Product Model

POW-SunSmart 10KP-PRO

PowMr

SOLAR STORAGE INVERTER

User Manual

Important Safety Instructions

Please save these instructions for future use!

⚠Read all of the instructions and cautions in the manual before beginning the installation!

- Installation and wiring must comply with the Local and National Electric Codes (NEC) and must be done by a certified technician.
- Do NOT disassemble or attempt to repair the inverter. There are no serviceable parts for this inverter.
- DO NOT parallel this device with other AC input sources to avoid damage.
- DO NOT attempt to touch the unit while it is operating as temperatures will be very hot. In addition, do not open the terminal cover while the unit is in operation.
- Make sure all connections going into and from the inverter are tight. There may be sparks when making connections, therefore, make sure there are not flammable materials or gases near installation.
- Installing breakers or fuses outside of the unit is recommended.
- After installation, check that all line connections are tight and secured.
- Do NOT let the positive (+) and negative (-) terminals of the battery touch each other. Use Lithium batteries or deep cycle Sealed Lead Acid, Flooded, Gel, AGM batteries.
- Explosive battery gases may be present while charging. Be certain there is enough ventilation to release the gases.
- Be careful when working with large lead acid batteries. Wear eye protection and have fresh water available in case there is contact with the battery acid.
- Over-charging and excessive gas precipitation may damage the battery plates and activate material shedding on them. Too high of an equalizing charge or too long of one may cause damage. Please carefully review the specific requirements of the battery used in the system.

Table of Contents

1 About This Manual

1.1 How to Use This Manual

This manual contains important information, guidelines, operation and maintenance for the following products: POW-SunSmart 10KP-PRO.

The manual must be followed during installation and maintenance.

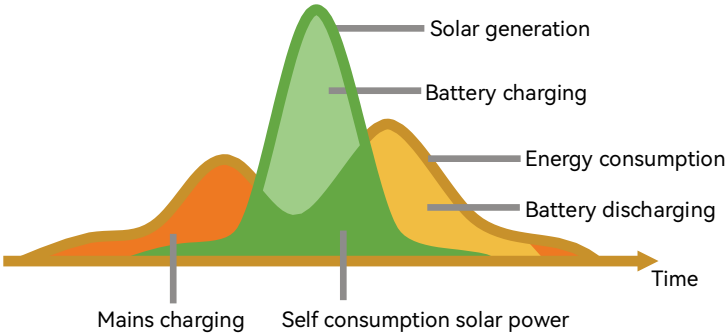
1.2 Symbols in This Manual

Symbol	Description
DANGER	DANGER indicates a hazardous situations which if not avoided will result in death or serious injury.
WARNING	WARING indicates a hazardous situations which if not avoided could result in death or serious injury.
CAUTION	CAUTION indicates a hazardous situations which if not avoided could result in minor or moderate injury.
NOTICE	NOTICE provide some tips on operation of products.

2 Production Instructions

2.1 Instructions

POW-SunSmart series 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. It applies to industrial scenarios.



2.2 Features

- Support the connection of various types of energy storage batteries such as lead-acid battery and lithium-ion battery.
- Have the dual activation function during lithium-ion battery sleep, that is, access to mains/PV power can activate the lithium-ion battery.
- Support split-phase/single-phase pure sine wave output.
- Support adjusting the voltage of each phase within the range of 100Vac, 105Vac, 110Vac, 115Vac, 120Vac and 127Vac.
- Support two-channel PV input and have the function of simultaneous two-channel maximum power point tracking (MPPT) for charging/loading capacity.
- Support two-channel MPPT, with an efficiency of up to 99.9% and a maximum single-channel current of 22A, perfectly fitting high-power modules.
- Provides two charging modes: PV only and hybrid mode (grid + PV).

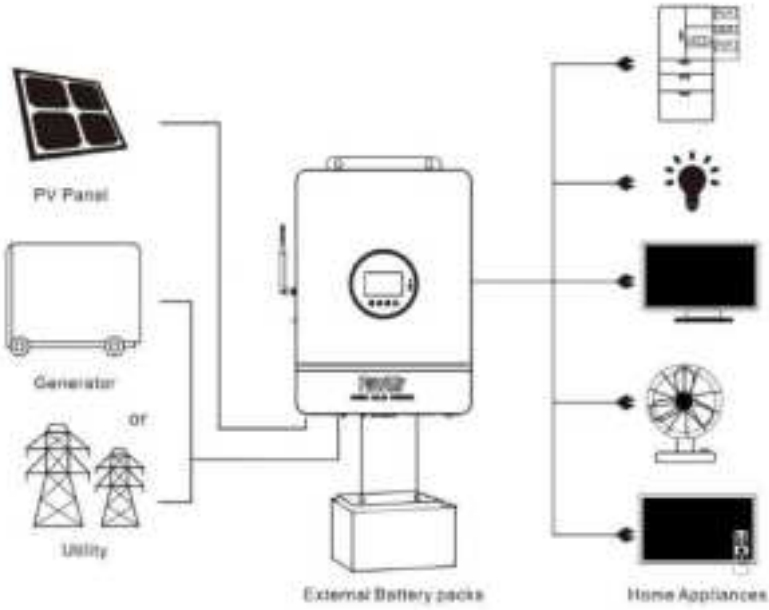
- Have the timed charge and discharge function, that is, users can set the charge and discharge time according to the time-of-use price to save electricity costs.
- Have the energy-saving mode, reducing no-load energy losses.
- Provide two output modes: mains bypass output and inverter output, achieving uninterrupted power supply.
- Support LCD display of dynamic flowchart, updating system data and operating status at any time.
- Provide 360° protection, including short circuit protection, overcurrent protection, overvoltage and undervoltage protection, and overload protection.
- Support CAN, USB, RS485 communication.

2.3 System Connection Diagram

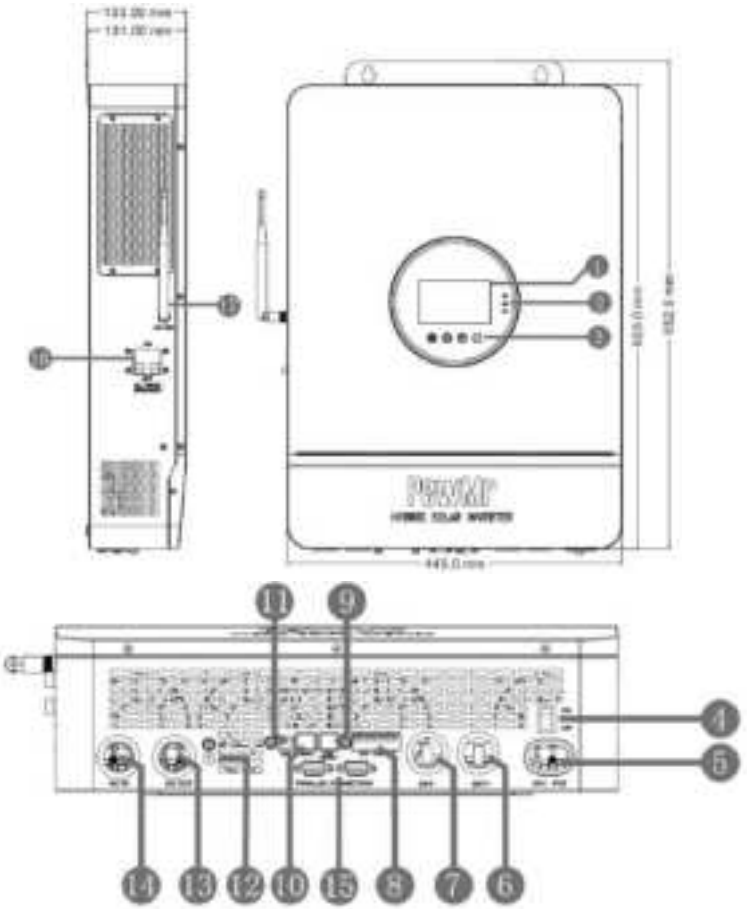
The diagram below shows the system application scenario of this product. A complete system consists of the following components:

1. **PV module:** 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.
2. **Mains 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.
3. **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.
4. **Home load:** It can connect various household and office loads, including refrigerators, lighting fixtures, TVs, fans, air conditioners, and other AC loads.
5. **Inverter:** The energy conversion device of the whole system.

The actual application scenario determines the specific system wiring method.



2.4 Production Overview



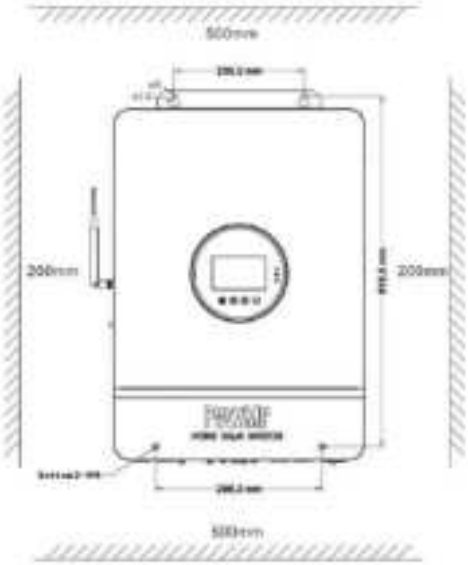
1	LCD Screen	2	LED Indicator	3	Physical button
4	ON/OFF Rocker Switch	5	PV Input (1/1)	6	Battery Port (+)
7	Battery Port (-)	8	Dry Contact	9	CAN/RS485-2 Port
10	RS485-1 Port	11	USB-B Port	12	Grounding Screw
13	AC output (L1+L2+N)	14	AC Input (L1+L2+N)	15	Parallel communication port
16	AC input circuit breaker	17	WIFI Antenna		

3 Installation

3.1 Select the Mount location

POW-SunSmart series is only for indoor use (protection level: IP20). Before selecting the installation location, users should consider the following factors:

- Choose the solid wall to install the inverter.
- Mount the inverter at eye level.
- Adequate heat dissipation space must be provided for the inverter.
- Ambient temperature: -10°C–55°C (14°F–131°F), to ensure optimal operation.



DANGER

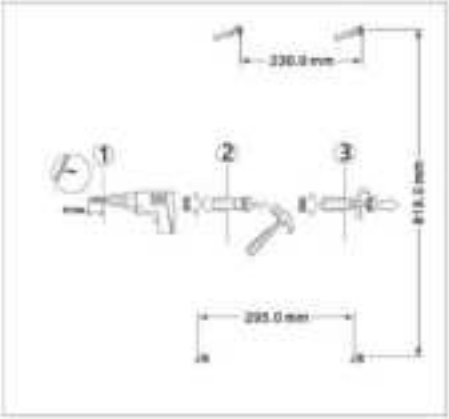
- Do not install the inverter where highly flammable materials are nearby.
- Do not install the inverter in potential explosive areas.
- Do not install the inverter with lead-acid batteries in a confined space.

CAUTION

- Do not install the inverter in direct sunlight.
- Do not install or use the inverter in a humid environment.

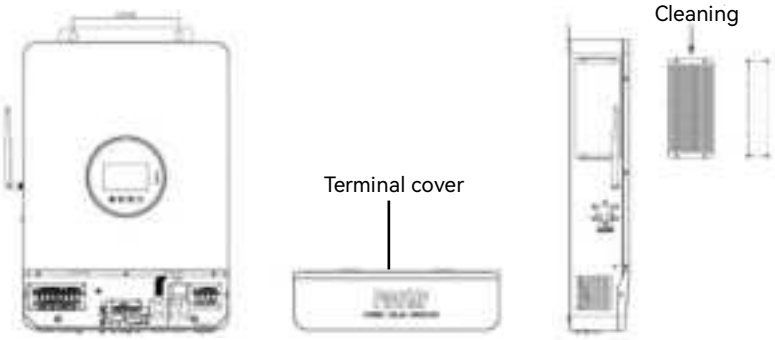
3.2 Mount the Inverter

Make 4 mounting holes in the wall with an electric drill according to the specified dimensions, insert 2 expansion screws above and fix the inverter with 2 M5 screws below.



3.3 Remove the Terminal Cover and Insect Screen

Using a screwdriver, remove the terminal protection cover and insect screen.



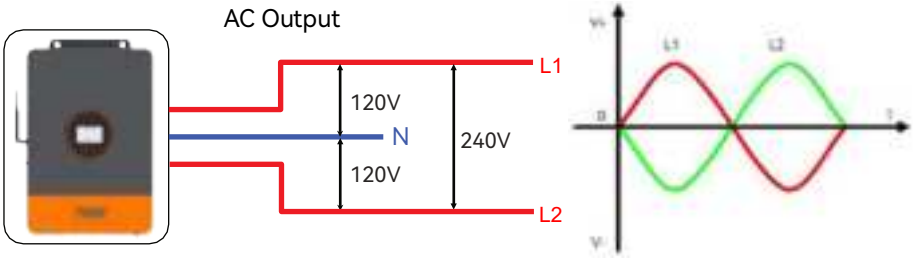
NOTICE

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

4 Wiring

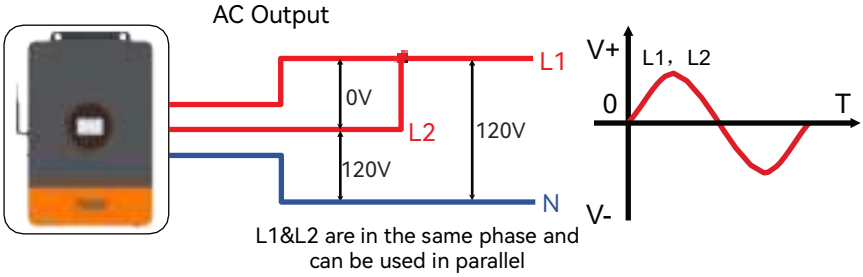
4.1 Wiring mode (depends on the output mode)

- **Split-phase mode (default)**



Items	Description
Applicable Model	POW-SunSmart 10KP-PRO
Output Voltage Range (L-N)	100 ~ 120Vac, 120Vac default
Output Voltage Range (L-L)	200 ~ 240Vac，240Vac default

