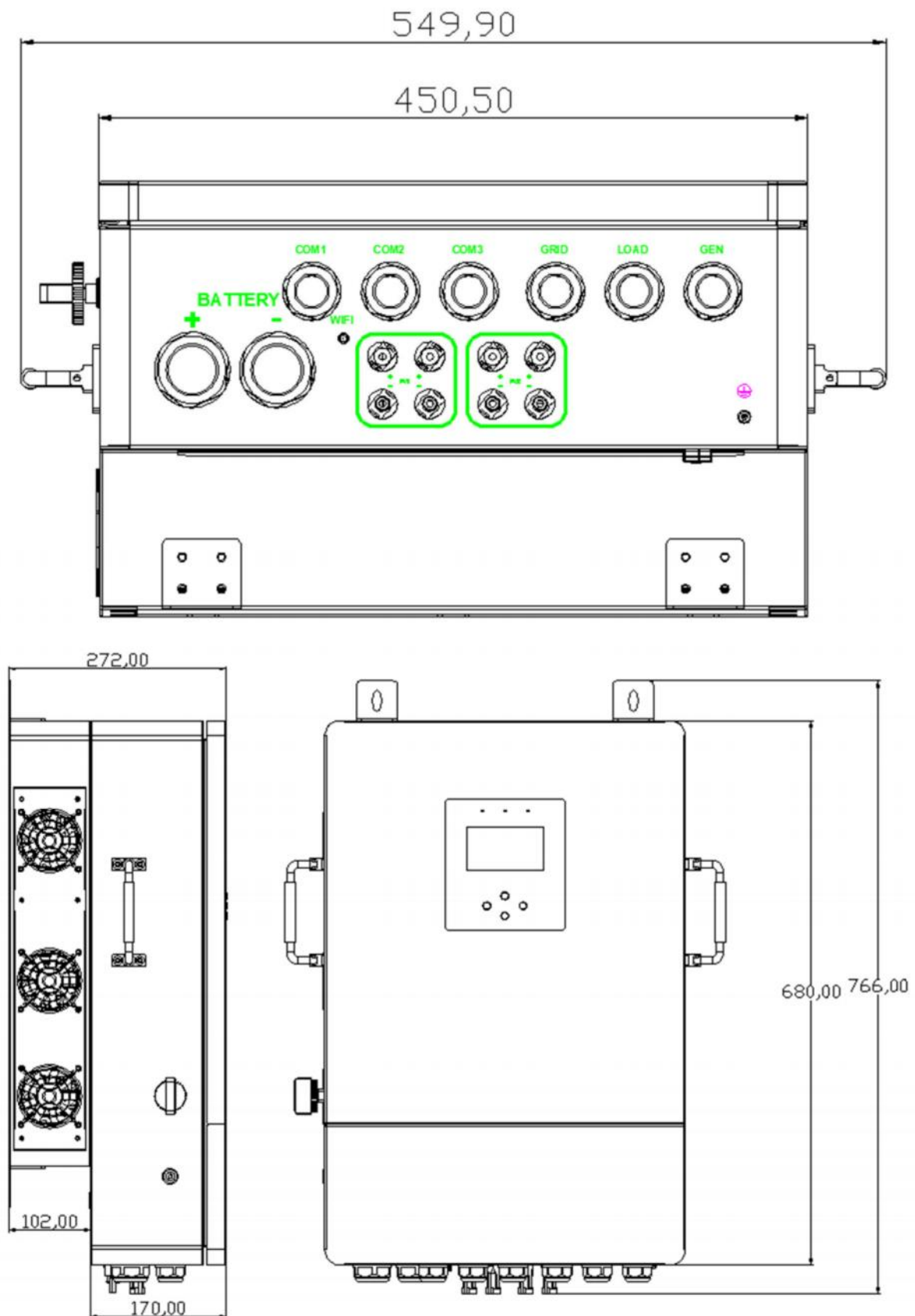
2.4 Production overview

NOTE: The following picture is only a schematic diagram of the equipment. If the actual chassis does not conform to the schematic due to a structural upgrade, it is subject to prior notice.



1	LED Indicators	2	LCD screen	3	keys
4	PV circuit breaker	5	ON/OFF rocker switch	6	Battery terminal
7	WIFI port	8	RS485 /CAN port	9	Parallel communication B port
10	Parallel communication A port	11	CAN port	12	DRM port
13	CT port	14	Utility terminals (L1+L2+N)+breaker	15	Load terminals (L1+L2+N)+breaker
16	Generator terminals (L1+L2+N)+breaker	17	USB-1 port	18	PV1 terminals
19	PV2 terminals	20	Dry contact	21	USB-2 port

2.5 Dimension drawing

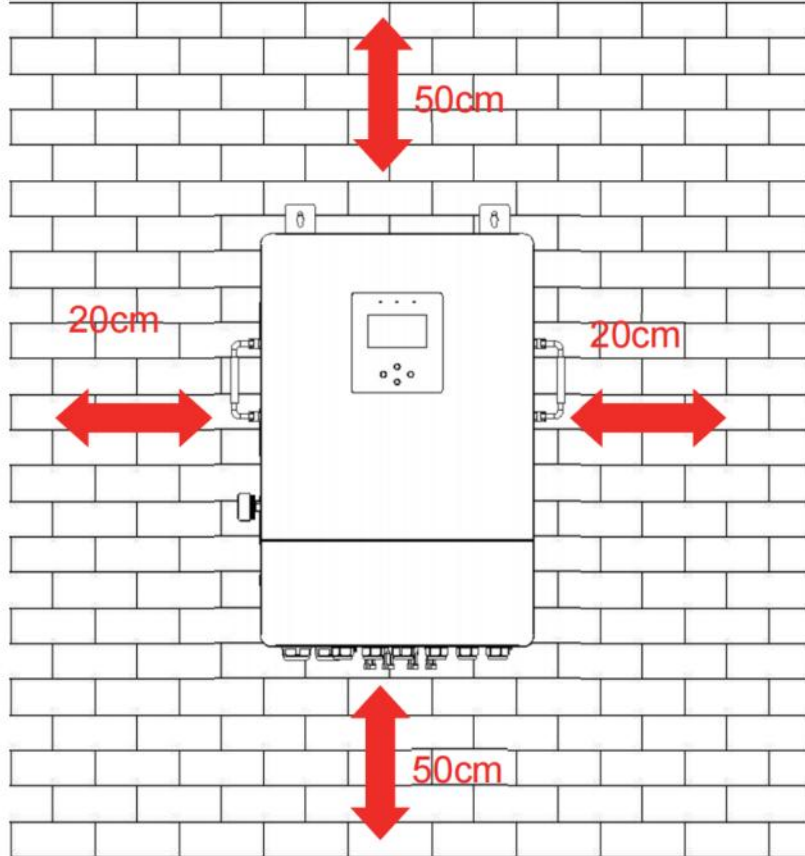


3. Installation

3.1 Select the mount location

PVBAT series can be used outdoors (protection class IP66). Please consider the followings before selecting the location:

- Choose the solid wall to install the inverter.
- Mount the inverter at eye level.
- Adequate heat dissipation space must be provided for the inverter.
- The ambient temperature should be between -25~60°C (-13~140°F) to ensure optimal operation.



⚠ DANGER

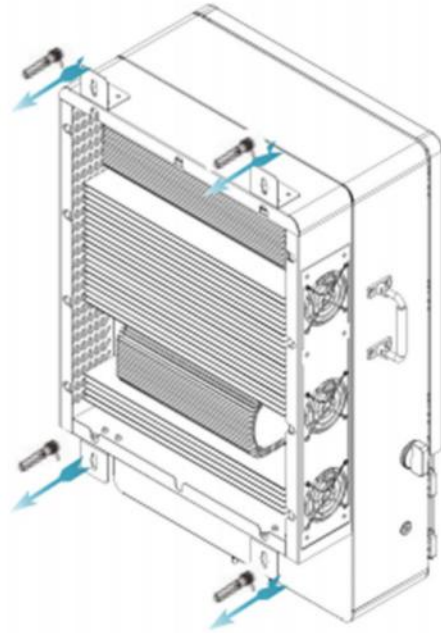
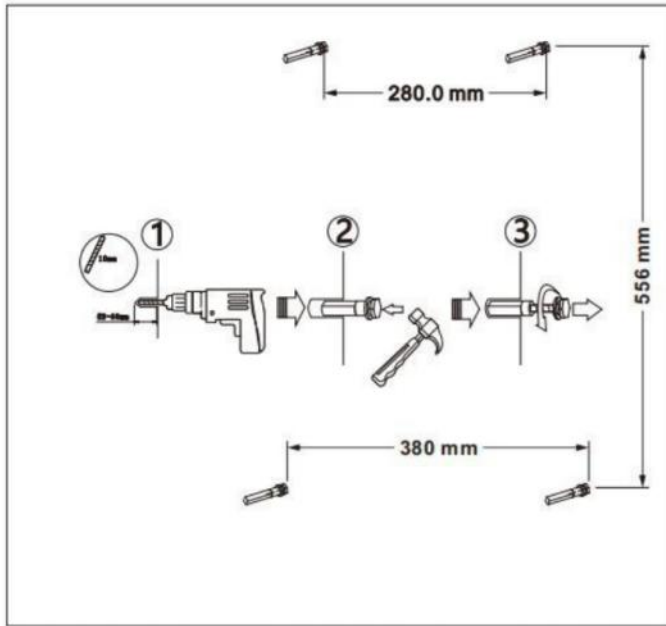
- Do not install the inverter where highly flammable materials are near by.
- Do not install the inverter in a potentially explosive area.
- Do not install the inverter with lead-acid batteries in a confined space.

⚠ CAUTION

- Do not install the inverter in direct sunlight.
- Do not install or use the inverter in a humid environment.
- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not in the cool air directly.
- Not near the television Antenna or antenna cable.
- Not higher than altitude of about 2000 meters above sea level.
- Not in environment of precipitation or humidity (>95%).
- Please AVOID direct sunlight, rain exposure, snow laying up during installation and operation.

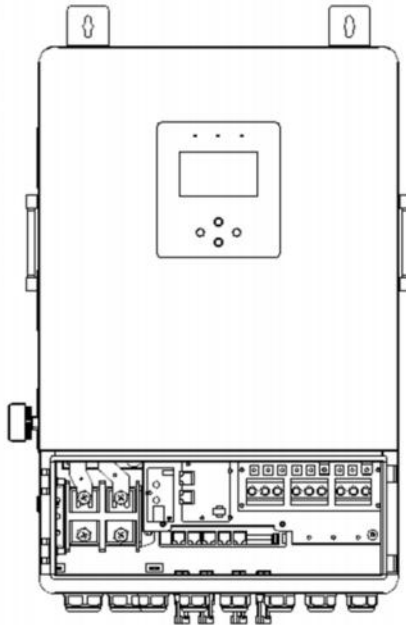
3.2 Mount the inverter

Punch 4 mounting holes in the wall with an electric drill according to the specified size, and insert 4 M8*60 expansion screws above.



3.3 Remove terminal protection cover and dust screen

Using a screwdriver, remove the terminal protection cover.



terminal protection cover

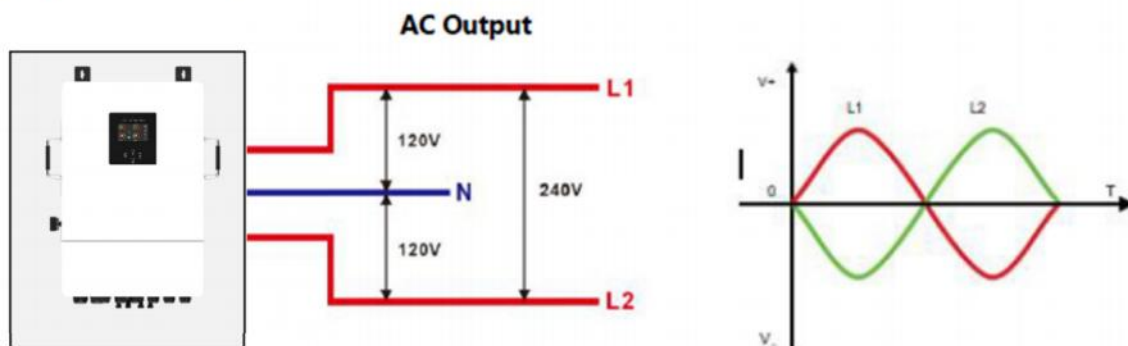


NOTICE

When using the device in areas with poor air quality, the dust screen is easily blocked by air particles. Please disassemble and clean the dust screen periodically to avoid affecting the internal air flow rate of the inverter, which may trigger an over-temperature protection fault (19/20 fault) affecting the use of the power supply and the service life of the inverter.

4. Connection

4.1 Single-phase output



Items	Description
Applicable models	PVBAT L2P G2 series model
AC Output Phase Voltage (L-N)	100~120Vac, 120Vac (default)
AC Output Line Voltage (L1-L2)	200~240Vac, 240Vac (default)

NOTICE

- Users can change the output phase mode and output voltage by setup menu.
- The output voltage can be set from 200V to 240V.

4.2 Cable & circuit breaker requirement




● PV input

Models	No. of PV	Cable Diameter	Max. PV Input Current	Circuit Breaker Spec
PVBAT L2P 8K	PV1	6mm ² / 10 AWG	25A	2P-25A
	PV2	6mm ² / 10 AWG	25A	2P-25A
PVBAT L2P 10K	PV1	6mm ² / 10 AWG	25A	2P-25A
	PV2	6mm ² / 10 AWG	25A	2P-25A
PVBAT L2P 12K	PV1	6mm ² / 10 AWG	25A	2P-25A
	PV2	6mm ² / 10 AWG	25A	2P-25A




● Battery

Models	Cable Diameter	Max. Current	Circuit Breaker Spec
PVBAT L2P 8K	34mm ² / 2 AWG	200A	2P-250A
PVBAT L2P 10K	42mm ² / 1 AWG	230A	2P-250A
PVBAT L2P 12K	54mm ² / 0 AWG	270A	2P-300A




● **AC INPUT**

Models	Schema	Cable Diameter	Circuit Breaker Spec
PVBAT L2P 8K		13mm ² /6 AWG (L1/L2/N)	3P-63A
PVBAT L2P 10K		13mm ² /6 AWG (L1/L2/N)	3P-63A
PVBAT L2P 12K		13mm ² /6 AWG (L1/L2/N)	3P-63A

● **Generator**

Models	Schema	Cable Diameter	Circuit Breaker Spec
PVBAT L2P 8K		13mm ² /6AWG (L1/L2/N)	3P-63A
PVBAT L2P 10K		13mm ² /6AWG (L1/L2/N)	3P-63A
PVBAT L2P 12K		13mm ² /6AWG (L1/L2/N)	3P-63A

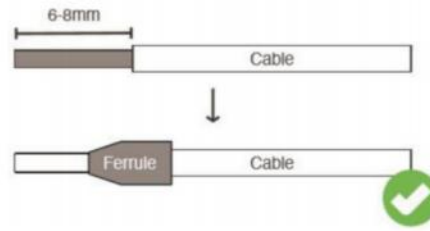
● **AC Output**

Models	Schema	Cable Diameter	Circuit Breaker Spec
PVBAT L2P 8K		13mm ² /6AWG (L1/L2/N)	3P-63A
PVBAT L2P 10K		13mm ² /6AWG (L1/L2/N)	3P-63A
PVBAT L2P 12K		13mm ² /6AWG (L1/L2/N)	3P-63A

NOTICE

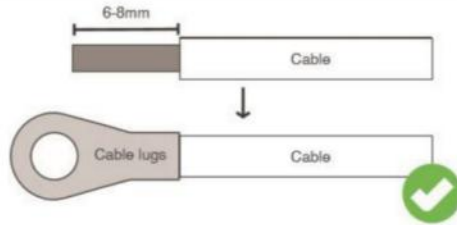
• AC Input, AC Output, Generator Input

1. Use a stripper to remove the 6~8mm insulation of the cable
2. Fixing a ferrule at the end of the cable. (ferrule needs to be prepared by the user)



• BATTERY

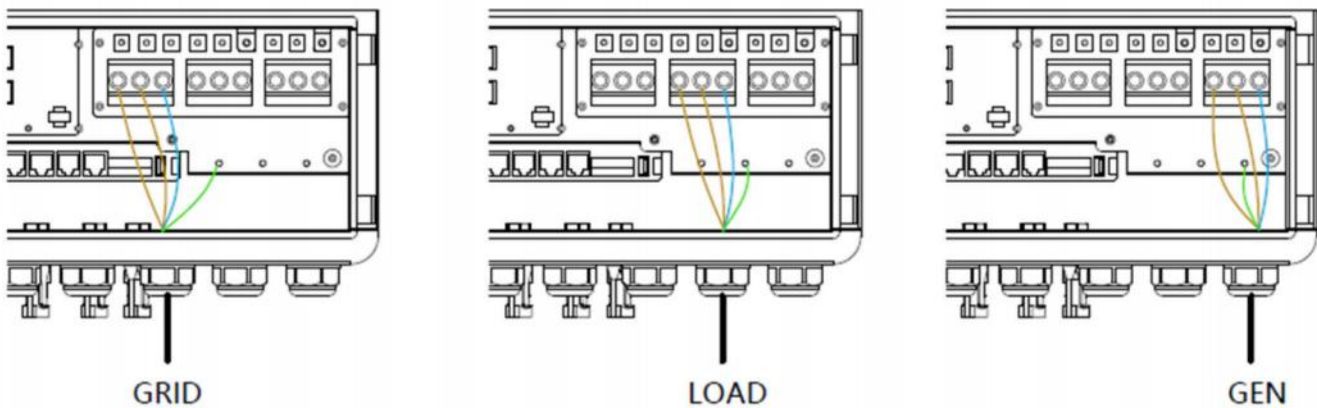
1. Use a stripper to remove the 6~8mm insulation of the cable
2. Fixing cable lugs that supply with the box at the end of the cable.



