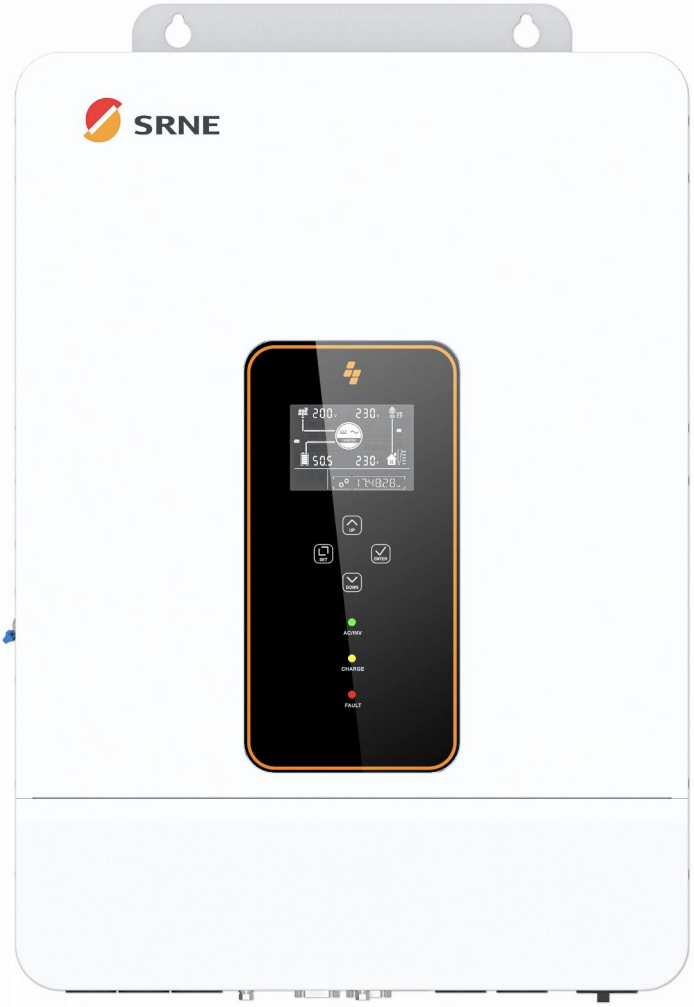
SRNE

User Manual



All-in-One Solar Charge Inverter

ASP48120S200-Pro

Ver. : V01 2025-12-08

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1. Safety Precautions

1.1 How to Use This Instruction Manual

This manual contains important information, guidelines, operation and maintenance for the following products: ASP48120S200-Pro.
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.

1.2 Safety signs

DANGER	DANGER: Indicates a hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	WARNING: Indicates a hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	CAUTION: Indicates a hazardous situation which, if not avoided, may result in minor or moderate injury.
NOTICE	NOTICE: Provides tips or cues regarding product operation.

1.3 Safety Instructions

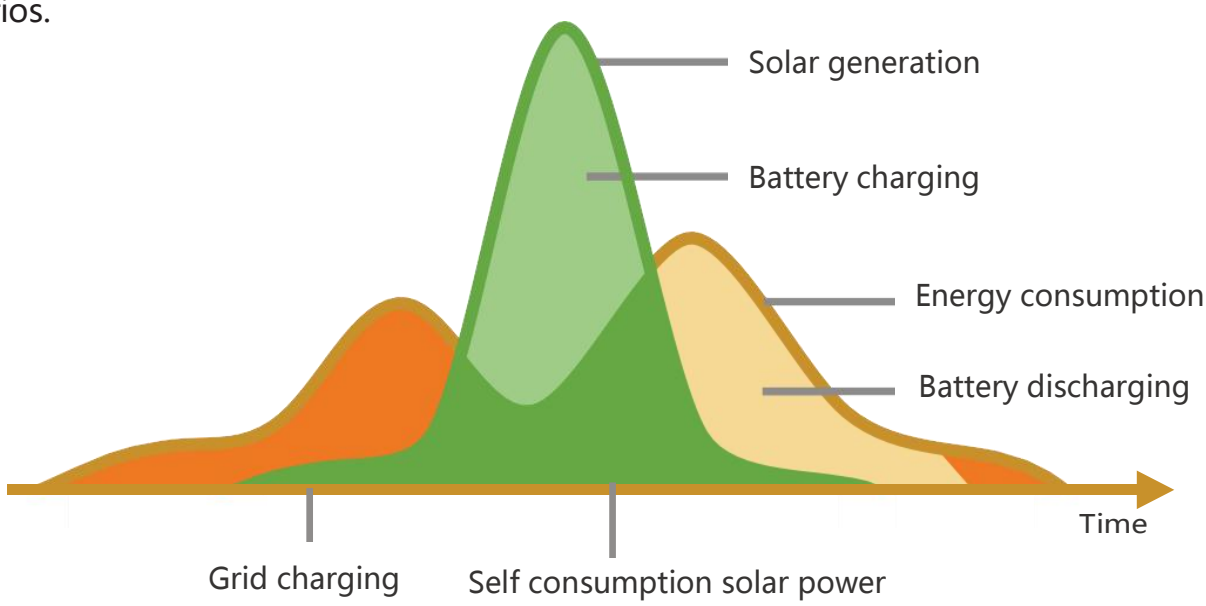
WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

- 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 optimum operation of this inverter, please follow required specification to select appropriate cable size and necessary protective device.
- Do not connect or disconnect any connections when the inverter is working.
- Do not open the terminal cover when the inverter working.
- Make sure the inverter is well grounding.
- Never cause AC output and DC input short circuited.
- Do not disassembly this unit, for all repair and maintenance, please take it to the professional service center.
- Never charge a frozen battery.
- Please keep children away from touching or mishandling the inverter.
- Please make sure that this inverter is the only input power source for the load, do not use it in parallel with other input AC power sources to avoid damage.Ensure this inverter is the sole input power source for the load. Do not parallel it with other AC input power sources to avoid damage.

2. Product Introduction

2.1 Product Description

ASP series is a new type of solar storage inverter that integrates PV storage, mains charge, and energy storage and outputs sinusoidal AC. Equipped with DSP control and advanced control algorithm, it has high response speed and good reliability, and applies to industrial scenarios.



2.2 Features

- Supports lead acid battery and li-ion battery connections.
- 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.
- Supports single-phase parallel and parallel three-phase pure sine wave output.
- Stand-alone or parallel systems support 200, 208, 220, 230 and 240Vac voltage levels
- Supports two solar inputs and simultaneous tracking of two solar maximum power charging/carrying capacity functions.
- Dual MPPT with 99.9% efficiency and maximum 22A current in a single circuit, perfectly adapted to high power modules.
- Provide 2 charge modes: only PV and mains + PV.
- Time-slot charging and discharging setting function is available in both off-grid and hybrid grid-connected modes.
- Stand-alone energy saving mode function to reduce no-load energy losses.
- With two output modes of utility bypass and inverter output, with uninterrupted power supply function.
- LCD large screen dynamic flow diagram design, easy to understand the system data and operation status.

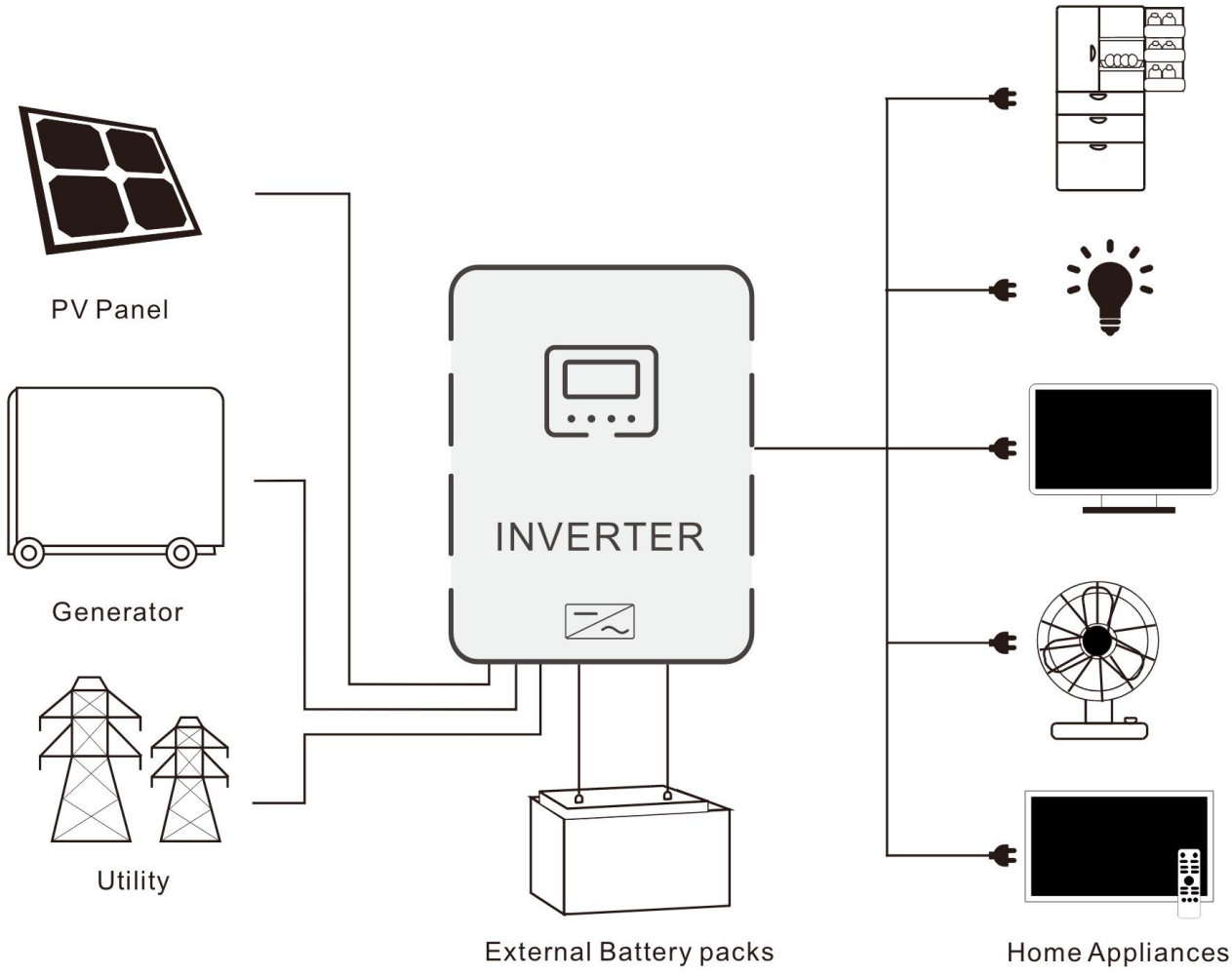
- 360° protection with complete short circuit protection, over current protection, over under voltage protection, overload protection, etc.
- Support CAN, USB, and RS485 communication.
- With N grounding option.

2.3 System Connection Diagram

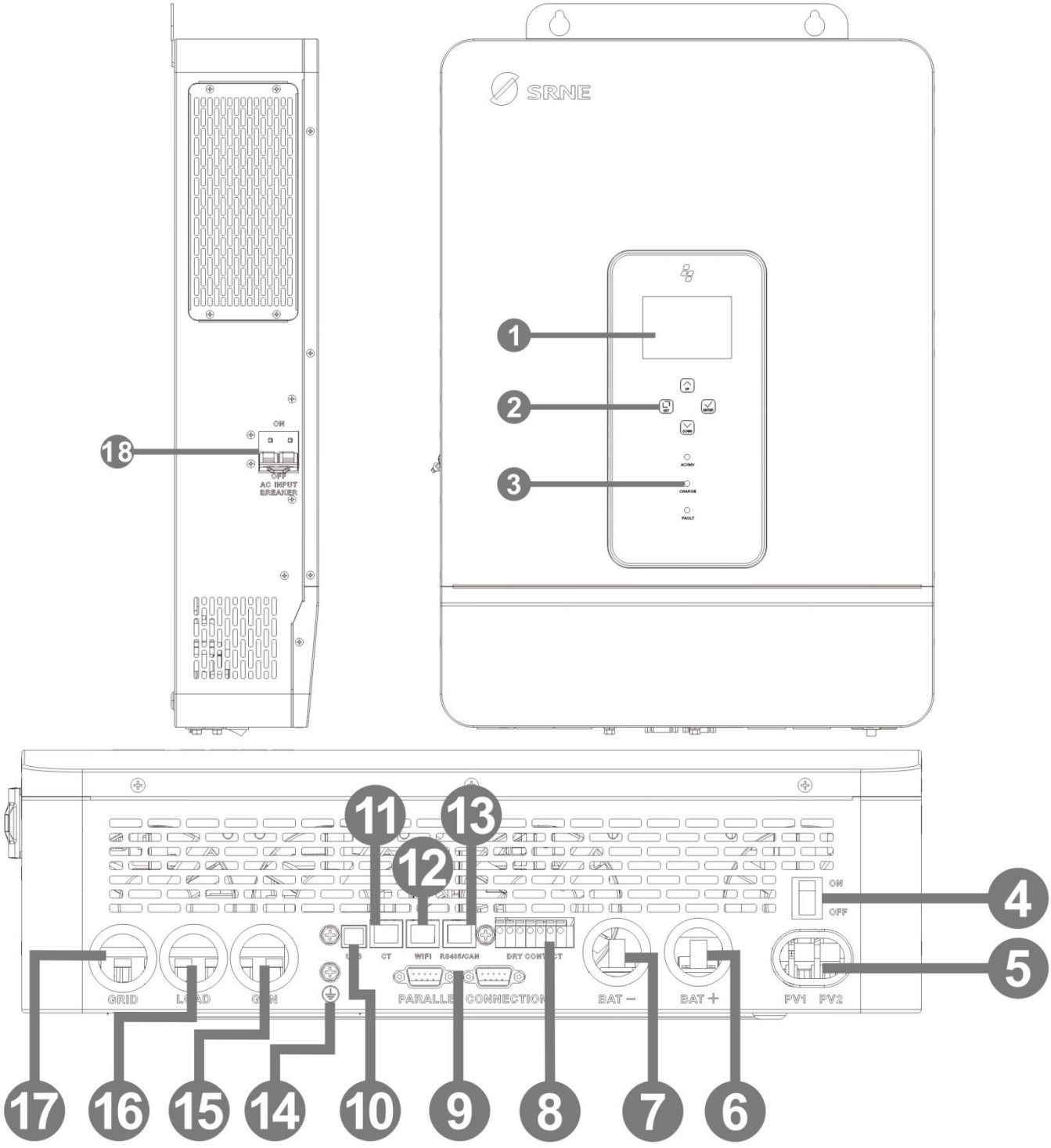
The diagram below shows the system application scenario of this product. A complete system consists of the following components:

- **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.

Note: The actual application scenario determines the specific system wiring method.

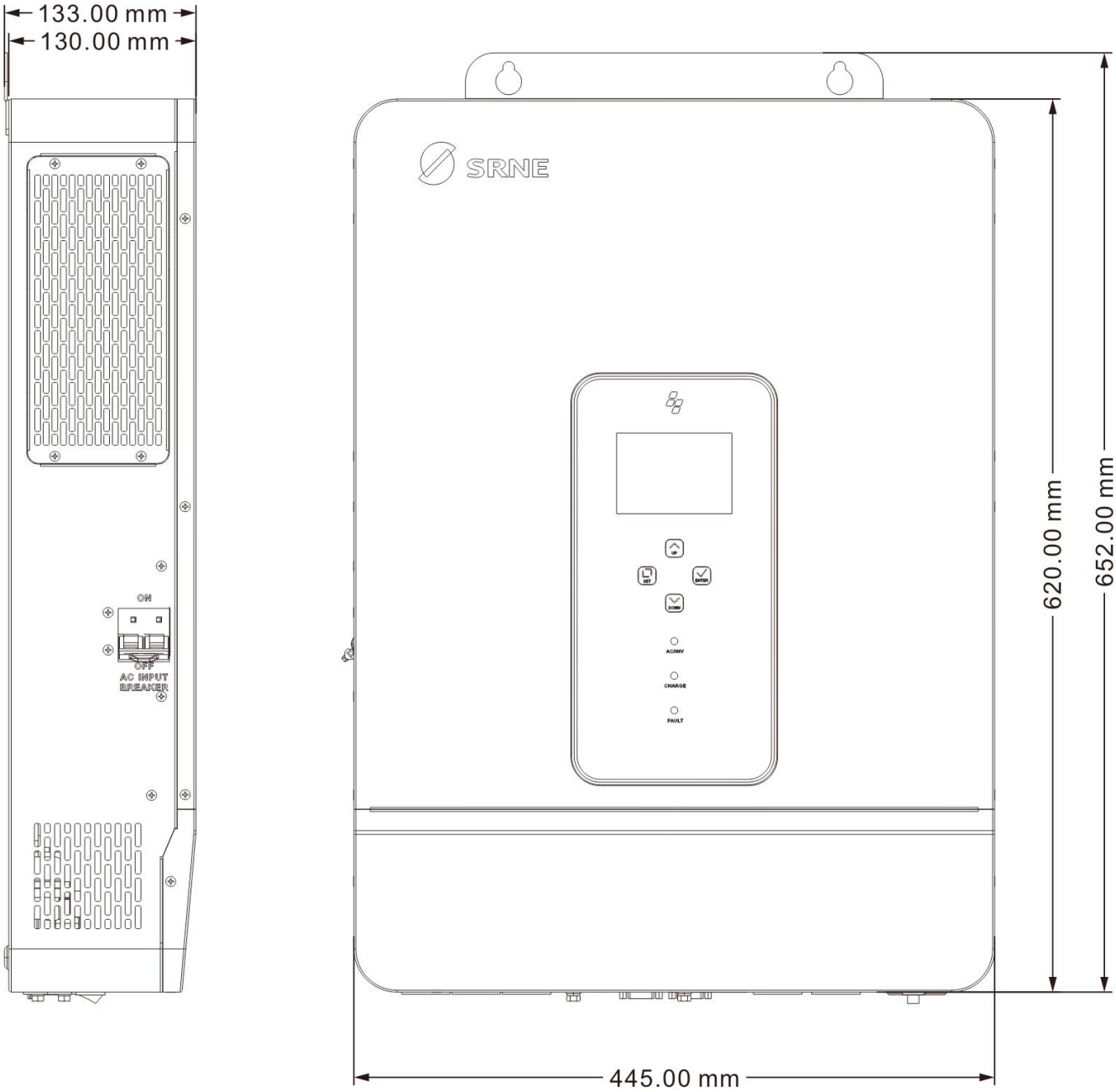


2.4 Product overview



1	LCD screen	2	Physical button	3	LED indicator
4	ON/OFF rocker switch	5	PV input (PV1/PV2)	6	Battery prot +
7	Battery prot -	8	Dry contact prot	9	Parallel port
10	USB prot	11	CT port	12	WiFi port
13	RS485/CAN prot	14	Grounding screw	15	Generator input
16	Load output (L+N)	17	Grid output (L+N)	18	AC input circuit breaker

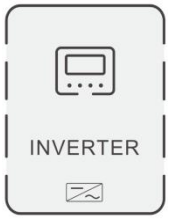
2.5 Product Size



3. Installation

3.1 Parts List

Please check the equipment before installation. Make sure that there is no damage to the packaging.You should have received the following items in the package:

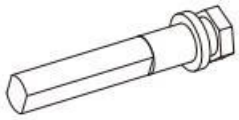


Inverter
x 1pcs

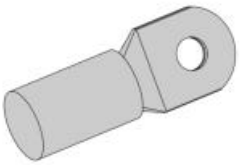
User Manual
x 1pcs

Certificate of Conformity
x 1pcs

Shipment Inspection Report x 1pcs
/Warranty Card x 1pcs

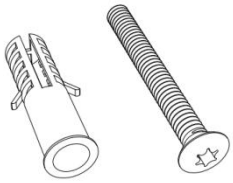


Expansion screw
M6*60mm
x 2pcs



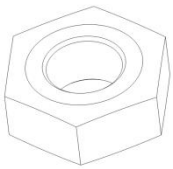
Copper lug SC70-8
x 2pcs

Black screw M4*8mm
x 4pcs

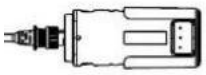


Plastic expansion screw
x 1pcs

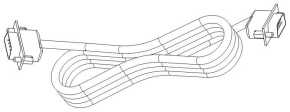
M8 Socket screwdriver
x 1pcs



M8 hexagon flange nut
x 2pcs



WIFI logger
x 1pcs



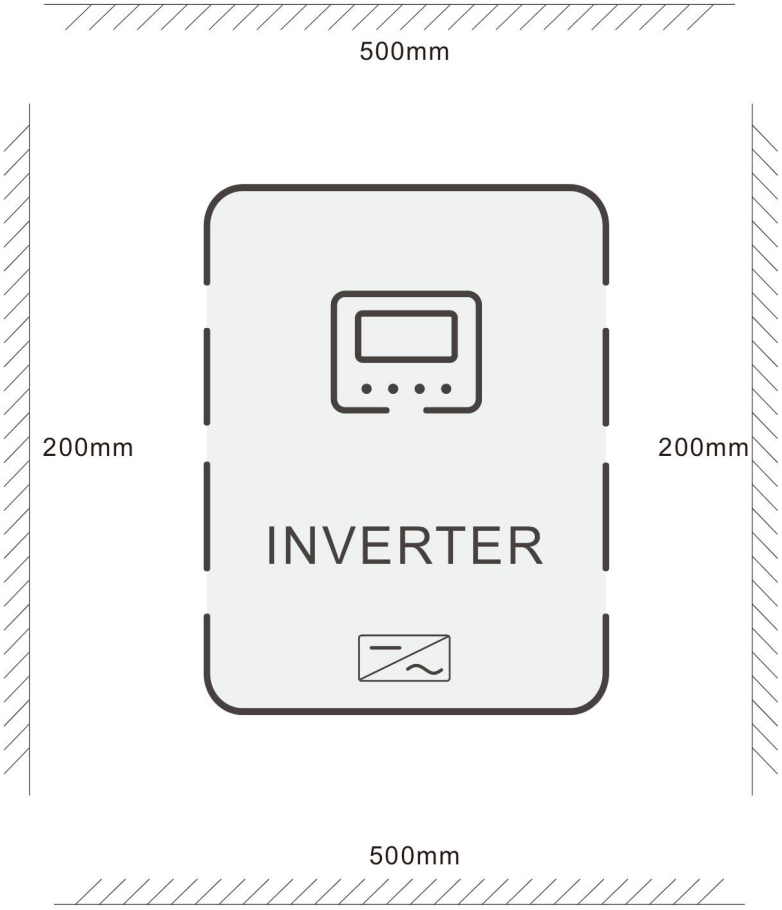
Parallel cable
x 1pcs

3.2 Mounting Instructions

3.2.1 Installation Location Selection

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

- A solid wall.
- Installation height: flush with the line of sight.
- Sufficient heat dissipation space.
- Ambient temperature: -10°C ~ 55°C (14°F ~ 131°F), to ensure optimal operation.