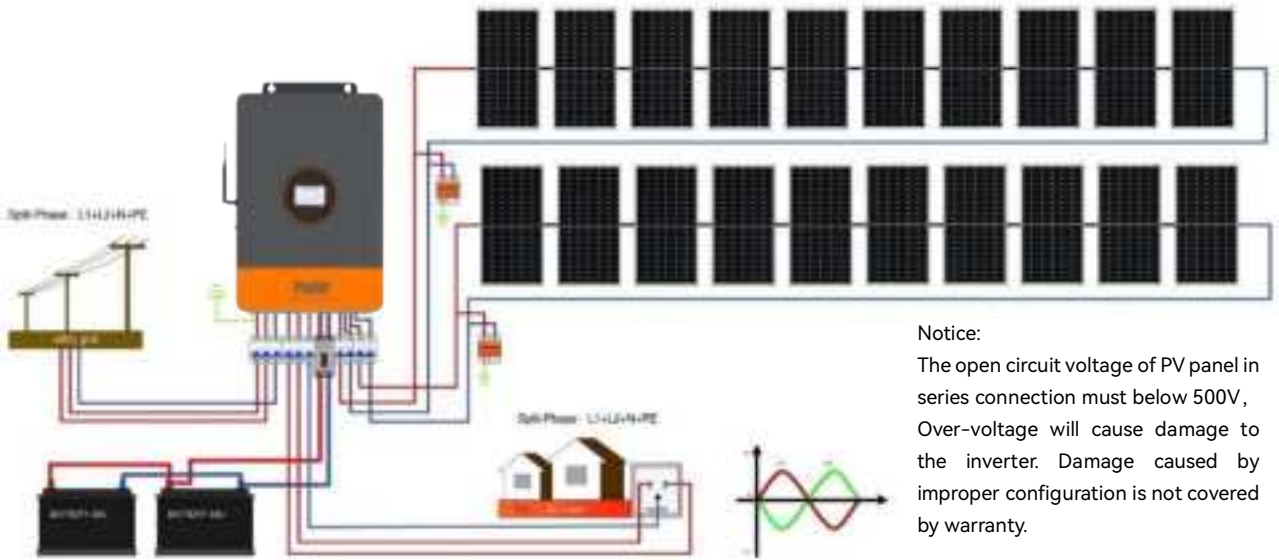
- **Single-phase mode**



L1&L2 are in the same phase and can be used in parallel

Items	Description
Applicable Model	POW-SunSmart 10KP-PRO
Output Voltage Range (L-N)	100 ~ 120Vac, 120Vac default

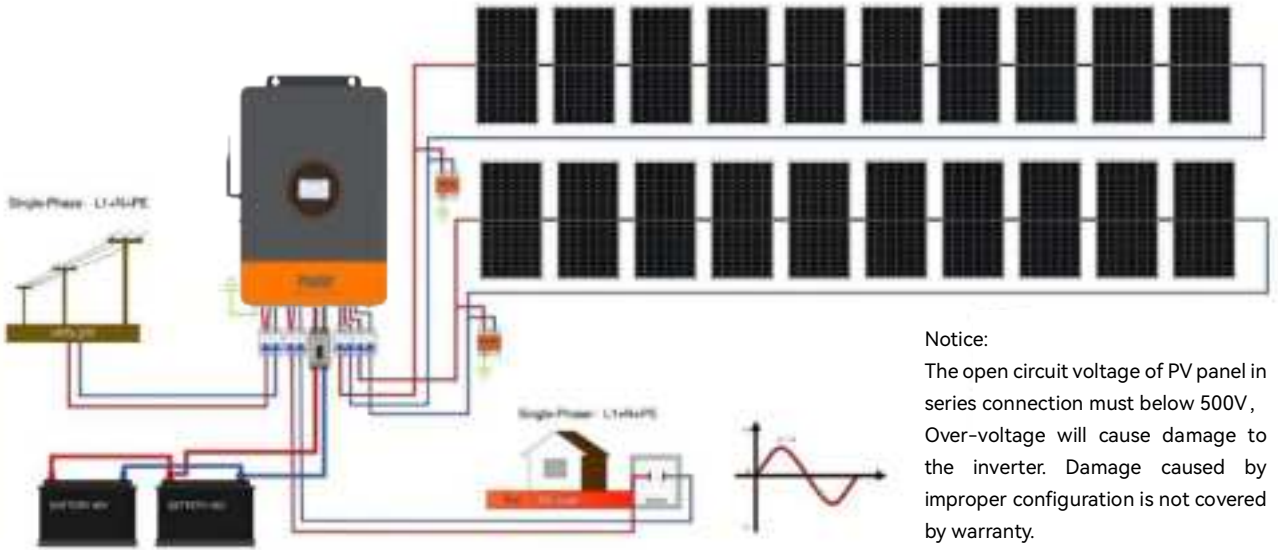
Split-phase Mode



Notice:

The open circuit voltage of PV panel in series connection must below 500V, Over-voltage will cause damage to the inverter. Damage caused by improper configuration is not covered by warranty.

Single-phase Mode



Notice:
The open circuit voltage of PV panel in series connection must below 500V, Over-voltage will cause damage to the inverter. Damage caused by improper configuration is not covered by warranty.

4.2 Cable & Circuit Breaker Requirement

- **PV INPUT**

Model	Cable Diameter	Max. PV Input Current	Circuit Breaker Spec
10KW	4mm² / 12 AWG	22A/22A	2P-25A

- **BATTERY**

Model	Cable Diameter	Max. Battery Current	Circuit Breaker Spec
10KW	70mm² / 00 AWG	220A	2P-250A

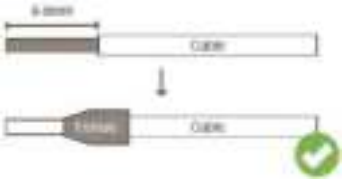
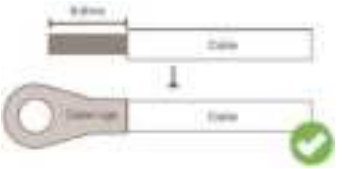
- **AC INPUT**

Model	Input Mode	Diagram	Max. Input Current	Cable Diameter	Circuit Breaker Spec
10KW	Split-phase		63A(L1/L2/N)	13mm² /6AWG (L1/L2/N)	3P-63A
	Single-phase	 L1 and L2 in same phase	63A(L1/L2) 126A(N)	13mm²/6AWG(L1/L2) 26mm²/3AWG(N)	2P-125A

- **AC OUTPUT**

Model	Output Mode	Diagram	Max. Output Current	Cable Diameter	Circuit Breaker Spec
10KW	Split-phase		63A(L1/L2/N)	13mm² /6AWG (L1/L2/N)	3P-63A
	Single-phase	 L1 and L2 in same phase	63A(L1/L2) 126A(N)	13mm²/6AWG(L1/L2) 26mm²/3AWG(N)	2P-125A

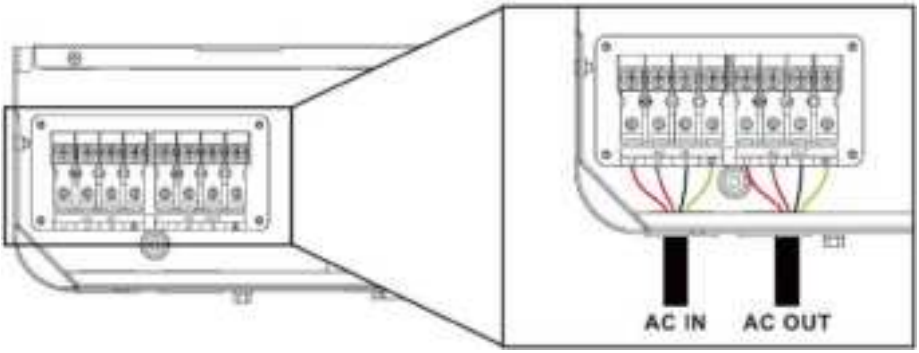
NOTICE

● **PV INPUT, AC INPUT, AC OUTPUT** 1. Use a stripper to remove the 6~8mm insulation of the cable. 2. Fix a sleeve at the end of the cable (the sleeve is to be prepared by the user)	
● **BATTERY** 1. Use a stripper to remove the 6~8mm insulation of the cable. 2. Fix a ring terminal (attached) 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 and Output Wiring

Connect the live wire, neutral wire, and ground wire according to the cable position and sequence shown in the following figure.

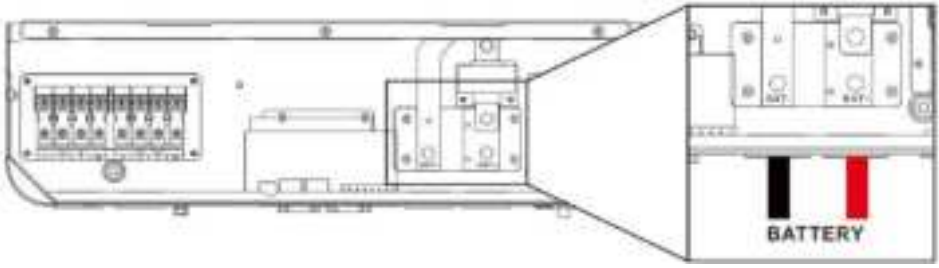


DANGER

- 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 Wiring

Connect the positive and negative cables of the battery according to the cable position and sequence shown in the following figure.

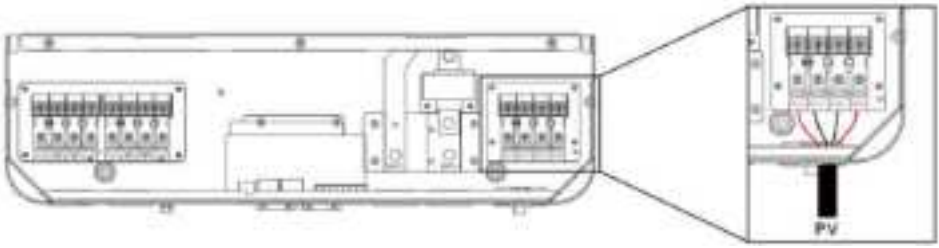


DANGER

- Before connecting battery, the circuit breaker must be opened to avoid the risk of electric shock and must not be operated with electricity.
- Please check the positive and negative terminals of the battery for correct connection and no reverse connection; otherwise it may damage the inverter.
- Please check that the cable used is sufficient for the requirements, too thin, poor quality cables are a serious safety hazard.

4.5 PV Wiring

Connect the positive and negative terminals of the two-channel PV modules according to the cable position and sequence shown in the following figure.

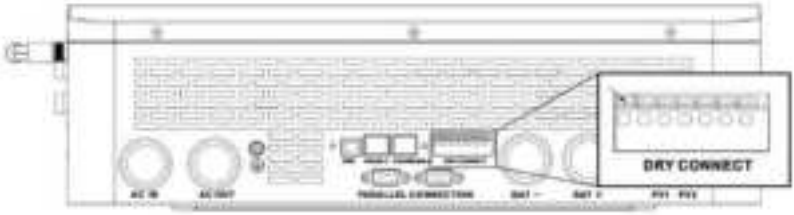


DANGER

- Before connecting PV, the circuit breaker must be opened to avoid the risk of electric shock and must not be operated with electricity.
- Please make sure that the open circuit voltage of the PV modules in series does not exceed the Max. Open Circuit Voltage of the inverter (In the POW-SunSmart series, this value is 500V), otherwise the inverter may be damaged.

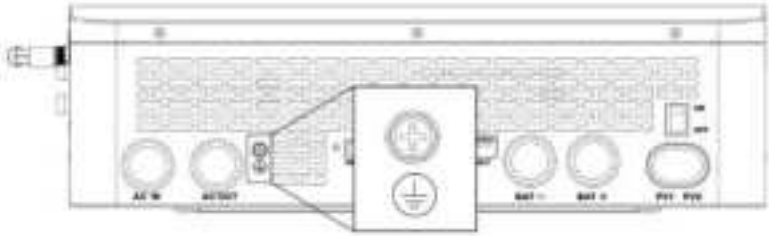
4.6 Dry Contact Wiring

Use a small screwdriver to push back the direction indicated by the arrow, then insert the communication cable into the dry junction port. (Communication cable diameter 0.2~1.5mm²)



4.7 Grounding

Please make sure the grounding terminal connect to the grounding busbar.



NOTICE

- The grounding cable should have a diameter of not less than 4 mm² and be as close as possible to the grounding point.

4.8 Inverter Start

After confirming reliable wiring and correct wiring sequence, restore the terminal cover to its original position.

Step 1. Close the circuit breaker of the battery.

Step 2. Press the rocker switch at the bottom of the inverter, and the screen and indicator will light up, indicating that the inverter is enabled.

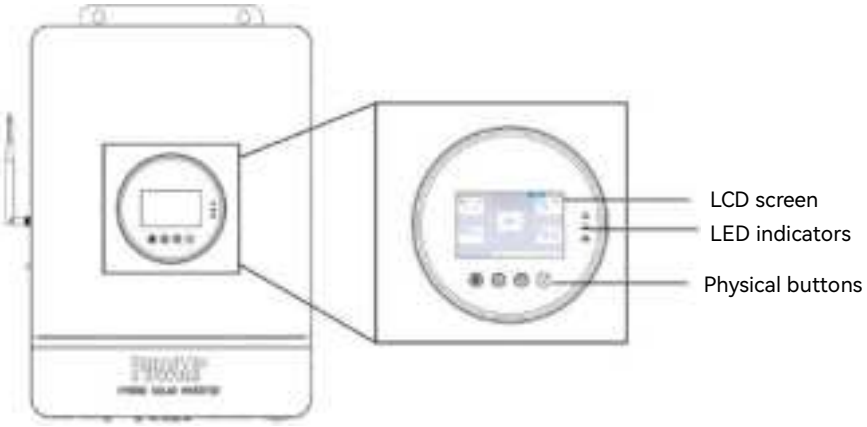
Step 3. Close the circuit breakers for PV input, AC input, and AC output in sequence.

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

5 Operation

5.1 Operation and Display Panel

The inverter's operation and display panel includes 1 LCD screen, 3 LED indicators, and 4 operation buttons.



➢ **Physical buttons**

Button	Description
	To enter/exit the setting menu
	To previous selection
	To next selection
	To confirm/enter the selection in setting menu

➢ **LED indicators**

Indicator	Color	Description
FAULT	Red	Flashing: Error occurred
CHARGE	Green	Solid on: Charging completed
		Flashing: Charging in progress
AC/INV	Yellow	Solid on: Utility bypass output
		Flashing: Inverter output

5.1.1 Display Panel

Icon	Description	Icon	Description
	Solar panel		Grid
	Battery		UPS Load
	Inverter		Energy Saving Mode
	Home Page		Settings
	Historical Data		Buzzer
01: 05	Local Time		Energy Flow
	WiFi Status	**MASTER**	Main Unit Logo

5.1.2 Browsing Detailed Data with Buttons

1. Press the up/down buttons, and when "HOME" is highlighted in blue, press the confirm button to select the home page icon.