The wire diameter is for reference only. If the distance between the PV array and the inverter or between the inverter and the battery is long, using a thicker wire will reduce the voltage drop and improve the performance of the system.

4.3 AC input & output connection

Connect the live wire and neutral wire according to the cable positions and sequence shown in the figure.

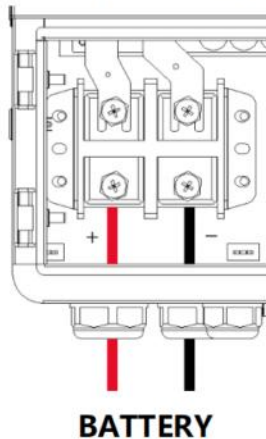


DANGER

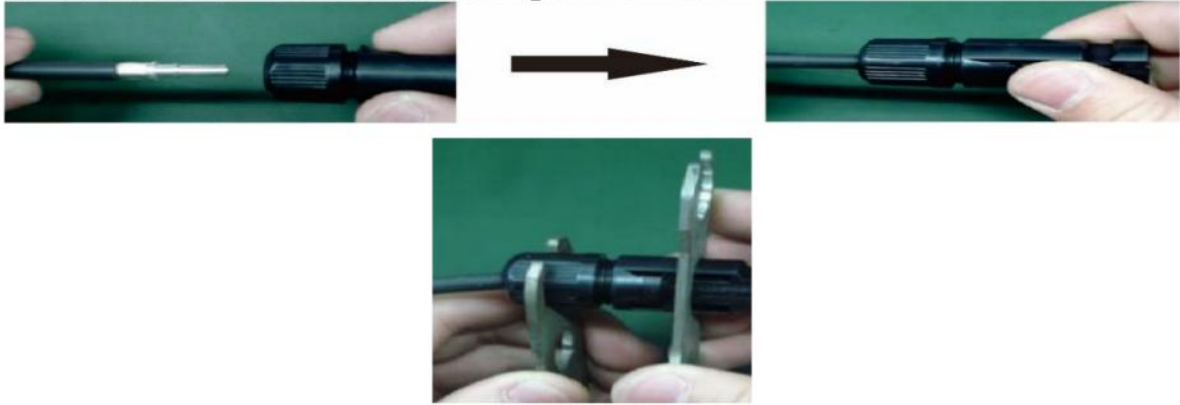
- Before connecting AC inputs and outputs, the circuit breaker must be opened to avoid the risk of electric shock and must not be operated with electricity.
- Please check that the cable used is sufficient for the requirements, too thin, poor quality cables are a serious safety hazard.

4.4 Battery connection

Connect the positive and negative cable of the battery according to the diagram below.

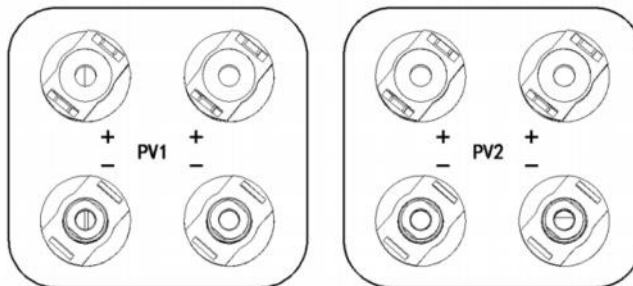


Insert assembled cable into male connector housing as shown below.



Step 4: 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.

Connect the positive and negative wires of the two strings of PV according to the diagram below.

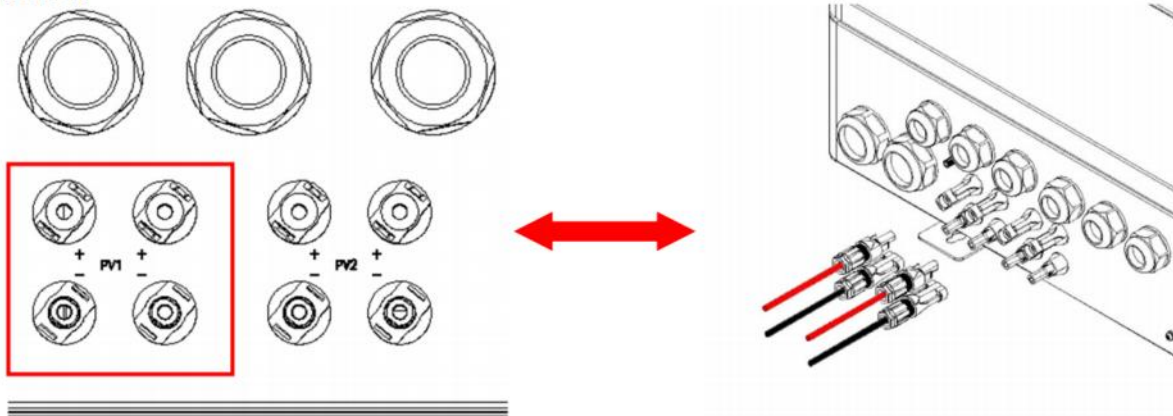


WARNING! For safety and efficiency, it's very important to use appropriate cables for PV module connection. To reduce risk of injury, please use the proper cable size as recommended below.

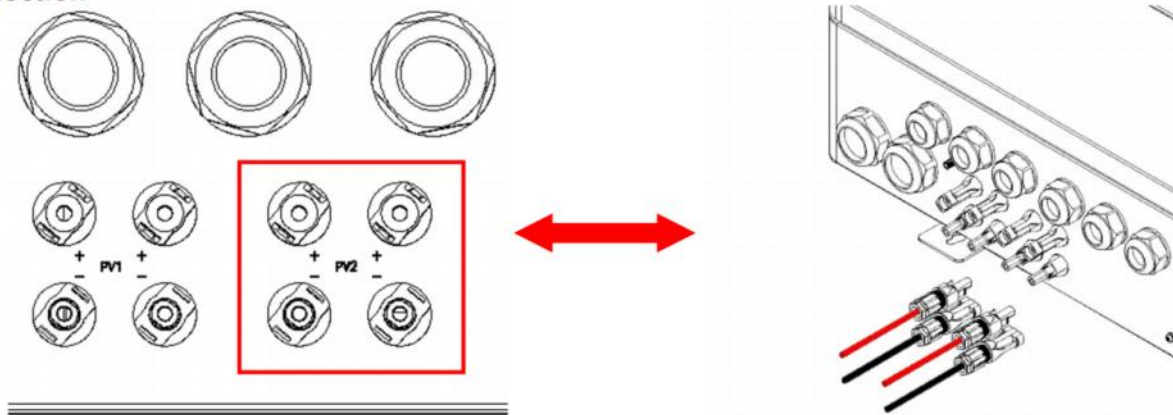
CAUTION: Never directly touch the terminals of inverter. It might cause lethal electric shock.

NOTE: The following picture is only a schematic diagram of the equipment. If the actual chassis does not conform to the schematic due to a structural upgrade, it is subject to prior notice.

PV1 Connection



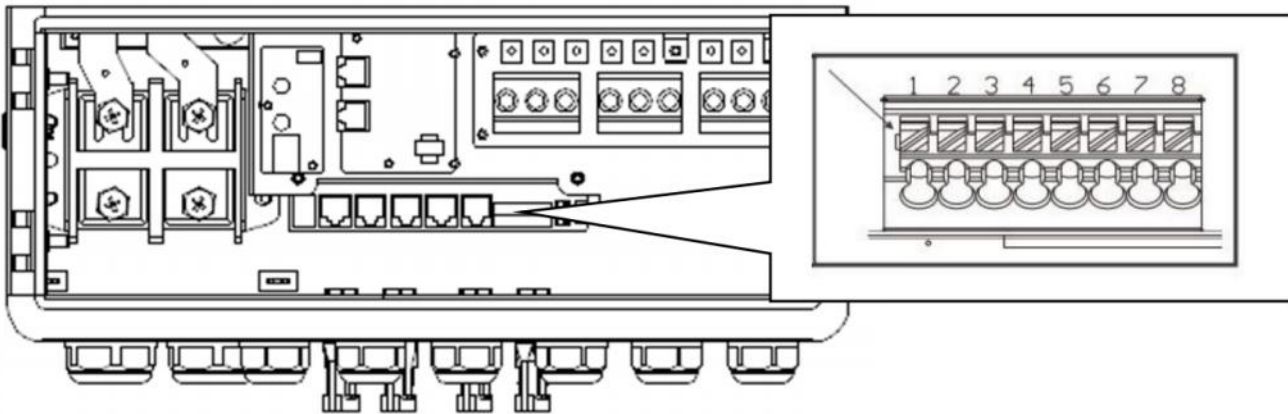
PV2 Connection



4.6 Dry contact connection

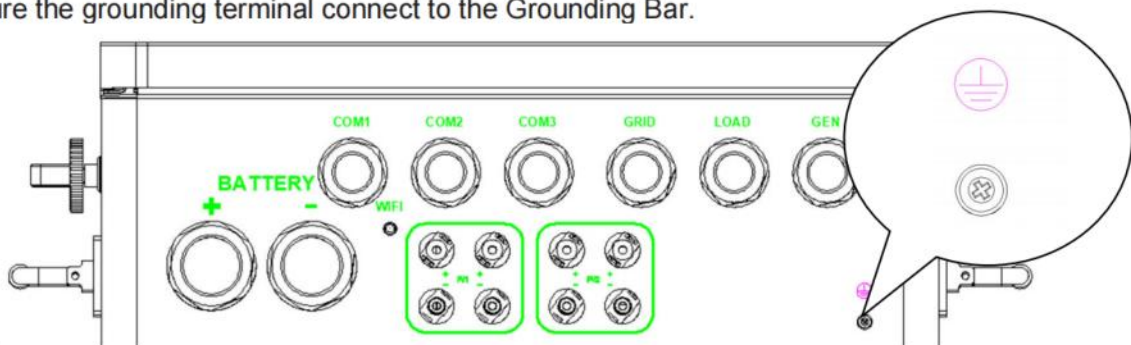
Use a small screwdriver to push back the direction indicated by the arrow, and then insert the communication cable into the dry junction port.

(Communication cable cross section 0.2~1.5mm²)



4.7 Grounding connection

Please make sure the grounding terminal connect to the Grounding Bar.



NOTICE

Grounding wire shall be not less than 4 mm² in diameter and as close as possible to the earthing point.

4.8 Final assembly

After ensuring that the wiring is reliable and the wire sequence is correct, install the terminal protection cover in place.

Step 1: Close the circuit breaker of the battery.

Step 2: Press the rocker switch on the bottom of inverter, the screen and indicators light up to indicate that the inverter has been activated.

Step 3: Sequential close of the circuit breakers for PV, AC input and AC output.

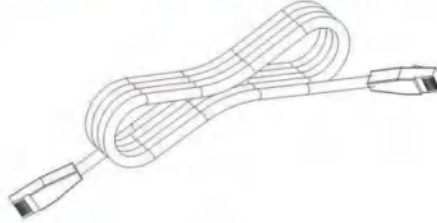
Step 4: Start the loads one by one in order of power from small to large.

4.9 Parallel wiring connection

4.9.1 Parallel introduction

1. Up to six units connected in parallel.
2. When using the parallel operation function, the following connecting lines (package accessories) shall be firmly and reliably connected:

Parallel communication line * 1



4.9.2 Precautions for connecting parallel cables

Warning :

1. PV connection:

When connected in parallel, the PV arrays of each machine must be independent and the PV arrays of PV1 and PV2 of each machine must also be independent.

2. Battery wiring:

Parallel connection in single or three-phase: ensure that all solar storage inverters are connected to the same battery, with BAT + connected to BAT +, BAT - connected to BAT -, and that the connection is correct with the same wiring length and line diameter before power on, so as to avoid the abnormal operation of parallel system output caused by wrong connection

3. LOAD wiring:

Parallel connection in single phase: ensure L-to-L, N-to-N and PE-to-PE connection for all solar storage inverters, and that the connection is correct with the same wiring length and line diameter before power on, so as to avoid the abnormal operation of parallel system output caused by wrong connection.

Parallel connection in three-phase: ensure N-to-N and PE-to-PE connection for all solar storage inverters. The L lines of all inverters connected to the same phase need to be connected together. But L lines of different phases cannot be joined together. Other connection precautions are the same as parallel connection in single phase. For specific wiring, please refer to 2.4.4 Wiring Diagram.

4. GRID wiring:

Parallel connection in single phase: ensure L-to-L, N-to-N and PE-to-PE connection for all solar storage inverters, and that the connection is correct with the same wiring length and line diameter before power on, so as to avoid the abnormal operation of parallel system output caused by wrong connection. Meanwhile, it is not allowed to have multiple different AC source inputs to avoid damage to the external equipment of the inverter. The consistency and uniqueness of AC source input shall be ensured.

Parallel connection in three-phase: ensure N-to-N and PE-to-PE connection for all solar storage inverters. The L lines of all inverters connected to the same phase need to be connected together. But L lines of different phases cannot be joined together. Other connection precautions are the same as parallel connection in single phase. For specific wiring, please refer to 2.4.4 Wiring Diagram.

5. Wiring of parallel communication line

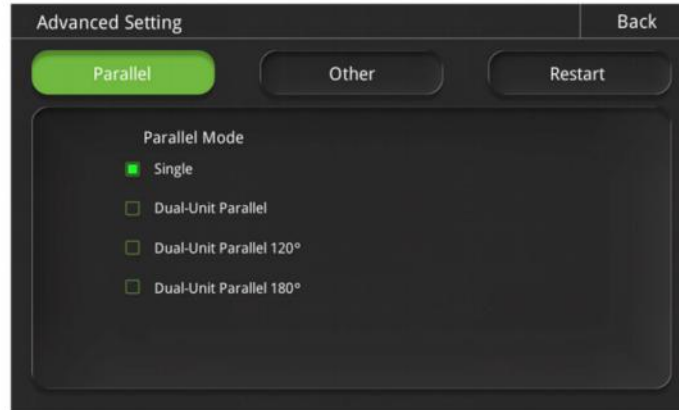
Our parallel communication cable is a shielded 10Pin network connection cable, which can be used for single- phase or three-phase parallel connection. Each machine must be connected with one out and one in. This means that the machine "Parallel_A" is connected to the machine to be parallelized "Parallel_B", and that the machine "Parallel_A" is not allowed to connect to the "Parallel_B". "Parallel_B" or "Parallel_A" is connected to the machine to be parallelized "Parallel_A". At the same time, the parallel communication cable of each machine should be fastened with 10Pin network connection cable to avoid disconnection or poor contact of the parallel communication cable, which may cause abnormal operation or damage to the system output.

6. Before and after connecting the system, please check the following system wiring diagrams in detail to ensure that all wiring is correct and reliable before powering on.