DANGER

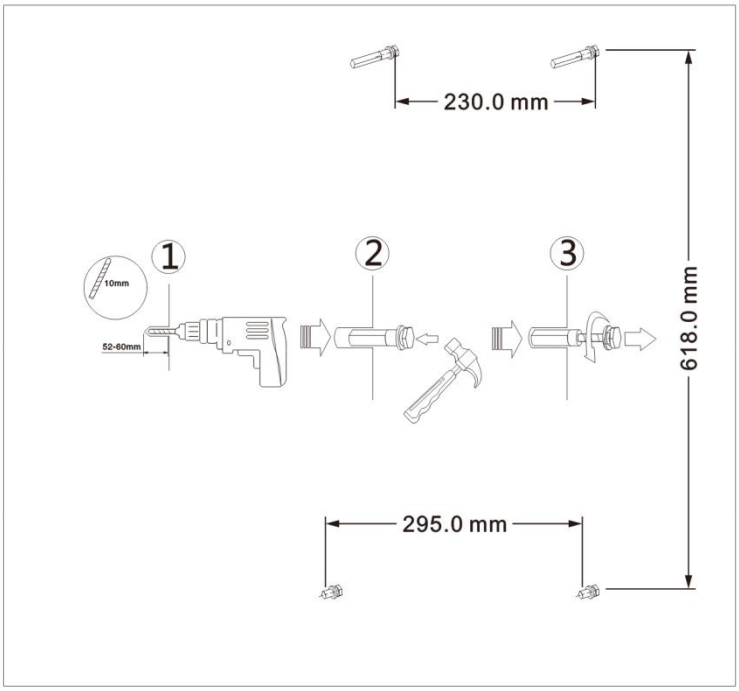
- Do not install the inverter where highly flammable materials are near by.
- Do not install the inverter in potential explosive areas.
- Do not install the inverter with lead-acid batteries in a confined space.

CAUTION

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

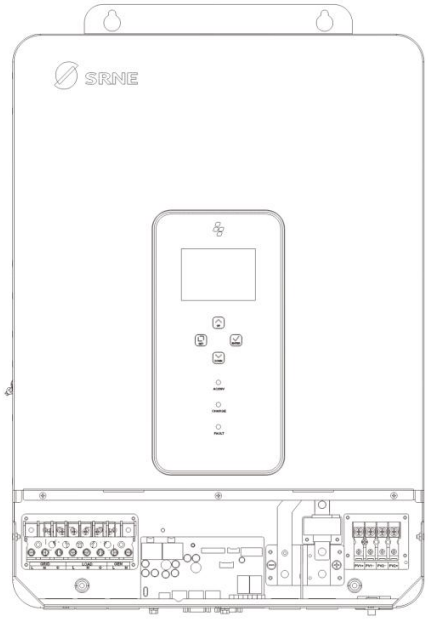
3.2.2 Mounting the Inverter

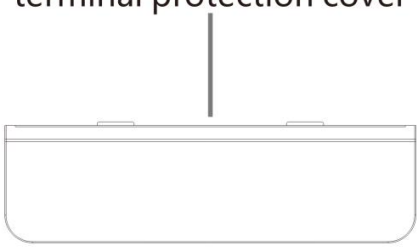
Make 4 mounting holes in the wall with a drill according to the specified dimensions, insert two expansion screws above and two M5 size screws below for fixing the inverter.



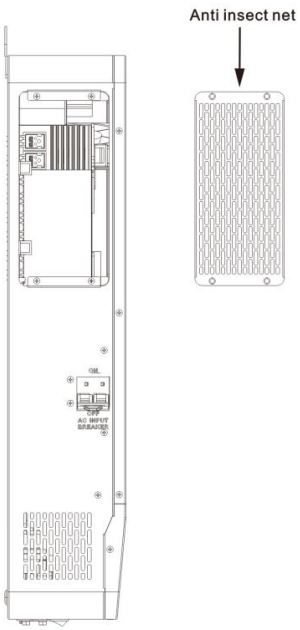
3.2.3 Remove the Terminal Cover

Using a screwdriver, remove the terminal protection cover.





Insect screen can be removed for cleaning.

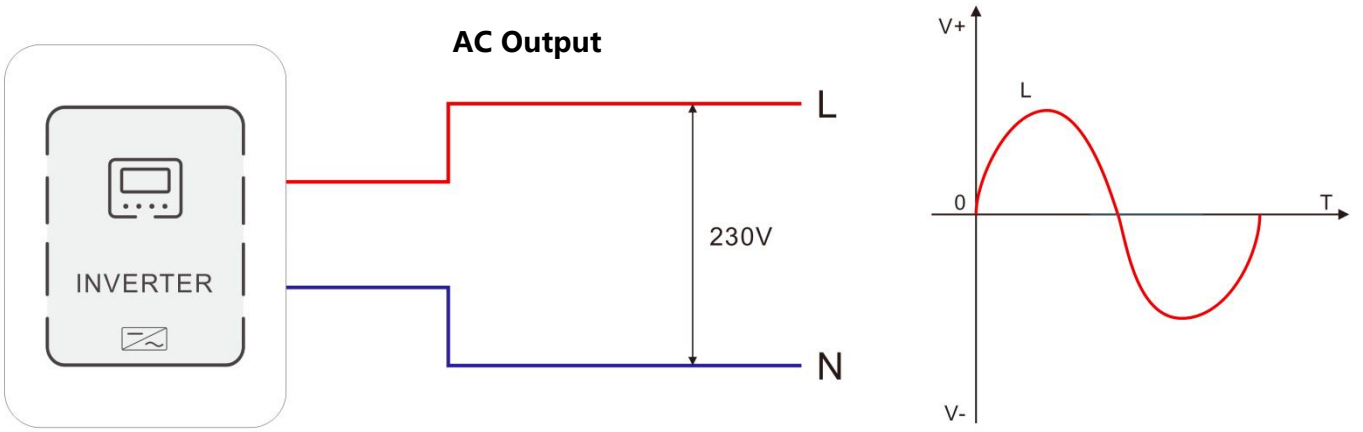


NOTICE

When using the device in areas with poor air quality, the dust screen is prone to being blocked by air particles. Please regularly remove and clean the dust screen to avoid affecting the internal air circulation rate of the frequency converter, which may cause over-temperature protection faults (Fault 19/20) and affect the service life of the power supply and inverter.

4. Connection Instructions

4.1 Single-phase Mode

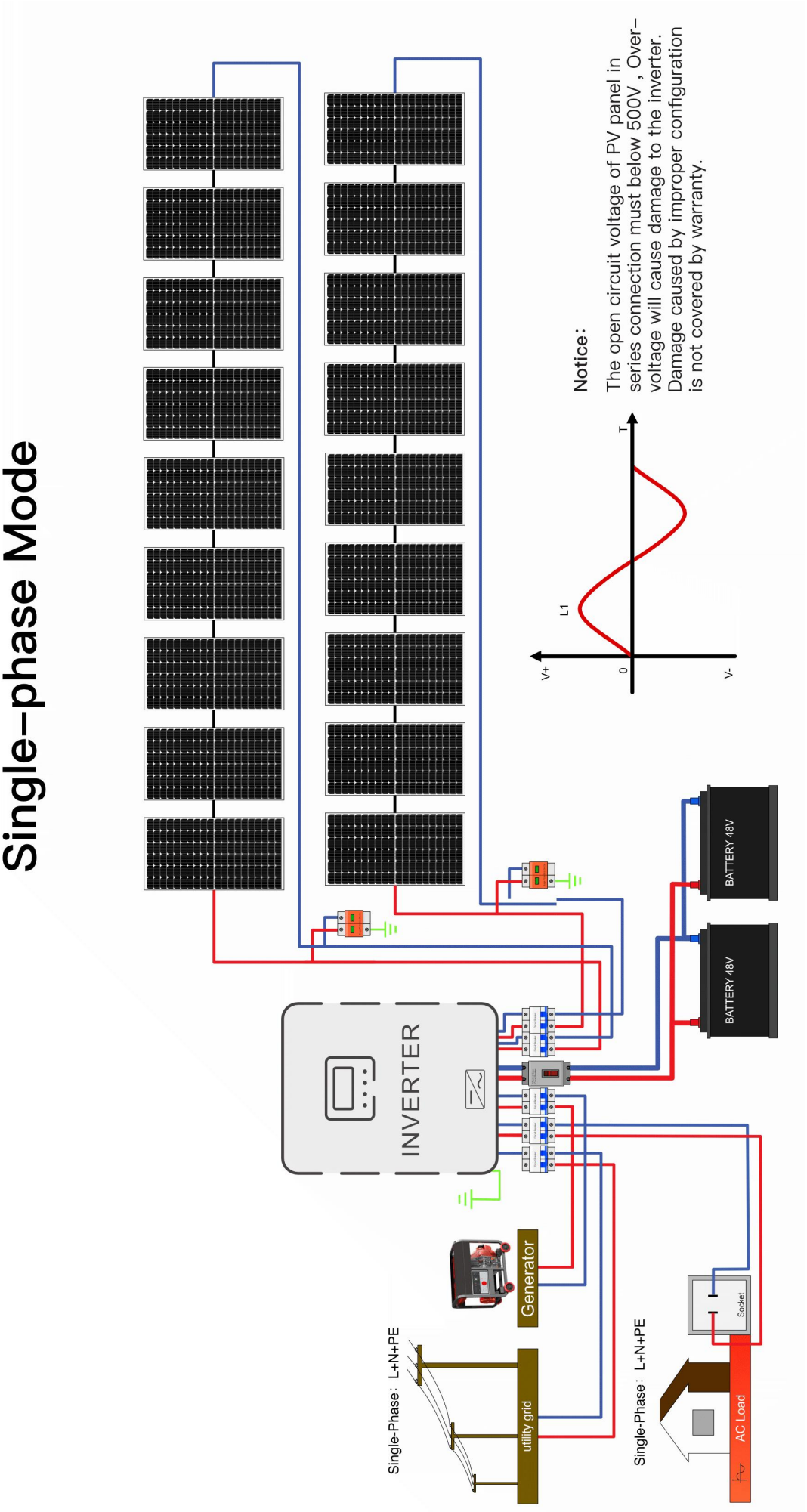


Project	Description
Applicable model	ASP48120S200-Pro
AC Output Voltage Range (L-N)	200~240Vac, 230Vac default

NOTICE

- Users can change the output phase mode and output voltage through the settings menu. For details, please refer to Chapter 5.2.
- The output voltage corresponds to parameter setting item [38], and the output phase voltage can be set within the range of 200V to 240V.

Single-phase Mode



4.2 Cable & Circuit Breaker Requirement

■ PV Input

Model	Cable Diameter	Max. Input Current	Circuit Breaker Specifications
ASP48120S200-Pro	10AWG/5mm²	22A	2P-25A

■ Grid Input

Model	Output Mode	Cable Diameter	Max. Input Current	Circuit Breaker Specifications
ASP48120S200-Pro	Single-phase	6AWG/13mm² (L/N)	63A (L/N)	2P-63A

■ Generator Input

Model	Output Mode	Cable Diameter	Max. Input Current	Circuit Breaker Specifications
ASP48120S200-Pro	Single-phase	6AWG/13mm² (L/N)	63A (L/N)	2P-63A

■ Battery

Model	Cable Diameter	Max. Input Current	Circuit Breaker Specifications
ASP48120S200-Pro	2AWG/55mm²	260A	2P-300A

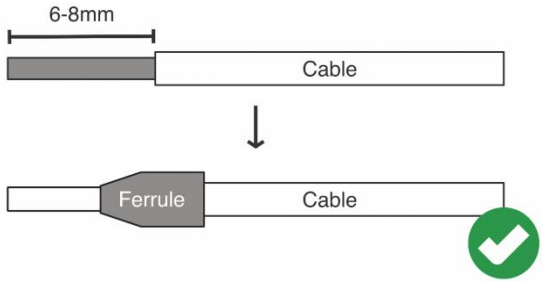
■ Load Output

Model	Output Mode	Cable Diameter	Max. Output Current	Circuit Breaker Specifications
ASP48120S200-Pro	Single-phase	6AWG/13mm² (L/N)	63A (L/N)	2P-63A

⚠ *NOTICE*

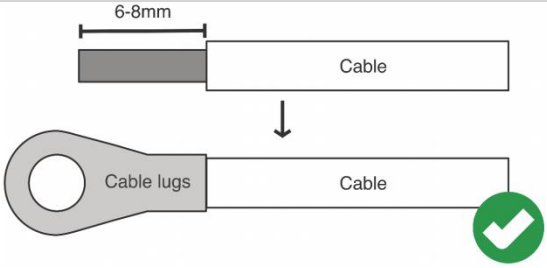
• AC input and AC output:

1. Use a wire stripper to remove 6-8mm of insulation from the cable.
2. Fix a cable gland at the end of the cable (the cable gland should be prepared by the user).



• Battery:

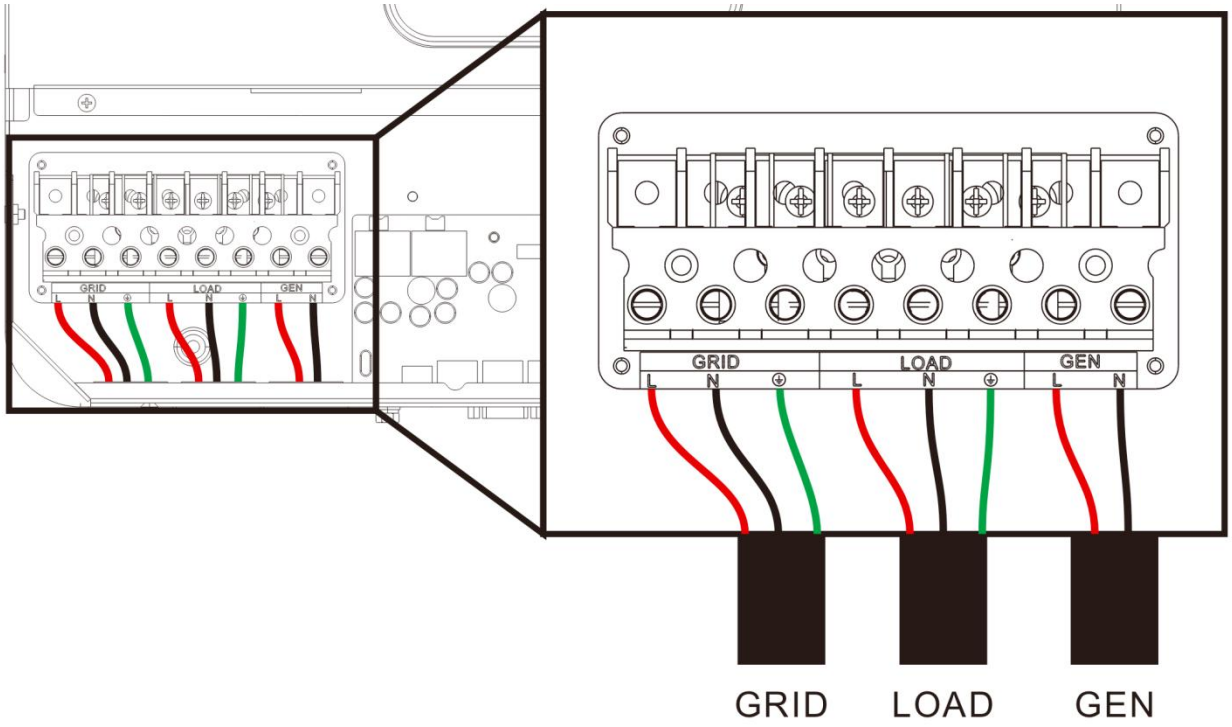
1. Use a wire stripper to remove 6-8mm of insulation from the cable.
2. Fix the cable lug provided with the package at the cable end.



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,and Generator Connection

Connect the live,neutral and ground wires according to the cables' position and order shown in the diagram below.

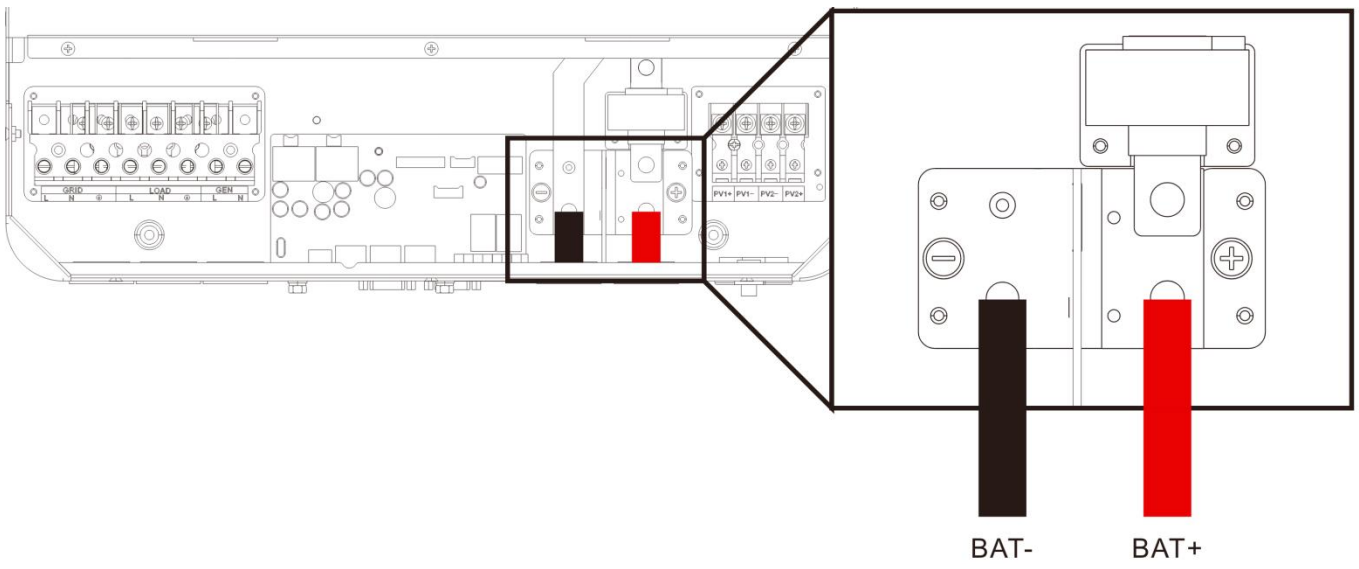


DANGER

- Before connecting AC input and output, the circuit breaker must be turned off to avoid electric shock hazards, and never operate 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.