2. After selecting the home page icon, press the confirm button again to enter the data details page.

5.1.3 View real-time data

On the LCD home screen, click the inverter icon, battery icon, grid icon, UPS load icon, or PV icon allows viewing of real-time data for each component. The microinverter and home load icons are non-clickable, as their data is fully displayed on the home page.

System Data			
NO.	**Real-Time Data Item**	**NO.**	**Real-Time Data Item**
1	MCU1 Version	11	SN Code (Inverter Serial Number)
2	MCU2 Version	12	Machine Status
3	Minor Version Number	13	DC/DC Temperature
4	LCD Version	14	DC/AC Temperature
5	Rated Power	15	Transformer Temperature
6	Customer ID	16	L1 Inverter Voltage
7	RS485 Address	17	L1 Inverter Current
8	Bus Positive Voltage	18	L2 Inverter Voltage
9	Bus Negative Voltage	19	L2 Inverter Current
10	Bus Total Voltage		
Battery Data			
1	Battery 1 Voltage	5	Battery Type
2	Battery 1 Charging/Discharging Power	6	Charging Status
3	Battery 1 Charging/Discharging Current	7	BMS Communication Protocol
4	Battery 1 SOC (%)		
Grid Data			
1	L1 Voltage	6	L2 Voltage
2	L1 Current	7	L2 Current
3	L1 Active Power	8	L2 Active Power
4	L1 Apparent Power	9	L2 Apparent Power
5	Frequency	10	Grid Charging Current
UPS Load Data			
1	L1 Voltage	7	L2 Current

2	L1 Current	8	L2 Active Power
3	L1 Active Power	9	L2 Apparent Power
4	L1 Apparent Power	10	L2 Load Factor
5	L1 Load Factor	11	Frequency
6	L2 Voltage		
	PV Data		
1	Solar1 Voltage V	5	Solar2 Current A
2	Solar1 Current A	6	Solar2 Power W
3	Solar1 Power W	7	Solar Total Power
4	Solar2 Voltage V		

5.2 History Page

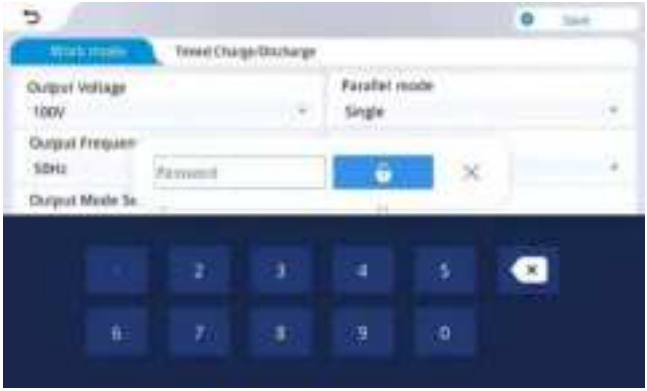
Today Data			
NO.	**Real-Time Data Item**	**NO.**	**Real-Time Data Item**
1	Battery Charging Energy	4	Load Consumption Energy
2	Battery Discharging Energy	5	Mains Charging Energy
3	Solar Generated Energy	6	Load Consumption Energy From Grid
History			
1	Solar energy generated in the last 7 days	4	Mains charging energy in the last 7 days
2	Battery charging energy in the last 7 days	5	Load consumption energy in the last 7 days
3	Battery discharging energy in the last 7 days	6	Load consumption energy from grid in the last 7 days
Energy Statistics			
1	Total Battery Charging Energy	4	Total Load Consumption Energy
2	Total Battery Discharging Energy	5	Mains Charging Energy
3	Total Solar Generated Energy	6	Total Load Consumption Energy From Grid
Historical Fault			

5.3 Setting Parameters

Operation Instructions:

1. Click the "Settings" button in the bottom menu bar of the screen to enter the settings interface. It includes six categories: "Basic setup", "Work mode setup", "Battery setup", "Advance setup", "WiFi setup ", and "Firmware Update".

2. When modifying settings, if password permission is enabled, a password must be entered to modify the parameters.



5.3.1 Basic Settings

➢ **Display Settings**

Item	Description
Language	Support English, Italian, German, Spanish and Chinese.
RS485 Address	RS485 address of the inverter. Single device: Adjustable range 1~254.
Date	Set year, month, day.
Time	Set hour and minute.
Screen-On Time (Min.)	Adjustable range 1~30 minutes.
Screen always On	Select whether the screen stays on continuously.
Beep	Select whether to enable buzzer alarm.
Backlight brightness	Adjustable from 0~100%.

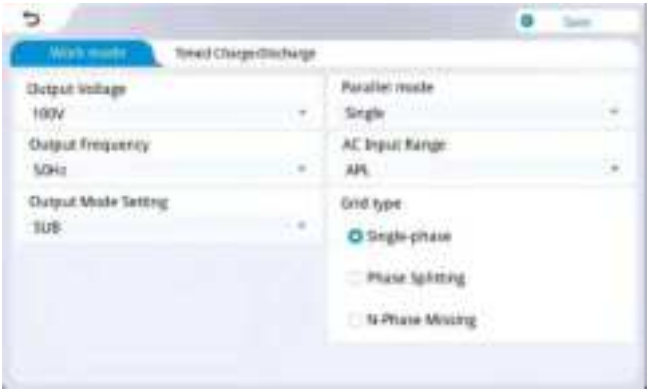
➢ **Password Settings (Change Password)**

Note: Default password 4321

Parameter Meaning	Description
New Password	Enter your custom new password.
Confirm Password	Please re-enter the new password exactly as above to verify the accuracy of the password setting.

5.3.2 Operation Mode Settings

➢ **Working Mode**



1. UPS Load: Connected to the LOAD port of the machine.
2. Home Load: Refers to the load connected to the machine's GRID port, which requires external CT or energy meter for use. (Otherwise, the power of the Home load cannot be detected.)

Parameter Meaning	Option	Description
Output Voltage	Settable: 100V,105V,110V,115V,120V,127V	
Output Frequency	50Hz	In grid mode the AC output frequency will adapt to the grid frequency, otherwise the output will follow the preset values.
	60Hz	
AC Output Mode	UTI	Photovoltaic priority for load operation. When PV output is insufficient, utility power and PV operate in hybrid mode. When PV energy sufficiently powers the load, excess energy charges the battery. Utility power only begins charging when the battery is over-discharged. The battery discharges only during off-grid operation.
	SBU	Inverter Priority. PV power is used as the primary source to supply the load. The system switches to utility power only when the battery voltage drops

		below the configured set value. When the battery voltage rises above the set value, the load is switched back from utility power to battery.
	SOL	Photovoltaic Priority Mode: Switches to utility power when PV is unavailable or battery voltage falls below the set value.
	SUB (Default)	Photovoltaic Priority Charging: When PV output is insufficient, utility power and PV provide combined charging while utility power supplies the load. When PV meets charging requirements but not load demands, both PV and utility power supply the load. The battery discharges only during off-grid operation.
Parallel Mode	Single Unit	Single - Unit Operation
	Parallel Units	Parallel Operation
	2P0/2P1/2P2	Two-Phase Split-Phase Parallel Operation All machine screens connected to P1 must be set to “2P0”; Assuming the set output voltage is 120Vac 1) When all machine screens connected to P2 are set to “2P1”, the voltage phase difference between P1 and P2 is phase difference of 120 degrees. The voltage between P1 phase live wire L1 and P2 phase live wire L2 is 120*1.732=208Vac; the voltage between L1-N and L2-N is 120Vac. 2) When all machine screens connected to P2 are set to “2P2”, the voltage phase between P1 and P2 differs by 180 degrees. The voltage between the live wire L1 of phase P1 and the live wire L2 of phase P2 is 120*2=240Vac; the voltage between L1-N and L2-N is 120Vac.

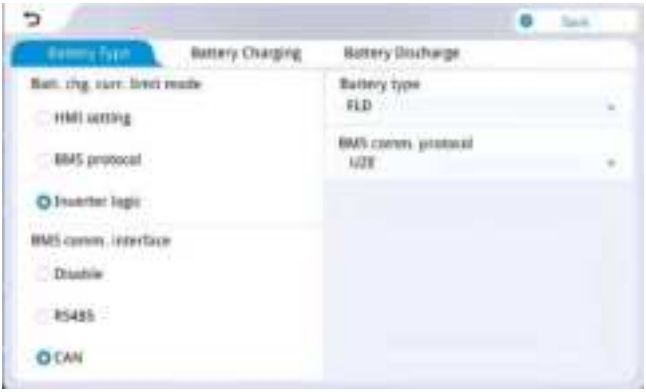
	3P1/3P2/3P3	Three-Phase Parallel Operation All machine screens connected to P1 must be set to “3P1”; all connected to P2 to ‘3P2’; all connected to P3 to “3P3”. Assuming the set output voltage is 120Vac: At this point, the voltage phases between (P1-P2, P1-P3, P2-P3) have a 120-degree phase difference. The voltage between phase L1 (P1) and phase L2 (P2) is 120*1.732=208Vac. Similarly, L1-L3, L2-L3 are 208Vac; the voltages between L1-N, L2-N, and L3-N are 120Vac.
AC Input Voltage Range	UPS (Default)	Input voltage range is 90~140V.
	APL	Input voltage range is 85~140V.
Grid Types	Single-phase system: 0°	
	Split-phase system: 180°	
	System without neutral conductor.	

➢ **Peak Shaving**

Parameter Meaning	Description
Timed charging enable	Select whether to enable scheduled charging.
Timed discharging enable	Select whether to enable scheduled discharging.
Start/End Time	Set the time period for scheduled charging/discharging.

5.3.3 Battery Settings

➢ **Battery Type**



Parameter Meaning	Option	Description
Batt. chg. curr. limit mode (Effective for BMS communication)	HMI setting	Maximum battery charging current is limited according to the inverter battery charging current setting value.
	BMS protocol	Maximum battery charging current is limited by the current limit value of the BMS.
	Inverter logic	Maximum battery charging current is limited by the machine's derating logic.
BMS comm. interface	Disable	BMS communication disabled.
	RS485	BMS RS485 communication.
	CAN	BMS CAN communication.
Battery Type	USER define	User-configurable settings for all battery parameters
	SLD	Sealed Lead Acid Battery
	FLD	Flooded Lead Acid Battery
	GEL	Gel Lead Acid Battery
	L14/L15/L16	Lithium Iron Phosphate Battery L14/L15/L16, corresponding to 14-cell, 15-cell, and 16-cell

		lithium iron phosphate batteries.
	N13/N14	Ternary Lithium Battery, N13/N14, corresponding to 13-cell and 14-cell ternary lithium batteries.
	No battery	No battery connected.
BMS Communication Protocol	When the BMS interface is set to 485 or CAN, the corresponding lithium battery manufacturer brand must be selected for communication:	
	RS485	0：PACE 1：RUDA 2：AOGUAN 3：OUTLITE 4：CEF 5：XINWANGDA 6：DAQIN 7：WOW 8：PYL 9：MIT 10：XIX 11：POL 12：GUOX 13：SMK 14：VOL 15：WES 100：SGP 101：GSL 102：PYT
	CAN	17：UZE 18：PYL_CAN 100：SGP 101：GSL
	Note: Actual display on the screen prevails.	

➢ **Battery Charging**

Parameter Meaning	Description
Max. chg. curr. by Grid	Set the maximum charging current from the grid to the battery. (Note: This value refers to the battery-side current, not the grid-side current, and does not apply to scheduled charging.)
Max. chg. current	Set the maximum charging current during the constant current phase of battery charging.
Max. chg. voltage	Sets the maximum charging voltage during the battery's constant-voltage charging phase.
Batt. curr. stop chg.	During the constant voltage charging phase, charging will cease when the charging current falls below this value. (Effective when BMS communication is not performed or BMS communication fails).
Batt. SOC stop chg.	When the SOC reaches the specified value, battery stops charging. (Valid when BMS communication is normal).
Batt. Recharging voltage	After the battery is fully charged, the inverter stops charging. Charging resumes when the battery voltage drops below this value. (This setting is effective when BMS communication is not established or has failed.) Note: After the battery is fully charged, the inverter stops charging. Charging will resume when the battery SOC drops below

	this value. (Fixed at Battery Charging Stop SOC - 5%, non-modifiable, effective when BMS communication is normal)	
Charging Mode	Hybrid Mode	Both solar power and utility power charge the battery simultaneously, prioritizing solar charging. When solar power is insufficient, utility power supplements the charge. Simultaneous charging from solar and utility power is only possible in bypass mode. During inverter operation, only solar charging is activated.
	PV Only	Only photovoltaic charging is enabled; utility charging is disabled.

➢ **Battery Discharging**

Parameter Meaning	Description
Batt. under volt. alarm	When the battery voltage is lower than this value, the inverter will report an under-voltage alarm (Notify the user that the battery is about to stop discharging), but the battery will not stop discharging. (Effective when BMS communication is not established or fails.)
Batt. under capacity alarm	SOC value up to this setting will alarm. The inverter output will not shut down and the fault disappears if the SOC value exceeds 5% of the set value. (Valid when BMS communication is normal)
Batt. volt. low recovery	When the battery report voltage low fault, the battery voltage reach this setting, the fault will be cleared.
Batt. SOC low fault	When the battery SOC is lower than this value, the inverter will report a low battery SOC fault and stop discharging. (Effective when BMS communication is normal.)
Batt. voltage low fault	When the battery voltage is lower than this value and after the "Discharge Stop Delay Time" elapses, the inverter will report a low battery voltage fault and stop discharging.
Batt. volt. low delay	Battery stop discharge delay time.
The following settings are only effective in hybrid grid operation mode:	
Batt. volt. stop dischg.	Discharging stops when the battery voltage is lower than this

in hybrid	value. (Effective when BMS communication is not established or fails.)
Batt. SOC stop dischg. in hybrid	Discharging stops when the battery SOC is lower than this value. (Effective when BMS communication is normal.)
Batt. volt. restart dischg.	The inverter stops discharging after low battery voltage, and resumes discharging when the battery voltage rises above this value. (Effective when BMS communication is not established or fails.)
Batt. SOC restart dischg.	The inverter stops discharging after low battery capacity, and resumes discharging when the battery SOC rises above this value. (Effective when BMS communication is normal.)