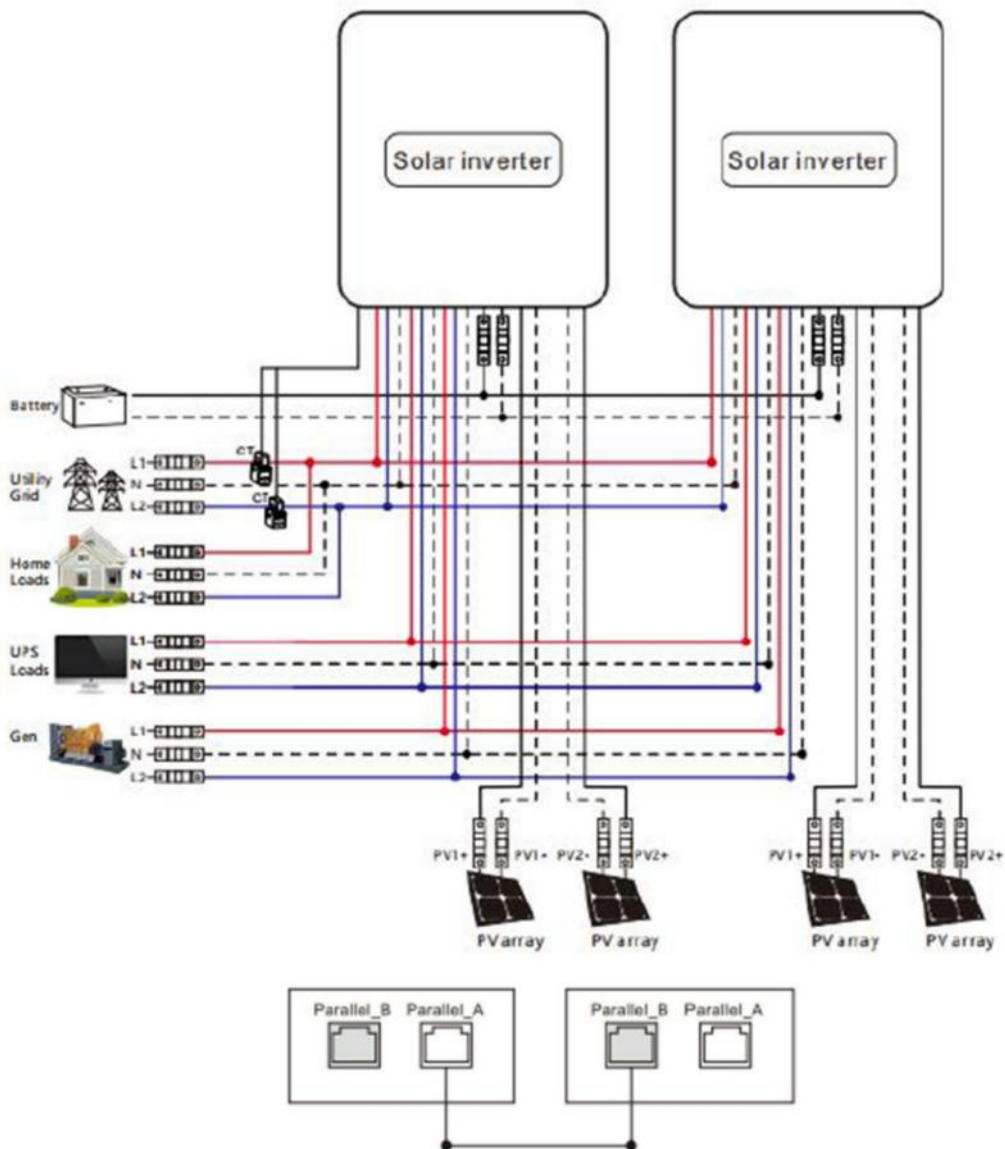
7. After the system is wired, powered on and in normal operation, if a new inverter needs to be connected, make sure to disconnect the battery input, PV input, AC input and AC output, and that all solar storage inverters are powered off before reconnecting into the system.

4.9.3 Split-phase parallel connection

Setting for each inverter: Select "Parallel" for parallel mode, select "Dual-Unit Parallel" for grid type, when "120V" is selected for output phase voltage, the output L1-L2 voltage is 240V, L1-N voltage is 120V, L2-N voltage is 120V.

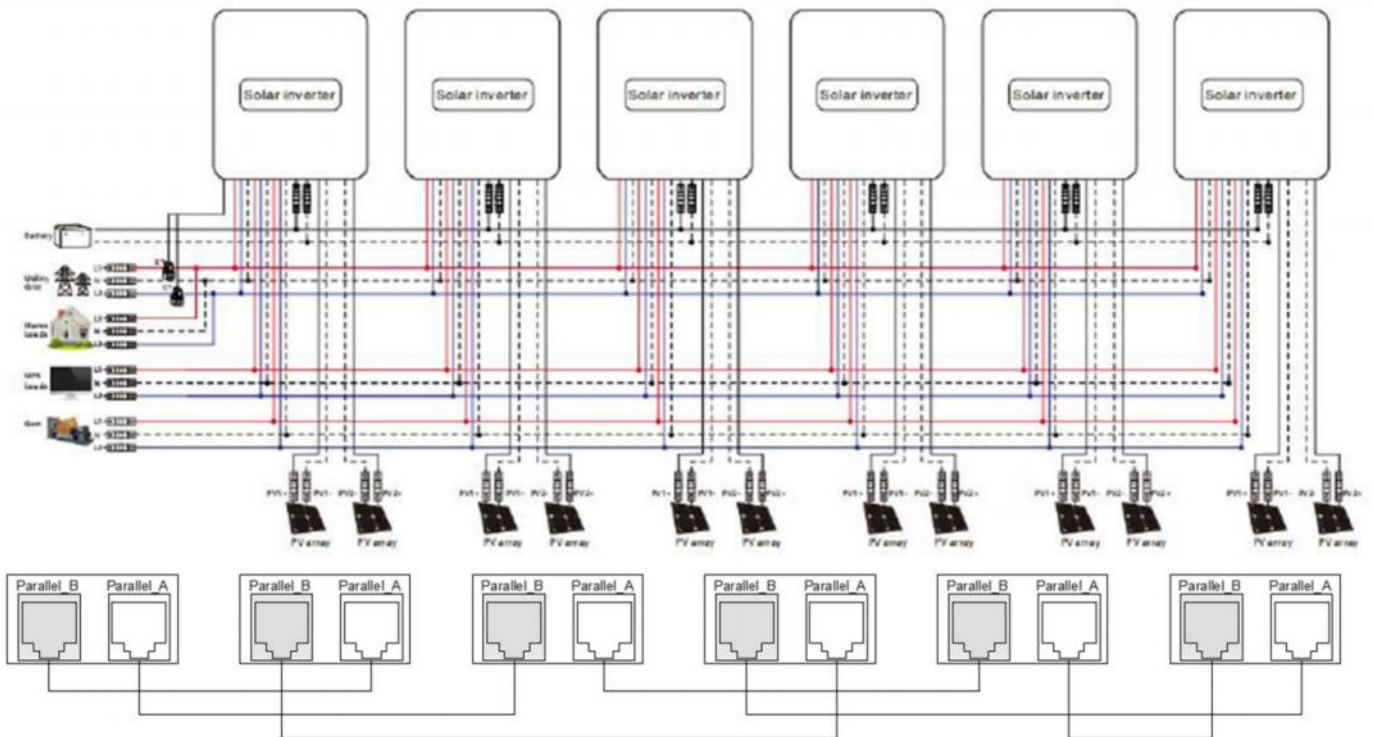


The wiring diagram is shown below:



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•
•
•

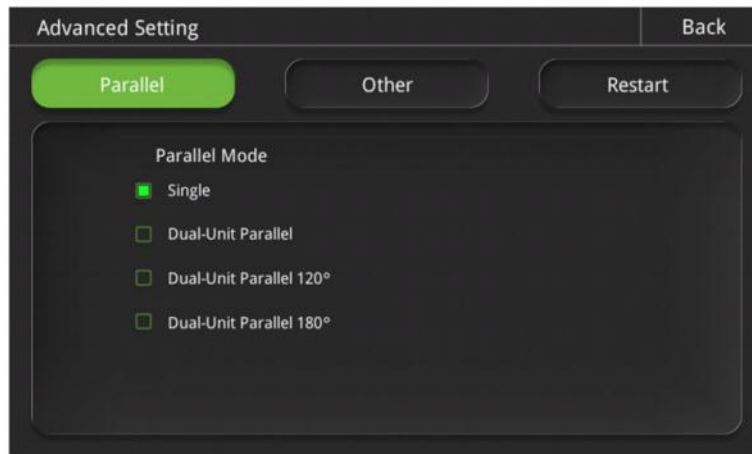
Up to six inverters parallel



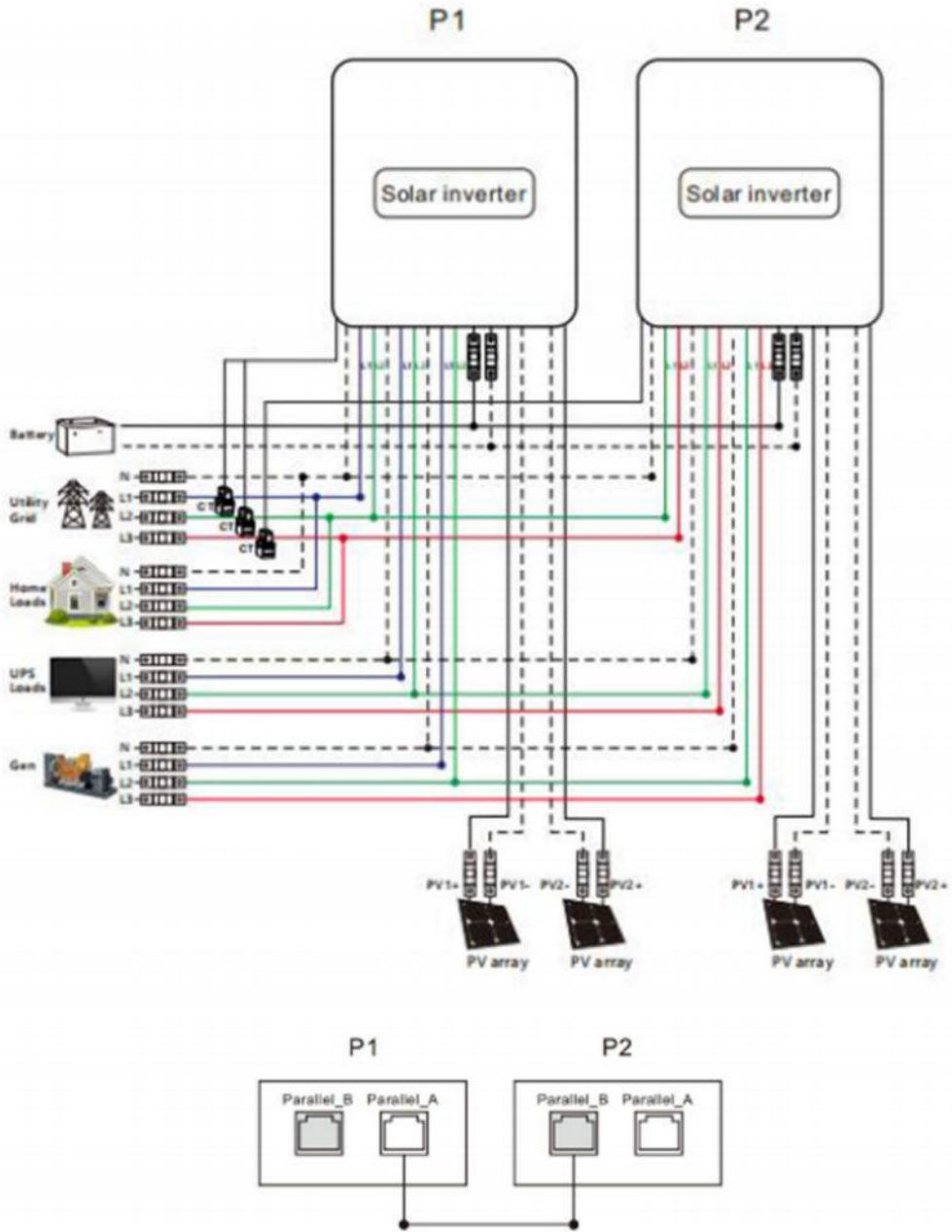
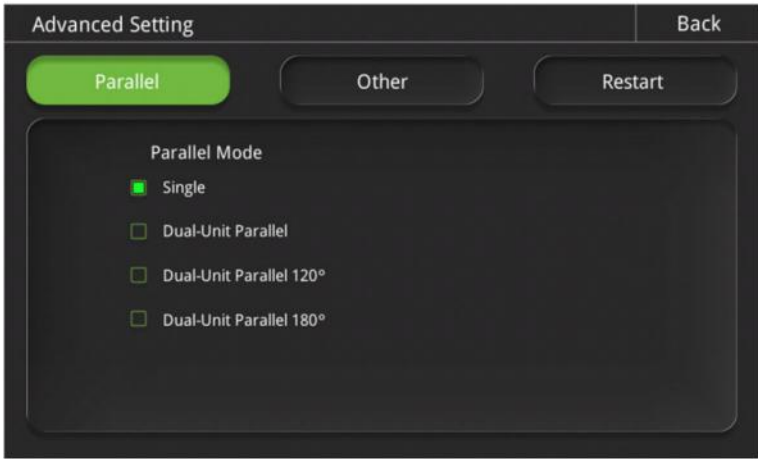
4.9.4 Three-phase parallel connection

(1) 2 inverters connected in parallel to form a three-phase output (three-phase unbalanced)

P1 machine setting: Parallel mode select "Dual-Unit Parallel 120°", grid type select "Three Phase", when output phase voltage select "120V", the output L1-L2 voltage is 208V, L1-N voltage is 120V, L2-N voltage is 120V.

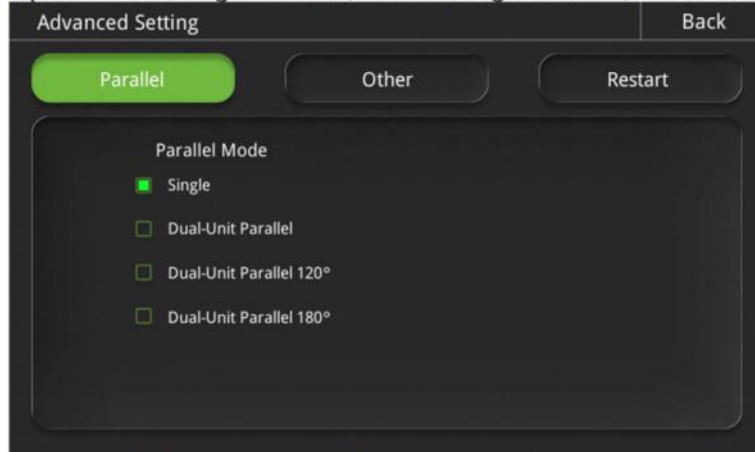


P2 machine setting: Parallel mode select "Dual-Unit Parallel 180°", grid type select "Three Phase", when the output phase voltage select "120V", then the output L1-L2 voltage is 208V, L1-N voltage is 120V, L2-N voltage is 120V.

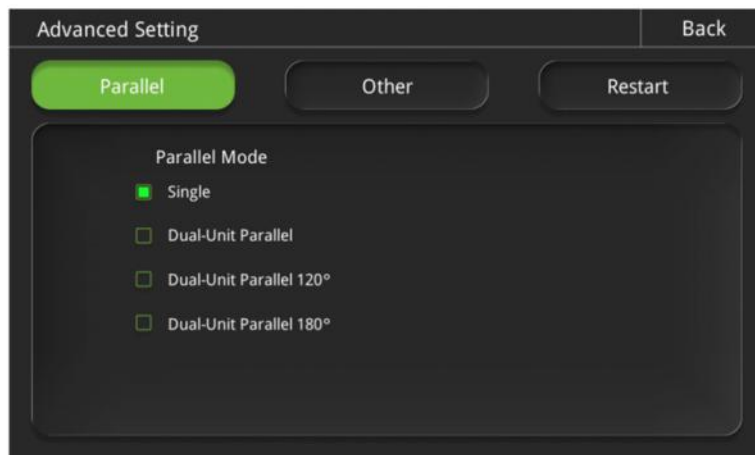


(2)3 or 6 inverters in parallel to form a three-phase output (three-phase balanced)

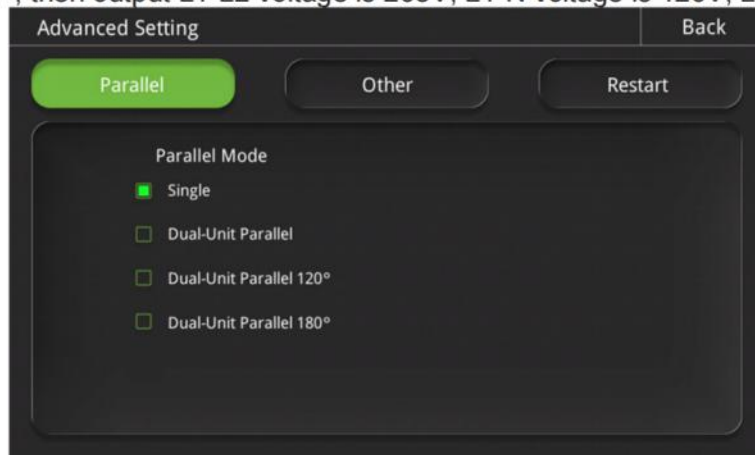
P1 machine setting: Parallel mode select " Dual-Unit Parallel", grid type select "Three Phase", when output phase voltage select "120V", the output L1-L2 voltage is 208V, L1-N voltage is 120V, L2-N voltage is 120V.