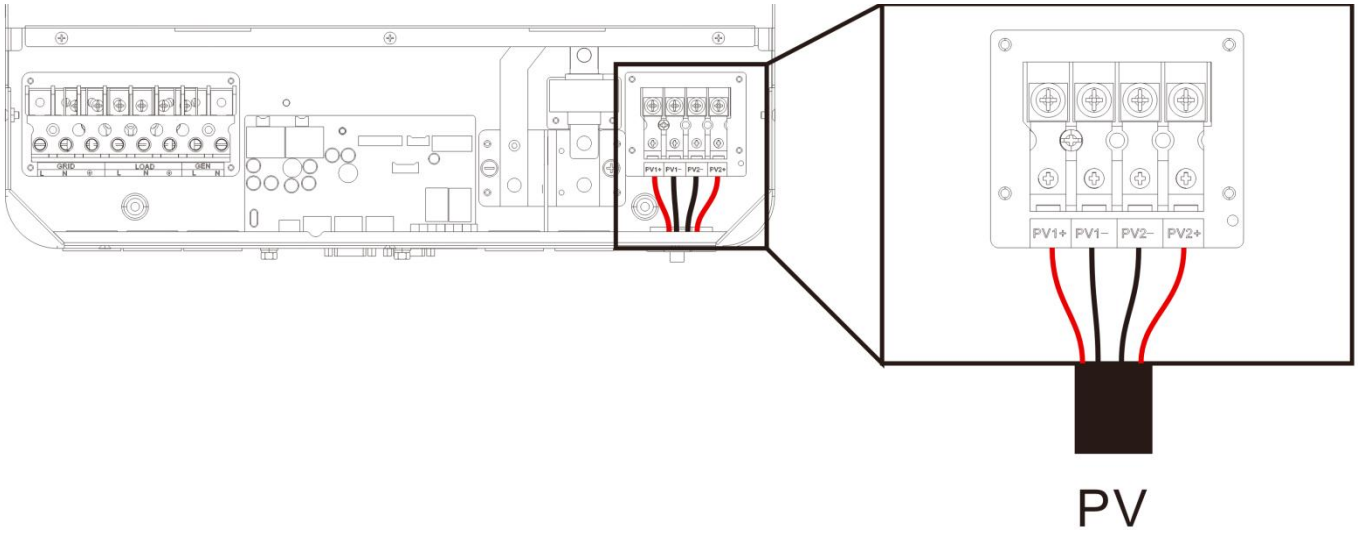


DANGER

- Before connecting battery, the circuit breaker must be turned off to avoid electric shock hazards, and never operate with electricity.
- Make sure that the positive and negative terminals of the battery are connected correctly, reversed polarity connection on battery will 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 Connection

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



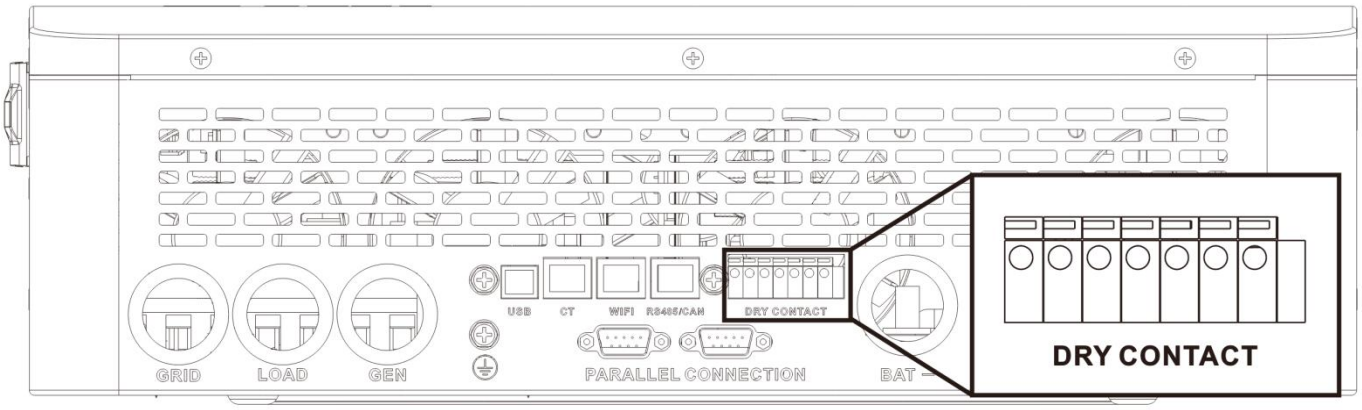
PV

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 ASP series, this value is 500V), otherwise the inverter may be damaged.

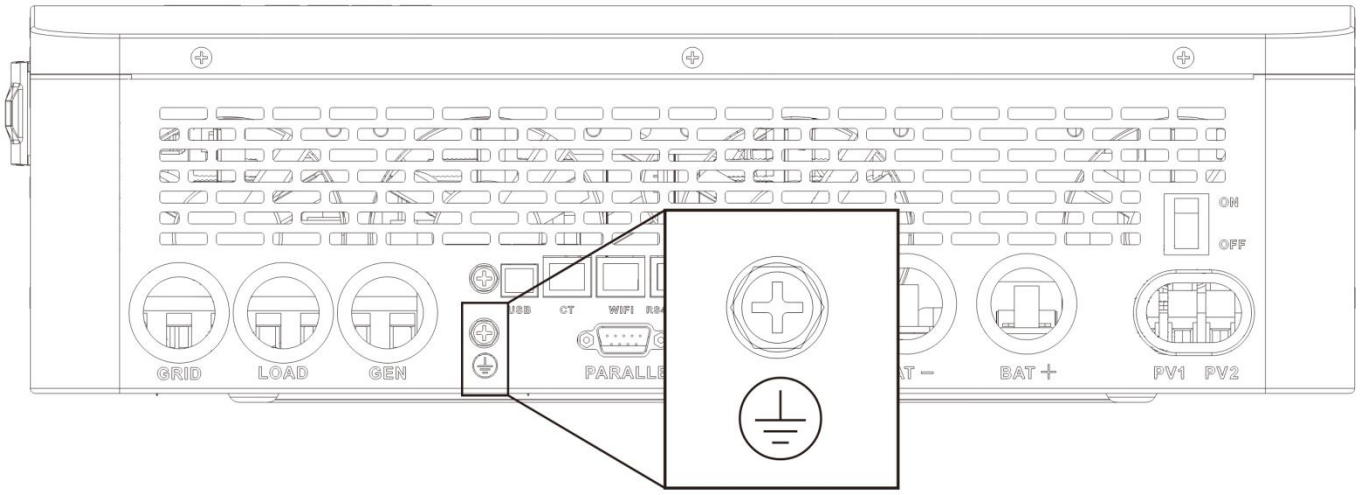
4.6 Dry Contact Connection

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 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 Installation

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

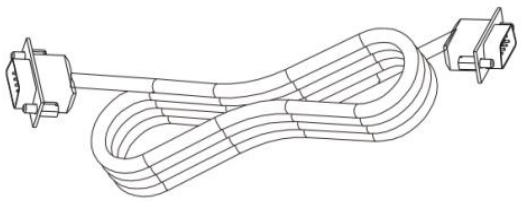
- **Step 1:** Close the circuit breaker of the battery.
- **Step 2:** Press the ON/OFF switch on the side of the inverter. The screen and indicator lights turning on indicates that the inverter has been activated.
- **Step 3:** Sequential close of the circuit breakers for PV, AC input and AC output.
- **Step 4:** Start the loads one by one in order of power from small to large.

4.9 Parallel Connection

4.9.1 Introduction to parallel connection

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



4.9.2 Cautions for parallel connection

Warning:

1. PV Wiring:

When connected in parallel, different machines need to be connected to different PV arrays or PV sources. You cannot connect the same PV to different machines. The machine's PV1 and PV2 must not be be connected to the same PV source.

2. Battery Wiring:

For single-phase or three-phase parallel connections, all inverse control units must be connected to the same battery, BAT+ to BAT+ and BAT- to BAT-. And make sure that the connections are correct and that the wires are of the same length and diameter before powering on the machine. Avoid wiring errors causing parallel system outputs improper operation.

3. AC OUT Wiring:

a. Single-phase parallel lines

When connecting single-phase parallel machines, all inverse control units must be connected L to L, N to N wire and PE to PE. And make sure that the connections are correct and that the wires are of the same length and diameter before powering on the machine. Avoid wiring errors causing parallel system outputs improper operation.

b. Three-phase parallel lines

When connecting three-phase parallel machines, all inverse control units must be connected N to N wire and PE to PE. The L-wires of all machines in the same phase need

to be connected together, but the L-wires of the AC outputs of different phases cannot be connected together. Other considerations as for parallel single-phase connection.

4. AC IN Wiring:

a. Single-phase parallel lines

When connecting single-phase parallel machines, all inverse control units must be connected L to L, N to N wire and PE to PE. And make sure that the connections are correct and that the wires are of the same length and diameter before powering on the machine. Avoid wiring errors causing parallel system outputs improper operation. At the same time, there must not be more than one different AC source input, avoiding damage to the inverter or external electrical equipment. Consistency and uniqueness of the AC source input is required.

b. Three-phase parallel lines

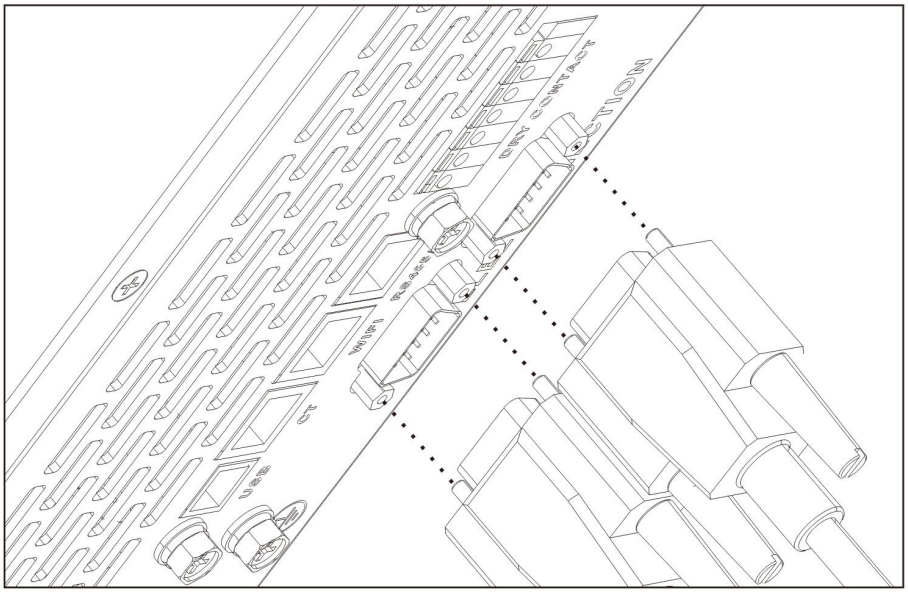
When connecting three-phase parallel machines, all inverse control units must be connected N to N wireand PE to PE. The L-wires of all machines in the same phase need to be connected together, but the L-wires of the AC inputs of different phases cannot be connected together. Other considerations as for parallel single-phase connection.

5. Parallel Communication Cable Wiring:

Our parallel communication cable is a standard DB15 computer cable with shielding. When using single-phase or three-phase machines in parallel, each machine must be connected one out and one in. This means that the male connector (out) of the machine is connected to the female connector (in) of the machine to be connected. Does not allow local male connectors to connect to local female connectors. At the same time make sure that the parallel communication cable is tightened through the DB15 terminal screw, which avoids disconnection or poor contact of the parallel communication cable leading to system output not working properly or damaged.

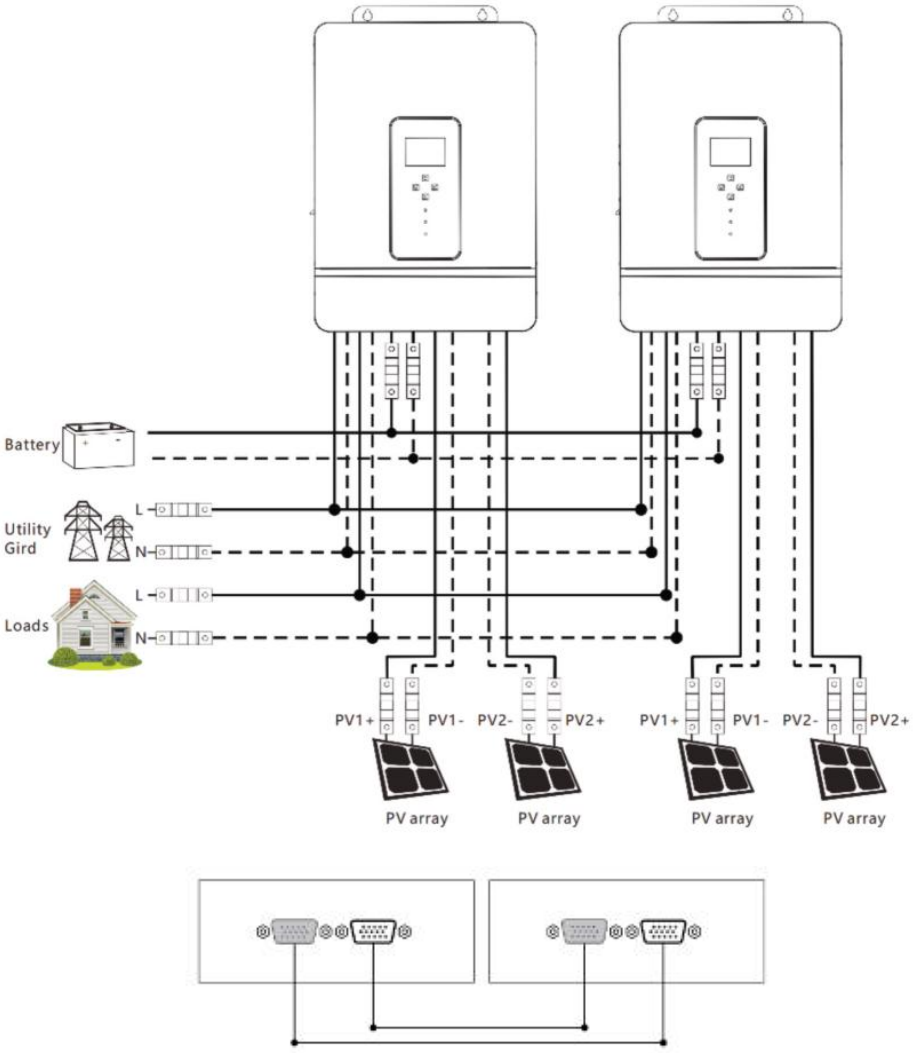
4.9.3 Single-phase parallel connection guide diagram

1. Parallel communication line and even flow detection line of inverse control unit need to be connected after screw locking. The schematic diagram is as follows:

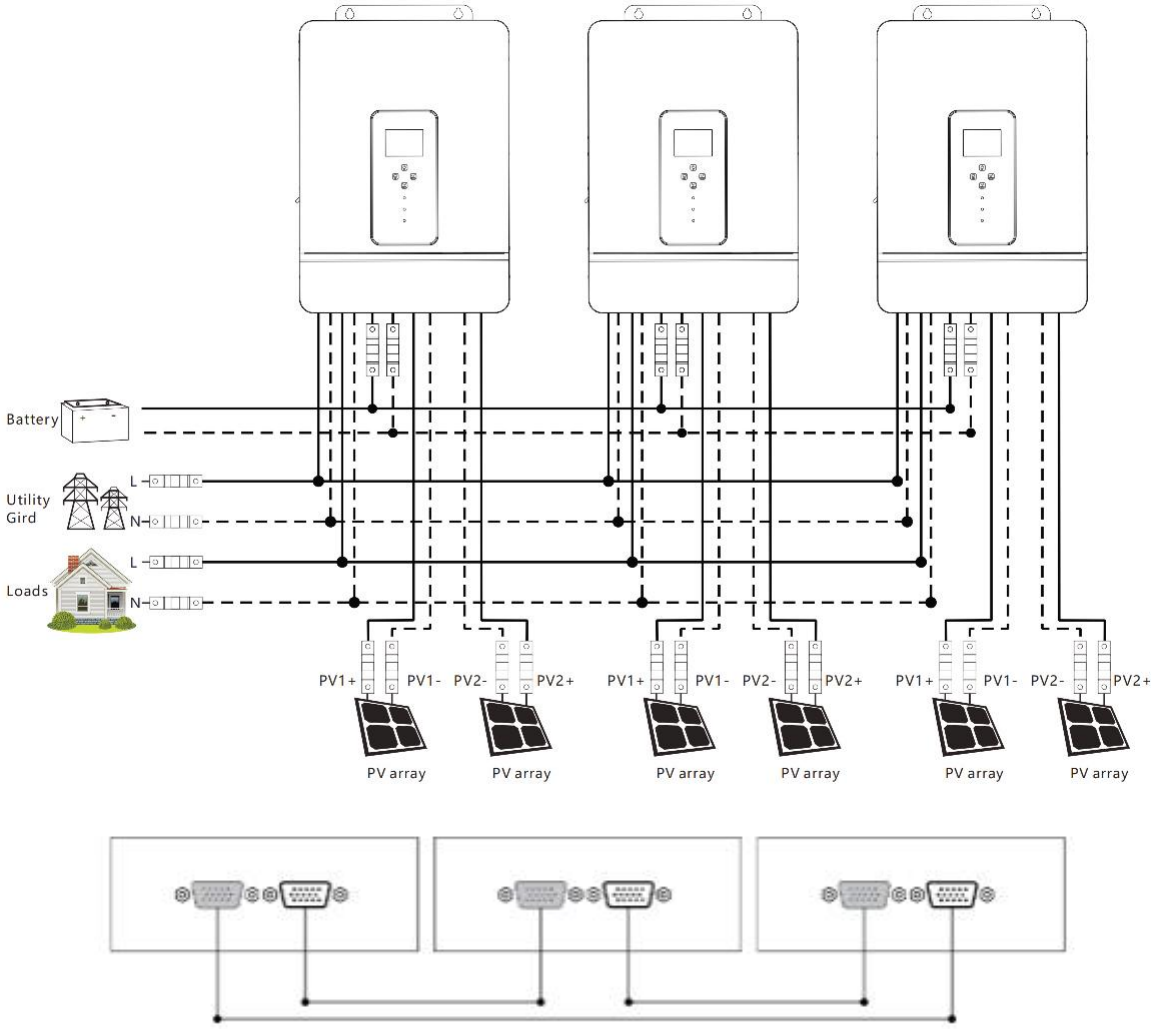


2. When multiple machines are connected in parallel, the parallel connection diagrams are as follows:

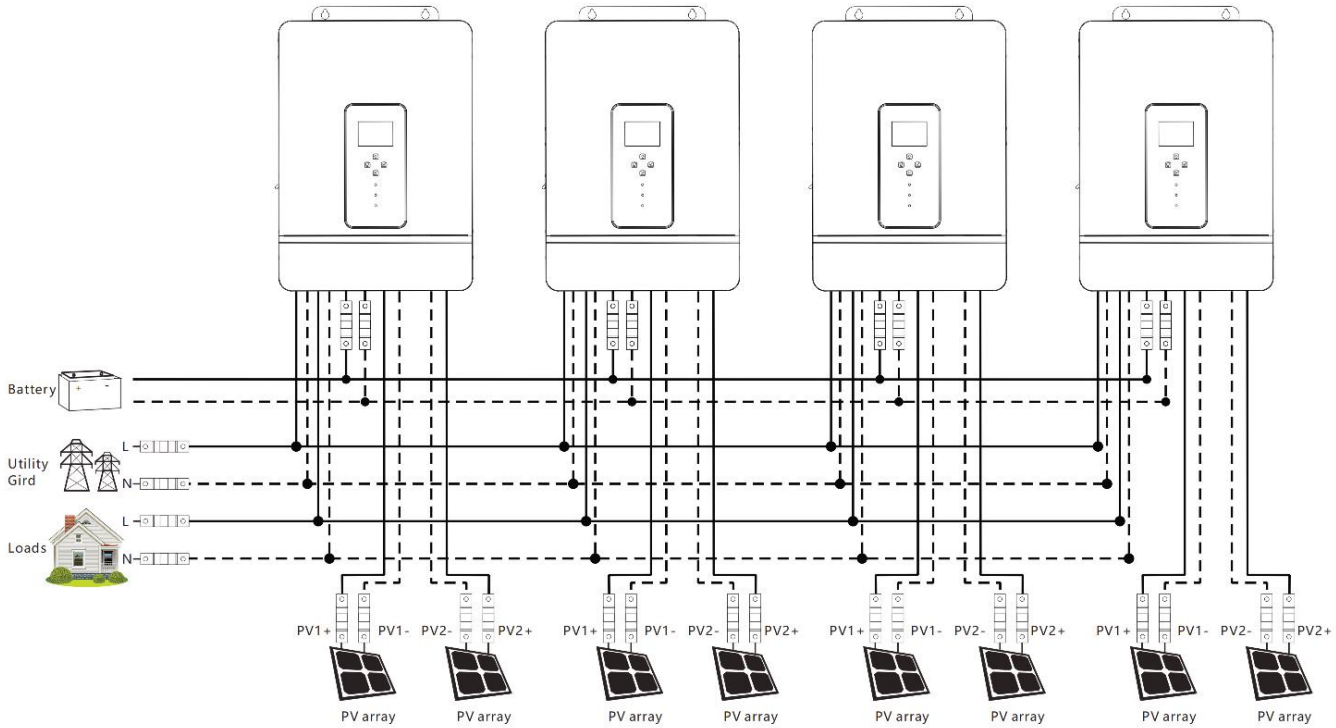
a. Two all-in-one solar charger inverters of the system connected in parallel