5.3.4 Advanced Settings

➢ **Other Page**

Parameter Meaning	Description
PE-N connect enable	Enables automatic switching of PE-N connection.
Power saving mode	After enabling power saving mode ① When load power is less than 25W, inverter output will shut off after 5 minutes; ② When load power exceeds 40W, inverter output will immediately restart.

➢ **Restart Inverter**

Parameter Meaning	Description
Restore to factory	Reset all inverter settings.
Restart inverter	Restart the inverter.

5.3.5 WIFI Settings

Important Note: In the current version, the WIFI function is only used for screen program upgrade.

➢ **Search and Select Network**

Click the [Refresh] button, select the target network name from the hotspot list, and click to enter the password input interface.

Parameter Meaning	Description
Refresh	Refresh the WIFI network to obtain WIFI hotspots.
Update LCD Firmware	Update the LCD display firmware. Note: The display must be connected to a 2.4 GHz Wi-Fi network.

➢ **Enter and Verify Password**

Enter the WIFI network password (supporting numbers and letters) in the password input field; click [Connect] to confirm and establish the connection.

Parameter Meaning	Description
Cancel	Exit the password data interface
Connect	Connect to the WIFI network.

5.4 Time-slot Charging/Discharging Function

The POW-SunSmart series is equipped with time-of-use charging and discharging functions, allowing users to set different charging and discharging periods according to the local peak-valley electricity prices, thereby making rational use of municipal electricity and photovoltaic power. When the price of municipal electricity is high, the battery inverter is used to power the loads; when the price of municipal electricity is low, the municipal electricity is used to power the loads and charge the battery. This helps users save electricity costs to the greatest extent.

The following examples are provided to help users understand its functions.

NOTICE

Before using this function for the first time, please set the local time and date, and then users can set the corresponding time slots according to the local peak and valley tariff charges.

Peak-Valley Electricity Tariff

Time-slot Utility Charging/Loading Function

With 3 definable periods, users can freely set the mains charge/loading period in the range of 00:00–23:59. During the user-set periods, solar energy will be prioritized if available. In the absence or insufficiency of solar energy output within the set periods, grid power will be used as a backup.

Time-slot Battery Discharging Function

With 3 definable periods, users can freely set the battery discharge period in the range of 00:00–23:59. During the period set by the user, the inverter will first use the battery inverter to load; if the battery power is insufficient, the inverter will automatically switch to mains to ensure stable operation of the load.

5.5 Battery Parameters

- **Lead-acid battery**

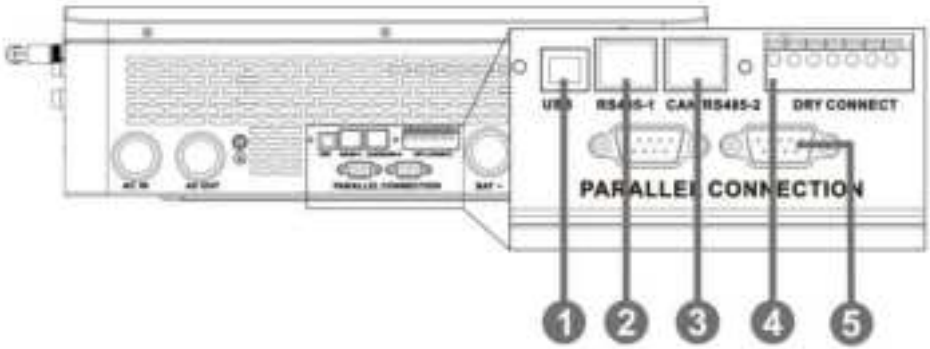
Parameter \ Battery type	Sealed	Gel	Flooded	User-defined
	SLd	GEL	FLd	USE
Overvoltage disconnect voltage	60V	60V	60V	60V
Equalizing charge voltage	58V	56.8V	58V	40~60V settable
Boost charge voltage	57.6V	56.8V	57.6V	40~60V settable
Floating charge voltage	55.2V	55.2V	55.2V	40~60V settable
Under-voltage alarm voltage	44V	44V	44V	40~60V settable
Under-voltage disconnect voltage	42V	42V	42V	40~60V settable
Discharge limit voltagee	40V	40V	40V	40~60V settable
Over-discharge delay time	5s	5s	5s	1~30s settable
Equalizing charge duration	120min	-	120min	0~900 min settable
Equalizing charge cycle	30days	-	30days	0~250 days settable
Boost charge cycle	120min	120min	120min	10~900min settable

- **Li-ion battery**

Parameter \ Battery type	Ternary Li-ion		LFP			User-defined
	N13	N14	L16	L15	L14	USER
Overvoltage disconnect voltage	60V	60V	60V	60V	60V	60V
Equalizing charge voltag	-	-	-	-	-	40~60V settable
Boost charge voltage	53.2V	57.6V	56.8V	53.2V	49.2V	40~60V settable
Floating charge voltage	53.2V	57.6V	56.8V	53.2V	49.2V	40~60V settable
Under-voltage alarm voltage	43.6V	46.8V	49.6V	46.4V	43.2V	40~60V settable
Under-voltage disconnect voltage	38.8V	42V	48.8V	45.6V	42V	40~60V settable
Discharge limit voltage	36.4V	39.2V	46.4V	43.6V	40.8V	40~60V settable
Over-discharge delay time	30s	30s	30s	30s	30s	1~30s settable
Equalizing charge duration	-	-	-	-	-	0~900min settable
Equalizing charge cycle	-	-	-	-	-	0~250d settable
Boost charge cycle	120min settable	120min settable	120min settable	120min settable	120min settable	10~900min settable

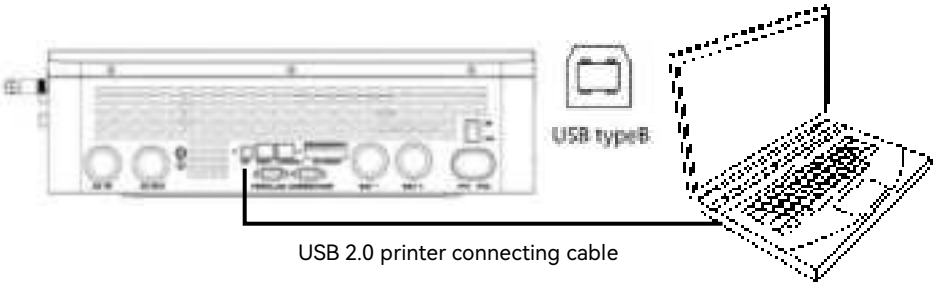
6 Communication

6.1 Overview



1	USB-B port	2	RS485-1	3	CAN/RS485-2 port
4	Dry contact port	5	Parallel port		

6.2 USB-B port

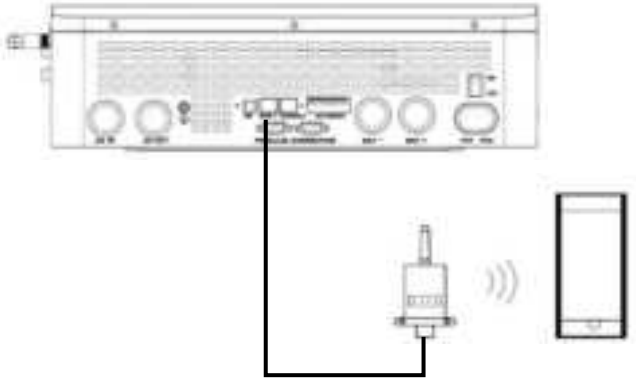


USB 2.0 printer connecting cable

Users can use the upper computer software through the port to read and modify device parameters. If needing the installation package for the upper computer software, you can contact us to get it.

6.3 WIFI Port

The WIFI port is used to connect to the Wi-Fi/GPRS data acquisition module, and then users can view the operation status and parameters of the inverter via the mobile 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 RS485/CAN Port

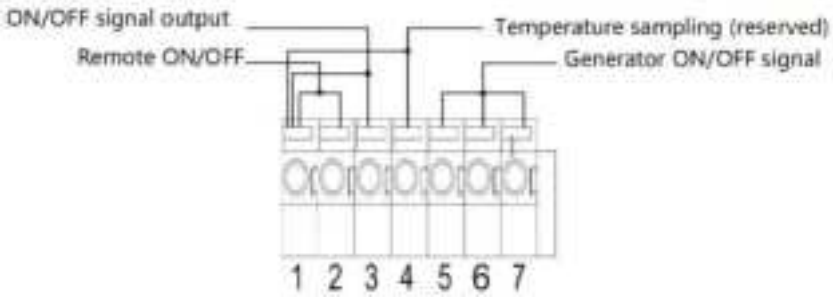
The RS485/CAN port is used to connect to the BMS of the Li-ion battery.

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

6.5 Dry Contact Port

The dry contact port has 4 functions:

1. Remote ON/OFF
2. ON/OFF signal output
3. Battery temperature sampling
4. Remote generator start/stop



Function	Description
Remote ON/OFF	When pin 1 is connected to pin 2, the inverter will turn off the AC output. When disconnected, the inverter is in normal output.
ON/OFF signal output	When the battery voltage reaches the discharge limit voltage, the voltage between pin 3 and pin 1 is 0 V. When the battery is in normal charge or discharge status, the voltage between pin 3 and pin 1 is 5 V.
Temperature sampling (reserved)	Pins 1 and 4 can be used for battery temperature sampling compensation.
Remote generator start/stop	When the battery voltage reaches the under-voltage alarm voltage or the voltage threshold for mains to switch to the battery, pins 6 to 5 are normally open, and pins 7 to 5 are normally closed. When the battery voltage reaches the voltage threshold for the battery to switch to mains, or the battery is fully charged, pins 6

	to 5 are normally closed, and pins 7 to 5 are normally open. (5/6/7 pin output: 125 VAC/1 A, 230 VAC/1 A, and 30 VDC/1 A)

NOTICE

- If you need to use the remote start/stop function of the generator with dry contact, please ensure that the generator has an ATS and supports remote start/stop.

7 Fault Codes and Response Measures

7.1 Fault Codes

Fault Code	Meaning	Affect Output or Not	Instructions
01	BatVoltLow	Yes	Battery under-voltage alarm
02	BatOverCurrSw	Yes	Overcurrent software protection for average battery discharge current
03	BatOpen	Yes	Battery disconnected alarm
04	BatLowEod	Yes	Battery under-voltage stop discharging alarm
05	BatOverCurrHw	Yes	Battery over-current hardware protection
06	BatOverVolt	Yes	Battery over-voltage protection
07	BusOverVoltHw	Yes	Busbar over-voltage hardware protection
08	BusOverVoltSw	Yes	Busbar over-voltage software protection
09	PvVoltHigh	Yes	PV input over-voltage protection
10	PvBoostOCSw	No	Boost circuit over-current software protection
11	PvBoostOCHw	No	Boost circuit over-current hardware protection
12	SpiCommErr	Yes	SPI communication fault of master and slave chips
13	OverloadBypass	Yes	Bypass overload protection
14	OverloadInverter	Yes	Inverter overload protection
15	AcOverCurrHw	Yes	Inverter over-current hardware protection
16	AuxDSpReqOffPWM	Yes	Slave chip request switch off failure

17	InvShort	Yes	Inverter short-circuit protection
18	Bussoftfailed	Yes	Busbar soft start failure
19	OverTemperMppt	No	MPPT heat sink over-temperature protection
20	OverTemperInv	Yes	Inverter heat sink over-temperature protection
21	FanFail	Yes	Fan failure
22	EEPROM	Yes	Memory failure
23	ModelNumErr	Yes	Model setting error
24	Busdiff	Yes	Positive and negative bus voltage imbalance
25	BusShort	Yes	Busbar short circuit
26	Rlyshort	Yes	Inverter AC output backward to bypass AC output
28	LinePhaseErr	Yes	Utility input phase fault
29	BusVoltLow	Yes	Busbar under-voltage protection
30	BatCapacityLow1	Yes	Alarm of battery capacity rate below 10% (taking effect after BMS communication is successful)
31	BatCapacityLow2	No	Alarm of battery capacity rate below 5% (taking effect after BMS communication is successful)
32	BatCapacityLowStop	Yes	Battery low-capacity OFF (Only enable BMS take effect)
34	CanCommFault	Yes	Parallel can communication fault
35	ParaAddrErr	Yes	Parallel ID (communication address) setting error
37	ParaShareCurrErr	Yes	Parallel current sharing fault
38	ParaBattVoltDiff	Yes	Large battery voltage difference in parallel mode

39	ParaAcSrcDiff	Yes	Inconsistent mains 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 connection fault
44	Serialnumbererror	Yes	Failure to set the serial number before leaving factory
45	Errorsettingofsplit-phasemode	Yes	Setting error of setting items in parallel mode
56	Lowinsulation resistancefault	No	Abnormally low earth impedance of PV1+ PV2+, and PV-
57	Leakagecurrent overloadfault	Yes	System current leakage out of the standard
58	BMSComErr	No	BMS communication failure
60	BMSUnderTem	No	BMS under-temperature alarm (taking effect after BMS communication is successful)
61	BMSOverTem	No	BMS over-temperature alarm (taking effect after BMS communication is successful)
62	BMSOverCur	No	BMS overcurrent alarm (taking effect after BMS communication is successful)
63	BMSUnderVolt	No	BMS under-voltage alarm (taking effect after BMS communication is successful)
64	BMSOverVolt	No	BMS overvoltage alarm (taking effect after BMS communication is successful)

7.2 Trouble Shooting

Fault Code	Meaning	Cause	Solution
/	No screen display	There is no power input, or the device switch at its bottom is not turned on.	Check if the battery air-switch or PV air-switch has been closed; check if the switch is in "ON"; press any button on the screen to exit the screen sleep mode.
01	Battery under-voltage	The battery voltage is lower than the value set in battery setting.	Charge the battery and wait until the battery voltage is higher than the value set in battery setting.
03	Disconnected battery	The battery is not connected, or the BMS of the lithium-ion battery is in the discharge protection state.	Check whether the battery is reliably connected; check whether the circuit breaker of the battery is not closed; ensure that the BMS of the Li-ion battery can communicate properly.
04	Battery over-discharge	The battery voltage is lower than the value set in battery setting.	Manual reset: Power off and restart. Automatic reset: charge the battery so that the battery voltage is higher than the value set in battery setting.
06	Rechargeable battery overvoltage protection	The battery is in the overvoltage state.	Manually power off and restart. Check to see if the battery voltage exceeds the limit. If it exceeds, the battery needs to be discharged until the voltage is below the battery's over-voltage recovery point.
13	Bypass over-load (software detection)	The output power or current of the bypass is overloaded within a certain period	Reduce the load power and restart the device. Please refer to item 11 of the protection features for more details.