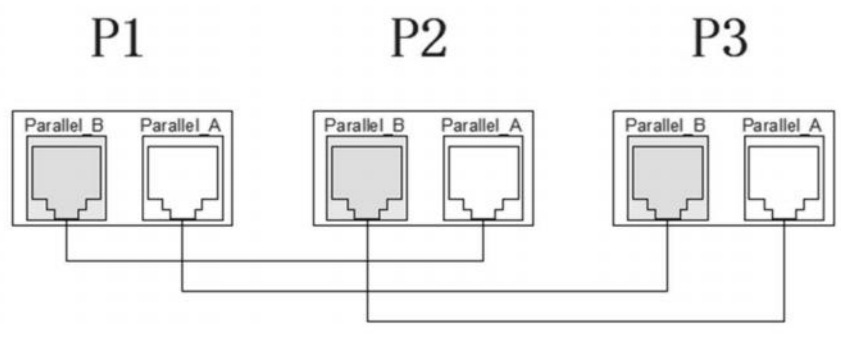
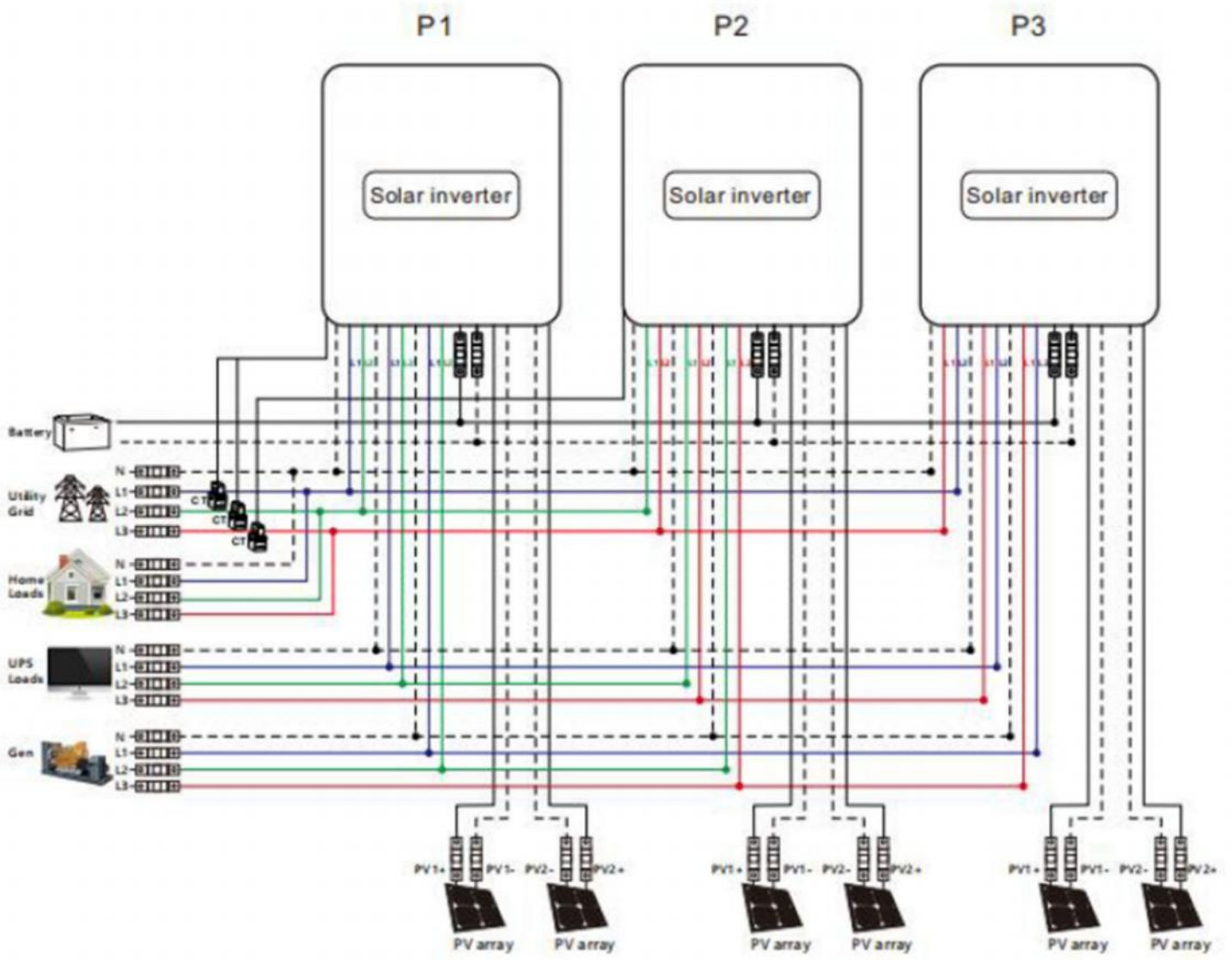


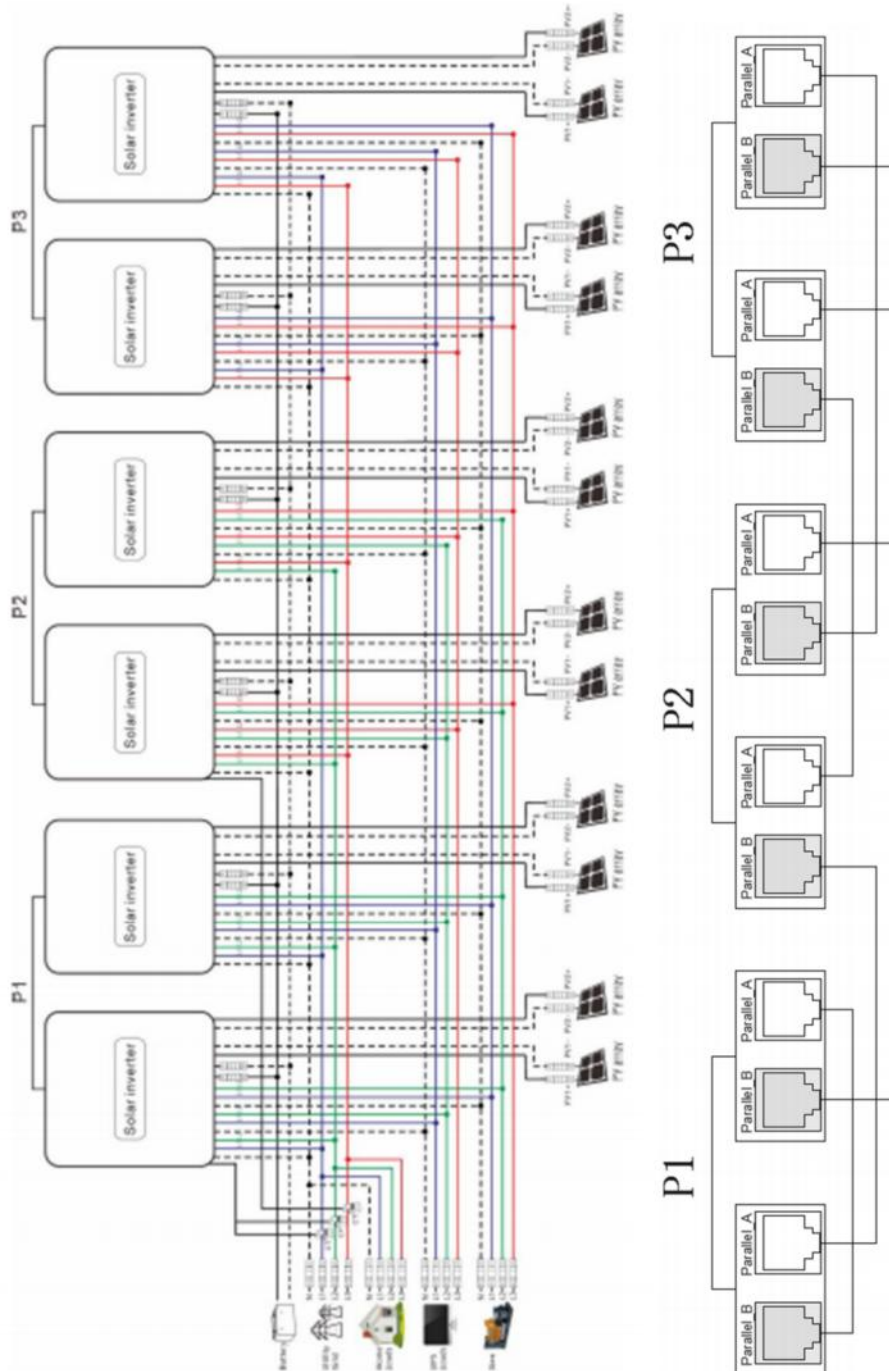
P2 machine setting: Parallel mode select " Dual-Unit Parallel 120°", grid type select "Three Phase", when the output phase voltage select "120V", then the output L1-L2 voltage is 208V, L1-N voltage is 120V, L2-N voltage is 120V.



P3 machine setting: Parallel mode select " Dual-Unit Parallel 180°", grid type select "Three Phase", when output phase voltage select "120V", then output L1-L2 voltage is 208V, L1-N voltage is 120V, L2-N voltage is 120V.



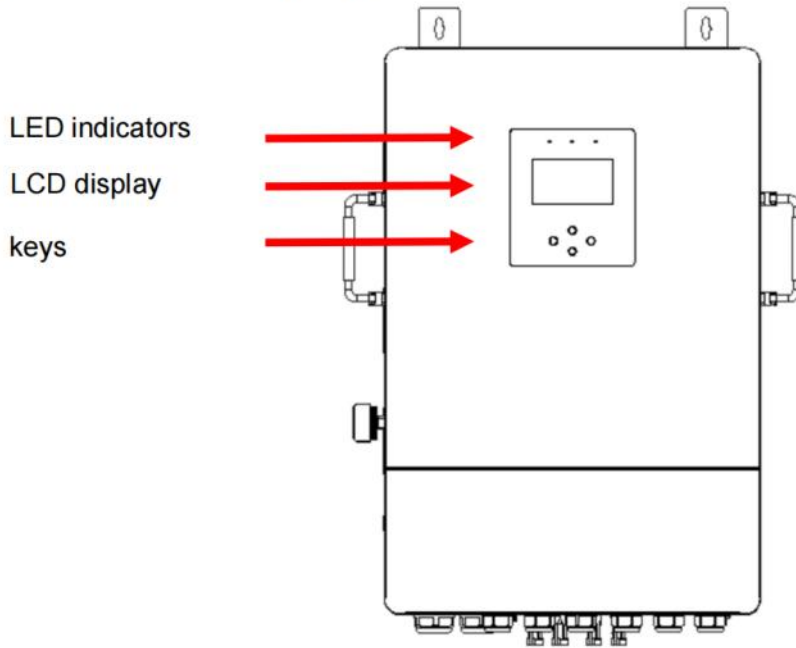




- Note:**
- 1) Before starting up and running, please check whether the connection was correct to avoid any abnormalities in the system.
 - 2) All wiring must be fixed and reliable to avoid wire drop during use.
 - 3) When the AC output is wired to the load, it shall be properly wired according to the requirements of the electrical load equipment to avoid damage to the load equipment.
 - 4) Setting item "output phase voltage setting" needs to be set consistently or only for the master. When paralleling, the voltage set by the master will prevail, and the master will be forced to rewrite the rest of the slaves to be consistent. This option can be set in standby mode only.
 - 5) Machine factory default for single machine mode, if you use parallel or three-phase function, you need to set the "Parallel mode" item parameters through the screen. The setting method is: power on one machine at a time, the rest of the machine off, and then set the "Parallel mode" item parameters according to the site 27system operation mode. After this machine is set successfully, turn off the machine switch and wait for the machine to be powered down, then set the rest of the machines in turn until all machines are set, and then all machines are powered up again at the same time and enter the working state.
 - 6) After the system runs, the output voltage is measured correctly, and then the load setting is connected

5. Operation





5.1 Operation and display panel



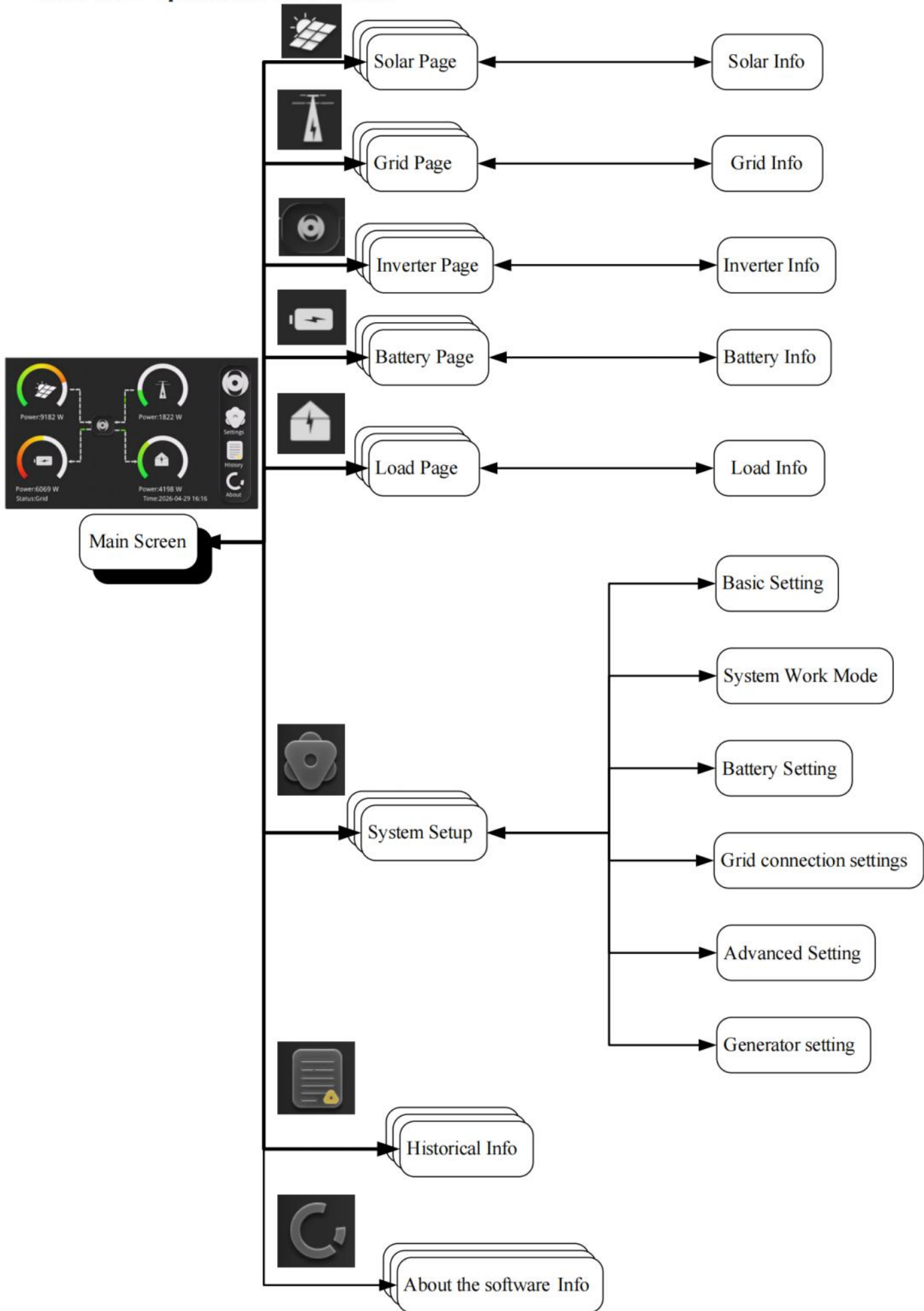
● LED Indicators

Indicators	Color	Description
AC/INV	Blue	Always on: mains bypass output
		Flashing: Inverter output
CHG	Green	Always on: Charging completed
		Flashing: Charging in progress
FAULT	Red	Flashing: Fault occurs

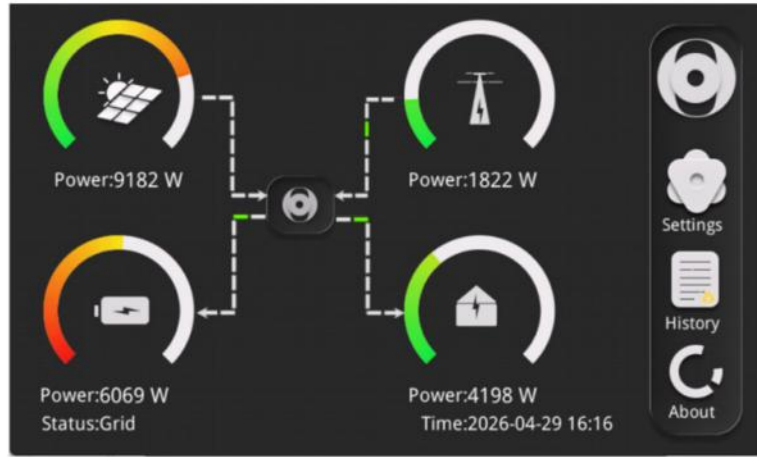
● Keys

Keys	Description
	To go to previous selection
	To exit setting mode
	To go to next selection
	To confirm the selection in setting mode or enter setting mode

5.1.1 LCD operation flow chart



● LCD Display Icons



Icon	Description	Icon	Description
	Solar panel		Load
	Battery		Grid
	About the inverter		Inverter OR Home page
	Local time		Setting
	Generator		History

•View real-time data

On the LCD home screen, click the inverter icon, battery icon, mains icon, load icon and photovoltaic icon to view the real-time data of the machine.