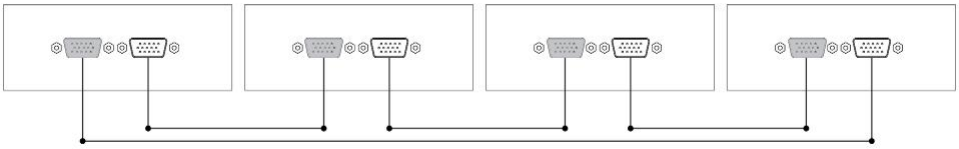


b. Three all-in-one solar charger inverters of the system connected in parallel

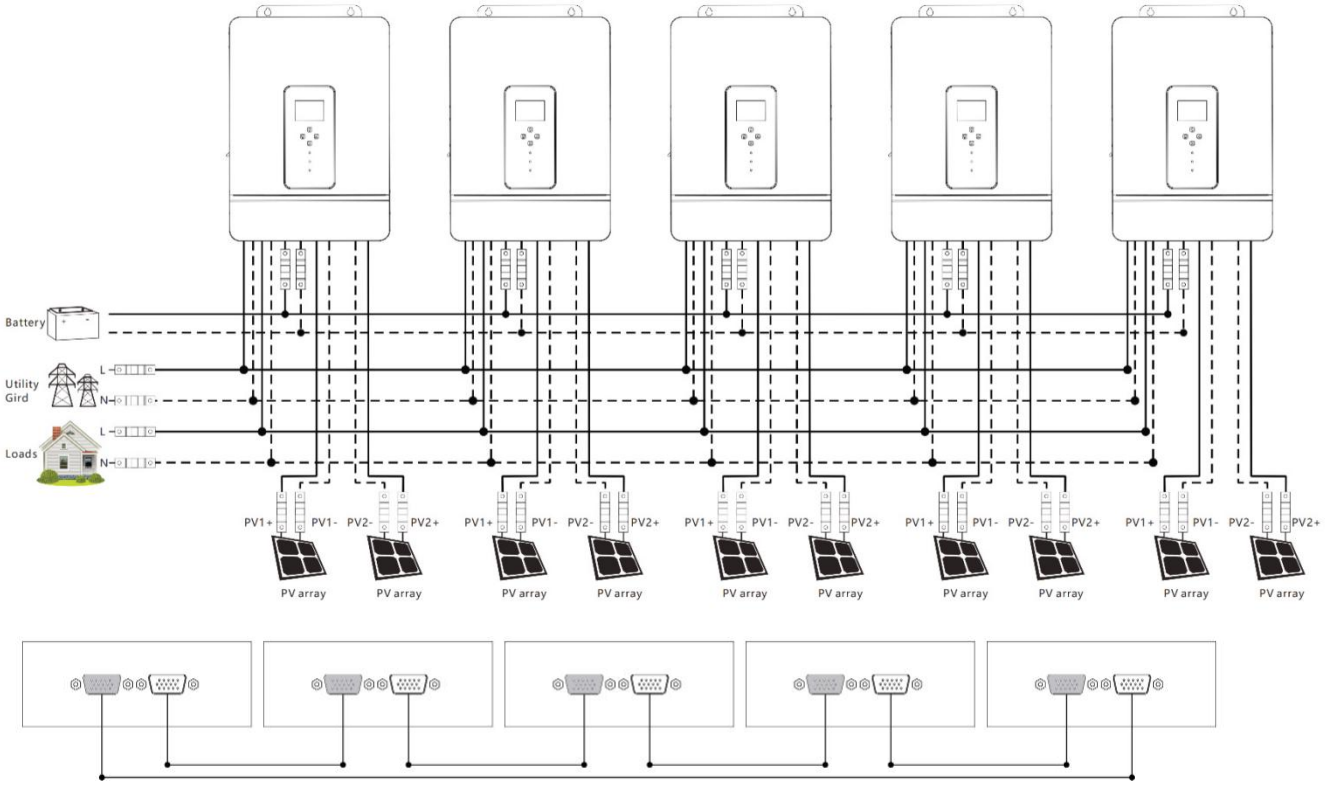


c. Four all-in-one solar charger inverters of the system connected in parallel

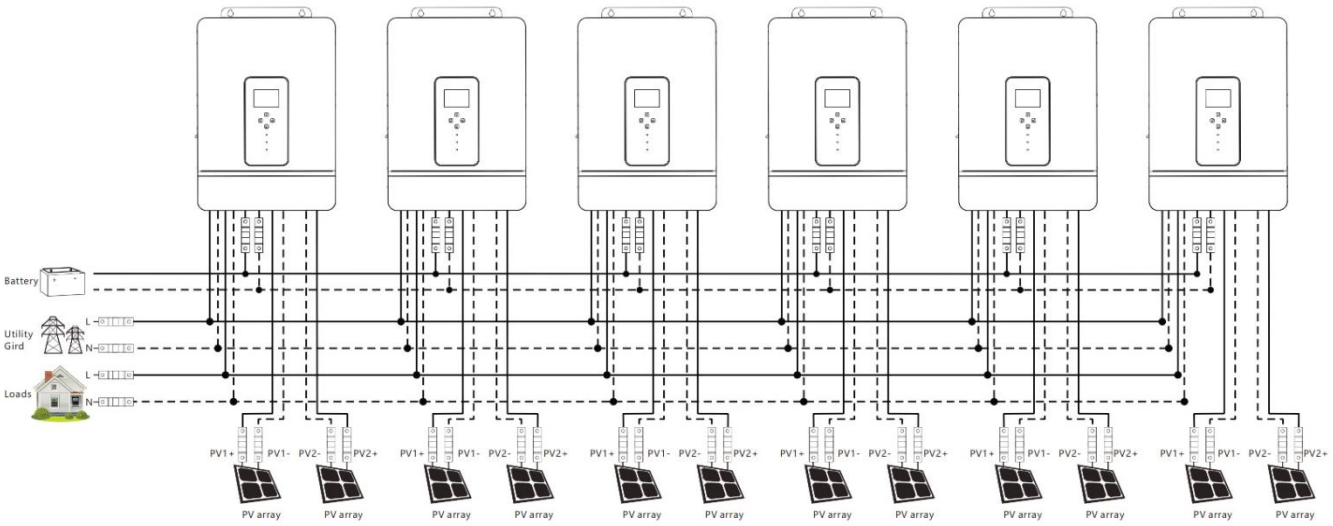


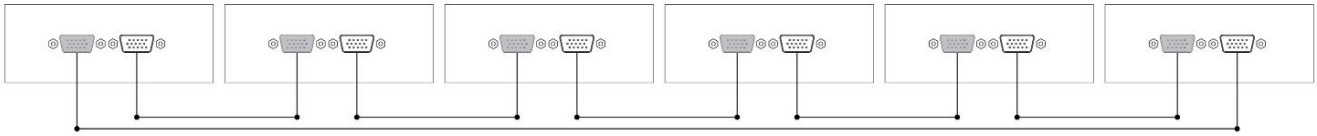


d. Five all-in-one solar charger inverters of the system connected in parallel



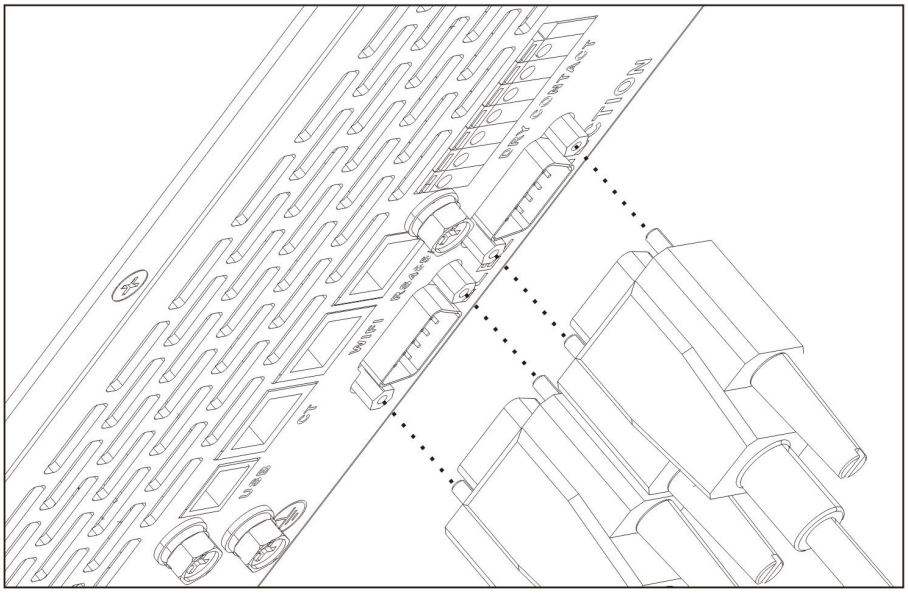
e. Six all-in-one solar charger inverters of the system connected in parallel





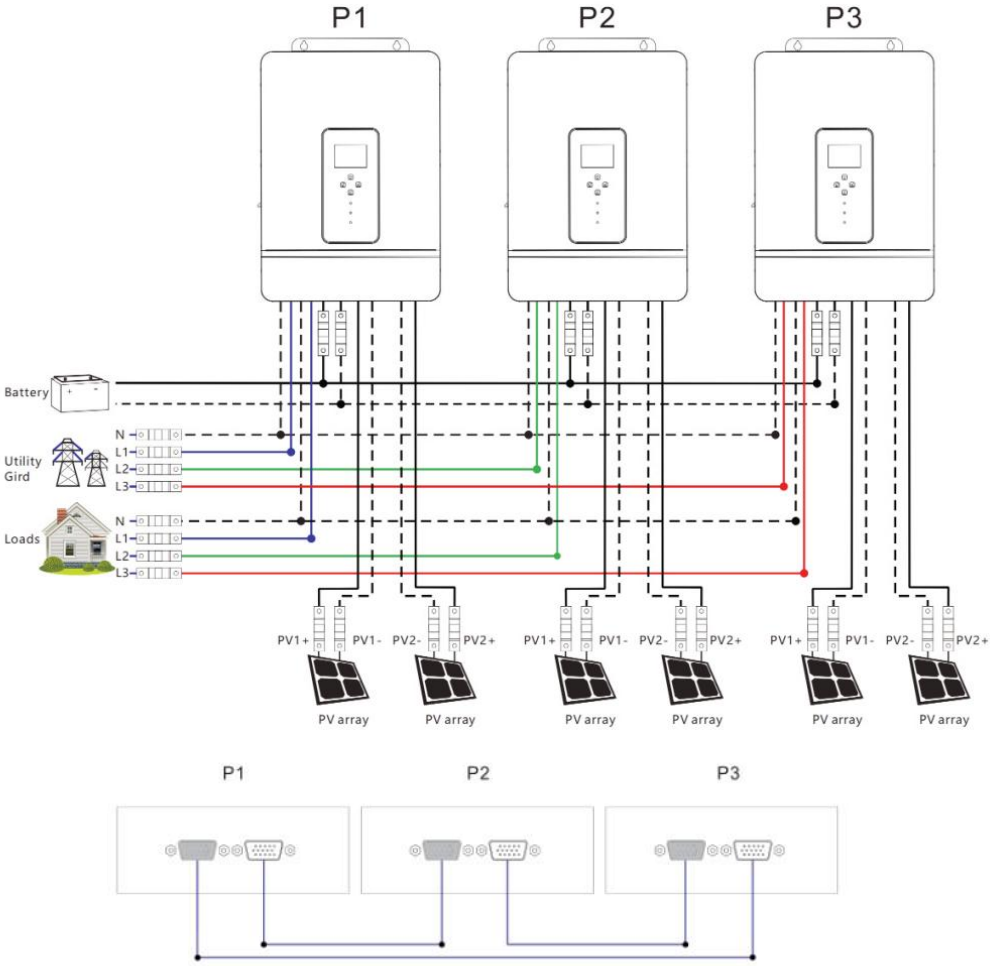
4.9.4 Three-phase parallel connection guide diagram

1. Parallel communication line of the inverters needs to be connected and then screwed and locked. The schematic diagram is as follows:

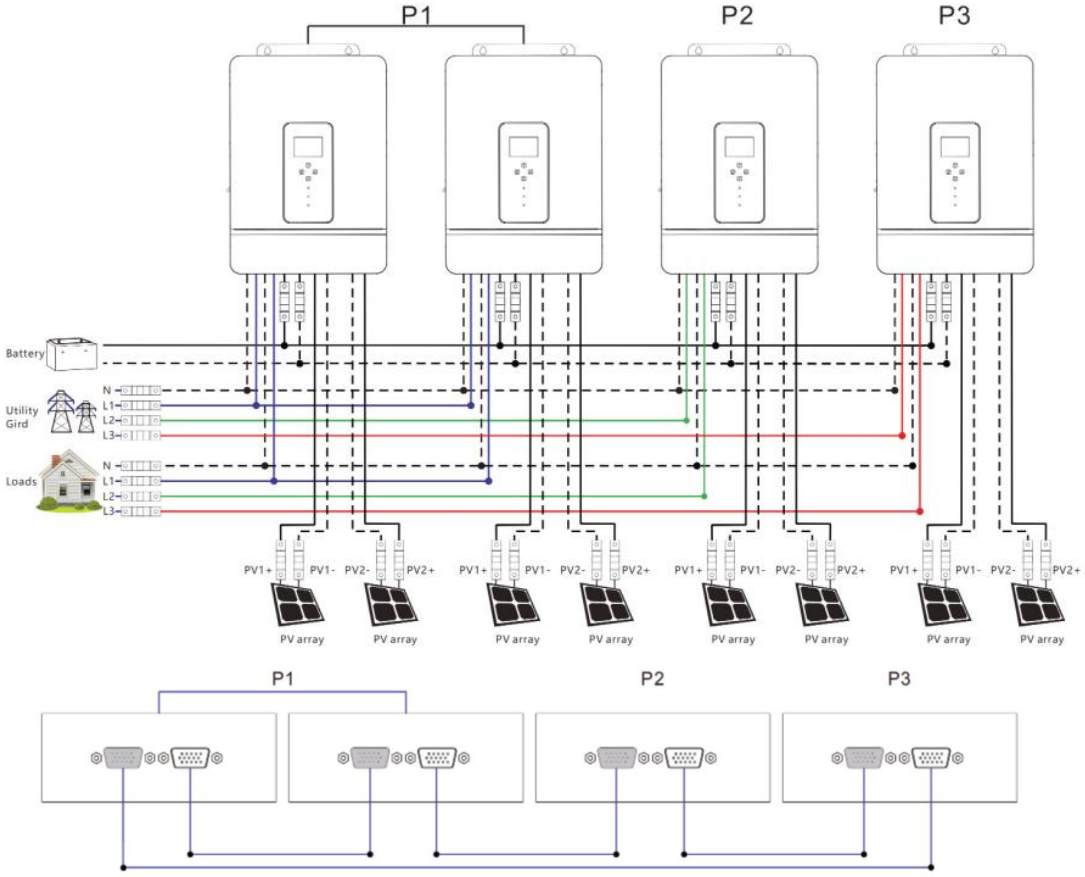


Three-phase parallel

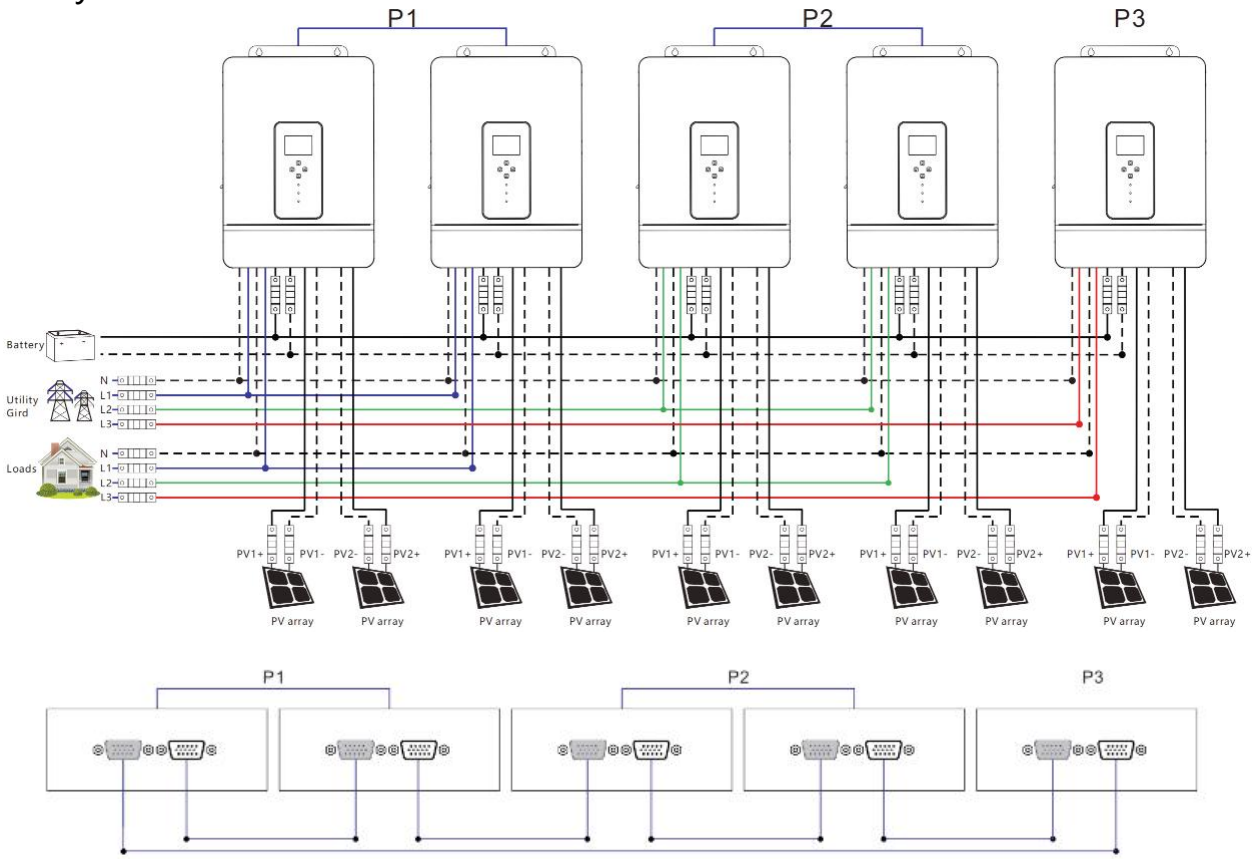
a. Three all-in-one solar charger inverters of the system connected in three phase 1+1+1 system:



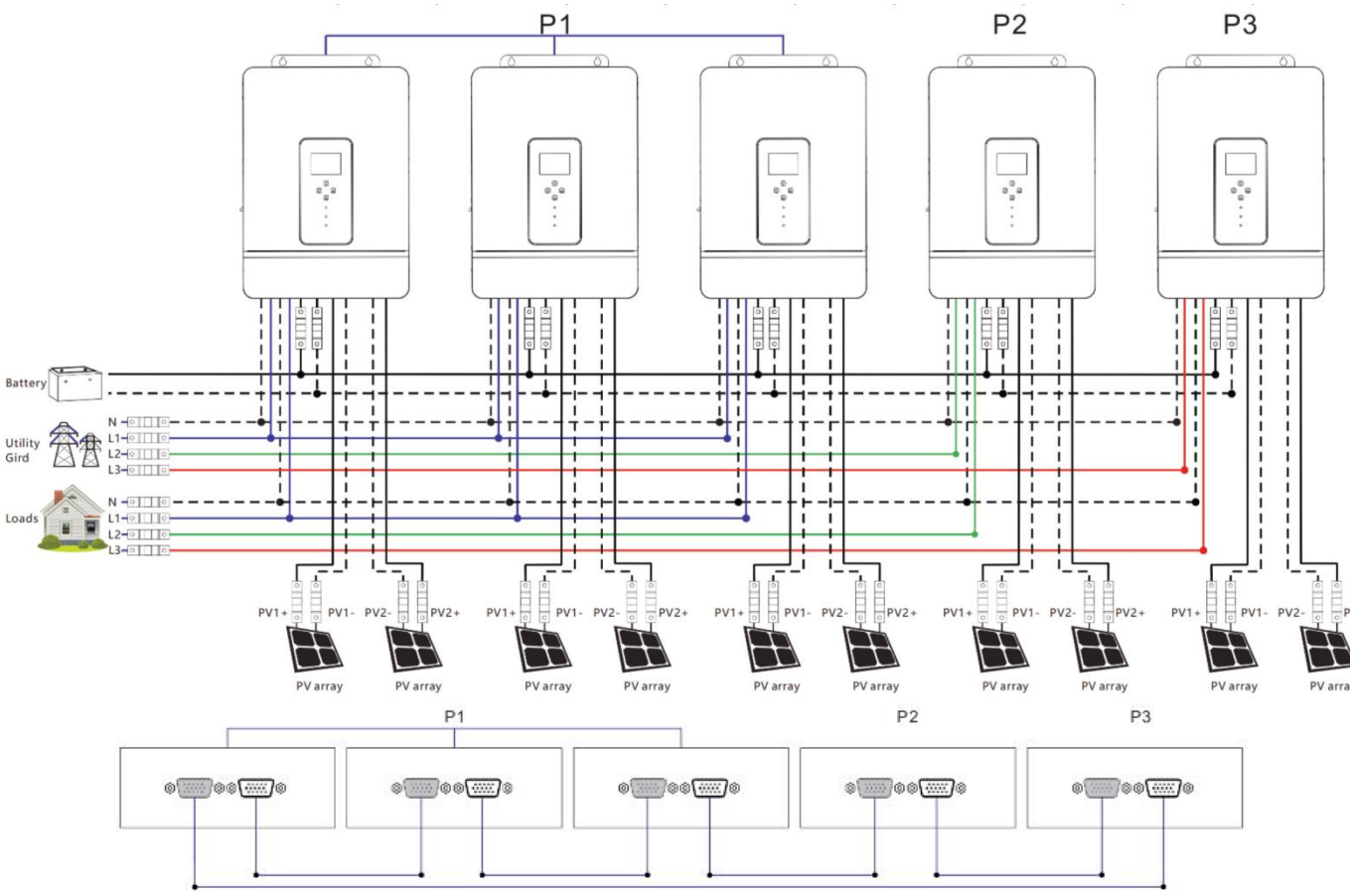
b. Four all-in-one solar charger inverters of the system connected in three phase 2+1+1 system:



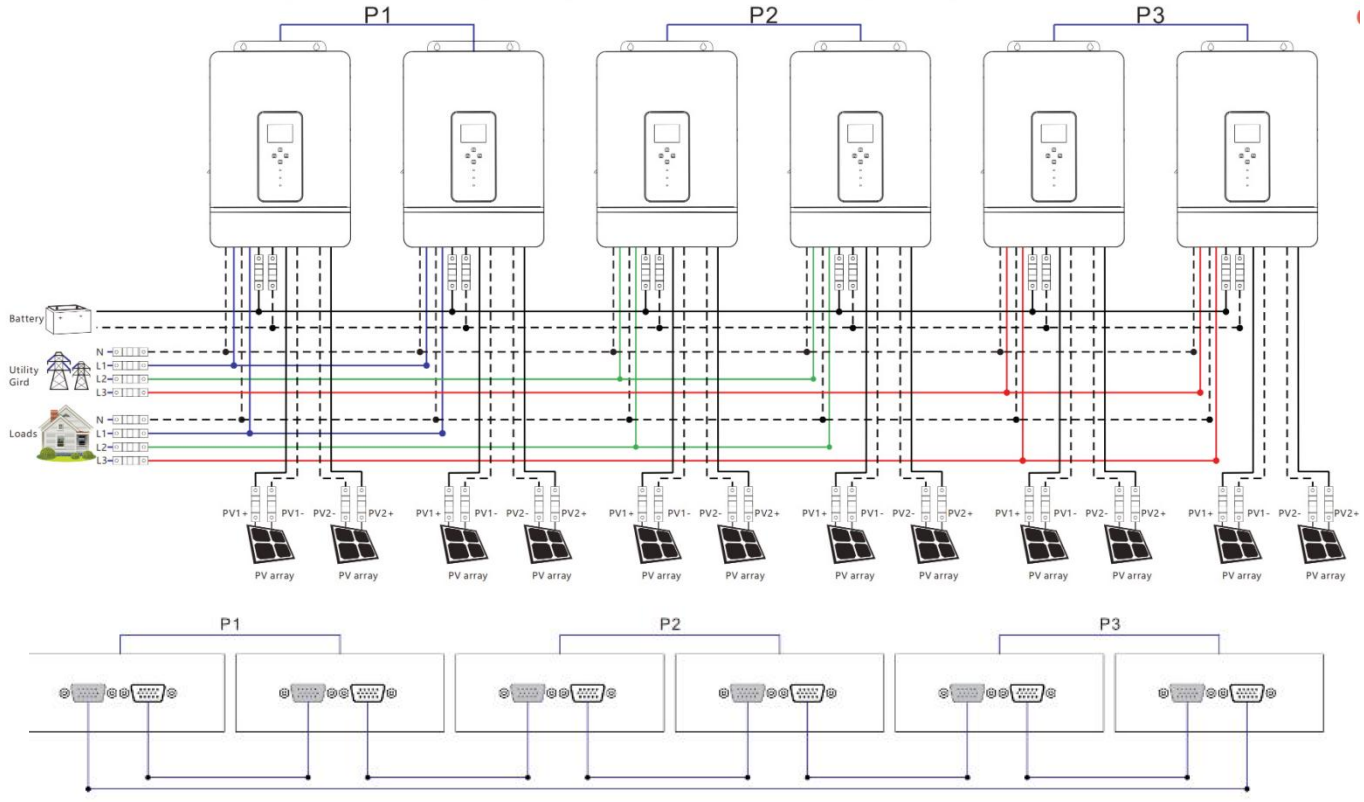
c. Five all-in-one solar charger inverters of the system connected in three phase 2+2+1 system:



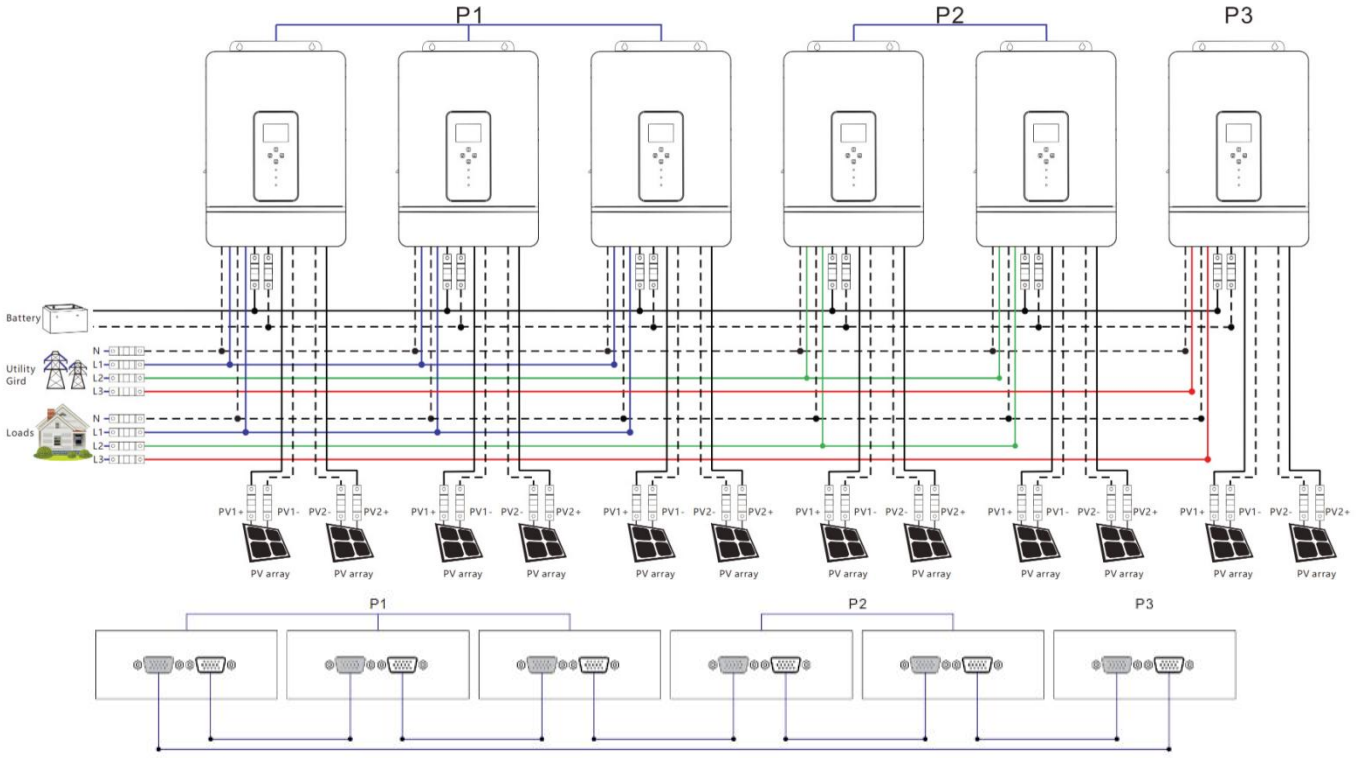
3+1+1 system:



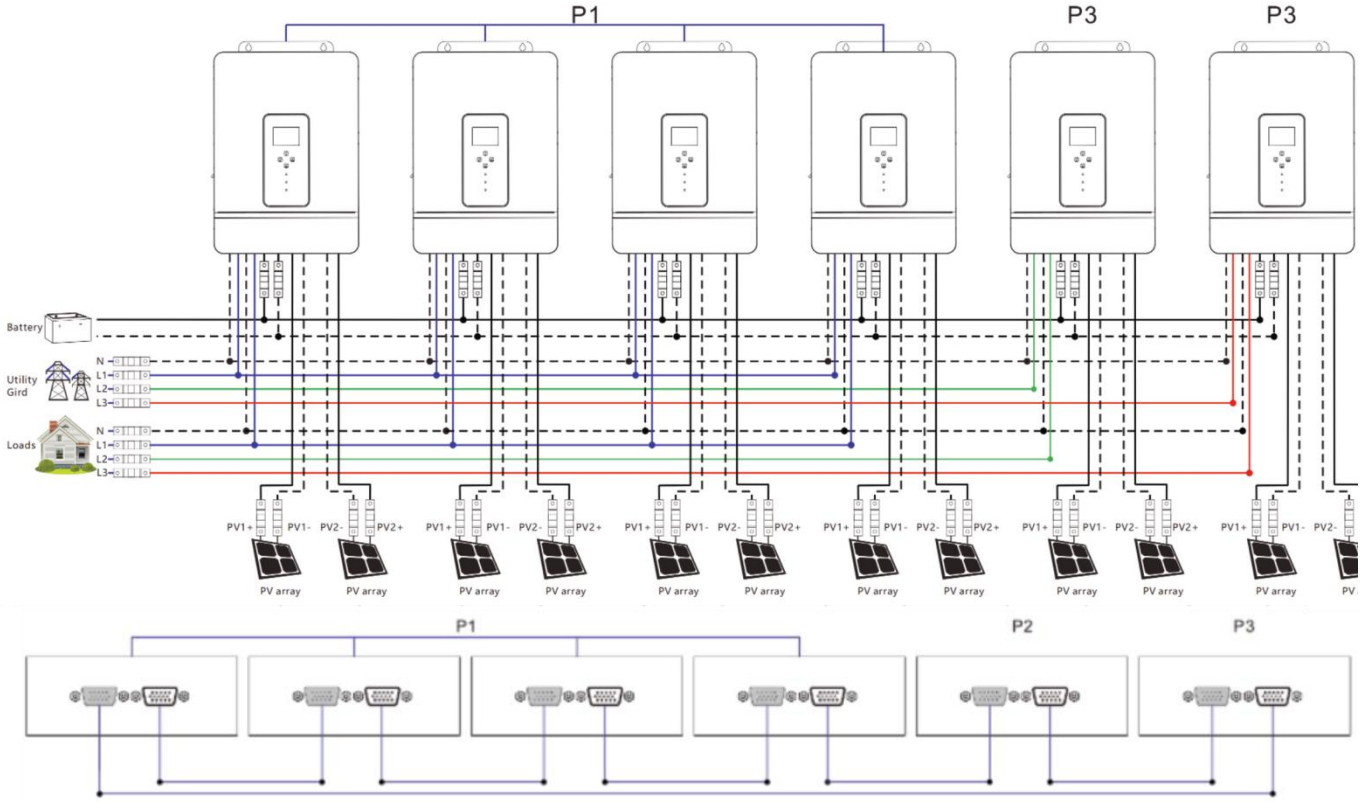
d. Six all-in-one solar charger inverters of the system connected in three phase 2+2+2 system:



3+2+1 system:



4+1+1 system:



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. Settings [38] need to be set consistently or only for the host. When the machine is running, the voltage set by the host shall prevail, and the master will force the rewrite of the other slave machines to keep the same set. Only can be set in the standby mode.
5. Machine factory default for single machine mode, if you use parallel or three-phase function, you need to set the [31] 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 [31] item parameters according to the site system 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.

The [31] setting item :

When in single phase parallel connection : setting【31】should be set as 【PAL】.

When in three phase parallel connection, all machines in phase 1 must be set as【3P1】, all machines in phase 2 must be set as 【3P2】 all machines in phase 3 must be set as【3P3】, at present, the voltage phase difference between P1-P2, P1-P3 and P2-P3 is 120 degrees.

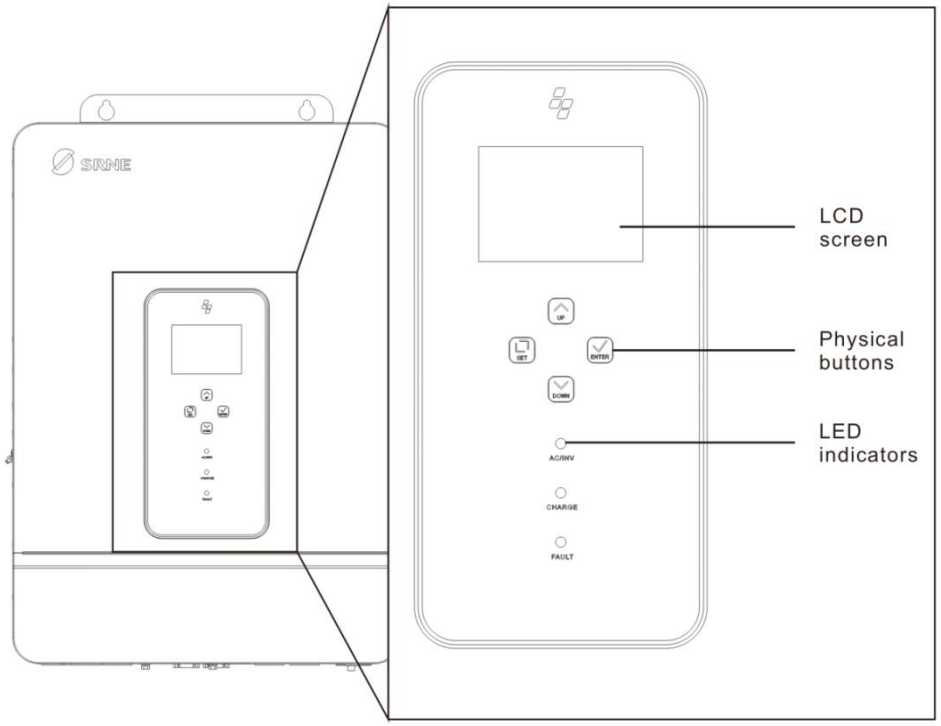
a.When the output voltage set in the setting【38】 is 230Vac, the line voltage between fire wire L1 in phase 1 and fire wire L2 in phase 2 is 230*1.732 = 398Vac, and similarly the line voltage between L1-L3, L2-L3 is 398Vac.

6. After the system runs, the output voltage is measured correctly, and then the load setting is connected.

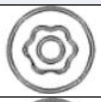
5. Operation

5.1 Operation and Display Panel

The operation and display panel of the inverter includes 1 LCD screen, 3 LED indicators, and 4 physical buttons.



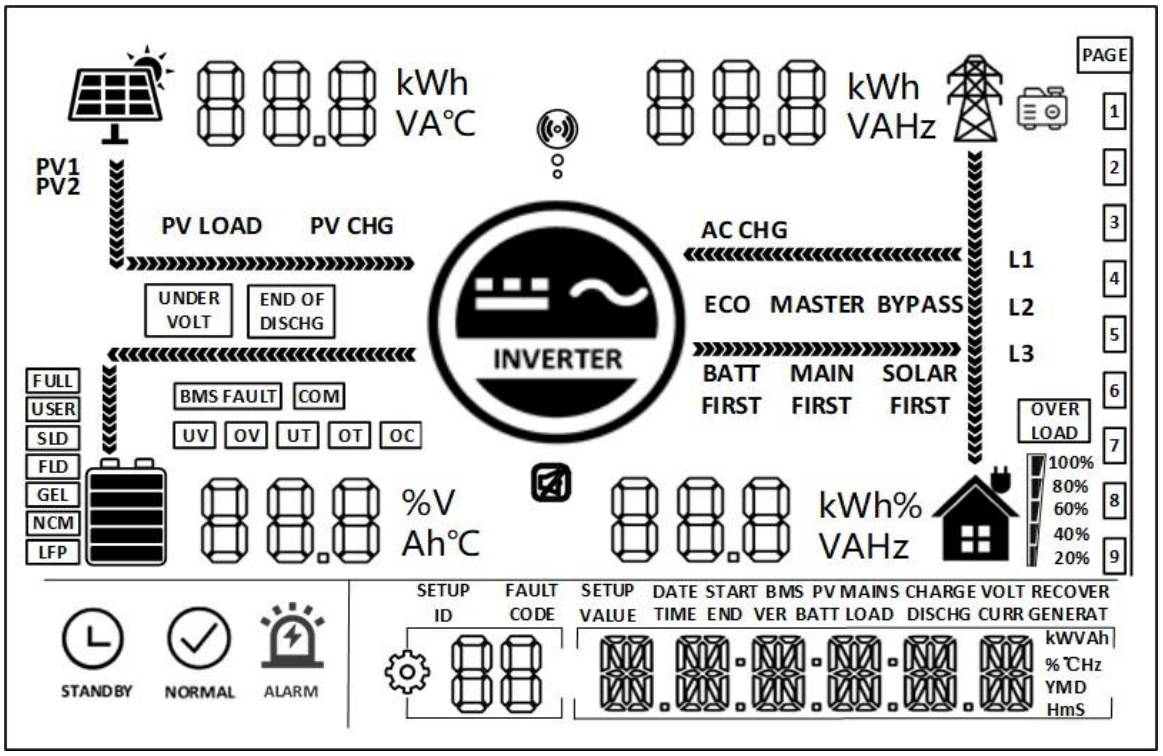
■ Physical buttons

Button	Description
	To enter/exit settings menu.
	To go to previous selection.
	To go to next selection.
	To confirm/enter selection in settings menu.

■ LED indicators

Indicator	Color	Description
FAULT	Red	Flashing: Fault occurred
AC/INV	Green	Steady on: Grid bypass output
		Flashing: Inverter output
CHARGE	Yellow	Steady on: Charging completed
		Flashing: Charging in progress

■ Display screen



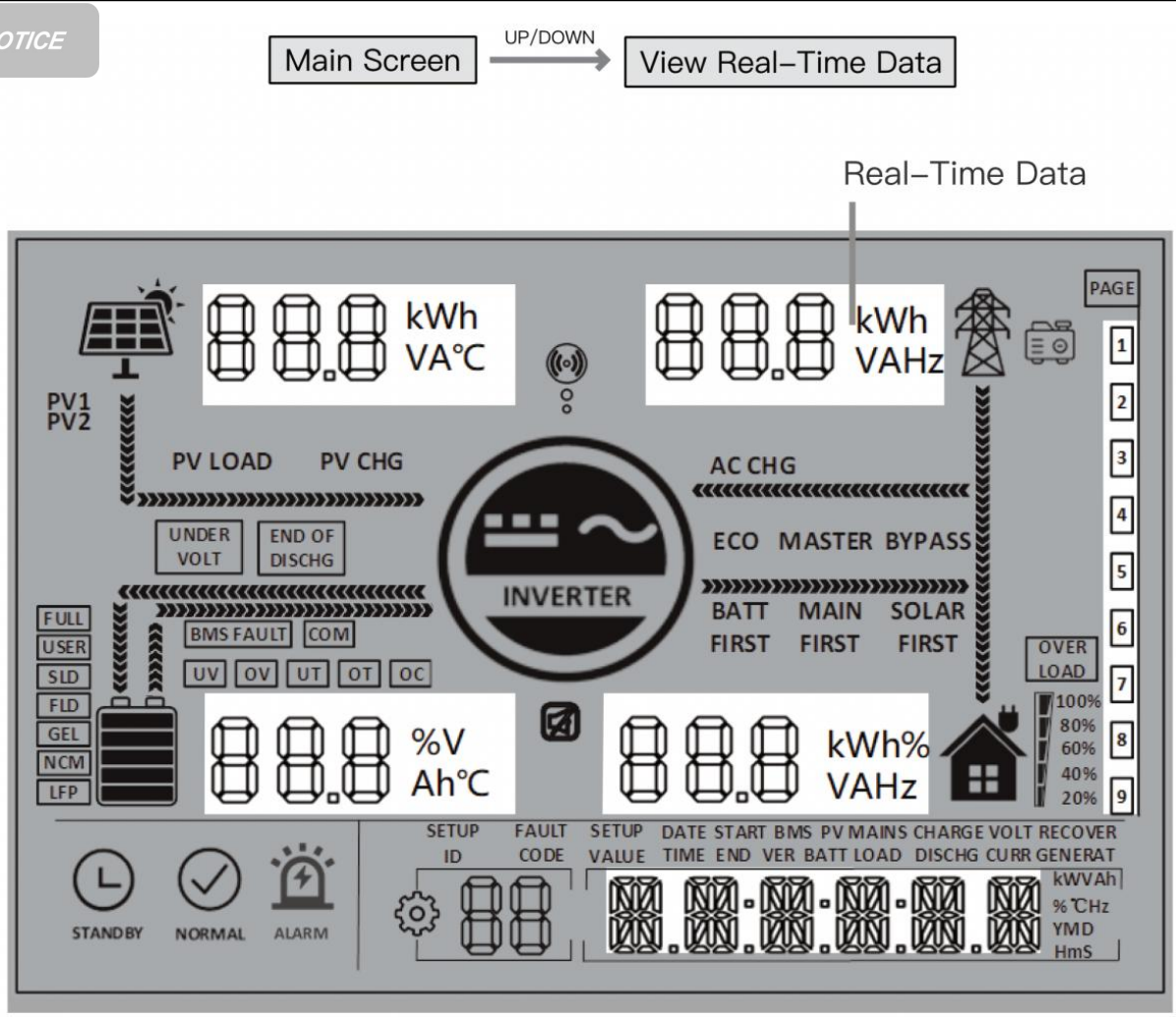
Icon	Description	Icon	Description
	PV panel		utility grid
	Battery		Generator
	The inverter is working		Load
	The inverter is communicating with the data collector		The buzzer is in mute mode
	Power flow direction		
STANDBY	The inverter is in standby mode	NORMAL	The inverter is working normally
ALARM	There is a fault		Settings
	Load power: 80%–100%		SOC: 80%–100%
	Load power: 60%–79%		SOC: 60%–79%
	Load power: 40%–59%		SOC: 40%–59%
	Load power: 20%–39%		SOC: 20%–39%
	Load power: 5%–19%		SOC: 5%–19%

UNDER VOLT	Battery under-voltage	END OF DISCHG	Battery over-discharge
OVER LOAD	Overload	BMS FAULT	BMS fault
COM	System communication error	UV	System under-voltage
OV	System overvoltage	UT	Too low system temperature
OT	Too high system temperature	OC	System overcurrent
FULL	Battery full power	USER	User-defined battery
SLD	Sealed lead-acid battery	FLD	Flooded lead-acid battery
GEL	Gel lead-acid battery	NCM	Ternary Li-ion battery
LFP	LFP Li-ion battery	ECO	Energy-saving mode
PVLOAD	PV power is loading	PVCHG	PV power is charging the battery
ACCHG	AC input power is charging the battery	MAINS FIRST	The output mode of the inverter is mains first
BYPASS	The output mode of the inverter is mains bypass	SOLAR FIRST	The output mode of the inverter is PV first
BATT FIRST	The output mode of the inverter is battery first		

■ View real-time data

On the screen, press the UP/DOWN button to view real-time data of the inverter in operation.