14	Inverter over- load (software detection)	The output power or current of the inverter is overloaded within a certain period	
19	Heat sink of PV input over-temperature (software detection)	Heat sink of PV input temperature exceeds 90℃ for 3s.	Resume normal charge and discharge when the temperature of the heat sink has cooled to below the over-temperature recovery temperature.
20	Heat sink of inversion over-temperature (software detection)	Heat sink of inversion temperature exceeds 90℃ for 3s.	
21	Fan failure	Software detection founds the fan has a fault	Shut down, manually flick the fan, and check if any foreign objects are blocking it
26	AC Input relay short- circuit	Stuck relay for AC output	Manually power off and restart; if the fault reappears after restarting, You need to contact the after-sales service to repair the machine.
28	Utility input phase fault	AC input phase does not coincide with AC output phase	Ensure that the phase of the AC input is the same as the phase of the AC output, e.g. if the output is in split-phase mode, the input must also be in split-phase.

NOTICE

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

8 Protection Function and Product Maintenance

8.1 Protection Function

No.	Protection Function	Description
1	PV current-limiting protection	When the charge current or power of the configured PV array exceeds the rated current and power of the inverter, it will charge at the rated current and power.
2	PV overvoltage protection	If the PV voltage exceeds the maximum value allowed by the hardware, the machine will report a fault and stop the PV boost to output a sinusoidal AC wave.
3	Reverse charge protection at night	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 140V, 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 90V, 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 low-voltage disconnect voltage threshold, it will automatically stop discharging the battery, thus preventing damage to the battery due to overdischarge.
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, it will immediately turn off the output of AC voltage. Only after manually powering on the device, normal output restores.
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 charge and discharge again.
11	Overload protection	After overload protection is triggered, the inverter output will be restored after 3 min, and after 5 times of overload, the output will be off until the frequency changer is restarted. (102%< load <110%): An error will be reported, and the output will be turned off after 5 min. (110%< load <125%): An error will be reported, and the output will be turned off after 10s. Load >125%: An error will be reported, and the output will be turned 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 wiring error protection	When the phase of the two bypass inputs is different from that of the inverter split-phase, the machine will prohibit connecting to the bypass, thus preventing the power failure or short circuit of load when connecting to the bypass

8.2 Maintenance

To maintain optimum and long-lasting working performance, we recommend that the following items are 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/discoloration and tighten terminal screws.
5. Check for dirt, nesting insects and corrosion, clean as required , Clean the insect screen 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.

DANGER

- Before conducting any inspection or operation, please ensure that the inverter is disconnected from all power sources and that the capacitor is fully discharged to avoid the risk of electric shock.

Our company will not be held responsible for damage due to the following reasons:

1. Damage caused by improper use or use in the wrong location.
2. The open circuit voltage of the PV module exceeds the maximum allowable voltage.
3. The operating temperature exceeds the limited operating temperature range.
4. Unauthorized personnel dismantle, and repair the inverter.
5. Force majeure: damage during transportation or handling of the inverter.

9 Parameter Table

MODEL	POW-SunSmart 10KP-PRO	Settable
INVERTER OUTPUT		
Rated Output Power	10000W	
Max. Peak Power	20000VA	
Rated Output Voltage	120/240Vac (single phase/split phase)	Y
Loading Motor Capacity	6 HP	
Rated Frequency	50/60Hz	Y
Output Wave	Pure sine wave	
Switching Time	10ms (typical value)	
Parallel Number	6	
Overload Protection	After overload protection is enabled, the inverter output will be restored after 3 min, and after 5 times of overload, the output will be off until the inverter is restarted. (102%< load <110%): An error will be reported, and the output will be turned off after 5 min. (110%< load <125%): An error will be reported, and the output will be turned off after 10s. Load >125%: An error will be reported, and the output will be turned off after 5s.	
BATTERY		
Battery Type	Lithium-ion battery/lead-acid battery/user-defined battery	Y
Rated Battery Voltage	48Vdc	
Voltage Range	40-60Vdc	Y
Max. PV Charge Current	200A	Y
Max. Grid/Generator Charging Current	120A	Y
Max. Hybrid Charging Current	200A	Y
PV INPUT		
No. of MPP Trackers	2	

Max. PV array power	5500W+5500W	
Max. Input current	22A+22A	
Max. Voltage of Open Circuit	500Vdc/500Vdc	
MPPT Voltage Range	125Vdc~425Vdc/125Vdc~425Vdc	
MAINS / GENERATOR INPUT		
Input Voltage Range	90-140Vac	
Input Frequency Range	50/60Hz	
Bypass Overload Current	63A	
EFFICIENCY		
MPPT Tracking Efficiency	99.9%	
Max. Battery Inverter Efficiency	92%	
GENERAL		
Dimensions	445*652*133mm	
Weight	27kg	
Protection Level	IP20，Indoor Only	
Ambient temperature	-10~55℃, >45℃ derated	
Noise	<60dB	
Cooling Method	Intelligent Fan	
COMMUNICATION		
Built-in interface	RS485 / CAN / USB / Dry contact	Y
External Modules (Optional)	Wi-Fi / GPRS	Y
CERTIFICATION		
Safety	IEC62109-1, IEC62109-2	
EMC	EN61000-6-1, EN61000-6-3, FCC 15 class B	
RoHS	Yes	

10 Appendix: Parallel Connection

10.1 Parallel Operation

1. The parallel operation supports up to six solar storage inverters.
2. When using the parallel function, it is necessary to connect the parallel communication cable in a correct and reliable manner. See the figure blow for the communication cable (packaging accessory):

Parallel communication cable*1

10.2 Cautions for Parallel Connection

Warning:

1. PV Wiring:

In parallel connection, the PV array of each inverter must be independent, and the PV array of PV1 and PV2 for one inverter must also be independent.

2. Battery Wiring:

In single-phase or three-phase parallel connection, all solar storage inverters must be connected to the same battery, with BAT+ connected to BAT+ and BAT- to BAT-, and before power on and start-up, it is necessary to check and ensure correct connection, wiring length, and cable size, so as to avoid the abnormal operation of parallel system output caused by wrong connection.

3. AC Output Wiring:

In single-phase parallel connection, all solar storage inverters must be connected in the manner of L-to-L, N-to-N, and PE-to-PE, and before power on and start-up, it is necessary to check and ensure correct connection, wiring length, and cable size, so as to avoid the abnormal operation of parallel system output caused by wrong connection.

In three-phase parallel connection, all solar storage inverters must be connected in the manner of N-to-N and PE-to-PE. The L lines of all inverters in the same phase shall be connected together, but the AC output L lines of different phases shall not be connected together. Other cautions are the same as those for single-phase parallel connection.

4. AC Input Wiring:

In single-phase parallel connection, all solar storage inverters must be connected in the manner of L-to-L, N-to-N, and PE-to-PE, and before power on and start-up, it is necessary to check and ensure correct connection, wiring length, and cable size, 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 AC source input shall be consistent and unique.

In three-phase parallel connection, all solar storage inverters must be connected in the manner of N-to-N and PE-to-PE. The L lines of all inverters in the same phase shall be connected together, but the AC output L lines of different phases shall not be connected together. Other cautions are the same as those for single-phase parallel connection.

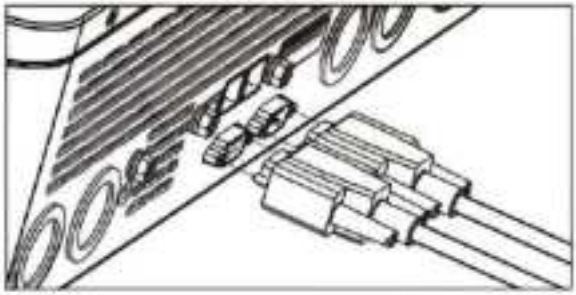
5. Communication Wiring:

Our company's communication cable for parallel operation is a DB15 standard computer cable with shielding function, and it is used for single-phase or three-phase parallel connection. Each inverter shall be connected with one out and one in, that is, the male connector (out) of the inverter is to be connected to the female connector (in) of the parallel inverter, not the one of the inverters. In addition, DB15 terminal screws will be used to tighten the communication cable of each parallel inverter to avoid falling off or poor contact of the communication cable, followed by abnormal operation or damage of the system output.

6. Before and after connecting the system, please carefully refer to the following system wiring diagrams to ensure that all wiring is correct and reliable before power on.
7. After the system is correctly 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.

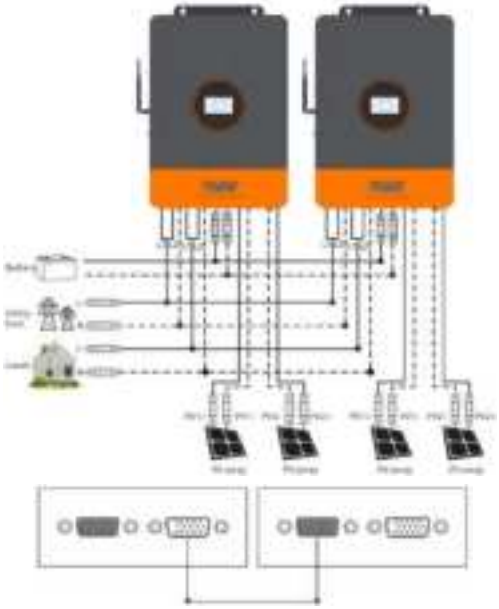
10.3 Wiring diagram for single-phase parallel connection (phase difference between L1 and L2: 0°)

- The communication cable of parallel solar storage inverter is to be locked with screws after connecting. See the diagram below:

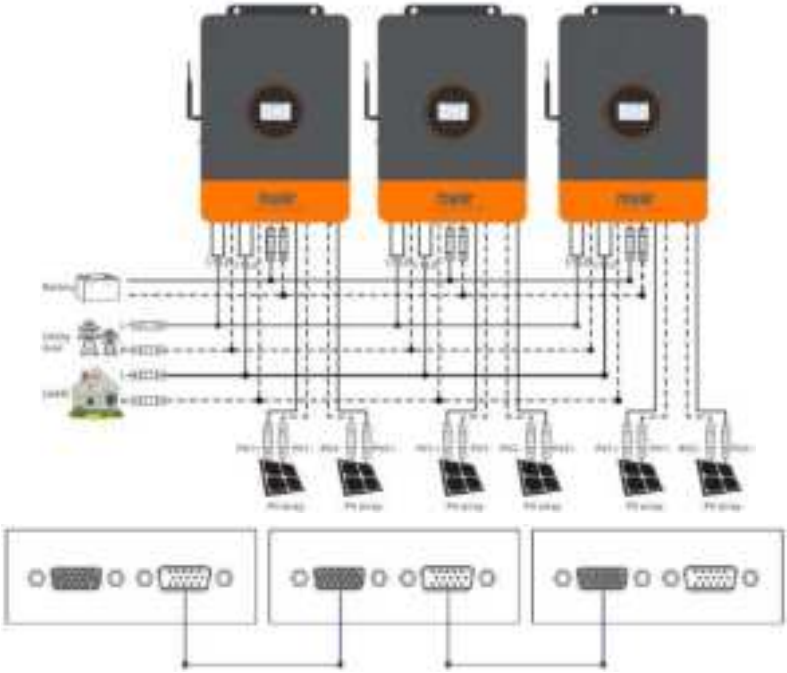


- See the diagram below for parallel connection.
  When the parallel mode is set to “PAL” and the AC output phase setting is set to “0°”, if the AC output voltage is configured to 120 V, the L–N output voltage is 120 V.

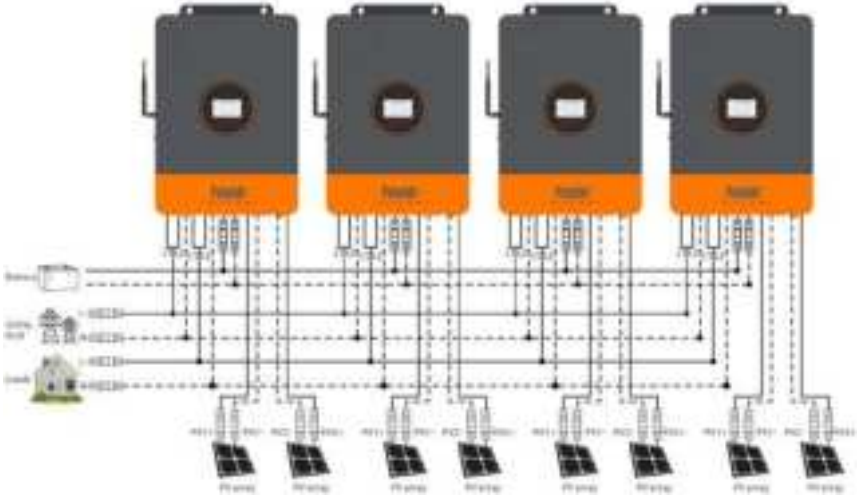
1. Two parallel-connected solar storage inverters:

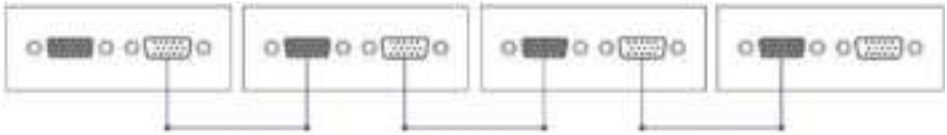


2. **Three parallel-connected solar storage inverters:**

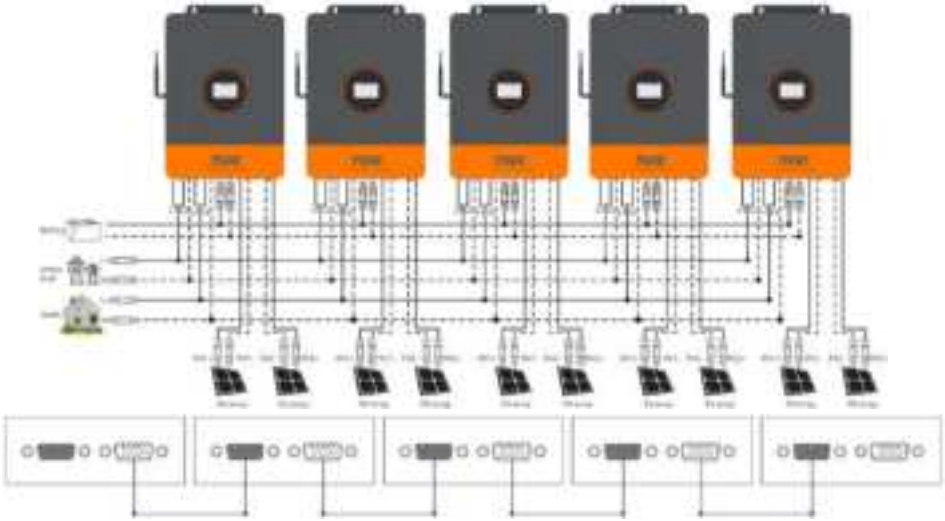


3. **Four parallel-connected solar storage inverters:**

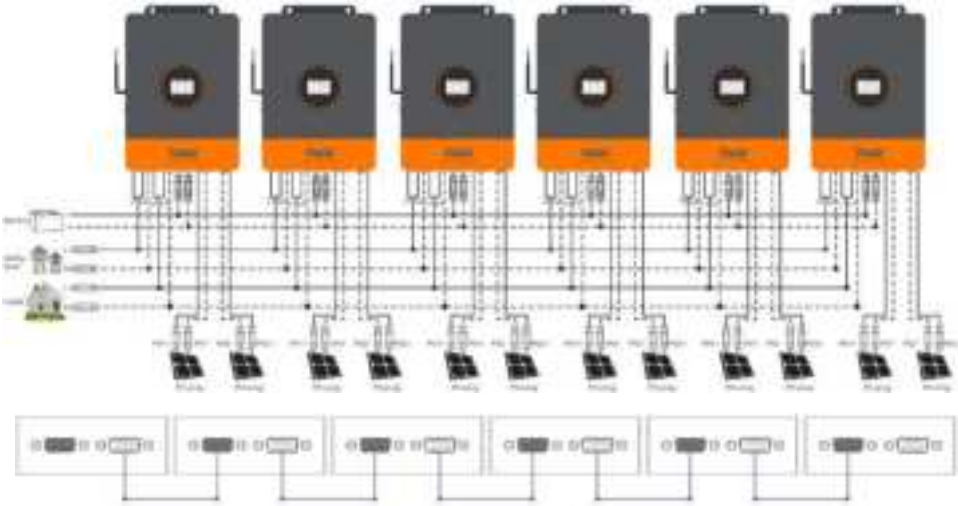




4. **Five parallel-connected solar storage inverters:**



5. **Six parallel-connected solar storage inverters:**

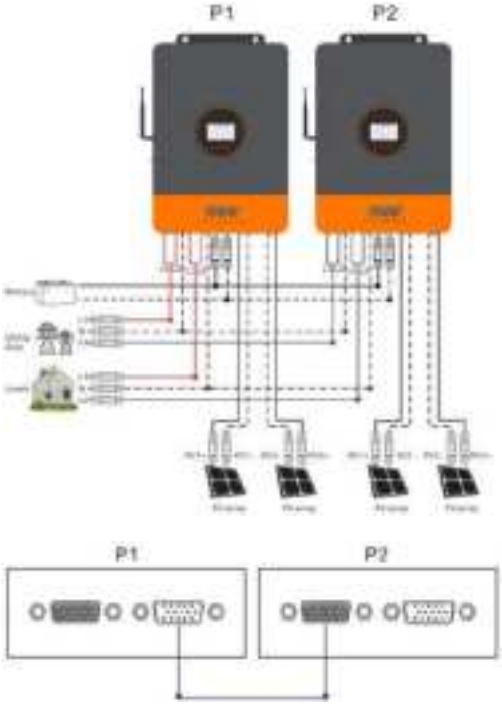


10.4 Wiring diagram for two-phase parallel connection (phase difference between L1 and L2: 0°)

1) For the P1 unit, set the parallel mode to “2P0”, and for the P2 unit, set the parallel mode to “2P1”. The AC output phase mode is fixed at “0°” by default and cannot be modified. The phase difference between P1 and P2 is 120°. When the AC output voltage is set to 120 V, the line-to-line voltage between L1 (phase of P1) and L2 (phase of P2) is 208 V, and the L1–N voltage is 120 V.
2) For the P1 unit, set the parallel mode to “2P0”, and for the P2 unit, set the parallel mode to “2P2”. The AC output phase mode remains fixed at “0°” and cannot be changed. The phase difference between P1 and P2 is 180°. When the AC output voltage is set to 120 V, the line-to-line voltage between L1 (phase of P1) and L2 (phase of P2) is 240 V, and the L1–N voltage is 120 V.

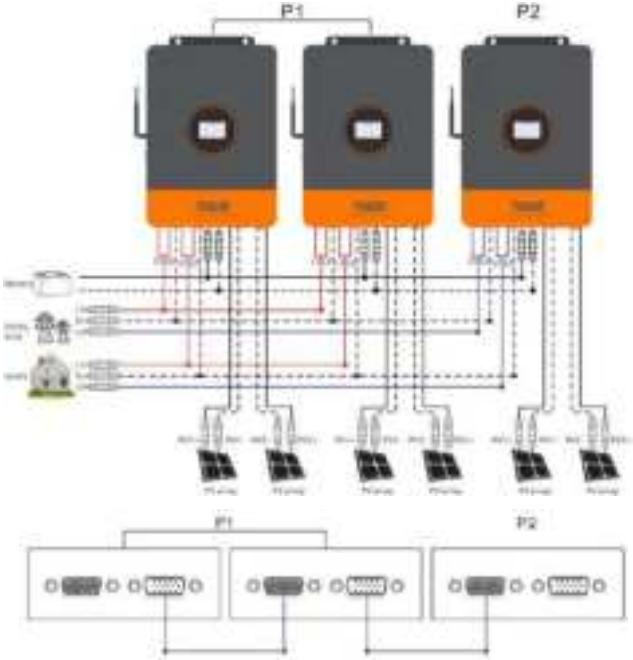
a. Split-phase system (two inverters)

1+1 system



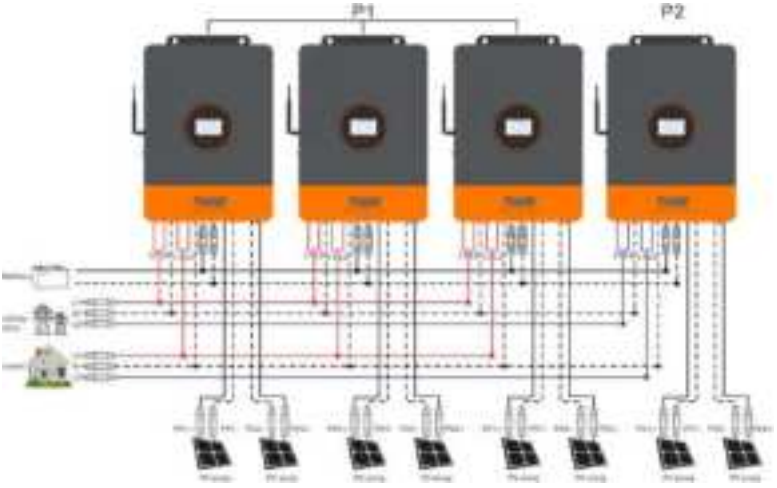
b. Split-phase system (three inverters)

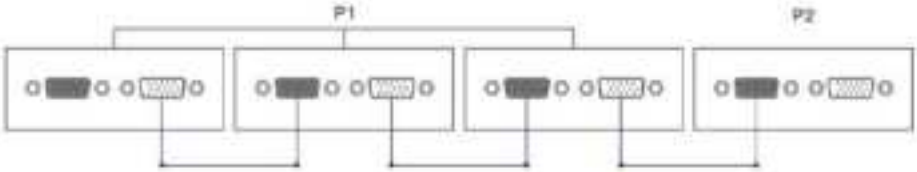
2+1 system



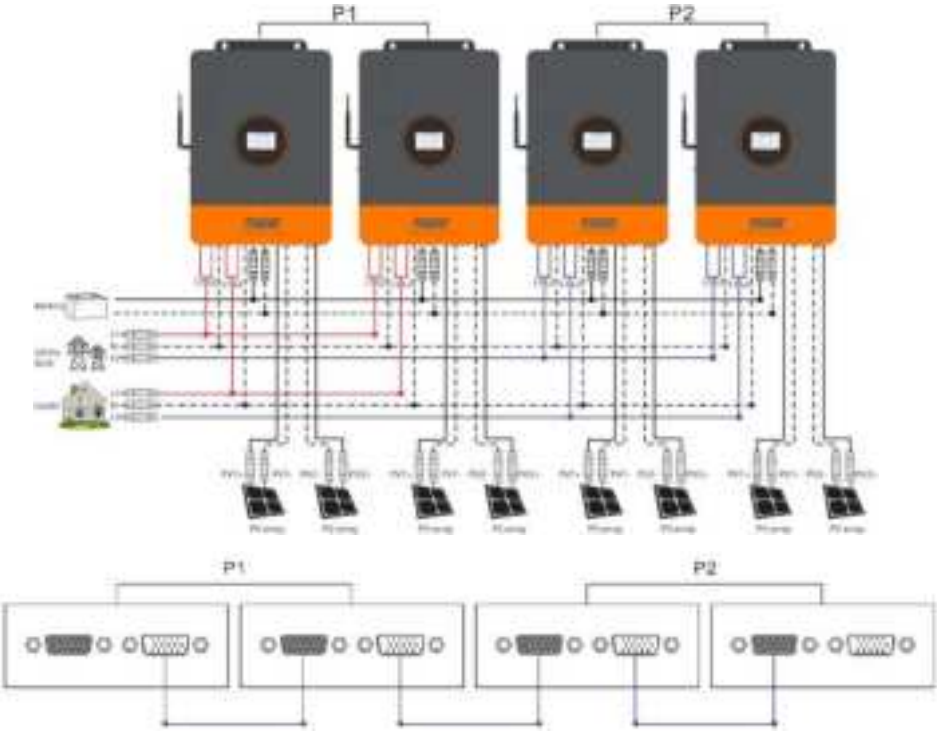
c. Split-phase system (four inverters)

3+1 system:



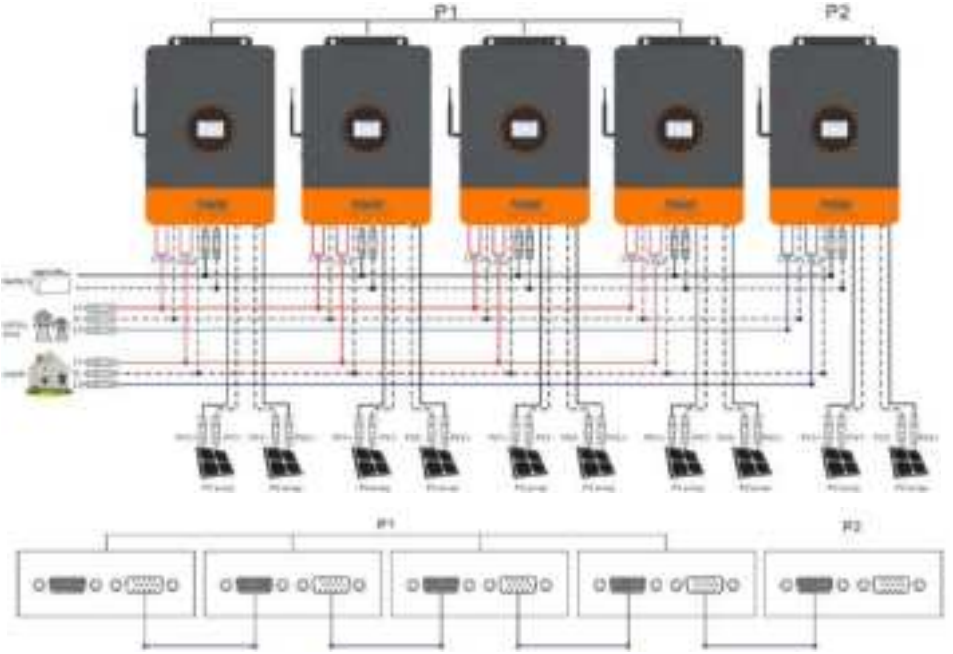


2+2 system:

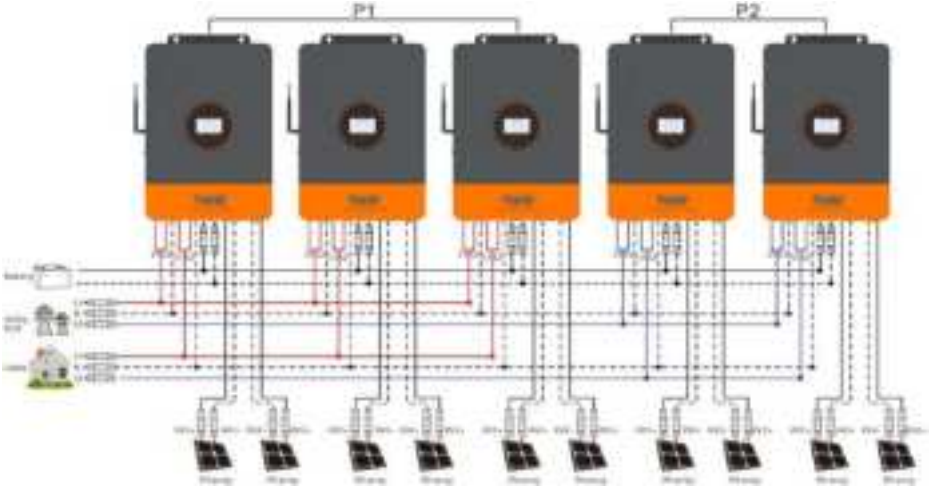


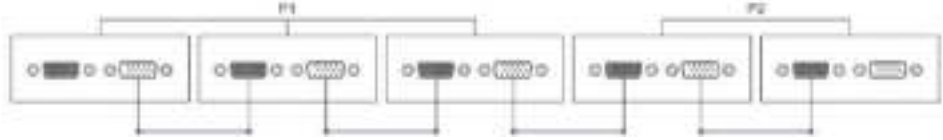
d. Split-phase system (five inverters)

4+1 system:



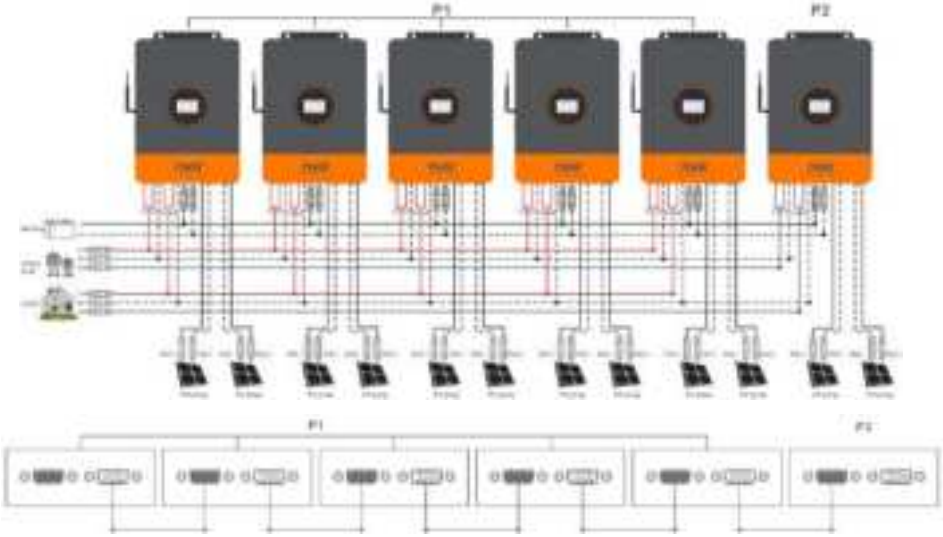
3+2 system:



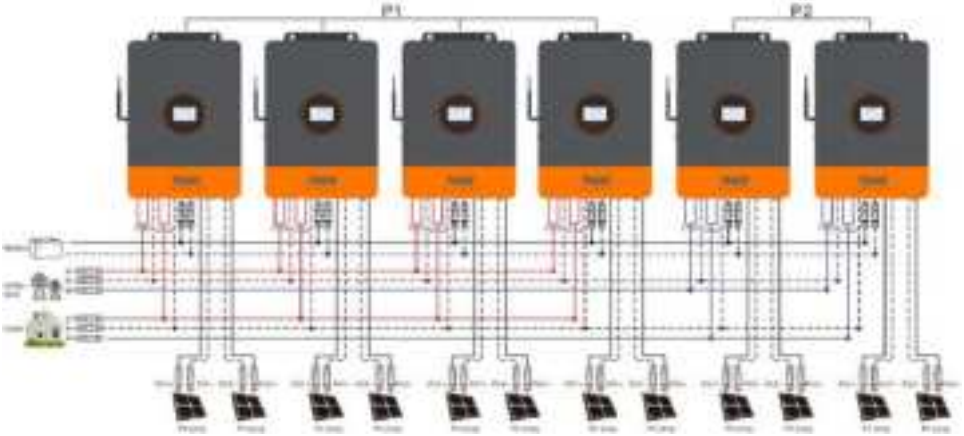


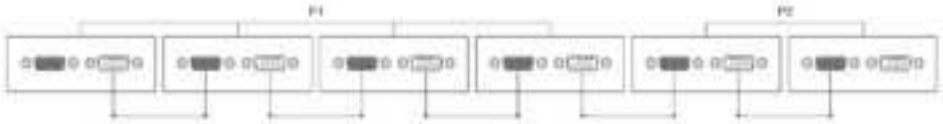
e. Split-phase system (six inverters)

5+1 system:

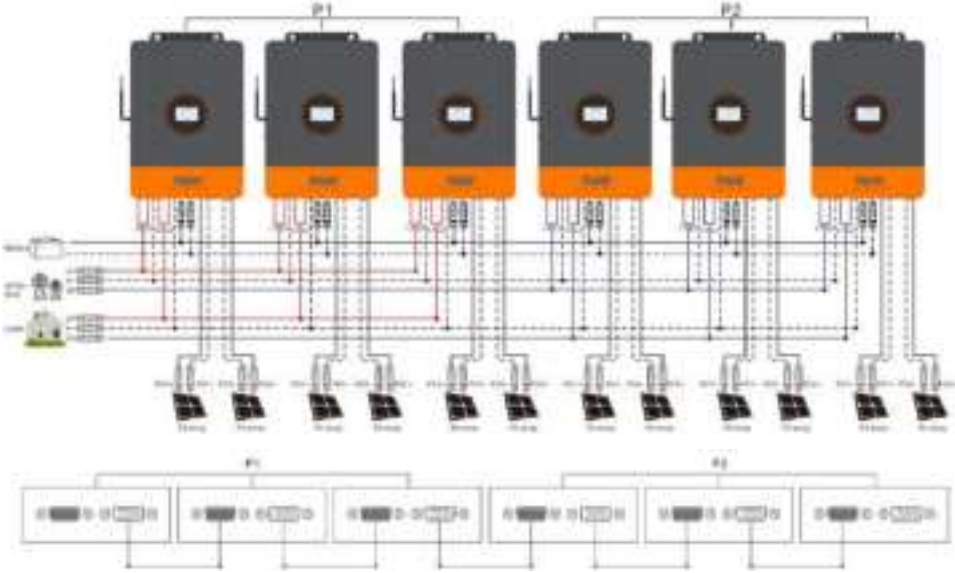


4+2 system:





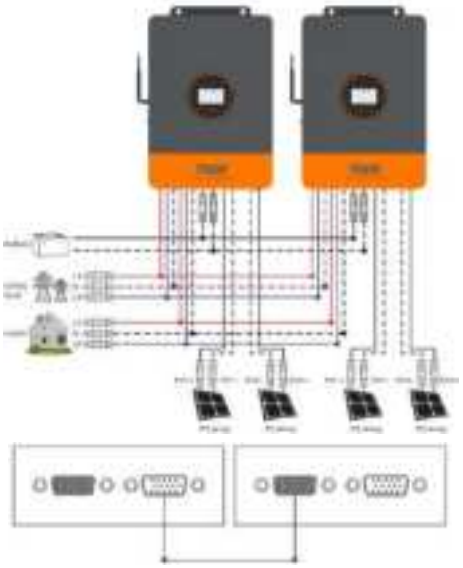
3+3 system:



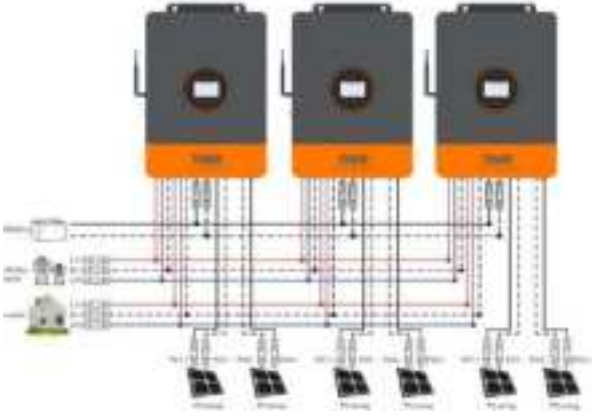
10.5 Wiring diagram for split-phase parallel connection (phase difference between L1 and L2: 180°)

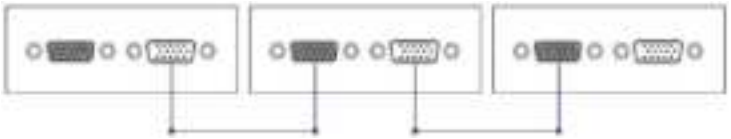
When the parallel mode is set to “PAL” and the AC output phase mode is set to 180°, if the AC output voltage is configured to 120 V, the line-to-line voltage between L1 and L2 is 240 V, and the L1–N voltage is 120 V.

a. Two parallel-connected

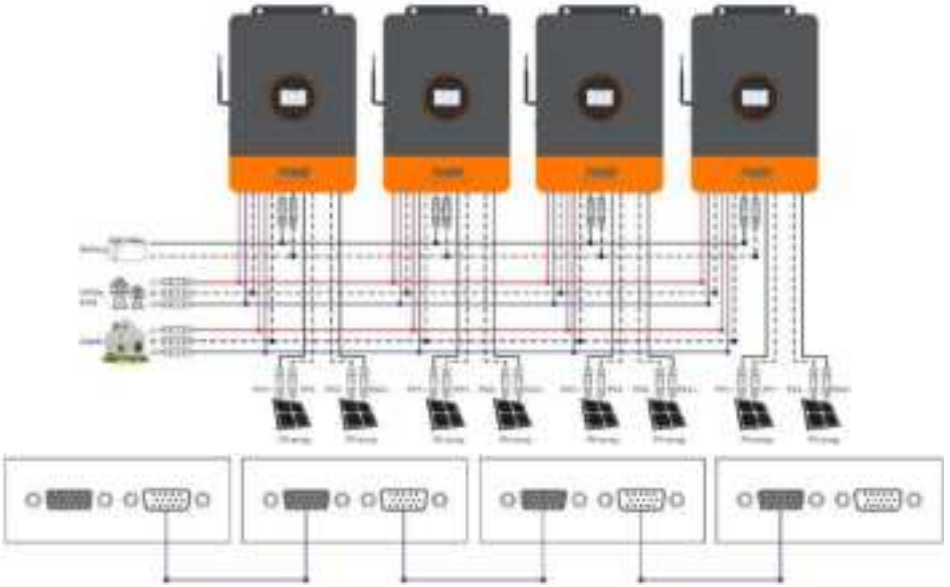


b. Three parallel-connected solar storage inverters:

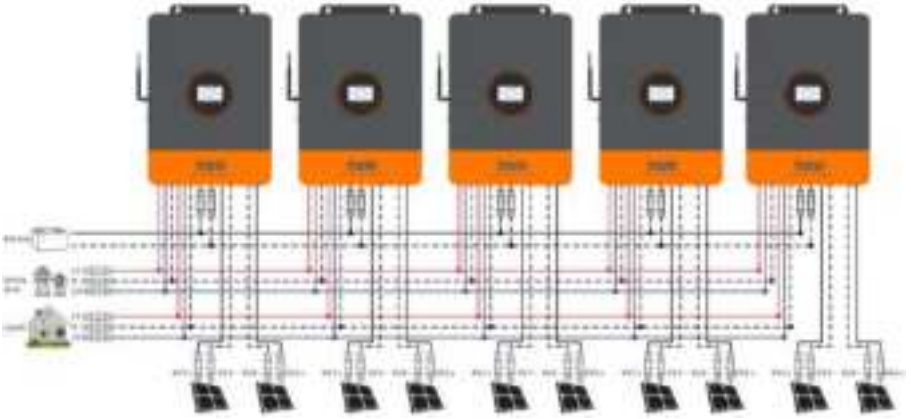




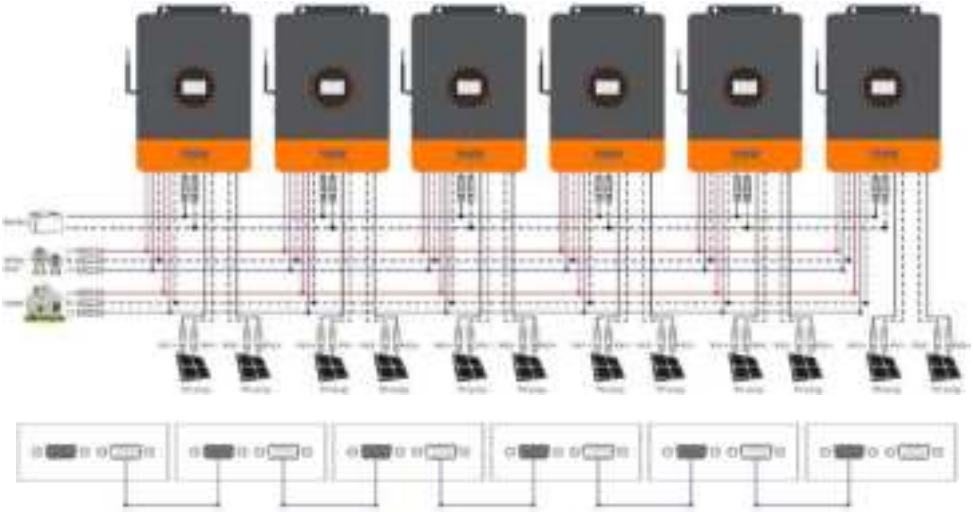
c. Four parallel-connected solar storage inverters:



d. Five parallel-connected solar storage inverters:



e. Six parallel-connected solar storage inverters:



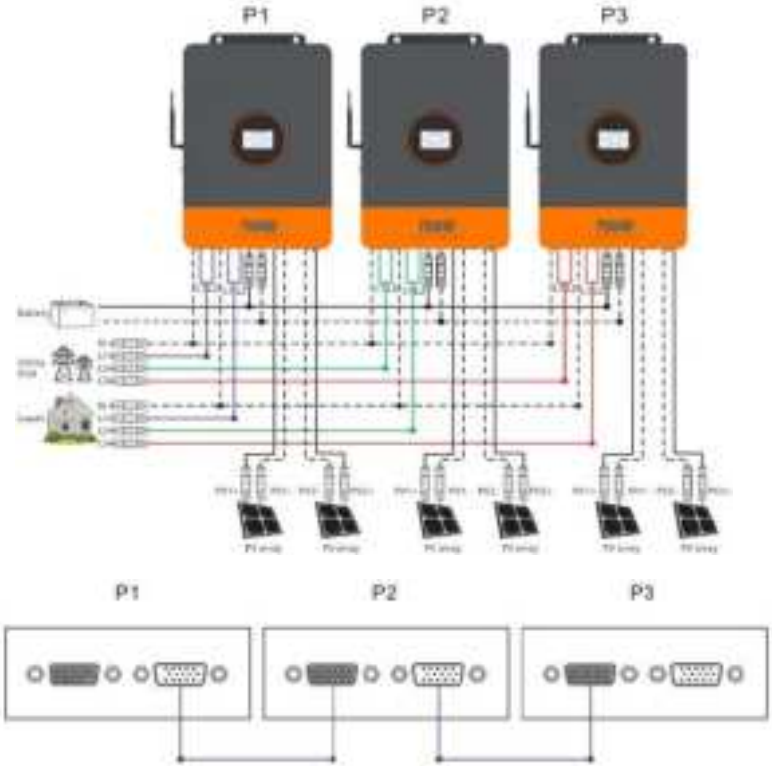
10.6 Wiring diagram for three-phase parallel connection

For the P1 unit, set the parallel mode to “3P1”; for the P2 unit, set the parallel mode to “3P2”; and for the P3 unit, set the parallel mode to “3P3”. The AC output phase mode is fixed at “0°” by default and cannot be modified.