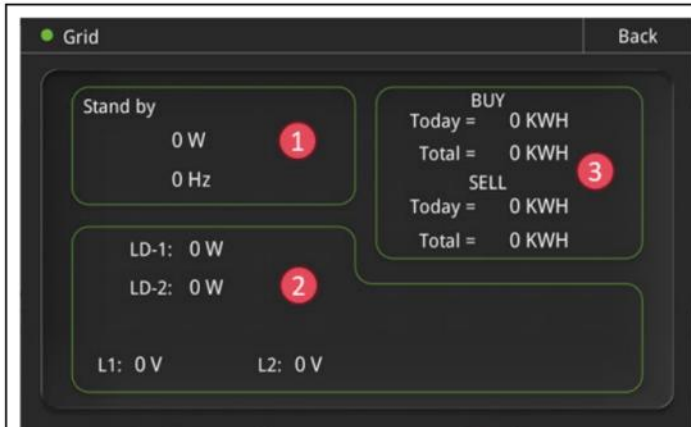
This is Solar Panel detail page.

- ① Solar power for each MPPT.
- ② Voltage, Current for each MPPT.
- ③ The total power of PV1+PV2.
- ④ Solar Panel energy for Day and Total.



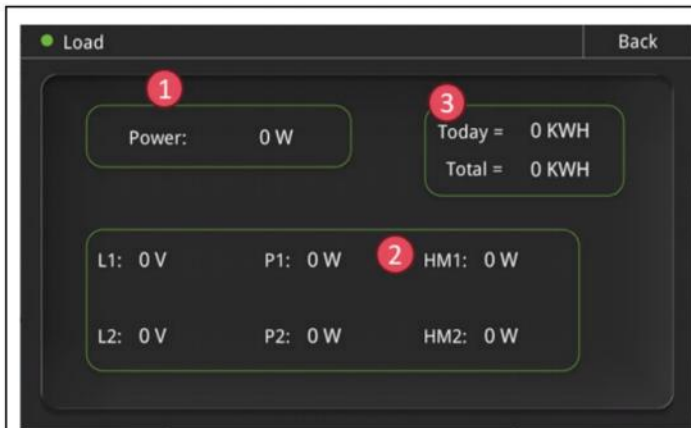
Li-BMS		Back
BMS Volt	50.2V	
BMS Curr	164.5A	
BMS Temp	38.2°C	
BMS Charg Curr Limit	200A	
BMS Charg Volt Limit	56V	
BMS DisChg Volt Limit	180A	
BMS Alarm H	0	
BMS Alarm L	0	
BMS Protection H	0	
BMS Protection L	0	

This is Battery detail page.
If you use Lithium Battery, you can enter BMS page.



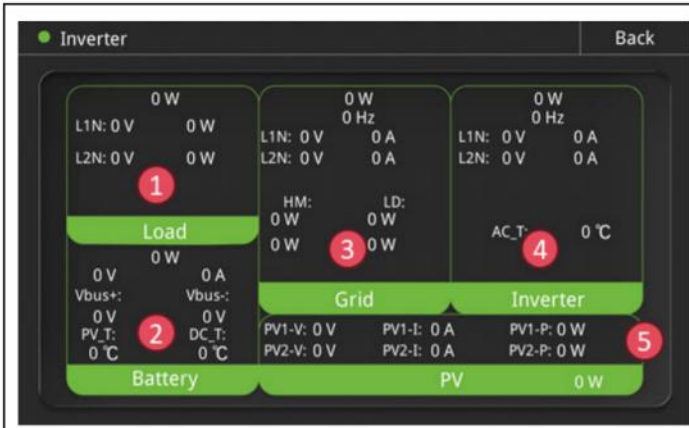
This is Grid detail Page.

- ① Status, Power, Frequency.
L1/L2: Voltage.
LD-1/LD-2: Power detected using internal sensors on AC grid in/out breaker.
- ② BUY: Energy from Grid to Invert.
SELL: Energy from Inverter to grid.



This is Load detail Page.

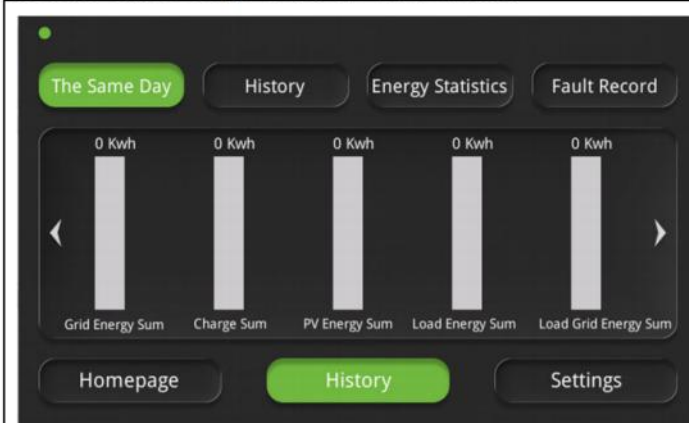
- ① Power: backup Load.
- ② L1/L2: backup output Voltage.
P1/P2: backup output Power.
HM1/HM2: home load.
- ③ Load consumption for Day and Total.



This is Inverter detail page.

- ① Backup load data.
- ② Battery data: Voltage, Current.
Vbus+, Vbus-: Internal DC bus voltage.
PV_T : MPPT Heat-sink temperature.
DC_T: Temperature of the DCDC Heat-sink.
- ③ Grid data.
- ④ Inverter data.
AC-T: Temperature of the INV Heat-sink.
- ⑤ PV data.

History: Curve Page-Solar & Load & Grid:

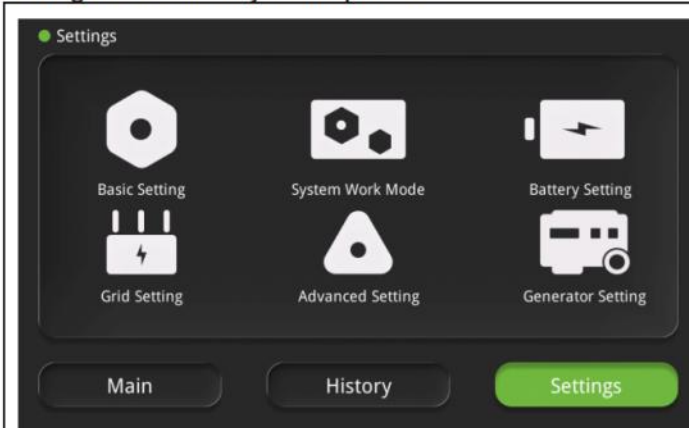


The screenshot shows the 'Fault Log' page with a table of fault records:

Fault Code	Fault Description	Time
43	ParaLineContErr	2026-04-29 16:01
34	CommCanFault	2026-04-29 16:01
12	SpiCommErr	2026-04-29 16:11
43	ParaLineContErr	2026-04-29 16:11

5.2 Setting

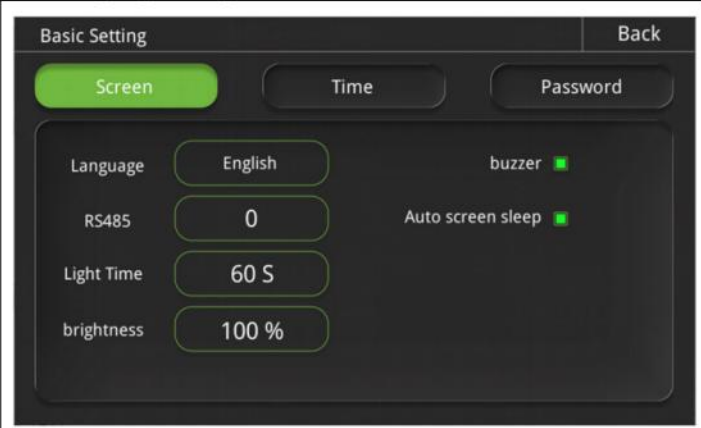
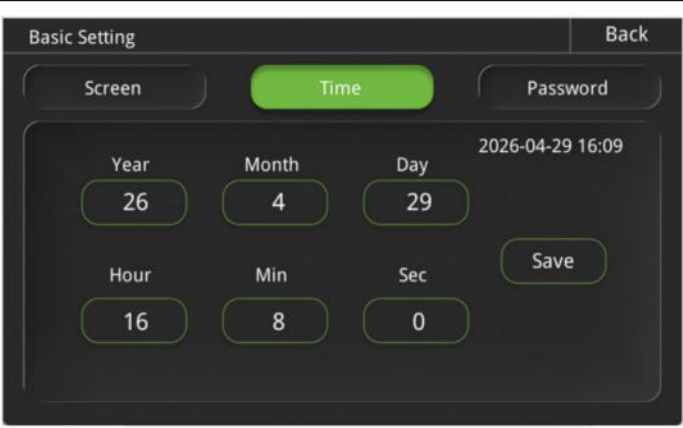
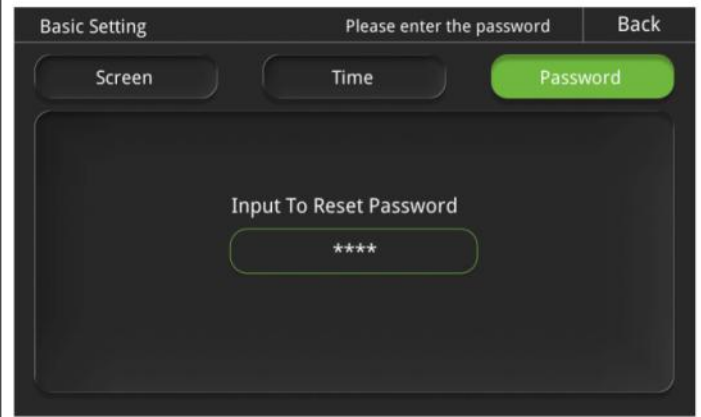
Operation Instructions: Click on the settings in the menu bar at the bottom of the screen to enter the setup interface, including the basic settings, work mode setup, battery setting, grid setting, advanced setting, generator setting of the six major setup items.



This is System Setup page.

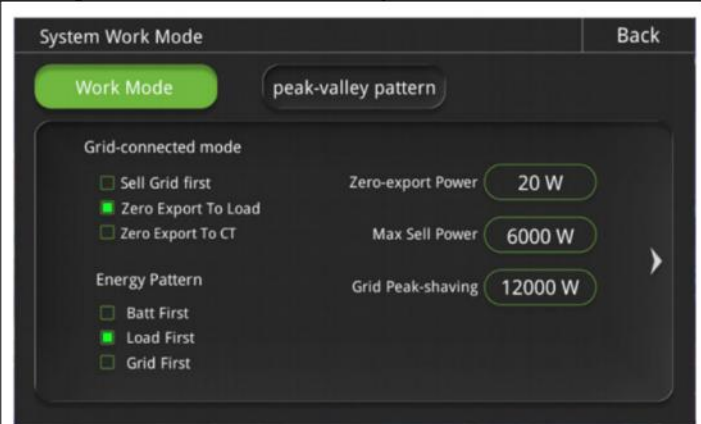
5.2.1 Basic Setting

● Display Setup

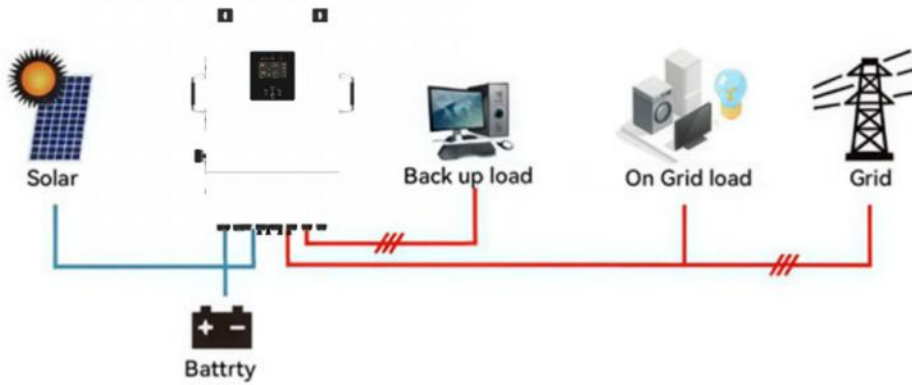
 <p>Basic Setting Back</p> <p>Screen Time Password</p> <p>Language: English buzzer <input checked="" type="checkbox"/></p> <p>RS485: 0 Auto screen sleep <input checked="" type="checkbox"/></p> <p>Light Time: 60 S</p> <p>brightness: 100 %</p>	 <p>Basic Setting Back</p> <p>Screen Time Password</p> <p>Year: 26 Month: 4 Day: 29 2026-04-29 16:09</p> <p>Hour: 16 Min: 8 Sec: 0 Save</p>
 <p>Basic Setting Please enter the password Back</p> <p>Screen Time Password</p> <p>Input To Reset Password</p> <p>****</p>	<p>Language: Chinese, English, German, Spanish, Arabic, Hebrew.</p> <p>RS485 Address: Display and current inverter RS485 address, range 1~254.</p> <p>Light Time: Setting range 60~1800S.</p> <p>Backlight brightness:0~100%.</p> <p>Password: Default password is "8888", Password setting value range: 0~9999.</p>

5.2.2 System Work Mode Setting

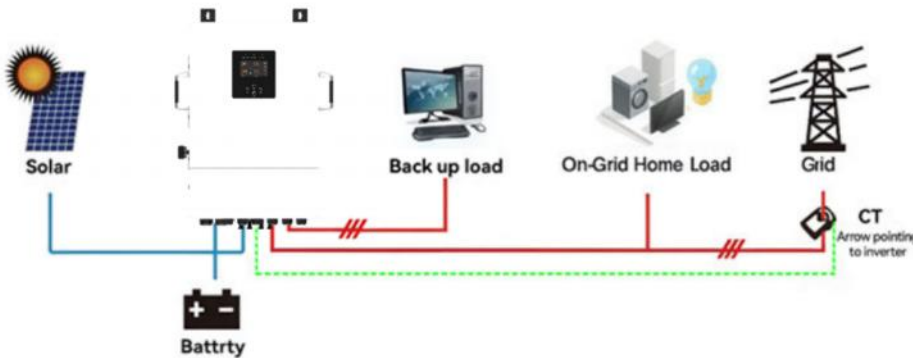
● System Work Mode setup Menu

 <p>System Work Mode Back</p> <p>Work Mode peak-valley pattern</p> <p>Grid-connected mode</p> <p><input type="checkbox"/> Sell Grid first Zero-export Power: 20 W</p> <p><input checked="" type="checkbox"/> Zero Export To Load Max Sell Power: 6000 W</p> <p><input type="checkbox"/> Zero Export To CT Grid Peak-shaving: 12000 W</p> <p>Energy Pattern</p> <p><input type="checkbox"/> Batt First</p> <p><input checked="" type="checkbox"/> Load First</p> <p><input type="checkbox"/> Grid First</p>	<p>Work Mode</p> <p>Sell Grid First: This Mode allows hybrid inverter to sell back any excess power produced by the solar panels to the grid. If time of use is active, the battery energy also can be sold into grid. The PV energy will be used to power the load and charge the battery and then excess energy will flow to grid. Power source priority for the load is as follows:</p> <ol style="list-style-type: none"> 1. Solar Panels. 2. Grid. 3. Batteries (until programable % discharge is reached).
--	---

Zero Export To Load: Hybrid inverter will only provide power to the backup load connected. The hybrid inverter will neither provide power to the home load nor sell power to grid. The built-in CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load and charge the battery.