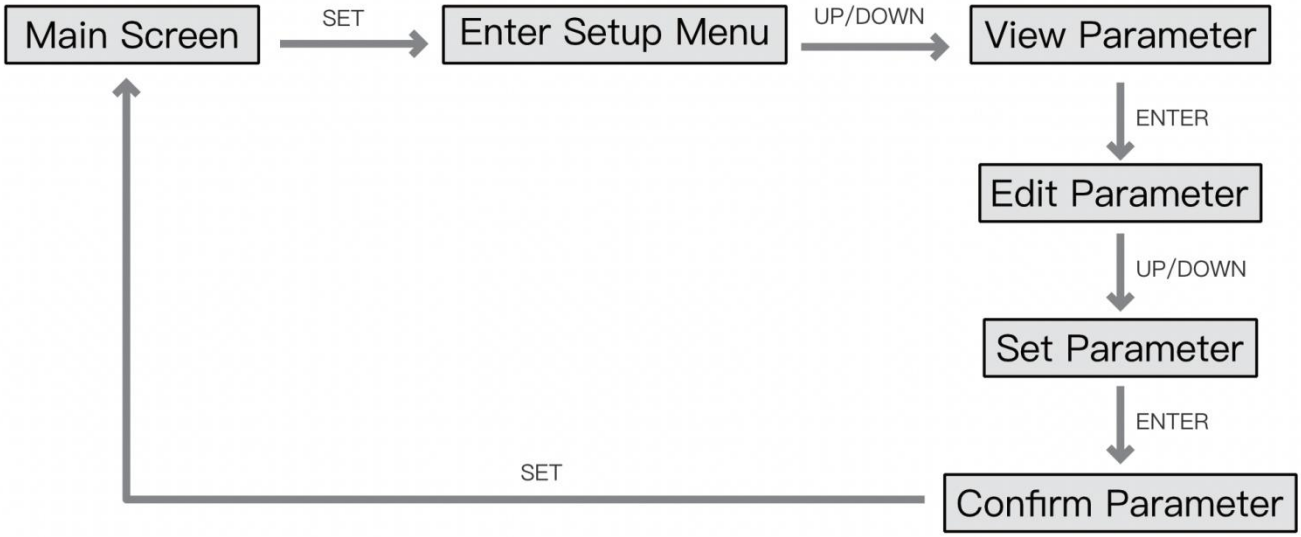
NOTICE

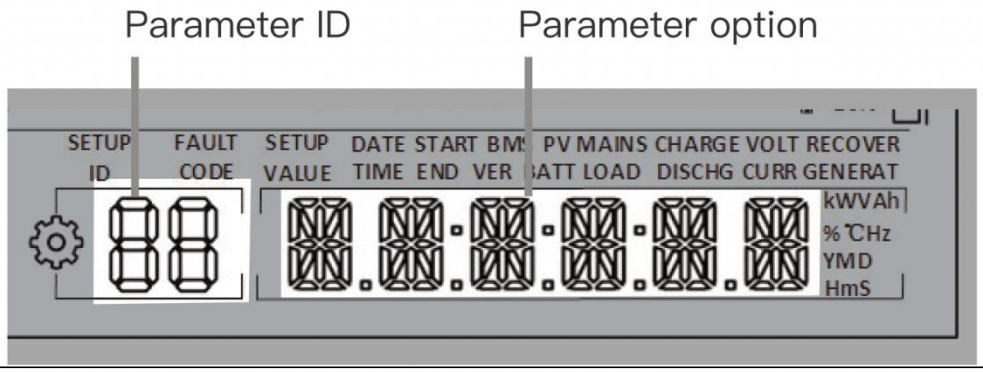


Page	PV	Battery	AC input	Load	General
1	PV input voltage	Battery voltage	AC input voltage	Phase voltage	Current time
2	PV input current	Battery current	AC input current	Phase current	Current date
3	PV input power	BMS Battery voltage	Total AC input power	Active power	Total PV power generation
4	Today's photovoltaic power generation in kWh	Battery SOC	Today's AC charging kWh	Apparent power	Total load electricity consumption
5	PV side radiator temperature	INV radiator temperature	AC frequency	AC output frequency	RS485 address
6	Rated open-circuit voltage	Rated battery voltage	Bus voltage	Rated output power	Software version
7	Max. PV charging current	Max. battery charge current	Max. AC charging current	Total AC output active power	/
8	/	/	/	Total AC output apparent power	/

5.2 Setting

NOTICE





ID	Parameter	Option	Description
The voltage setting logic: 【15】< 【12】< 【04】< 【14】< 【35】< 【37】< 【05】< 【09/11】			
00	Exit	ESC	Exit the setup menu
01	AC output mode	UTI	PV energy priority with the load, When PV power is insufficient, the grid and PV jointly supply the load. When PV power exceeds the load demand, the surplus charges the battery. Grid charging is activated only when the battery is over-discharged. (06 Settings as" OSO(only PV)", the grid power will not charge), the battery is only discharged when off the grid.
		SBU	Prioritises the use of PV to power the load and switches back to the grid to power the load only when the battery voltage is lower than the set value in parameter item [4] (when connected to the BMS, according to item [61]). When the battery voltage is higher than the value set in parameter [5] (when connected to the BMS, according to item [62]), it switches back to the PV from the grid to supply the load.
		SUB (**default**)	PV energy first used for charging, the remaining energy supply load,when PV energy is insufficient, it is supplemented by the grid , the grid energy is first supplied to the load and second used for charging(if 06 Settings as" OSO(only PV) " ,the grid energy will not used for charging).
		SOL	PV first mode. When the PV power is unavailable or the battery voltage is lower than the set value in the item 4, it will switch to the grid mode
02	AC input frequency	50.0 (**default**)	In grid mode the AC output frequency will adapt to the grid frequency, otherwise the output will follow the preset values.
		60.0	
03	AC input voltage range	UPS (**default**)	When output range is 220/230V, input voltage range 170~280V.
		APL	When output range is 220/230V, input voltage range 90~280V, frequency range changes to 40-70 Hz.
04	Voltage point of battery switch to grid	43.6	When parameter **[01]= SBU/SOL**, output source will switch to grid from battery when the battery voltage below the preset value. Setting range: 40~52V.
05	Voltage point of grid switch to battery	56.8	When parameter **[01]=SBU/SOL**, output source will switch to battery from grid when the battery voltage above the preset value. Setting range: 48~60V.
06	Battery charge mode	SNU (**default**)	PV and grid hybrid charging, with PV charging prioritized. When PV energy is insufficient, mains charging supplements it. When PV energy is sufficient, mains charging stops. **Note:** PV and mains can only charge simultaneously when the mains bypass output is loaded. During inverter operation, only PV charging can be activated.

		OSO	Only PV charging, without activating grid charging.
07	Battery charging current	100A (**default**)	setting range: 0~200 A
08	Battery type	USER	User-defined, and in this type, you can set all battery parameters
		SLD	Sealed lead-acid battery
		FLD	Flooded lead-acid battery
		GEL (**default**)	Gel lead-acid battery
		L14/ L15/ L16	L14/ L15/ L16 lithium iron phosphate batteries, corresponding to lithium iron phosphate batteries 14, 15, 16 series.
		N13/ N14	Ternary lithium batteries, N13/N14, corresponding to ternary lithium batteries 13 series, 14 series.
		NO BAT	No battery
09	Battery boost charge voltage	57.6V	Setting range 48V~58.4V, step 0.4V, valid when battery type is custom and lithium battery.
10	Boost charge duration	120	Boost charging maximum time setting, refers to the constant voltage charging when the voltage reaches the **parameter [09]** setting voltage maximum charging time, set the range of 5min~900min, step of 5 minutes.
11	Battery floating charge voltage	55.2	Setting range 48V~58.4V, step 0.4V, this parameter can not be set after the BMS communication is successful.
12	Battery over-discharge voltage (delayed shutdown)	42	When the battery voltage is lower than the judgement point, and triggers the **parameter [13]**, the inverter output is switched off, the setting range is 40V~48V.
13	Battery over-discharge delay time	5	The battery voltage is lower than **parameter [12]**, and the inverter output is switched off after triggering the delay time set in this parameter, the setting range is 5s~50s, the step is 5s.
14	Battery under-voltage alarm threshold	44	When the battery voltage is lower than this judgement point, the device will under-voltage alarm, the output will not be switched off, the setting range is 40V~52V, the step is 0.4V.
15	Battery discharge limit voltage	40	When the battery voltage is lower than this parameter value, the output will be turned off immediately. The setting range is 40V~52V, the step is 0.4V.
16	Battery equalization charging	dIS (**default**)	Disable equalization charging.
		ENA	Enable equalization charging, valid when battery type is FLd, SLd, and USER.
17	Battery equalization charging voltage	58	Setting range 48V~58V in 0.4V steps, valid when battery type is FLd, SLd, and USER.
18	Battery equalization charging duration	120	Setting range 5min~900min in 5 min steps, valid when battery type is FLd, SLd, and USER.

19	Battery equalization charging delay time	120	Setting range 5min~900min in 5 minute steps, valid when battery type is FLd, SLd, and USER.
20	Battery equalization charging interval	30	Setting range 0~30 days in 1 day steps, valid when battery type is FLd, SLd, and USER.
21	Battery equalization charging stop-start	dIS (**default**)	Start equalization charging immediately.
		ENA	Stop equalization charging immediately.
22	Energy-saving mode	dIS (**default**)	Disable energy-saving mode
		ENA	Enable energy-saving mode, when the load power is less than 25W, the output of the inverter will switch off after a 5-minute delay. When the load exceeds 50W, the inverter will restart automatically.
23	Overload automatic restart	dIS	Disable overload automatic restart, if an overload occurs to shut down the output, the machine will not be restored to power on again.
		ENA **(default)**	Enable overload automatic restart. If an overload occurs that shuts down the output, the machine delays for 3 minutes before restarting the output. After accumulating 5 times, it will not restart again.
24	Over-temperature auto restart	dIS	Disable over-temperature auto restart and when over-temperature occurs, it will turn off the output and the inverter will no longer turn on the output
		ENA **(default)**	Enable over-temperature auto restart and when over-temperature occurs, it will turn off the output and the output will restart when the temperature drops
25	Buzzer alarm	dIS	Disable buzzer alarm
		ENA (**default**)	Enable buzzer alarm
26	Mode switch prompt	dIS	Disable prompt when the status of the main input source changes
		ENA (**default**)	Enable prompt when the status of the main input source changes
27	Inverter overload switch to bypass	dIS	Disable automatic switching to grid to power the load when the inverter is overloaded.
		ENA (**default**)	When the inverter is overloaded, it automatically switches to grid to power the load.
28	Grid charging current	80A	Setting range: 0~150A
30	RS485 communication address	ID: 1	Setting range: 1~253
31	AC output mode (can be set in the standby	SIG (**default**)	Settings for stand-alone use.

	mode only)	PAL	Settings for single-phase parallel use.
		3P1/3P2/ 3P3	Settings for three-phase parallel use.
		All machines in phase 1 must be set as【3P1】, all machines in phase 2 must be set as【3P2】, all machines in phase 3 must be set as【3P3】. When the output voltage set in the setting【38】is 230Vac: At present, the voltage phase difference between P1-P2, P1-P3 and P2-P3 is 120 degrees. The line voltage between fire wire L1 in phase 1 and fire wire L2 in phase 2 is 230*1.732 = 398Vac, and similarly the line voltage between L1-L3, L2-L3 is 398Vac. The line voltage between L1-N, L2-N, L3-N is 230Vac.	
32	RS485 communication	dIS (**default**)	Enable PC and Remote Monitoring Protocol
		485	Enable the BMS communication function based on RS485 communication
		CAN	Enable the BMS communication function based on CAN communication
33	BMS communication	When **item [32] = 485 / CAN**, the corresponding lithium battery manufacturer brand should be selected for communication.	
		WOW (**default**)	**485 protocol:** PAC=PACE, RDA=RITAR, AOG=ALLGRAND , OLT=OLITER, CEF=CFE, XYD=SUNWODA, DAQ=DYNESS, WOW=SRNE, PYL=PYLONTECH , POW=POWMr, VOL=VILION, SGP=SGP, GSL Energy, PYT=Pylon tech 2, DYE=DEYE, LUX=LUXPOWER
			CAN protocol: UZE=YUZE, SGP=SGP, GSL Energy, PYT=Pylon tech 2, LUX=LUXPOWER
34	On-grid and anti-reverse current	dIS (**default**)	Disable this function.
		ON GRD	When **parameter [01]=UTI**, PV energy will be prioritized for load supply. After meeting the load demand, the remaining electricity will be fed back to the grid, and any further excess energy will be used to charge the battery. When **parameter [01]=SUB**, PV energy will prioritize charging the battery. After meeting the battery demand, the remaining electricity will be used to power the load (if the remaining electricity is insufficient for the load, the remaining PV power will be mixed with grid power to supply the load), and any additional excess energy will be fed back to the grid.
		HOME LOAD	When **parameter [01]=UTI**, PV energy will be prioritized for load supply. Excess energy will be subject to anti-backflow control, and any remaining excess energy will be used to charge the battery. When **parameter [01]=SUB**, PV energy will be prioritized for charging. After meeting the battery's requirements, the remaining energy will be used for load supply, and any further excess energy

			will be subject to anti-backflow control.
35	Battery under-voltage recovery point	52V	When the battery is under-voltage, the battery voltage needs to be higher than this setting value in order to restore the battery inverter AC output, setting range: 44V~54.4V.
37	Battery full charge and recharging recovery point	52V	Inverter stops charging when the battery is full. Inverter resumes charging when the battery voltage below this value. Setting range: 44V~54V.
38	AC output voltage	230V **(default)**	Setting range: 200/208/220/230/240Vac.
39	Charging current limiting method (when BMS is enabled)	LC SET	The maximum battery charge current is not greater than the set value of [item 07]
		LC BMS **(default)**	The maximum battery charge current is not greater than the maximum value of BMS
		LC INV	The maximum battery charge current is not greater than the logical judgment value of inverter
40	1st slot grid start charging	00:00:00	Setting range: 00:00:00–23:59:00
41	1st slot grid end charging	00:00:00	Setting range: 00:00:00–23:59:00
42	2nd slot grid start charging	00:00:00	Setting range: 00:00:00–23:59:00
43	2nd slot grid end charging	00:00:00	Setting range: 00:00:00–23:59:00
44	3rd slot grid start charging	00:00:00	Setting range: 00:00:00–23:59:00
45	3rd slot grid end charging	00:00:00	Setting range: 00:00:00–23:59:00
46	Time slot grid charging function	dIS **(default)**	Disable the function
		ENA	The mains is available for power supply in the set period or after battery over-discharge. If the timed discharge function is enabled at the same time, the mains is only available for power supply in the set charge period, and the system only switches to the power supply of battery inverter during the set discharge period or mains failure.
47	1st slot battery start discharging	00:00:00	Setting range: 00:00:00–23:59:00
48	1st slot battery end discharging	00:00:00	Setting range: 00:00:00–23:59:00
49	2nd slot battery start discharging	00:00:00	Setting range: 00:00:00–23:59:00
50	2nd slot battery end discharging	00:00:00	Setting range: 00:00:00–23:59:00
51	3rd slot battery start	00:00:00	Setting range: 00:00:00–23:59:00

	discharging		
52	3rd slot battery end discharging	00:00:00	Setting range: 00:00:00–23:59:00
53	Time slot battery discharging function	dIS (**default**)	Disable the function
		ENA	After enabling the segmented timed battery discharge function, the battery will discharge only during the specified discharge period.
54	Local date	00:00:00	YY/MM/DD. Setting range: 00:01:01-99:12:31.
55	Local time	00:00:00	Setting range: 00:00:00-23:59:59.
56	Leakage current detection protection	DIS (**default**)	Disable detecting Leakage current value.
		ENA	Enable detecting Leakage current value.
57	Stop charging current	3 (**default**)	Charging stops when the charging current is less than this setting (unit: A).
58	Discharging alarm SOC setting	15	Triggers an alarm when the battery SOC is less than the set value (unit: %, valid only when BMS communication is normal).
59	Discharging cut-off SOC setting	5	Stops discharging when the battery SOC is less than the set value (unit: %, valid only when BMS communication is normal).
60	Charging cut-off SOC setting	100	Stops charging when the battery SOC is higher than the set value (unit: %, valid only when BMS communication is normal).
61	Switching to grid SOC setting	10	Switch to grid power when the battery SOC is less than this setting value (unit: %, valid only when BMS communication is normal).
62	Swithing to inverter output SOC setting	100	Switches to inverter output mode when SOC is higher than this setting value (unit: %, valid only when BMS communication is normal).
63	Auto N-PE connection switch function	dIS (**default**)	Disable automatic switching of N-PE connections.
		ENA	Enable automatic switching of N-PE connections.
67	on-grid power setting	0 (**default**)	Setting range: 0 to inverter rated power.
72	Battery grid-connected discharge enable	dIS (**default**)	Battery is not allowed to feed power back to the grid.
		ENA	Battery is allowed to feed power back to the grid.
73	Generator charging current setting	60A (default)	setting range: 0~150A
74	Generator power setting	12kW (**default**)	setting range: 0~12kW
76	External CT transformation ratio	2000	Setting range: 0~5000

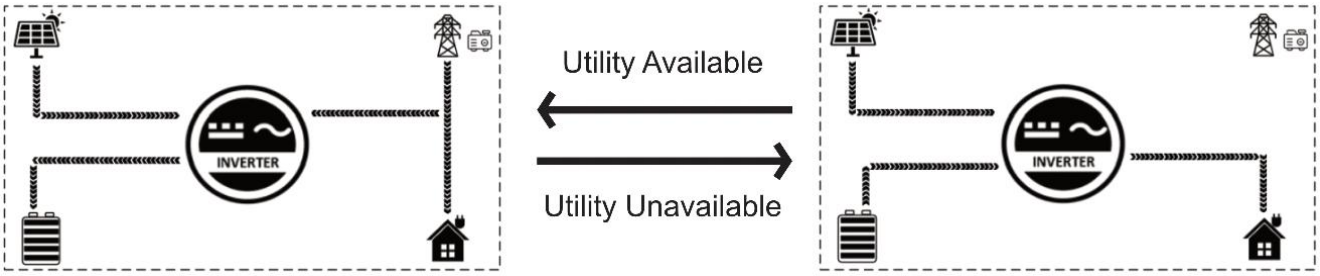
77	External CT anti-backflow error power	100W (**default**)	It can be set between 0W and 500W, which means that in order to prevent power sampling errors, 0-500W of electricity is drawn from the grid to ensure that there is no backflow at all.
78	Battery hybrid discharge current	200A (**default**)	Maximum discharge current of the battery when operating in hybrid mode with both battery and mains power.
79	AFCI Enable	dIS (**default**)	Disable AFCI function.
		1-10	Enable AFCI function. Detection Threshold: 1~10
80	AFCI fault manual clearing	NULL (**default**)	Do not clear.
		CLEAR	Manually clear the AFCI fault.
81	Generator operating mode	GEN IN (**default**)	Generator interface used as generator function input.
		AC OUT	Generator interface used as secondary load port output.
82	CT manual enabling	NO CT	No CT input.
		TO INV	CT direction set to inverter flow as positive direction.
		TO GRD	CT direction set to grid flow as positive direction.

5.3 AC Output Mode

The AC output mode corresponds to parameter setting items of 01 and 34, allowing users' manual setting

- **Mains first 01 UTI**

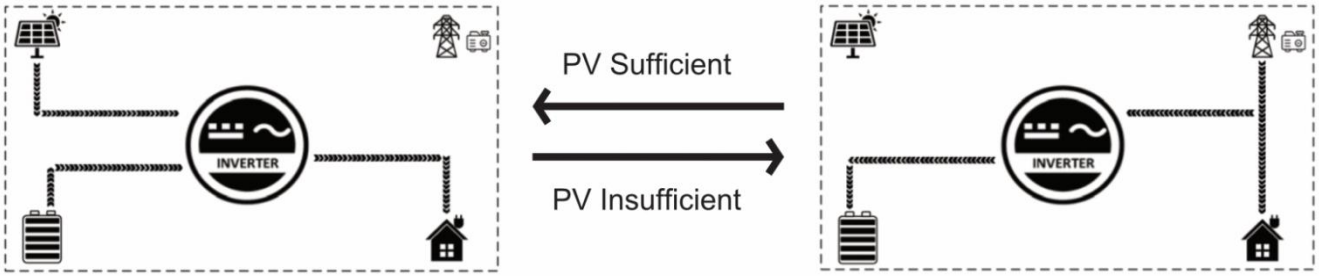
Utility at first priority, utility and solar provide power to load at the same time when solar is available, battery will provide power to load only when utility power is not available.**(Priority: utility>solar>battery)**



- **PV and Utility hybrid loading 01 SUB (default)**

PV priority charging; When PV power is insufficient, utility power and PV will perform hybrid charging (when item 06 is set to "PV-only charging", utility power will not be used for charging), and utility power will supply the load. When PV power meets the charging demand but cannot meet the load demand, PV and utility power will perform hybrid loading, and the battery will only discharge in off-grid mode.