In this configuration, the phase difference between P1–P2, P1–P3, and P2–P3 is 120°. When the AC output voltage is set to 120 Vac, the voltage between the L1 phase conductor of P1 and the L2 phase conductor of P2 is 120 × 1.732 = 208 Vac. Likewise, the line-to-line voltages between L1–L3 and L2–L3 are also 208 Vac.

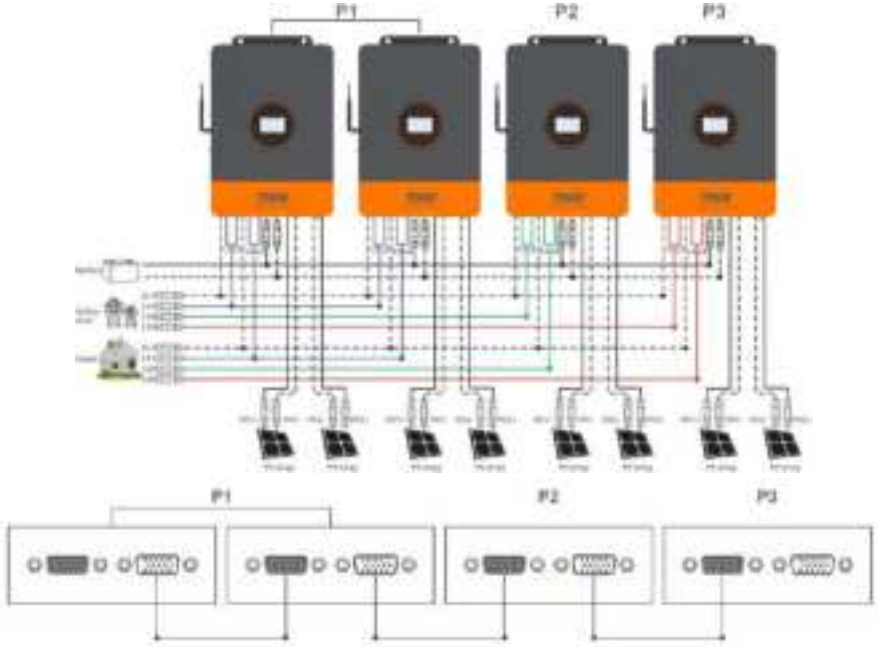
Three-phase system (three inverters)

1+1+1 system:



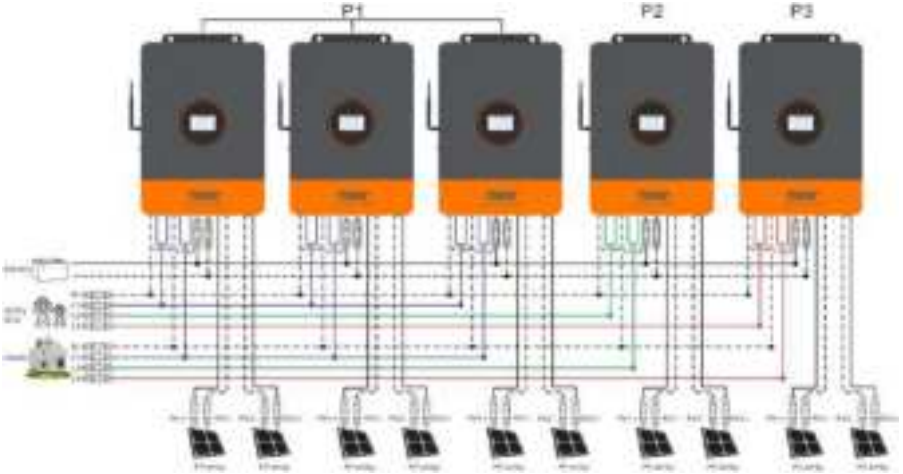
a. Three-phase system (four inverters)

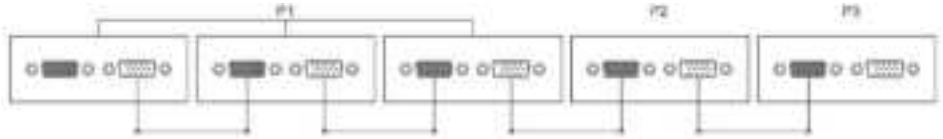
2+1+1 system:



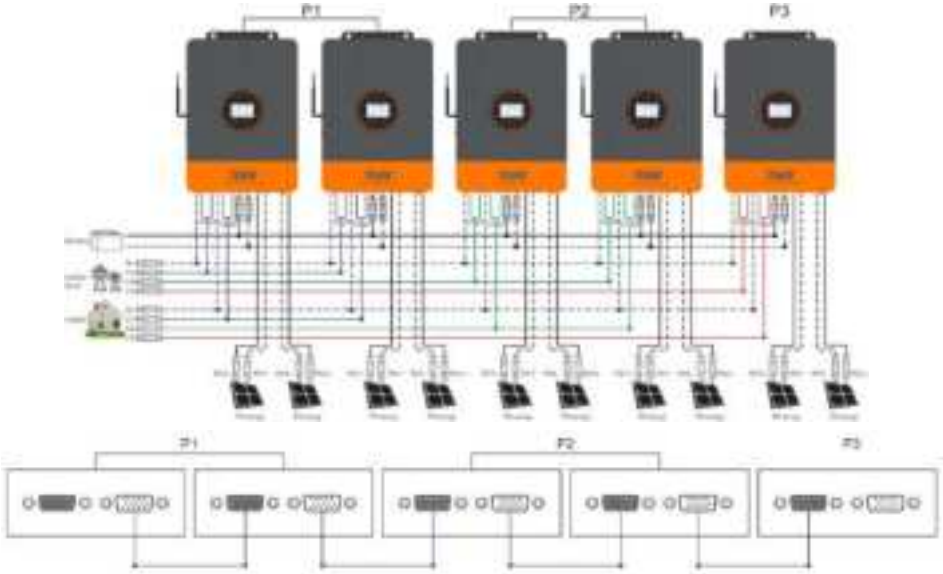
b. Three-phase system (five inverters)

3+1+1 system:



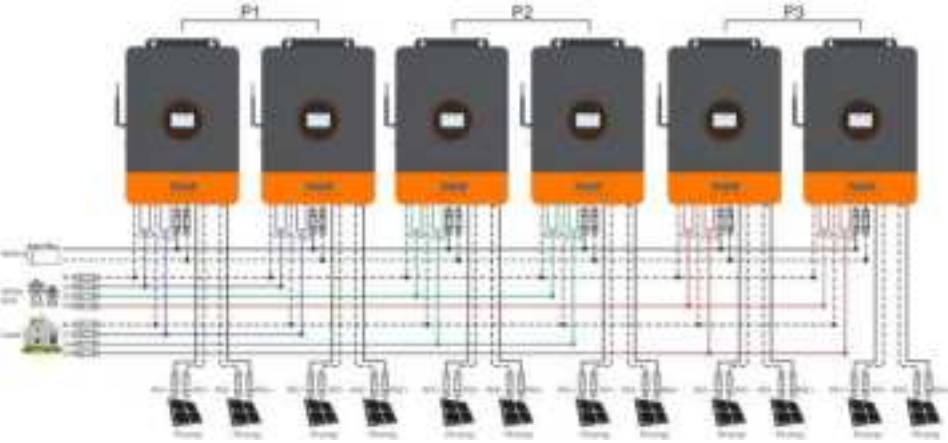


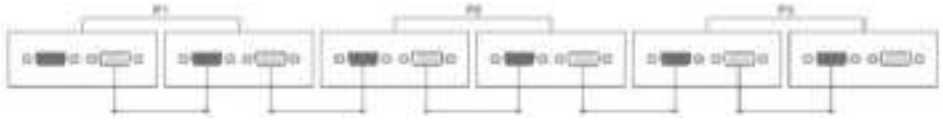
2+2+1 system:



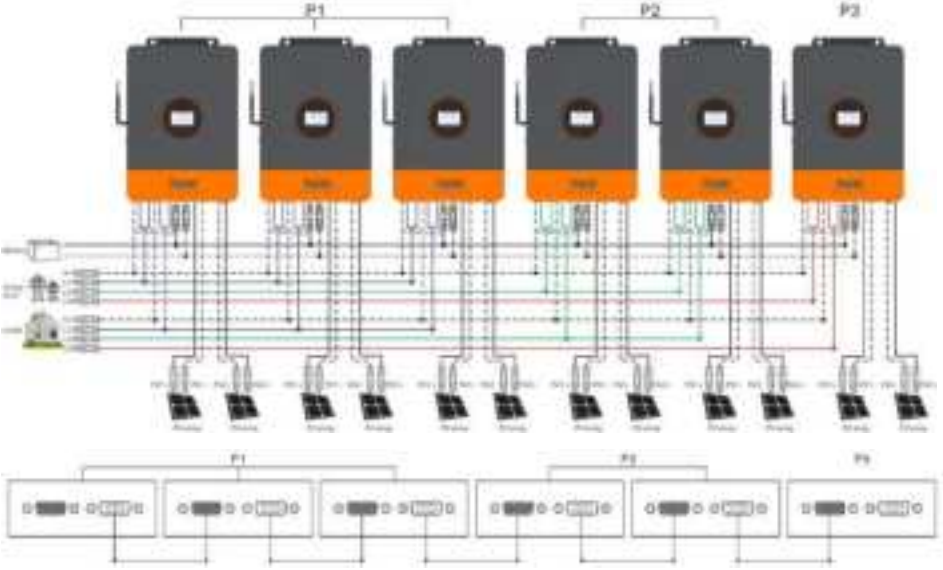
c. Three-phase system (six inverters)

2+2+2 system:

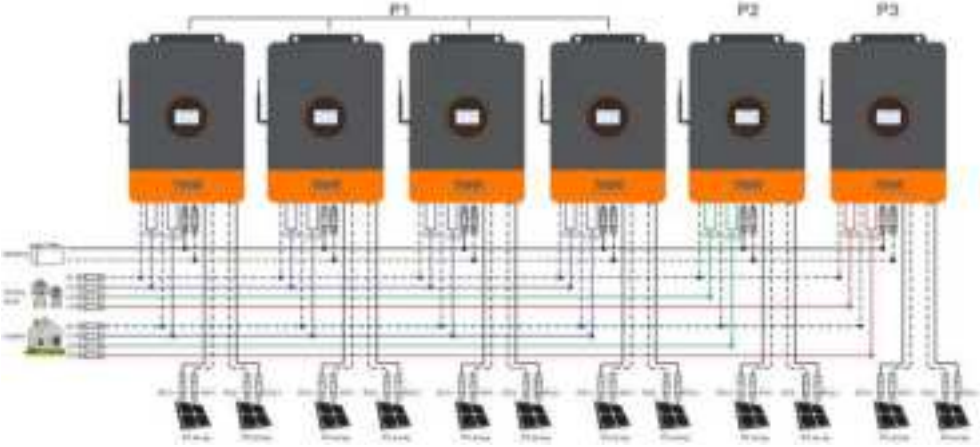


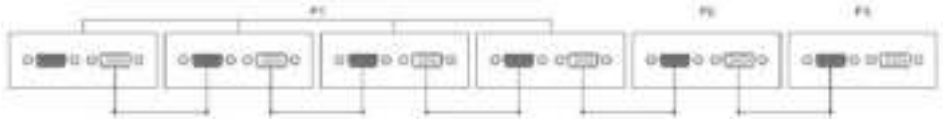


3+2+1 system:



4+1+1 system:





Note:

1. Before powering on and lighting up the screen, check for correct wiring according to the above wiring diagrams to avoid system problems.
2. Check all connections for firm fixing to avoid detachment and abnormal system operation.
3. When connecting the AC output to the load, complete wiring according to the requirements of the electrical load to avoid damage to the load.
4. Set the Output phase voltage to the same parameter, or only set it in the host inverter. During parallel operation, the voltage set in the host shall prevail, so the host inverter will forcibly set the item to the value for slave inverters. Only in standby mode can the item be set.
5. The unit is set to standalone mode by default at the factory. If parallel operation or three-phase operation is required, the parallel mode parameter must be set via the display. The setting method is as follows: each time, power on only one unit while keeping the other units turned off, then set the parallel mode parameter according to the on-site system operating mode. After the setting of the current unit is completed successfully, turn off the unit, wait until it is fully powered down, and then set the remaining units one by one. After all units have been set, power on all units simultaneously to enter normal operation.

When using single-phase parallel operation:

Set the parallel mode to “PAL” and set the AC output phase mode to “0°”. When the AC output voltage is set to “120 V”, the L–N output voltage is 120 V.

When using two-phase split-phase parallel operation:

(1) Set the parallel mode of the P1 unit to “2P0” and the parallel mode of the P2 unit to “2P1”. The phase difference between P1 and P2 is 120°. The AC output phase mode parameter is fixed at “0°” by default and cannot be changed. When the AC output voltage is set to “120 V”, the line-to-line voltage between the L1 phase of P1 and the L2 phase of P2 is 208 V, and the L1–N voltage is 120 V.

(2) Set the parallel mode of the P1 unit to “2P0” and the parallel mode of the P2 unit to “2P2”. The phase difference between P1 and P2 is 180°. When the AC output voltage is set to “120 V”, the line-to-line voltage between the L1 phase of P1 and the L2 phase of P2 is 240 V, and the L1–N

voltage is 120 V.

When using split-phase parallel operation:

Set the parallel mode to “PAL” and set the AC output phase mode to 180°. When the AC output voltage is set to “120 V”, the line-to-line voltage between L1 and L2 is 240 V, and the L1–N voltage is 120 V.

When using three-phase parallel operation:

Set the parallel mode of the P1 unit to “3P1”, the parallel mode of the P2 unit to “3P2”, and the parallel mode of the P3 unit to “3P3”. The AC output phase mode parameter is fixed at “0°” by default and cannot be changed. At this time, the phase difference between P1–P2, P1–P3, and P2–P3 is 120°. When the AC output voltage setting is 120 Vac, the voltage between the L1 phase of P1 and the L2 phase of P2 is 120 × 1.732 = 208 Vac; similarly, the line-to-line voltages between L1–L3 and L2–L3 are also 208 Vac.

6. After the system runs, measure the correct output voltage before connecting to loads.

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