Zero Export To CT: Hybrid inverter will not only provide power to the backup load connected but also give power to the home load connected. If PV power and battery power is insufficient, it will take grid energy as supplement. The hybrid inverter will not sell power to grid. **In this mode, a CT is needed. The External CT, Arrow pointing to inverter.** The external CT will detect power flowing back to the grid and will reduce the power of the inverter only to supply the local load, charge battery and home load.



Energy Pattern: PV Power source priority.

Batt First: PV power is firstly used to charge the battery and then used to power the load. If PV power is insufficient, grid will make supplement for battery and load simultaneously.

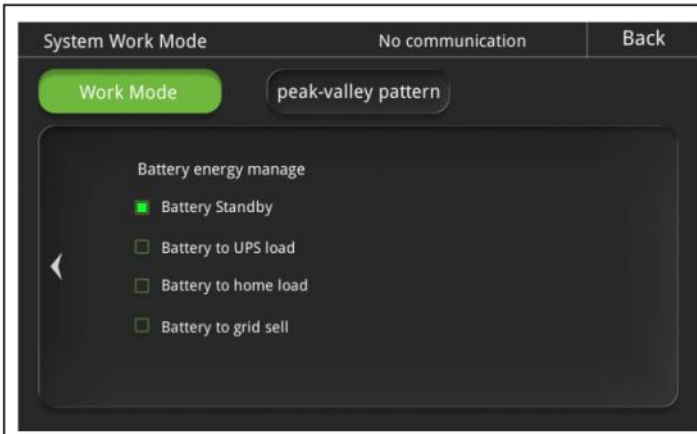
Load First: PV power is firstly used to power the load and then used to charge the battery. If PV power is insufficient, Grid will provide power to load.

Grid First: PV energy is prioritized for selling to the grid.

Zero-export Power: for zero-export mode, it tells the grid output power. Recommend to set it as 20-100W to ensure the hybrid inverter won't feed power to grid.

Max. sell power: Allowed the maximum output power to flow to grid.

Grid Peak-shaving: when it is active, grid output power will be limited within the set value. If the load power exceeds the allowed value, it will take PV energy and battery as supplement. If still can't meet the load requirement, grid power will increase to meet the load needs.

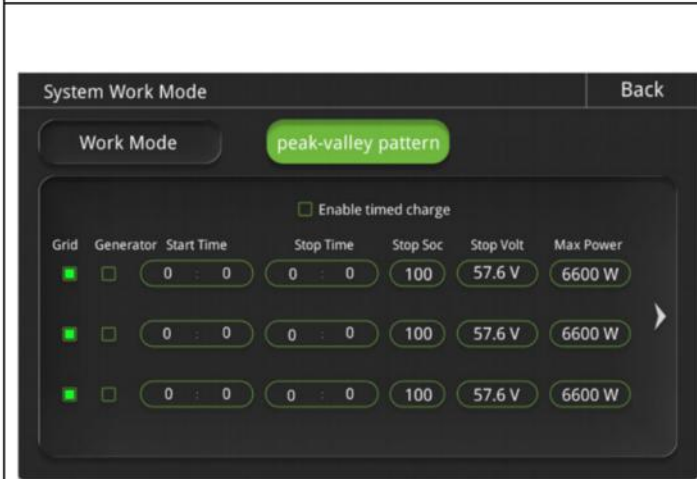


Battery Standby: The battery does not discharge, and the battery is discharged only when the working state is off the grid.

Battery to UPS load: When the PV power is less than the UPS load power, the battery discharge is added.

Battery to home load: The battery can supply the power to home load.

Battery to grid sell: The battery can supply the power to grid.



Time charging enable: Select whether to turn on timed charging.

Start/End Time: Setting the time period for timed charging.

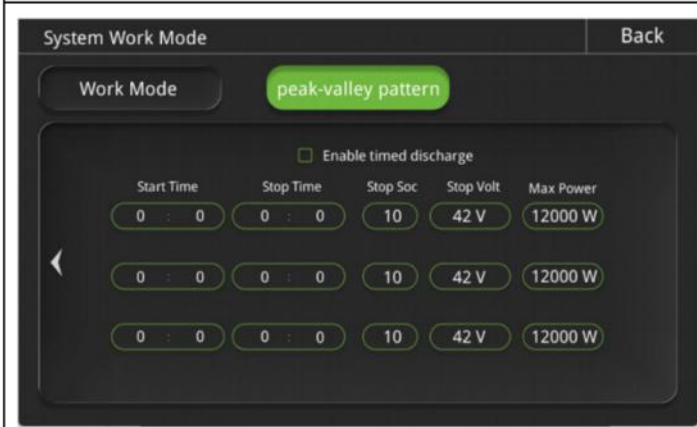
Stop SOC: Setting the battery charging cut-off SOC value during the timed charging time period (during BMS communication).

Stop Volt: Setting the battery charging cut-off voltage value during the timed charging time period (when the BMS is not communicating).

Max Power: Setting the battery charging power during the timed charging time period.

Grid: When setting the timed charge, select the grid to charge the battery.

Generator: When setting the timed charge, select the generator to charge the battery.



Time discharging enable: Select whether to turn on timed discharging.

Start/End Time: Setting the time period for timed charging.

Stop SOC: Setting the battery the cut-off SOC value for discharging during the timed discharging time period (during BMS communication).

Stop Volt: Setting the battery discharging cut-off voltage value during the timed discharging time period (when the BMS is not communicating).

Max Power: Setting the battery discharging power during the timed discharging time period

5.2.3 Battery setup

Battery Setting Back

Battery Type Lithium battery lead-acid battery

Battery Type

User Define Batt Capacity

Lithium battery Grid max discharge current

Sld battery Max A charge

No Battery maxAC chg curr

BMS Communication

Disable Grid Charge Enable

RS485 Generator charging enable

CAN

Battery Type

Lithium battery: Lithium-ion battery

User Define: User customizable to set all battery parameters.

Sld battery: Sealed Lead Acid Battery.

No Battery: Without battery.

BMS Communication

Disable: BMS does not communicate

RS485/CAN: BMS RS485/CAN communication function

Batt Capacity: Stored electric energy capacity of battery

Grid max discharge current: Maximum Discharge Current of Equipment Grid-Connected.

Max. A charge: To configure total charging current for solar and utility chargers.

MaxAC chg curr: Maximum utility charging current.

Grid charging enable: Selectable grid participation in battery charging.

Generator charging enable: Setting whether the generator is charged or not

Battery Setting Back

Battery Type Lithium battery lead-acid battery

Lithium Mode SOC switching Grid

Shutdown Grid switching SOC

Low SOC alarm

Restart

Lithium Mode: When the BMS port selection setting item = 485 or CAN, you need to select the corresponding lithium battery manufacturer brand for communication:

0:Pace-PACEEX 1: Pylon, 2: Growatt, 3: Fns, 4: No agreement

Shutdown: Be valid in Off-grid mode, battery can discharge to this SOC, then the DC/AC inverter module of this inverter will be shut down and the solar power can only be used to charge the battery.

Low SOC alarm: Battery under-voltage alarm point, when the battery voltage is lower than the judgment point, the under-voltage alarm will be reported and the output will not be turned off.

Restart: The battery voltage at which the inverter resumes inversion after a low-voltage shutdown.

SOC switching Grid: When the battery discharges to this value, the inverter switches to mains power supply and starts charging.

Grid switching SOC: When the battery is charged to this value, the inverter switches to battery power supply

Equalizing voltage: Battery equalization high voltage

Under-volt alarm: Battery voltage is too low, device will sound alarm prompt.

Float voltage: Long-term standby maintenance voltage

Batt switching Grid: When battery voltage drops below this voltage, output switch automatically from battery to mains power

Grid switching Batt: When battery voltage reaches or exceeds this value, power supply automatically switch from mains to battery output.

Battery Setting Back

Battery Type Lithium battery lead-acid battery


Equalizing voltage Batt switching Grid

Shutdown Grid switching Batt

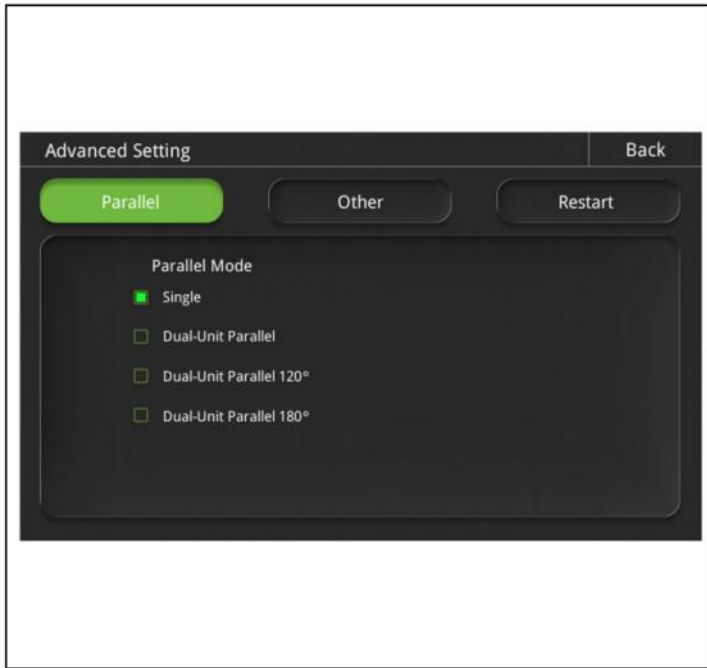

Under-volt alarm Restart

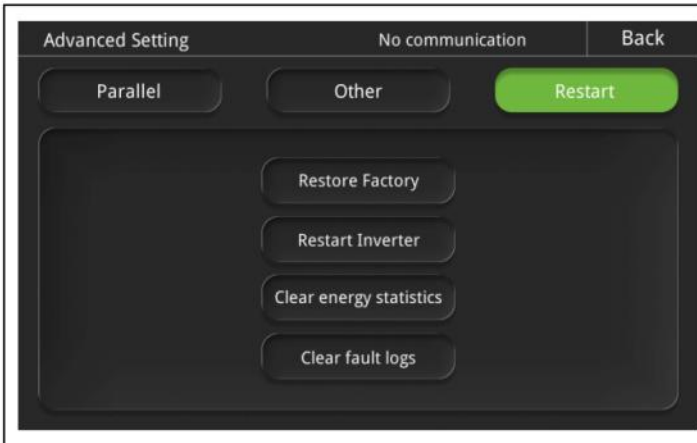
Float voltage

5.2.4 On grid setup

	<p>Basic Setting Grid standard: Europe: EN 50549-1, South Africa: NRS-097, UK: G99, Other regions: GNL Grid frequency: 50Hz, 60Hz Output volt phase: Etable: 0°, 120°, 180° Output AC Volt: Etable: 100V, 105V, 110V, 120V, 127V</p>
--	---

5.2.5 Advance Setup

	<p>Parallel mode Single: Stand-alone Parallel: Single phase Parallel</p> <table border="1"> <tr> <td data-bbox="774 761 973 884">Dual-Unit Parallel</td> <td data-bbox="973 761 1489 884">Dual-Unit parallel connection setting. All machines in phase 1 must be set as 【Dual-Unit parallel】 .</td> </tr> <tr> <td data-bbox="774 884 973 996">Dual-Unit Parallel 120°</td> <td data-bbox="973 884 1489 996">All machines in phase 2 must be set as 【Dual-Unit parallel 120°】 .</td> </tr> <tr> <td data-bbox="774 996 973 1310">Dual-Unit Parallel 180°</td> <td data-bbox="973 996 1489 1310">All machines in phase 3 must be set as 【Dual-Unit parallel 180°】 . When the output voltage is 230Vac. At present the line voltage between the live wire L1 in phase 1 and the live wire L2 in phase 2 is $230 \times 1.732 = 398\text{Vac}$, and similarly the line voltage.</td> </tr> </table>	Dual-Unit Parallel	Dual-Unit parallel connection setting. All machines in phase 1 must be set as 【Dual-Unit parallel】 .	Dual-Unit Parallel 120°	All machines in phase 2 must be set as 【Dual-Unit parallel 120°】 .	Dual-Unit Parallel 180°	All machines in phase 3 must be set as 【Dual-Unit parallel 180°】 . When the output voltage is 230Vac. At present the line voltage between the live wire L1 in phase 1 and the live wire L2 in phase 2 is $230 \times 1.732 = 398\text{Vac}$, and similarly the line voltage.
Dual-Unit Parallel	Dual-Unit parallel connection setting. All machines in phase 1 must be set as 【Dual-Unit parallel】 .						
Dual-Unit Parallel 120°	All machines in phase 2 must be set as 【Dual-Unit parallel 120°】 .						
Dual-Unit Parallel 180°	All machines in phase 3 must be set as 【Dual-Unit parallel 180°】 . When the output voltage is 230Vac. At present the line voltage between the live wire L1 in phase 1 and the live wire L2 in phase 2 is $230 \times 1.732 = 398\text{Vac}$, and similarly the line voltage.						
	<p>PE-N connect enable: Enable automatic switching of PE-N connections. PV Riso check enable: Enable PV insulation impedance detection. Leakage curr. protection enable: Enable leakage current protection. BMS Fault Shutdown: The inverter shuts down when it detects a communication fault with the battery BMS. Power saving mode: After turning on the energy-saving mode, if the load is empty or less than 25W, the inverter output will be shut down after a delay of 5min; when the load is more than 40W, the inverter will start automatically. CT Enable: Enable the CT function of the inverter.</p>						



Restore Factory Settings: Reset all inverter settings.
Reboot Inverter: Restart the inverter.
Clear Energy Statistics: Clear all data on the energy statistics interface.
Clear Fault Logs: Clear all saved fault history records of the equipment.

5.2.6 Generator Setup



Max A charge: Maximum battery charging current during generator charging.
Rated input power: Setting the power of the generator up to the rated power of the inverter
Generator operating mode: Select the operating mode of the generator.

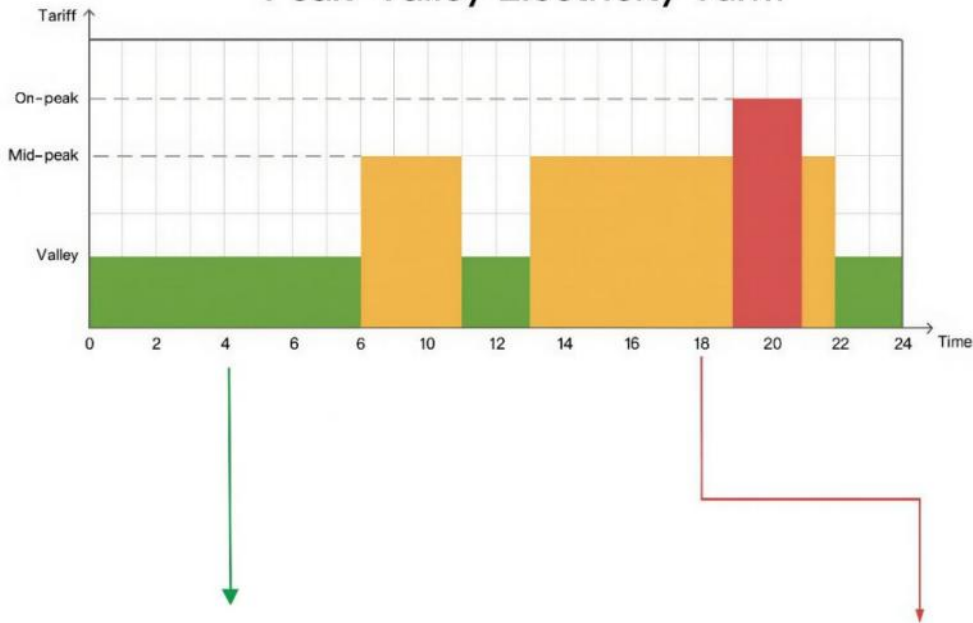
5.3 Time-slot charging/discharging function

The PVBAT series is equipped with a time-slot charging and discharging function, which allows users to set different charging and discharging periods according to the local peak and valley tariffs, so that the utility power and PV energy can be used rationally.