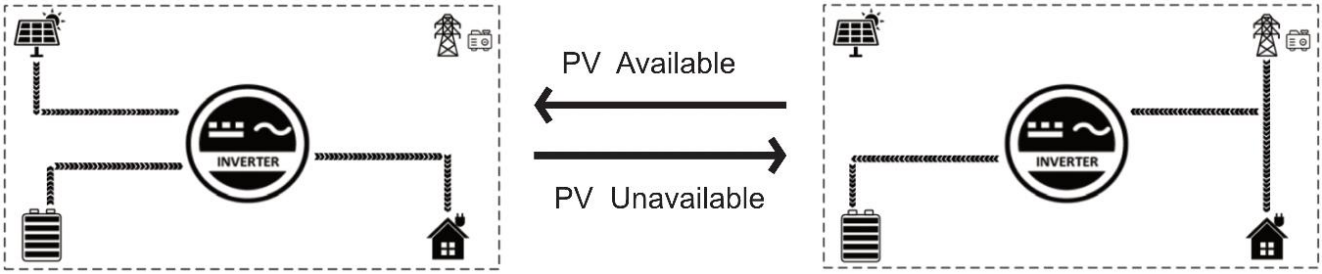
(Priority: Utility > PV > Battery)



■ PV Priority Output 01 SOL

PV prioritizes power supply to the load. When PV meets the load demand, the excess power will charge the battery. When PV energy is insufficient, the battery will supplement energy to power the load. When PV is invalid, it will switch to utility power supply, and finally use battery power supply. When PV energy is insufficient, and when the battery level is lower than the parameter (Battery to utility) or the SOC setting value for switching to utility, it will switch to utility power supply for the load and charging. PV charges when there is no load. This mode can maximize the use of PV power generation while maintaining battery capacity, and is suitable for areas with stable power grids.

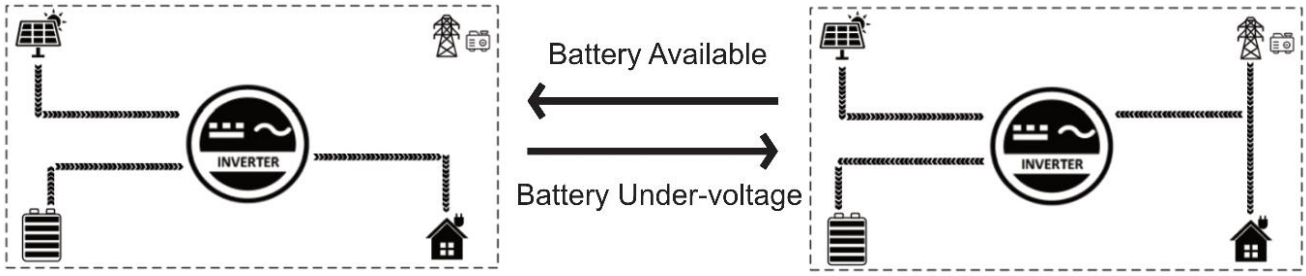
(Priority: PV > Utility > Battery)



■ Inverter Priority Output 01 SBU

The PV will supply power to the loads on a priority basis. If the PV is insufficient or unavailable, the battery will be used as a supplement to supply power to the load. When the battery voltage touches the value of parameter [04] (Voltage point of battery switch to utility), it will switch to utility power supply to the load (without BMS connected) / When the BMS is connected and the Li-ion battery SOC touches the value of parameter [61] (Switching to utility SOC setting), it will switch to utility power supply to the load. This mode maximises the use of DC energy, and it is suitable for the areas where the utility power is stable.

(Priority: PV > Battery > Utility)

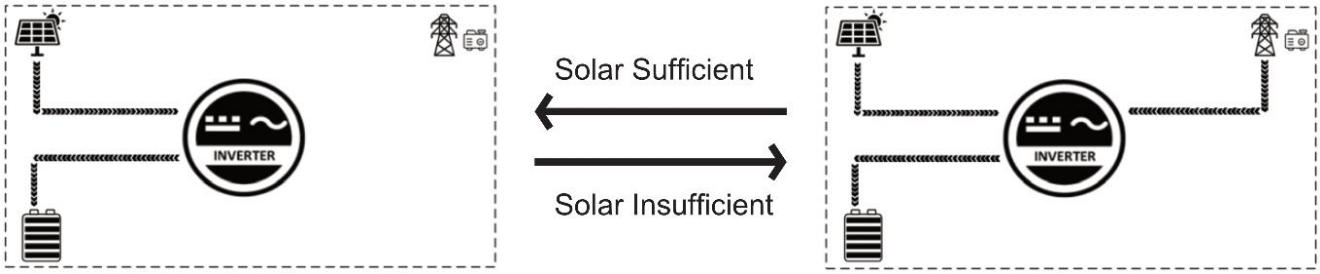


5.4 Battery Charging Mode

The charging mode corresponds to parameter [06], which allows the user to set the charging mode manually.

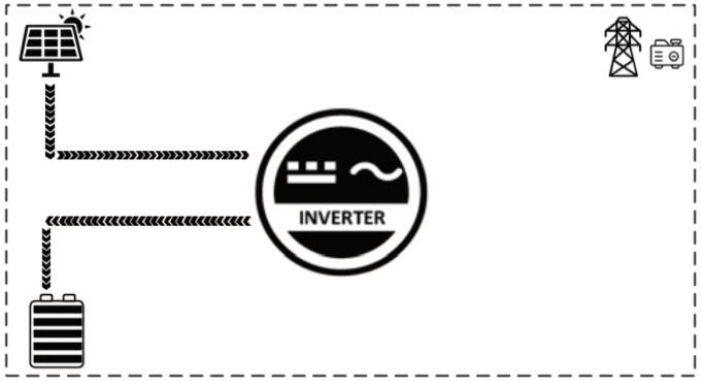
- **Hybrid Charging SNU (default)**

PV and utility power charge the battery at the same time, with PV taking priority and mains power acting as a supplement when PV is insufficient. This is the fastest charging method and is suitable for areas with insufficient power supply, providing sufficient backup power for users. **(Priority: PV > Utility)**



- **Only PV Charging OSO**

Only PV power is used to charge the battery, without starting the utility charging. This is the most energy-efficient method, with all battery power coming from solar energy, and is usually used in areas with good radiation conditions.



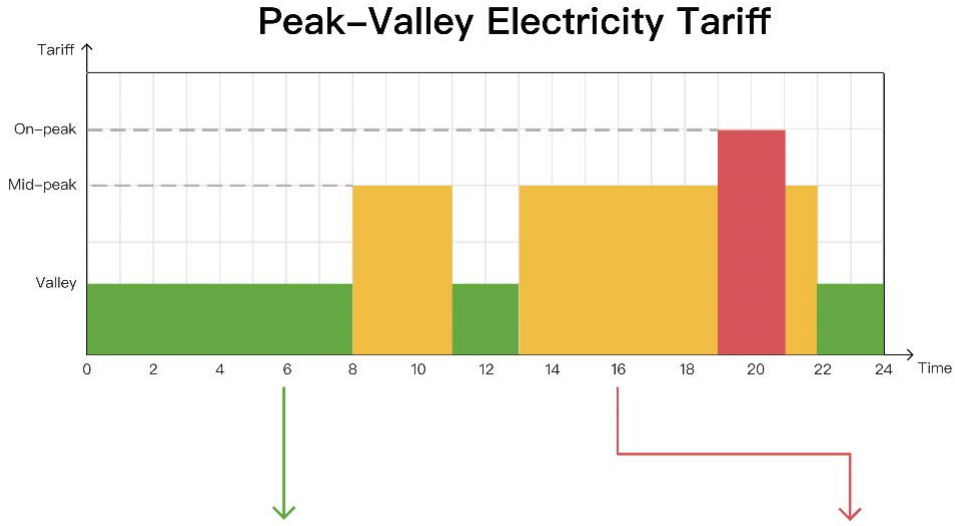
5.5 Time-slot Charging/Discharging Function

The ASP 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 40-45, 47-52. Below are examples for users to understand the function.

NOTICE



Time-slot Utility Charging & Loading 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

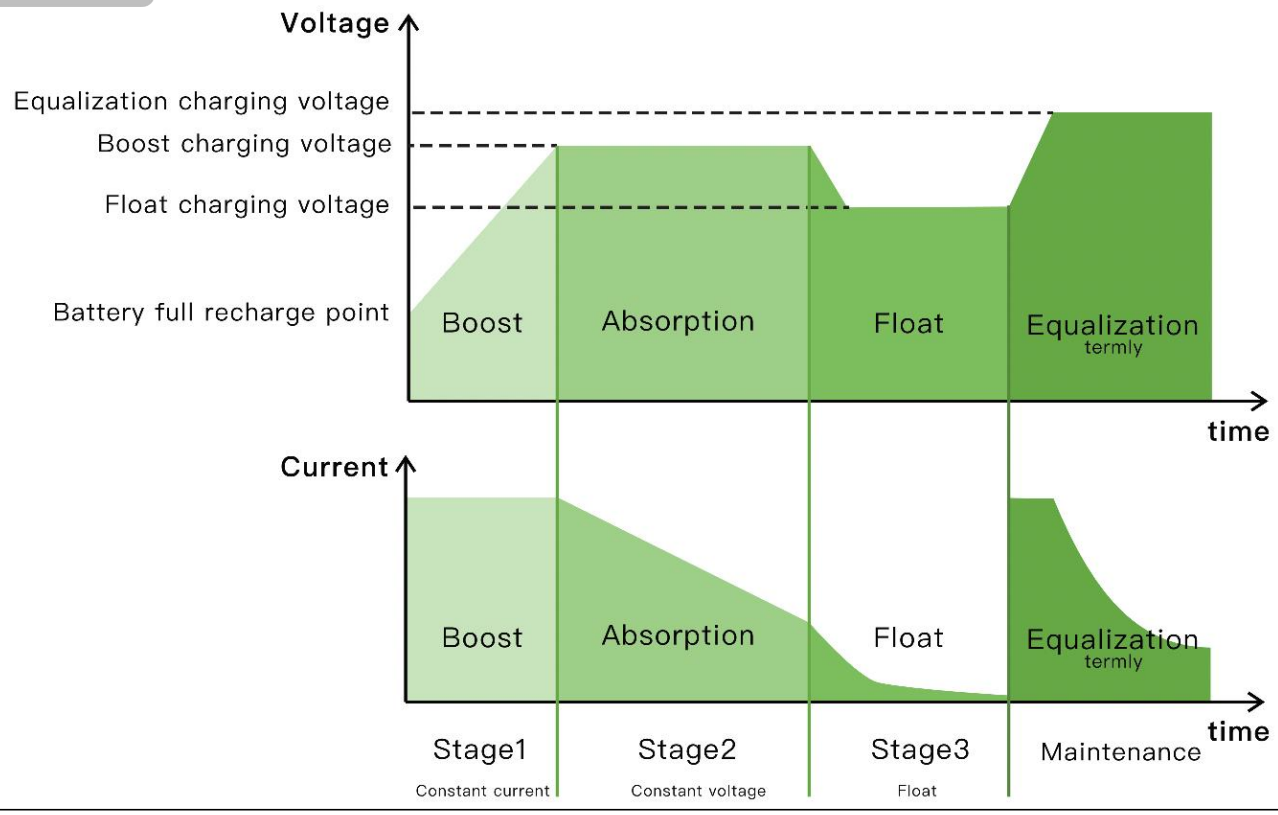
With 3 definable time periods, users can freely set the battery discharge time within the range of 00:00 to 23:59. During the time period set by the user, the inverter will give priority to the battery inverter to carry the load, and if the battery power is insufficient, the inverter will automatically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

5.6 Battery parameters

- **Lead-acid battery**

Parameters \ Battery type	Sealed lead acid battery (SLD)	Gel lead acid battery (GEL)	Flooded lead acid battery (FLD)	User-defined (USE)
Overvoltage Disconnect Voltage	60V	60V	60V	60V
Equalization Charging Voltage	58V	56.8V	58V	40 ~ 60V settable
Boost Charging Voltage	57.6V	56.8V	57.6V	40 ~ 60V settable
Float Charging Voltage	55.2V	55.2V	55.2V	40 ~ 60V settable
Undervoltage Alarm Voltage	44V	44V	44V	40 ~ 60V settable
Undervoltage Disconnect Voltage	42V	42V	42V	40 ~ 60V settable
Discharge Limit Voltage	40V	40V	40V	40 ~ 60V settable
Over-discharge Delay Time	5s	5s	5s	1 ~ 30s settable
Equalization Charging Duration	120 min	-	120 min	0 ~ 600 min settable
Equalization Charging Cycle	30d	-	30d	0 ~ 250d settable
Bulk Charging Cycle	120m	120m	120m	10 ~900m settable

NOTICE

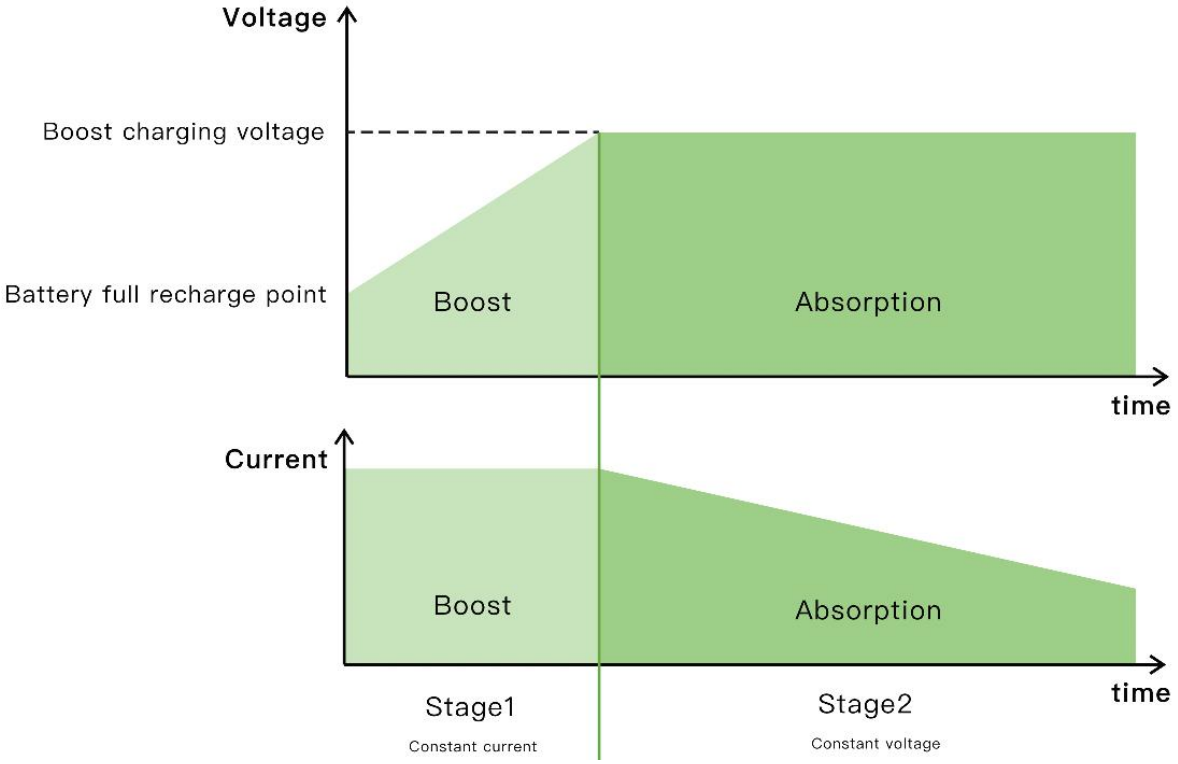


■ Lithium-ion Battery

Parameters \ Battery type	Ternary (N13)	Ternary (N14)	LFP (L16)	LFP (L15)	LFP (L14)	Adjustable
Overvoltage Disconnect Voltage	60V	60V	60V	60V	60V	60V
Equalization Charging Voltage	-	-	-	-	-	40 ~ 60V settable
Boost Charging Voltage	53.2V	57.6V	56.8V	53.2V	49.2V	40 ~ 60V settable
Float Charging Voltage	53.2V	57.6V	56.8V	53.2V	49.2V	40 ~ 60V settable
Undervoltage Alarm Voltage	43.6V	46.8V	49.6V	46.4V	43.2V	40 ~ 60V settable
Undervoltage 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
Equalization Charging Duration	-	-	-	-	-	0 ~ 600 min settable
Equalization Charging Cycle	-	-	-	-	-	0 ~250d settable
Boost Charging Cycle	120 min settable	120 min settable	120 min settable	120 min settable	120 min settable	10 ~ 900 min settable

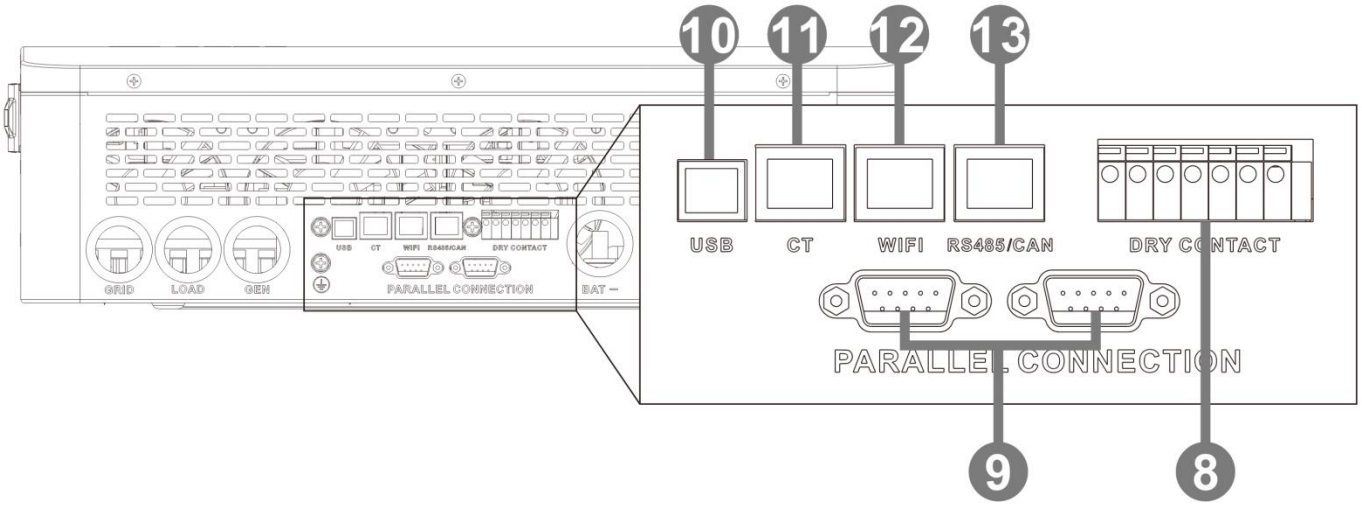
NOTICE

If no BMS is connected, the inverter will charge according to the battery voltage with a preset charging curve. When the inverter communicates with the BMS, it will follow the BMS instructions to perform a more complex stage charging process.