When mains electricity is expensive, the battery inverter is used to carry the load; when the mains electricity is cheap, the mains electricity is used to carry the load and charge, which can help customers to save electricity costs to the greatest extent.

The user can turn on/off the time-slot charging/discharging function in setup menu parameter 46 and 53 and set charging and discharging slot in parameter. Below are examples for users to understand the function.

Peak-Valley Electricity Tariff

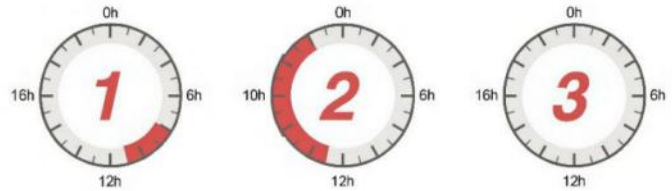


Time-slot Utility Charging/Carrying Function



With 3 definable periods, the user can freely set the mains charging/carrying time within the range of 00:00 to 23:59. During the time period set by the user, if PV energy is available, PV energy will be used first, and if PV energy is not available or insufficient, utility energy will be used as a supplement.

Time-slot Battery Discharging Function



With 3 definable time periods, users can freely set the battery discharge time within the range of 00:00 to 23:59. During the time set by the user, the inverter will give priority to the battery inverter to carry the load, and if the battery power is insufficient, the inverter will automatically switch to mains power to ensure stable operation of the load.

5.4 Battery parameter

- Lead-acid battery

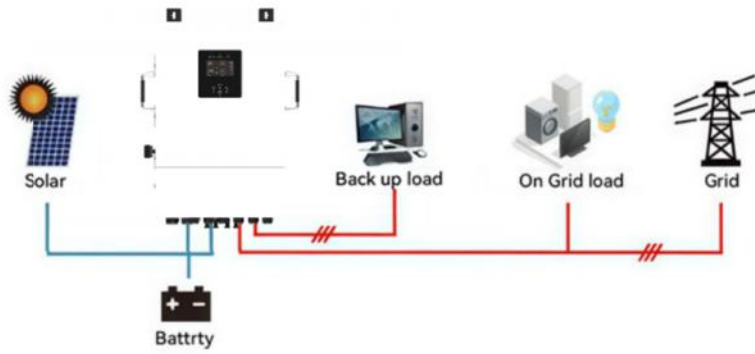
Battery type Parameters	Sealed lead acid battery (SLD)	Gel lead acid battery (GEL)	Flooded lead acid Battery (FLD)	User-defined (USE)
Over disconnect Voltage	60V	60V	60V	60V
Boost charging voltage	57.6V	56.8V	57.6V	40~60V (can be set)
Undervoltage alarm voltage	44V	44V	44V	40~60V (can be set)
Undervoltage disconnect voltage	42V	42V	42V	40~60V (can be set)
Discharge limiting voltage	40V	40V	40V	40~60V (can be set)
Overdischarge delay time	5s	5s	5s	1~30s (can be set)
Enhanced Charge Cycle	120min	120min	120min	10~900min (can be set)

- Li-ion battery

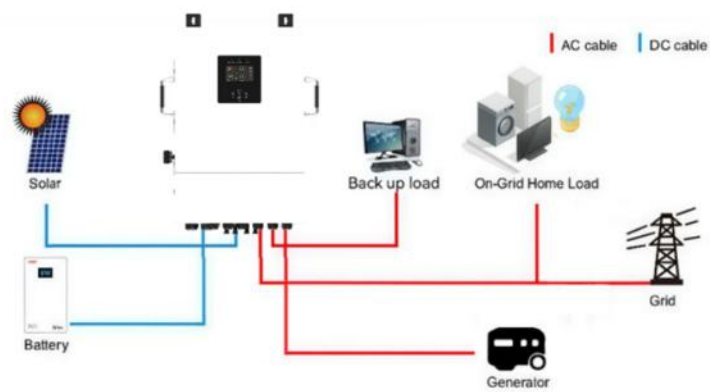
Battery type Parameters	Ternary		LFP			User-defined
	(N13)	(N14)	L16	L15	L14	USE
Over disconnect Voltage	60V	60V	60V	60V	60V	60V
Boost charging voltage	53.2V	57.6V	56.8V	53.2V	49.2V	40~60V (can be set)
Undervoltage alarm voltage	43.6V	46.8V	49.6V	46.4V	43.2V	40~60V (can be set)
Undervoltage disconnect voltage	38.8V	42V	48.8V	45.6V	42V	40~60V (can be set)
Discharge limiting voltage	36.4V	39.2V	46.4V	43.6V	40.8V	40~60V (can be set)
Overdischarge delay time	30s	30s	30s	30s	30s	1~30s (can be set)
Enhanced Charge Cycle	120min (can be set)	120min (can be set)	120min (can be set)	120min (can be set)	120min (can be set)	10~900min (can be set)

5.5 Mode

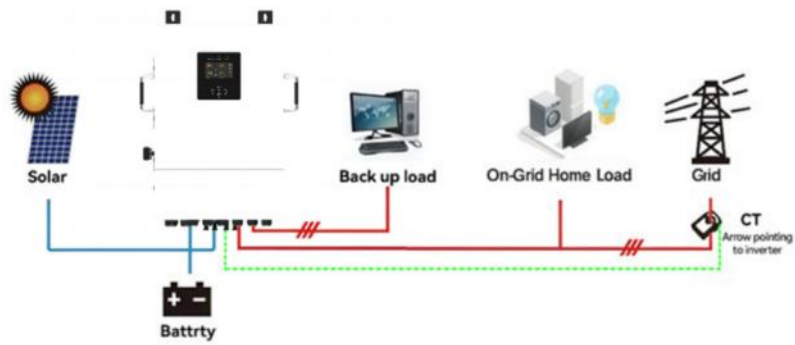
Mode I: Basic



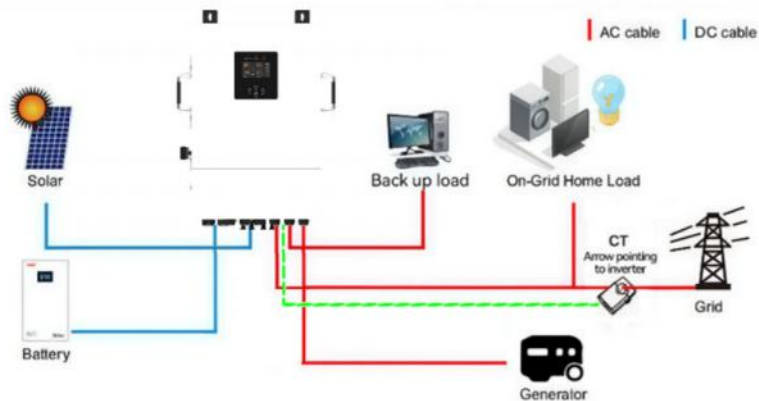
Mode II: With Generator



Mode III: With CT

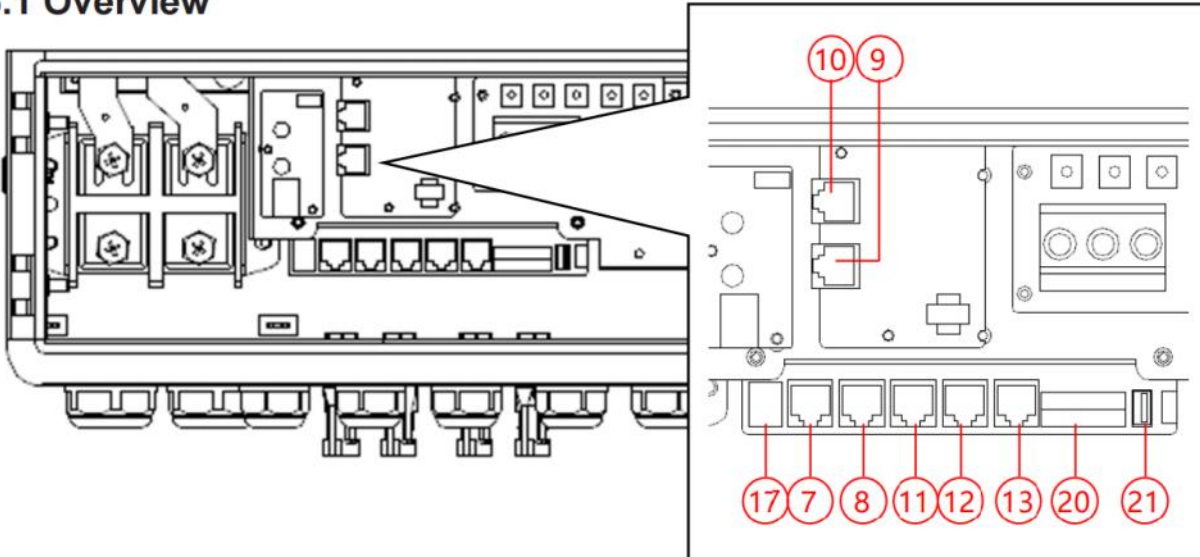


Mode IV: With Generator & CT



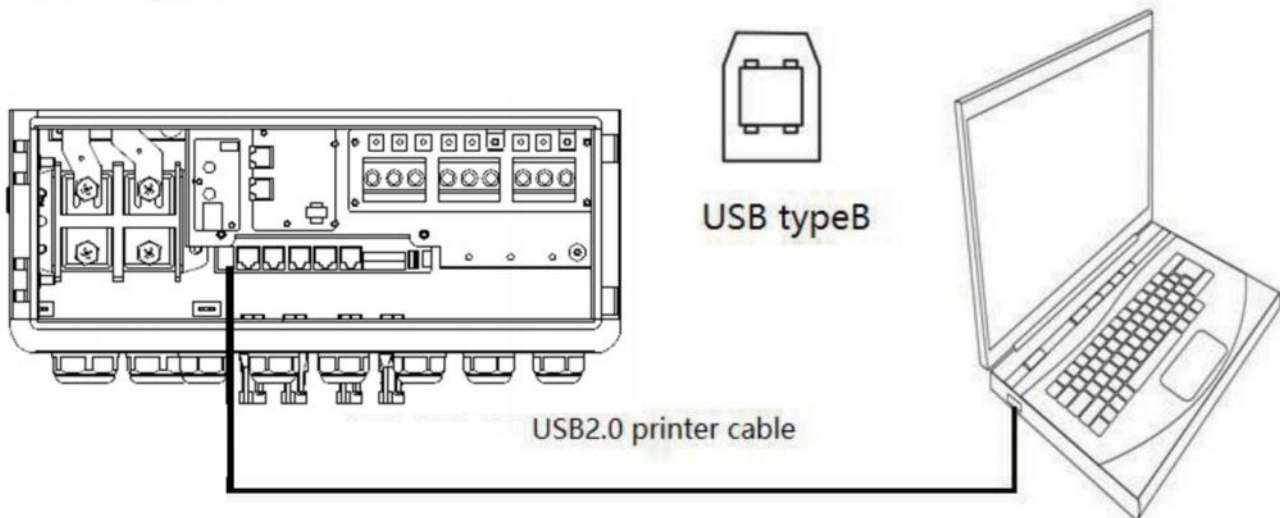
6. Communication

6.1 Overview



7	WIFI port	8	RS485 port
9	Parallel communication B port	10	Parallel communication A port
11	CAN port	12	DRM port
13	CT port	17	USB-1 port
20	Dry contact	21	USB-2 port

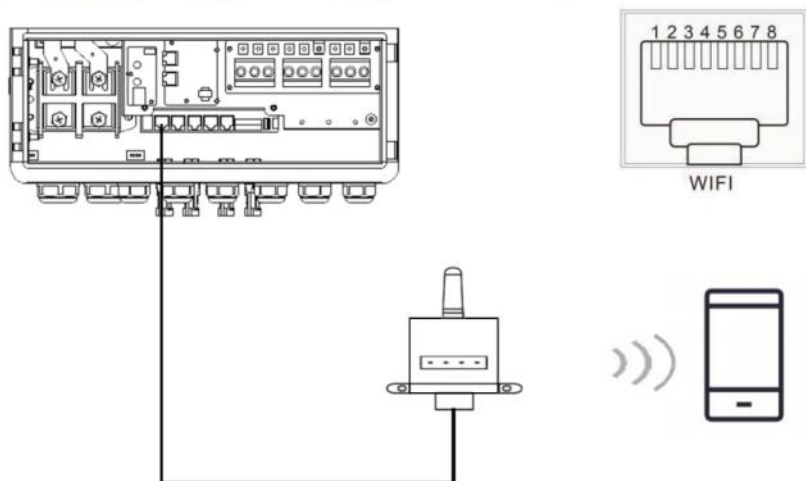
6.2 USB-1 port



The user can read and modify device parameters through this port by using the host software. Please contact us for the host software installation package if you require one

6.3 WIFI port

The RS485-1 port is used to connect to the Wi-Fi/GPRS data acquisition module, which allows the user to view the operating status and parameters of the inverter via the mobile phone APP.

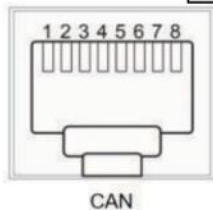


RJ45	Definition
Pin 1	5V
Pin 2	GND
Pin 3	/
Pin 4	/
Pin 5	/
Pin 6	/
Pin 7	RS485-A
Pin 8	RS485-B

6.4 CAN port

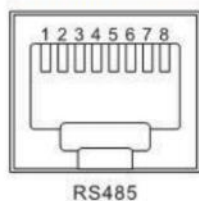
The CAN port is used to connect to the BMS of Liion battery.

RJ45	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Definition	/	/	/	CANH	CANL	/	/	/



6.5 RS485 port

The RS485/CAN port is used to connect to the BMS of Liion battery.



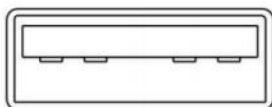
RJ45	Definition
Pin 1	RS485-B
Pin 2	RS485-A
Pin 3	GND
Pin 4	CANH
Pin 5	CANL
Pin 6	GND
Pin 7	RS485-A
Pin 8	RS485-B

NOTICE

If you need to use the inverter to communicate with the lithium battery BMS, please contact us for the communication protocol or upgrade the inverter to the appropriate software programme.

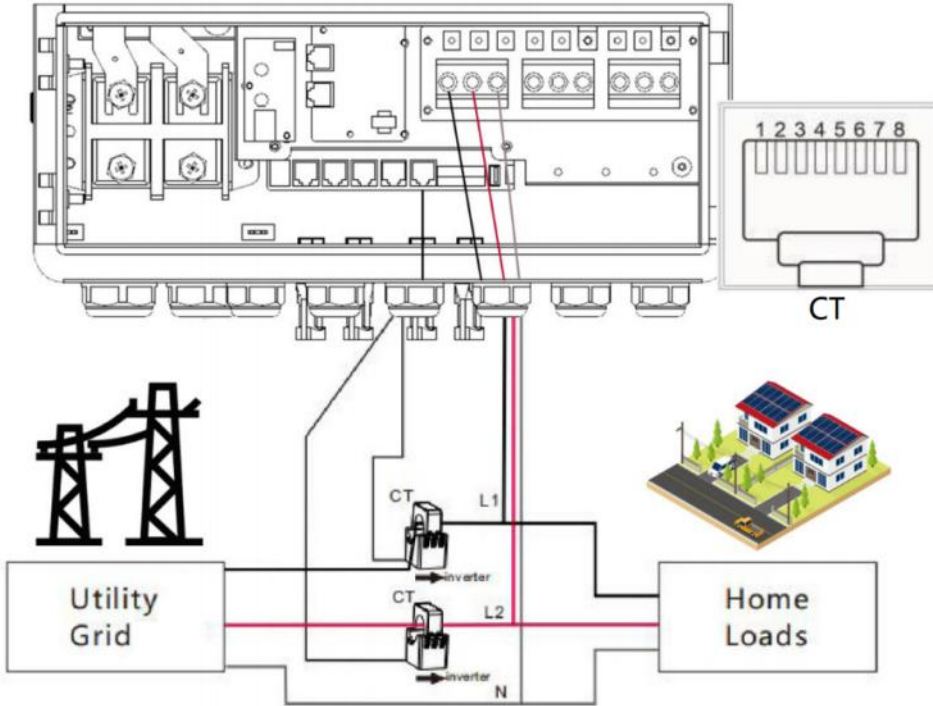
6.6 USB-2 port

It is used to updated the screen firmware.



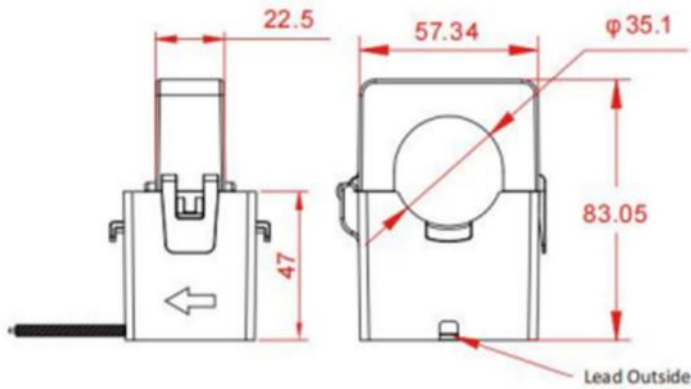
6.7 External CT port

For external CT model connection



RJ45	Definition
Pin 1	/
Pin 2	/
Pin 3	/
Pin 4	CT2+
Pin 5	CT2-
Pin 6	/
Pin 7	CT1+
Pin 8	CT1-

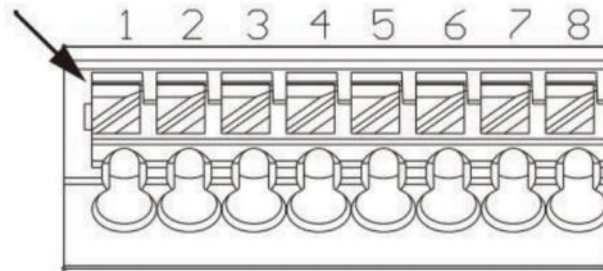
1. Split Core Current Transformer (CT) dimension: (mm)
2. Secondary output cable length is 4m.
3. The CT direction is "to inverter"



6.8 Dry contact port

Dry contact port with 3 functions:

1. RSD power supply
2. Temperature sampling (reserved)
3. Generator remote start/stop



Function	Description
RSD power supply	PIN 1 is GND, PIN 2 is RSD 12V+
Temperature sampling (reserved)	Pin 1 & Pin 5 can be used for battery temperature sampling compensation.
Generator remote start/stop	6-7:NC 6-8:NO Remote generator shutdown: Pins 6 to 7 are normally closed, and pins 6 to 8 are normally open. (Pin 6/7/8 output 125Vac/1A,230Vac/1A,30Vdc/1A)

NOTICE

If you need to use the remote start/stop function of a dry contact generator, make sure that the generator has an ATS and supports the remote start/stop function.

7. Fault and Remedy

7.1 Fault code

Fault code	Fault name	Whether it affects the output or not	Description
【01】	BatVoltLow	No	Battery under voltage alarm.
【02】	BatOcAvgSw	Yes	Battery discharge average current over current (hardware protection).
【03】	BatOpen	Yes	Battery not-connected alarm.
【04】	BatLowEod	Yes	Battery under voltage stop discharge alarm.
【05】	BatOverCurr	Yes	Battery over current (hardware protection).
【06】	BatOverVolt	Yes	Charging over voltage protection.
【07】	BusOverVoltHw	Yes	Bus over voltage (hardware protection).
【08】	BusOverVoltSw	Yes	Bus over voltage (software protection).
【09】	PvVoltHigh	No	PV over voltage protection.
【10】	PvArcFault	Yes	The device detects a large arc input at the PV terminal.
【11】	PvBuckOCHw	Yes	PV current exceeds the maximum hardware limit of the inverter.
【12】	SpiCommErr	No	The device detects an SPI communication error.
【13】	OverloadBypass	Yes	Bypass overload protection.
【14】	OverloadInverter	Yes	Inverter overload protection.
【15】	AcOverCurrHw	Yes	Inverter over current (hardware protection).
【16】	AuxDspReqOffPwm	No	The auxiliary DSP sends no waveform to the inverter.
【17】	InvShort	Yes	Inverter short-circuit protection.
【18】	BusSoftFault	Yes	The bus voltage has not reached the normal voltage value for hardware operation.
【19】	OverTemperMppt	No	Buck heat sink over temperature protection.
【20】	OverTemperInv	Yes	Inverter AC output with load or AC charging radiator over-temperature protection.
【21】	Fan Fail	Yes	Fan blockage or failure fault.

【22】	EEPROM fail	Yes	Memory failure.
【23】	ModelNumErr	Yes	Model setting error.
【24】	BusDiff	Yes	Bus voltage positive and negative poles are inconsistent.
【25】	BusShort	Yes	Positive and negative poles of the bus voltage are short-circuited.
【26】	RlyShort	Yes	Inverted AC Output Back feeds to Bypass AC Input.
【27】	LinePhaseLack	Yes	One phase of the mains phase is lost.
【28】	LinePhaseErr	Yes	The mains phases are not connected to the inverter in the correct wiring sequence.
【29】	BusUnderVoltSw	Yes	Internal battery boost circuit failure.
【30】	BatCapacityLow1	No	Alarm given when battery capacity rate is lower than 10% (setting BMS to enable validity).
【31】	BatCapacityLow2	No	Alarm given when battery capacity rate is lower than 5% (setting BMS to enable validity).
【32】	BatCapacityLowStop	Yes	Inverter stops when battery capacity is low (setting BMS to enable validity).
【33】	CtrlCanFault	Yes	CAN port hardware damaged
【34】	CommCanFault	Yes	CAN communication fault in parallel operation.
【35】	ParaAddrErr	Yes	Parallel ID (communication address) setting error.
【36】	BalanceFault	Yes	Balance circuit malfunction
【37】	ParaShareCurrErr	Yes	Parallel current sharing fault .
【38】	ParaBattVoltDiff	Yes	Large battery voltage difference in parallel mode.
【39】	ParaAcSrcDiff	Yes	Inconsistent AC input source in parallel mode.
【40】	ParaHwSynErr	Yes	Hardware synchronization signal error in parallel mode.
【41】	InvDcVoltErr	Yes	Inverter DC voltage error.
【42】	SysFwVersionDiff	Yes	Inconsistent system firmware version in parallel mode.
【43】	ParaLineContErr	Yes	Parallel line connection error in parallel mode.
【44】	SnInfoErr	Yes	No serial number set at factory.
【45】	ParaModeFault	Yes	Item 'Parallel' setting error.

【46】	Reverse	Yes	The connection between the temperature sensor and the machine is disconnected.
【47】	Reverse	Yes	PV voltage is below the minimum PV voltage required by the machine.
【48】	AfciSelfCheckErr	Yes	Communication failure
【49】	GridOV	Yes	selects the local corresponding grid standard.
【50】	GridUV	Yes	
【51】	GridOF	Yes	
【52】	GridUF	Yes	
【53】	bLineLoss	Yes	
【54】	IgridDCOver	Yes	
【55】	GridStand	Yes	
【56】	PvIsoLow	No	PV1+, PV2+ and PV- abnormally low impedance to ground.
【57】	LeakageCurrOver	Yes	System leakage current exceeds limit.
【58】	BMS_CommErr	No	Check whether the communication line is connected correctly and whether [33] is set to the corresponding lithium battery communication protocol.
【59】	BMS_OtherAlarm	No	Communication fault between battery and inverter
【60】	BMS_BattUT	No	BMS alarm battery low temperature.
【61】	BMS_BattOT	No	BMS alarm battery over temperature.
【62】	BMS_BattOI	No	BMS alarm battery over current.
【63】	BMS_BattUV	No	BMS alarm over battery.
【64】	BMS_BattOV	No	BMS alarm low battery.

7.2 Troubleshooting

Fault Code	Meaning	Remedy
Display	No screen display	Check if the battery switch or PV switch is closed; whether the switch is in the "ON" state; press any button on the screen to exit the screen sleep mode.
【06】	Battery over voltage protection	Check that the battery voltage does not exceed the protection value. If it does, discharge the battery until the voltage falls below the battery over-voltage recovery point.
【01】 【04】	Battery under voltage protection	Charge the battery until it returns to the low voltage disconnection recovery voltage
【21】	Fan failure	Check if the fan is not turning or blocked by foreign object.
【19】 【20】	Heat sink over temperature protection	When the temperature of the device is cooled below the recovery temperature, normal charge and discharge control is resumed.
【13】 【14】	Bypass overload protection, inverter overload protection	① Reduce the use of power equipment; ② Restart the unit to resume load output.
【17】	Inverter short-circuit protection	① Check the load connection carefully and clear the short-circuit fault points; ② Re-power up to resume load output.
【09】	PV over voltage	Use a multi meter to check if the PV input voltage exceeds the maximum allowable input voltage rated.
【03】	Battery disconnected alarm	Check if the battery is not connected or if the battery circuit breaker is not closed.
【40】 【43】	Parallel connection fault	Check if the parallel line is not connected well, such as loose or wrong connection.
【35】	Parallel ID setting error	Check whether the setting of parallel ID number is repeated.
【37】	Parallel current sharing fault	Check if the parallel current sharing line is not connected well, such as loose or wrong connection.
【39】	Inconsistent AC input source in parallel mode	Check whether the parallel AC inputs are from the same input interface.
【42】	Inconsistent system firmware version in parallel mode	Check whether the software version of each inverter is consistent.

【44】	Serial number error	Incorrect device serial number setting.
【45】	Parallel mode error	There is a device in the parallel system with the wrong parallel mode setting.
【49】	High grid voltage	Check that the grid voltage is within the normal range, if the grid voltage is abnormal, wait until the grid voltage is restored.
【50】	Low grid voltage	Check that the grid voltage is within the normal range, if the grid voltage is abnormal, wait until the grid voltage is restored.
【51】	High grid frequency	Check that the grid frequency is within the normal range, if the grid frequency is abnormal, wait until the grid frequency is restored.
【52】	Low grid frequency	Check that the grid frequency is within the normal range, if the grid frequency is abnormal, wait until the grid frequency is restored.
【53】	Grid unconnected	Check if the grid is correctly connected, e.g. if the switch is closed and if the grid is disconnected.
【54】	Grid-connected current with DC component over	Power down and restart the device, if it continues to report faults, contact the manufacturer after sales.
【56】	Low insulation resistance fault	Check that the system is well grounded and that the PV modules and cables are not worn.
【57】	Leakage current overload fault	Check that the system is well grounded and that the loads are not operating abnormally.

 **NOTICE**

If you encounter product faults that cannot be solved by the methods in the above table, please contact our after-sales service department for technical support and do not disassemble the equipment by yourself.

8. Protection and Maintenance

8.1 Protection function

No.	Protection functions	Description
1	PV input current / power limiting protection	When the charging current or power of the PV array configured exceeds the PV input rated value, the inverter will limit the input power and charge at the rated.
2	PV input over-voltage	If the PV voltage exceeds the maximum value allowed by the hardware, the machine reports a fault and stops PV boosting to output a sinusoidal AC waveform.
3	PV night reverse current protection	At night, the battery is prevented from discharging through the PV module because the battery voltage is greater than the voltage of PV module.
4	AC input over-voltage protection	When the AC input voltage of each phase exceeds 280V, the mains charging will be stopped and switched to the inverter mode.
5	AC input under-voltage protection	When the AC input voltage of each phase below 170V, the utility charging will be stopped and switched to the inverter mode.
6	Battery over-voltage protection	When the battery voltage reaches the over-voltage cut-off point, the PV and the utility will automatically stop charging to prevent the battery from being overcharged and damaged.
7	Battery under-voltage protection	When the battery voltage reaches the under-voltage cut-off point, the inverter will automatically stop the battery discharge to prevent damage from over-discharging the battery.
8	Battery over-current protection	After a period when the battery current exceeds that allowed by the hardware, the machine will switch off the output and stop discharging the battery.
9	AC output short-circuit protection	When a short-circuit fault occurs at the load output terminal, the AC output is immediately turned off and turned on after 1 second. If the output load terminal is still short-circuited after 3 attempts, the inverter must be manually restarted after first removing the short-circuit fault from the load before the normal output can be restored.
10	Heat sink over temperature protection	When the internal temperature of the inverter is too high, the inverter will stop charging and discharging; when the temperature returns to normal, the inverter will resume charging and discharging.
11	Inverter over-load protection	After triggering the overload protection the inverter will resume output after 3 minutes, 5 consecutive overloads will switch off the output until the inverter is restarted. (102%<load<110%): alarm and output shutdown after 5min; (110% < load < 125%): alarm and output shutdown after 10s. Load > 125%: alarm reported and output switched off after 5s.

12	AC output reverse	Prevents AC back flow from the battery inverter to the bypass AC input.
13	Bypass over-current protection	Built-in AC input over-current protection circuit breaker.
14	Bypass phase inconsistency protection	When the phase of the bypass input and the phase of the inverter split do not match, the inverter disables switching to the bypass output to prevent the load from dropping out or short-circuiting when switching to the bypass.
15	Charging short-circuit protection	When the external battery port is short-circuited in the PV or AC charging state, the inverter will protect and stop the output current.
16	Parallel connection error protection	In parallel operation, the equipment will be protected when the parallel line is lost.
17	Parallel battery voltage difference protection	In parallel operation, the equipment will be protected when the battery connection is inconsistent and the battery voltage is greatly different from that detected by the host.
18	Parallel AC voltage difference protection	In parallel operation, the equipment will be protected when the AC IN input connection is inconsistent.
19	Synchronization signal fault protection	The equipment will be protected when there is a fault in the guidance signal between parallel buses, causing inconsistent behavior of each inverter.

8.2 Maintenance

To maintain optimum long-lasting working performance, it is recommended that the following items be checked twice a year.

1. Ensure that the airflow around the inverter is not blocked and remove any dirt or debris from the radiator.
2. Check that all exposed conductors are not damaged by sunlight, friction with other surrounding objects, dry rot, insect or rodent damage, etc. The conductors need to be repaired or replaced if necessary.
3. Verify that the indications and displays are consistent with the operation of the equipment, note any faults or incorrect displays and take corrective action if necessary.
4. Check all terminals for signs of corrosion, insulation damage, high temperatures or burning/discolouration and tighten terminal screws.
5. Check for dirt, nesting insects and corrosion, clean as required, clean insect screens regularly.
6. If the lightning arrester has failed, replace the failed arrester in time to prevent lightning damage to the inverter or other equipment of the user.



Make sure that the inverter is disconnected from all power sources and that the capacitors are fully discharged before carrying out any checks or operations to avoid the risk of electric shock.

The Company shall not be liable for damage caused by:

1. Damage caused by improper use or use in a wrong location.
2. Photovoltaic modules with an open circuit voltage exceeding the maximum permissible voltage.
3. Damage caused by the operating temperature exceeding the restricted operating temperature range.
4. Dismantling and repair of the inverter by unauthorised persons.
5. Damage caused by force majeure: damage during transport or handling of the inverter.

9. Data sheet

Technical Specifications	PVBAT L2P G2 Series
Rated Power	12000VA / 12000W
AC Input	
Input Voltage	120/240Vac (L1/L2/N) Split-phase
Input Voltage Range	90~140VAC
Input Frequency Range	50/60Hz Auto Recognition
AC Output	
Surge Power	24000VA
Output Voltage	120/240Vac Split-phase Output $\pm 5\%$
Output Frequency	50/60Hz
Peak Efficiency	93%
Transfer Time	10ms (Computer Equipment) / 20ms (Home Appliances)
Battery Specifications	
Battery Voltage	48VDC
Float Charge Voltage	54VDC
Overcharge Protection Voltage	63VDC
Battery Type	Lithium Battery / Lead-Acid Battery
Maximum Solar Charging Current	200A
Maximum Utility Charging Current	150A
Maximum Total Charging Current	200A
Solar Charger & AC Charger	
Maximum PV Open-Circuit Voltage	500VDC
Maximum PV Array Power	6500W \times 2
MPPT Operating Voltage Range	60~450VDC
Maximum PV Input Current	22A + 22A
MPPT Trackers / Strings	2

Protection & Functions	
AC Overcurrent Protection	Supported
AC Overvoltage Protection	Supported
Over-temperature Protection	Supported
Smart Load Management	Supported
Parallel Operation	Supports up to 6 units in parallel
General Parameters	
Operating Temperature	-10°C ~ 50°C
Relative Humidity	5% ~ 95% (Non-condensing)
Altitude	2000 m (Derating required above this altitude)
Protection Rating	IP66
Product Dimensions (W × D × H)	440 × 260 × 270 mm
Net Weight	42 kg
Communication	
Standard Interfaces	RS232, USB, CAN, RS485
Optional Interface	WiFi
Safety Standards	EN/IEC62109-1, EN/IEC62109-2



THANK YOU

Thank you for choosing PVBAT.

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