6. Communication

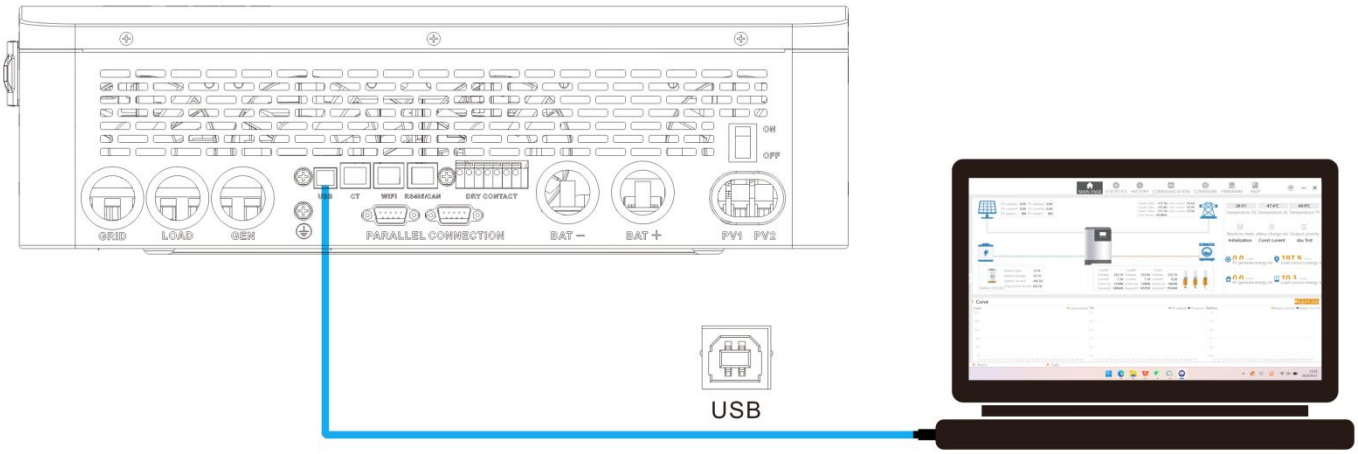
6.1 Product Overview



8	Dry Contact Prot	9	Parallel Port	10	USB Port
11	CT Port	12	WiFi Port	13	RS485/CAN Port

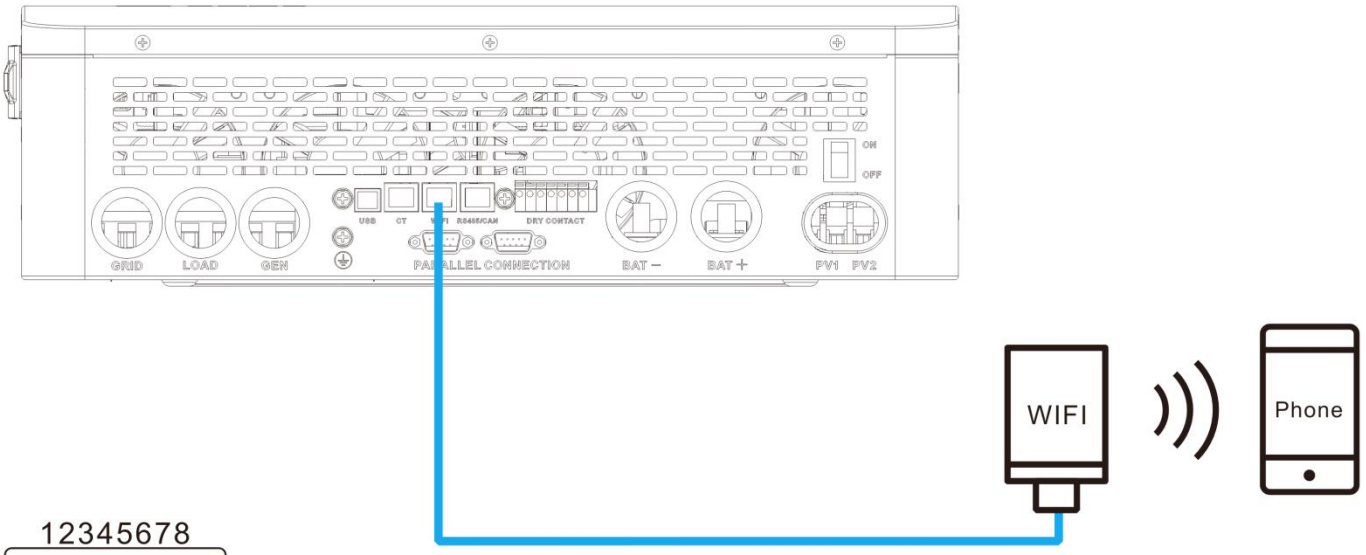
6.2 USB Communication Function

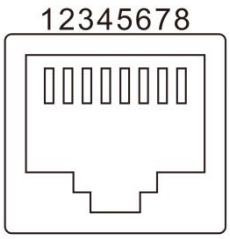
Users can use the host computer software to read and modify the device parameters through this port. If you need the installation package of the host computer software, you can download it from the official website or contact us to get the installation package.



6.3 WiFi Communication Function

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.



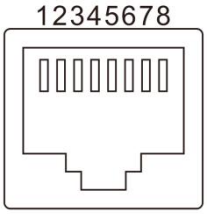


WIFI

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

6.4 RS485/CAN Communication Function

The RS485/CAN interface is used to connect to the BMS lithium battery.



RS485/CAN

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

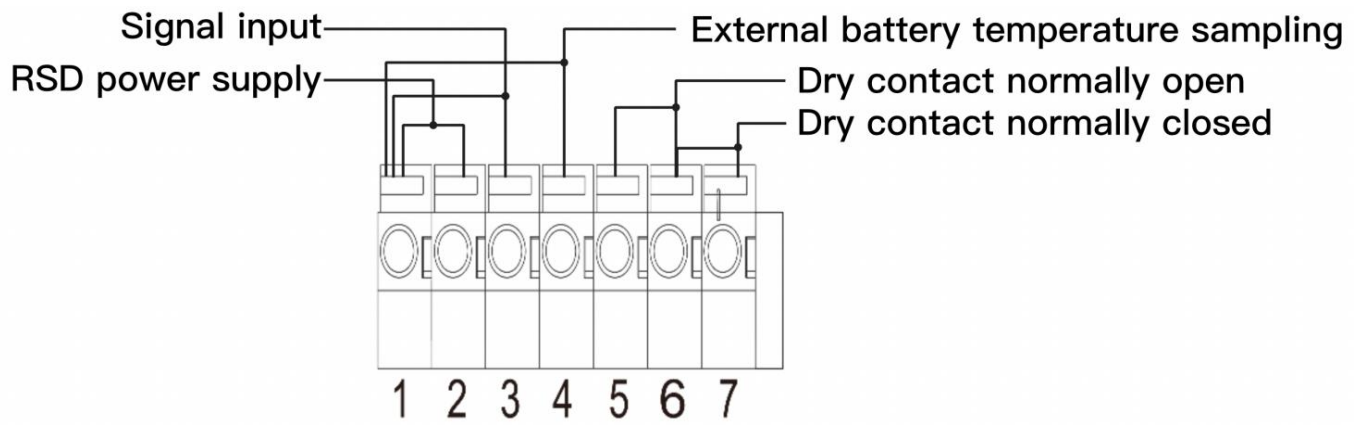
⚠ *NOTICE*

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.

6.5 Dry Contact Function

The dry contact port has 4 functions:

1. RSD power supply
2. Signal input
3. External battery temperature sampling
4. Dry contacts normally open/closed

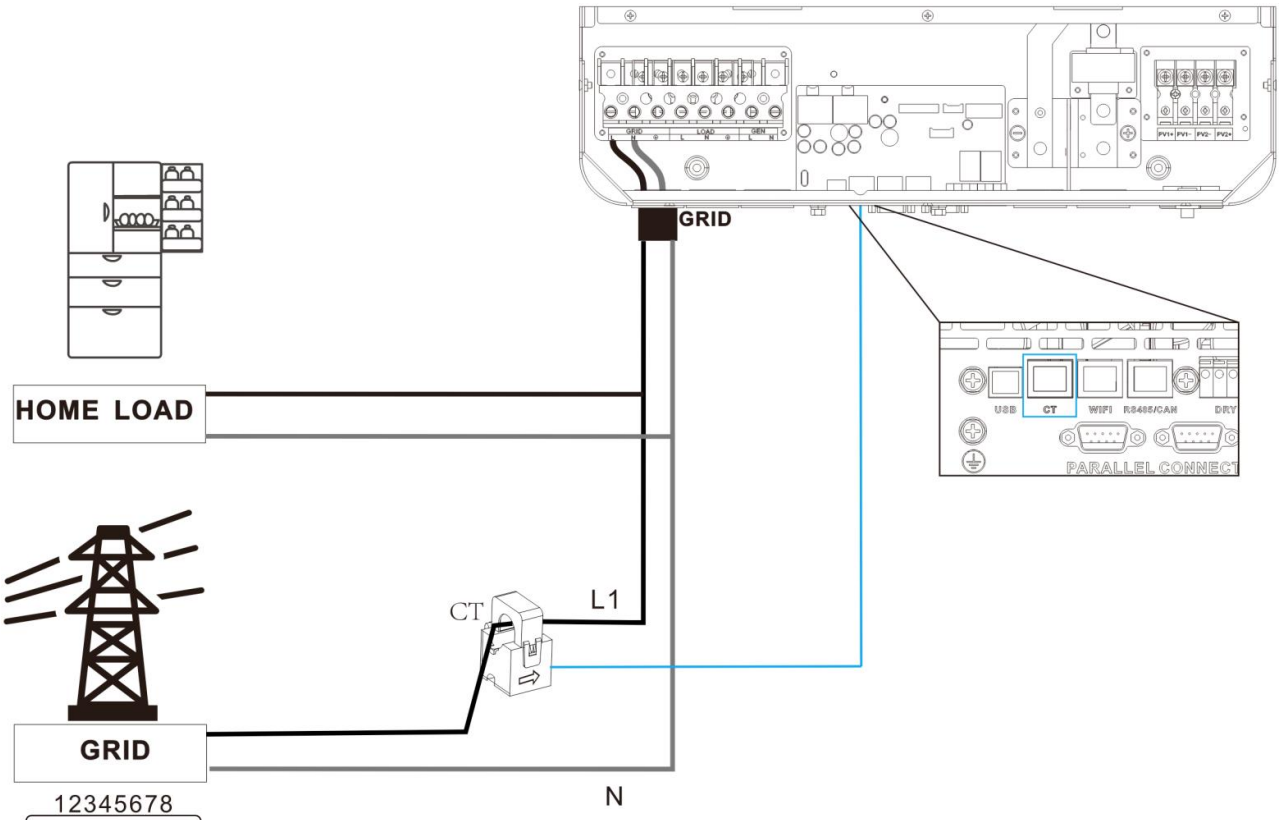


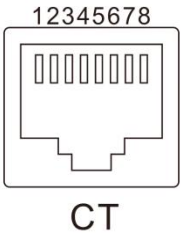
Function	Definition
RSD power supply	Pin 1 is GND, Pin 2 is 12V. When the machine is operating normally, the voltage difference between the two pins is 0V. When rapid shutdown is required, 12V is output here.
Signal input	Digital signal input, maximum 12V.
External battery temperature sampling	Pin 1 and Pin 4 can be used for battery temperature sampling compensation.
Dry contact	Pin 5 is the common pin, Pin 5 and Pin 6 is normally open, Pin 5 and Pin 7 is normally closed, signal cannot be connected to Pin 6 and Pin 7

⚠ *NOTICE*

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

6.6 External CT Connection

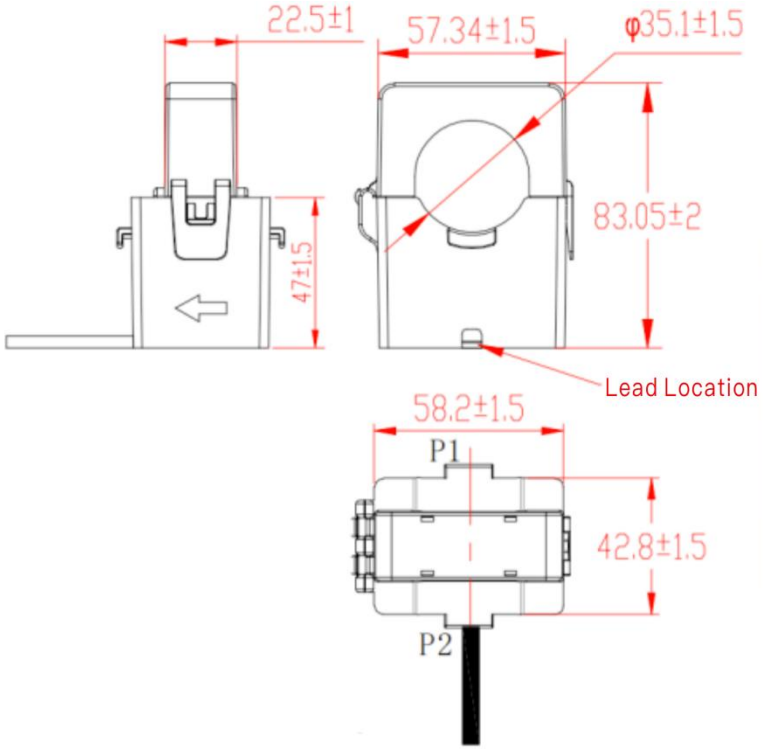


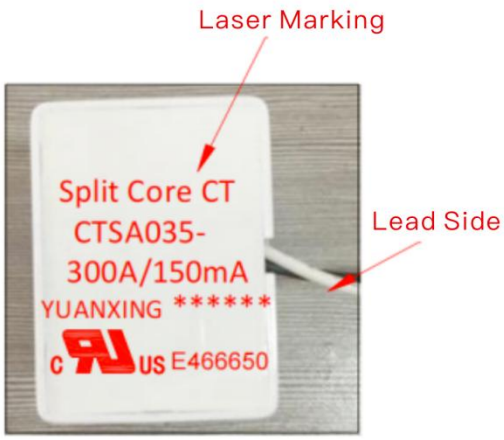


CT

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

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

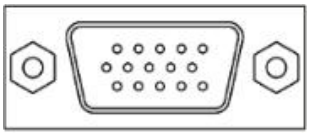




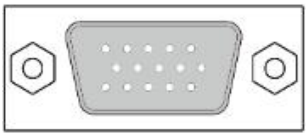
6.7 Parallel Communication Function

a) This port is used for parallel communication, through which the parallel modules can communicate with each other.
b) Each inverter has two DB15 ports, one for the male connector and the other for the female connector.
c) When connecting, make sure to connect the male connector of the inverter with the female connector of the inverter to be paralleled, or connect the female connector of the inverter to the male connector of the inverter to be paralleled.
d) Do not connect the male connector of the inverter to its female connector.

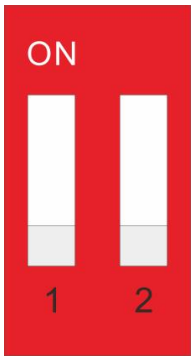
Female connector



Male connector



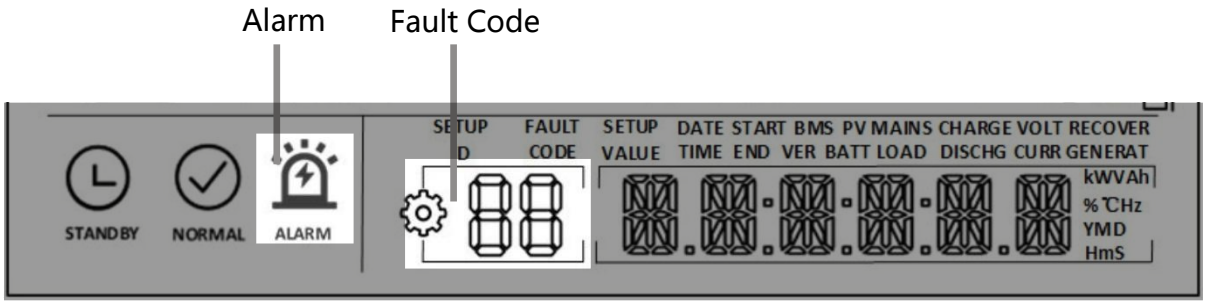
6.8 DIP Switch



This DIP switch is the parallel communication resistance matching switch. When multiple inverters are operating in parallel, set the DIP switch of the first and last inverter to the ON position, and toggle the DIP switches of the remaining inverters to the 1-2 position (downward).

7. Fault Codes and Response Measures

7.1 Fault Codes



Fault Code	Meaning	Affect Output or Not	Description
01	BatVoltLow	No	Battery under-voltage alarm
02	BatOverCurrSw	Yes	Overcurrent software protection for average battery discharge current
03	BatOpen	Yes	Disconnected battery alarm
04	BatLowEod	Yes	Under-voltage battery discharge stop alarm
05	BatOverCurrHw	Yes	Battery overcurrent hardware protection
06	BatOverVolt	Yes	Charge overvoltage protection
07	BusOverVoltHw	Yes	Bus overvoltage hardware protection
08	BusOverVoltSw	Yes	Bus overvoltage software protection
09	PvVoltHigh	Yes	PV overvoltage protection
10	PvAFCIErr	No	PV arc fault.
11	PvBoostOCHw	No	Boost overcurrent 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 overcurrent hardware protection
16	AuxDSpReqOffPWM	Yes	Slave chip OFF request fault
17	InvShort	Yes	Inverter short-circuit protection
18	Bussoftfailed	Yes	Bus soft-start failure
19	OverTemperMppt	No	PV heat sink over-temperature protection
20	OverTemperInv	Yes	Inverter heat sink over-temperature protection
21	FanFail	Yes	Fan fault
22	EEPROM	Yes	Memory fault
23	ModelNumErr	Yes	Model setting error
24	Busdiff	Yes	Positive and negative bus voltage imbalance
25	BusShort	Yes	Bus short-circuit

26	Rlyshort	Yes	Inverter AC output backward to bypass AC output
28	LinePhaseErr	Yes	Mains input phase error
29	BusVoltLow	Yes	Bus low-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 (taking effect after BMS communication is successful)
34	CanCommFault	Yes	Parallel can communication fault
35	ParaAddrErr	Yes	Parallel ID (communication address) setting error
36	Balance currentOC	Yes	Balance bridge arm overcurrent failure.
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
48	AFCIComErr	Yes	AFCI communication error.
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 fault
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 Troubleshooting

Fault Code	Meaning	Causes	Remedy
/	No screen display	No power input, or the switch on the bottom of the unit is not switched on.	Check whether the battery air circuit breaker or PV air circuit breaker is closed. Check if the switch is in the "ON" position. 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 parameter [14].	Charge the battery until the battery voltage exceeds the set value in parameter [14].
03	Battery not connected	The battery is not connected, or the BMS is in discharge protection state.	Check whether the battery is reliably connected. Check if the battery circuit breaker is closed. Ensure that the BMS can communicate normally.
04	Battery over-discharge	The battery voltage is lower than the value set in parameter [12].	Manual reset: Turn off and restart the device. Automatic reset: Charge the battery to make the battery voltage higher than the value set in parameter [35].
06	Battery over-voltage when charging	Battery is in over-voltage condition.	Manually turn off the power and restart. Check if the battery voltage exceeds the limit value. If it does, the battery needs to be discharged until the voltage is lower than the battery overvoltage recovery point.
13	Bypass over-load (software detection)	Bypass output power or output current over-load for a period of time.	Reduce the load power and restart the device. For details, please refer to item 11 of the protection functions.
14	Inverter over-load (software detection)	Inverter output power or output current over-load for a period of time.	
19	Heat sink of PV input over-temperature (software detection)	Heat sink of PV input temperature exceeds 90℃ for 3s.	Normal charging and discharging will resume when the temperature of the radiator cools down below the over-temperature recovery temperature.
20	Heat sink of inverter output over-temperature (software detection)	Heat sink of inverter output temperature exceeds 90℃ for 3s.	
21	Fan failure	Hardware detects fan failure.	After turning off the machine's power, manually switch the fan and check for any foreign objects blocking it.
26	AC input relay short-circuit	The relay is used to control the AC input.	Manually shut down and restart the machine. If the fault reappears after restarting, contact the after-sales service department to repair the machine.
28	Utility input phase fault	AC input phase does not match AC output phase.	Ensure that the AC input phase is the same as the AC output phase.

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 Functions

No.	Protection Functions	Definition
1	PV input current / power limiting protection	When the configured PV array charging current or power exceeds the rated PV input value, the inverter will limit the input power and charge at the rated value.
2	PV overvoltage protection	If the PV voltage exceeds the maximum value allowed by the hardware, the device will report a fault and stop PV boosting to output a sinusoidal AC waveform.
3	Night anti-reverse charging protection	At night, the battery will be prevented from discharging to the PV module because the battery voltage is greater than the PV module voltage.
4	Mains input overvoltage protection	When the grid voltage of per phase exceeds 280Vac, the mains charging will be stopped and will switch to inverter output.
5	Mains input undervoltage protection	When the mains voltage of per phase falls below 170Vac, the mains charging will be stopped and will switch to inverter output.
6	Battery overvoltage protection	When the battery voltage reaches the over-voltage disconnection voltage point, it will automatically stop the PV and grid charging of the battery to prevent over-charging and damage to the battery.
7	Battery undervoltage protection	When the battery voltage reaches the low-voltage disconnection voltage point, it will automatically stop discharging the battery to prevent the battery from being over-discharged and damaged.
8	Battery overcurrent protection	When the battery current exceeds the range allowed by hardware, the machine will turn off output and stop discharging the battery.
9	AC output short-circuit protection	In the event of a load short-circuit fault, the AC output voltage will be shut down immediately. To resume normal output, the load short-circuit fault must first be eliminated, followed by a manual re-powering.
10	Radiator 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	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 backfeed protection	Prevents backfeeding of battery inverter AC to bypass AC inputs.
13	Bypass overcurrent protection	Built-in AC input overcurrent protection circuit breaker.
14	Bypass wiring error protection	When the phase of the two bypass inputs is different from the phase of the inverter phase split, the machine will prohibit cutting into the bypass to prevent the load from dropping out or short-circuiting when cutting into the bypass.

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.

⚠ DANGER

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. PV 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. Datasheet

Inverter Model	ASP48120S200-Pro	Settable
Inverter Output		
Rated Output Power	12000W	
Max. Peak Power	24000W	
Rated Output Voltage	230Vac (single-phase)	√
Loading Motor Capacity	6HP	
Rated Frequency	50/60Hz	√
Output Wave	Pure sine wave	
Switching Time	10ms (typical value)	
Parallel Number	1-6 units	
Battery		
Battery Type	Lithium-ion/lead-acid /user-defined	√
Rated Battery Voltage	48Vdc	
Battery Voltage Range	40Vdc–60Vdc	√
Max. Grid/Generator Charging Current	150A	√
Max. Hybrid Charging Current	200A	√
PV Input		
No. of MPPT Trackers	2	
Max. Input Power	6600W+6600W	
Max. Input Current	22A+22A	
Max. Open Circuit Voltage	500Vdc/500Vdc	
MPPT Operating Voltage Range	125-425Vdc/125-425Vdc	

Grid/Generator Input		
Input Voltage Range	90-275Vac	
Input Frequency Range	50/60Hz	
Bypass Overload Current	63A	
Efficiency		
MPPT Tracking Efficiency	99.9%	
Max. Efficiency of Battery	92%	
General Data		
Dimension	445*620*130mm	
Weight	27kg	
Protection Level	IP20, for indoor use only	
Ambient Temperature	−10°C−55°C, >45°C derating	
Noise	<60dB	
Cooling Mode	Intelligent fan	
Communication		
Built-in Interface	RS485/CAN/USB/Dry contact	√
External Module (Optional)	Wi-Fi/GPRS	√
Certification		
Safety	IEC62109-1, IEC62109-2	
EMC	EN61000-6-1, EN61000-6-3	
RoHS	Yes	

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