SRNE

User Manual

All-in-One Solar Charge Inverter

ASP48140S300-H
ASP48150S300-H
ASP48160S300-H

Ver. : V00 2025-12-13

CONTENTS

1.Safety Precautions 1
- 1.1 How to Use This Instruction Manual 1
- 1.2 Symbols in this manual 1
- 1.3 Safety Instructions 1

2.Product Introduction 2
- 2.1 Product Description 2
- 2.2 Product Features 2
- 2.3 System Connection Diagram 3
- 2.4 Product Overview 4
- 2.5 Product Size 5

3. Installation 6
- 3.1 Parts List 6
- 3.2 Mounting Instructions 7
- 3.2.1 Installation Location Selection 7
- 3.2.2 Mounting the Inverter 7
- 3.2.3 Removing the Terminal Protection Cover 9

4.Connection Instructions 9
- 4.1 Single-Phase Mode 9
- 4.2 Cable & Circuit Breaker Requirement 11
- 4.3 Grid & Load & Generator Connection 12
- 4.4 Battery Connection 13
- 4.5 PV Connection 14
- 4.6 Dry Contact Connection 15
- 4.7 Grounding Connection 16
- 4.8 Inverter Start 16
- 4.9 Parallel Connection 16
- 4.9.1 Introduction to Parallel Connection 16
- 4.9.2 Precautions for Connecting the Parallel Connecting Lines 17
- 4.9.3 Schematic Diagram for Single-Phase Parallel Connection 18
- 4.9.4 Schematic Diagram for Three-Phase Parallel Connection 20

5.Operation 23
- 5.1 Operation and Display Panel 23
- 5.2 Setting 27
- 5.3 AC Output Mode 34
- 5.4 Battery Charging Mode 36
- 5.5 Time-slot Charging/Discharging Function 37
- 5.6 Battery Parameters 38

6. Communication 40
- 6.1 Product Overview 40
- 6.2 USB Communication Function 40
- 6.3 Parallel Function (For parallel operation only) 41
- 6.4 RS485/CAN Communication Function 41
- 6.5 CAN Function 41
- 6.6 WIFI Communication Function 42
- 6.7 Meter Communication (Optional) 43
- 6.8 DRM(Only Australia) 44
- 6.9 External CT Connection 44
- 6.10 Dry Contact Function 45

7.Fault Codes and Countermeasures 46
- 7.1 Fault Codes 46
- 7.2 Troubleshooting 48

8.Protection and Maintenance 50
- 8.1 Protection Functions 50
- 8.2 Maintenance 51

9.Datasheet 52

1.Safety Precautions

1.1 How to Use This Instruction Manual

This manual contains important product information, guidelines, and operating and maintenance instructions.
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 Symbols in this manual

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

1.3 Safety Instructions

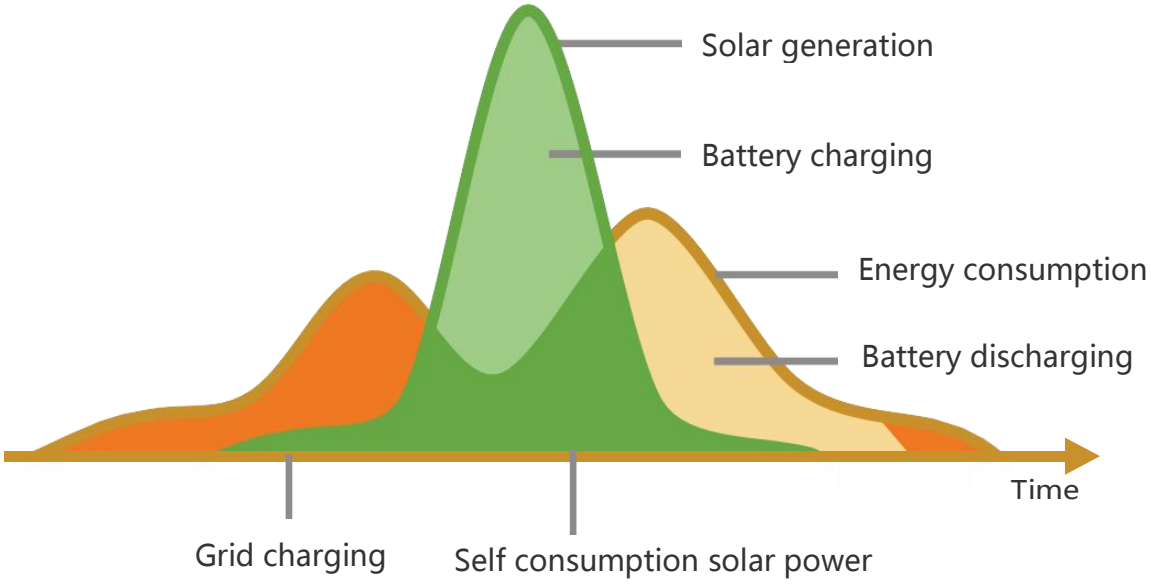
WARNING: This chapter contains important safety and operating instructions. Read and keep this manual for future reference.

- 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

The Product is a new type of solar energy storage inverter integrating solar energy storage, utility power charging storage, and AC sine wave output. Adopting DSP control and advanced control algorithms, it features fast response speed, high reliability, and compliance with industrial standards.



2.2 Product Features

- Supports connection of lead-acid batteries and li-ion batteries.
- Features Dual activation function when lithium-ion batteries are in hibernation; activation of lithium-ion batteries can be triggered by either mains power or photovoltaic power input.
- Supports single-phase pure sine wave output.
- Supports phase voltage adjustment within the range of 200Vac, 208Vac, 220Vac, 230Vac, and 240Vac.
- Supports two-way photovoltaic input, with the function of simultaneously tracking the maximum power charging or load-carrying capacity of two MPPTs.
- Dual MPPT with 99% efficiency and maximum 36A current in a single circuit, perfectly adapted to high power modules.
- 2 charging modes are available: solar only, grid + PV hybrid charging.
- With the time-slot charging and discharging setting function, you can set the time period for cutting in/out of mains charging and switch the time period between battery discharging and mains bypass power supply mode.
- 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.

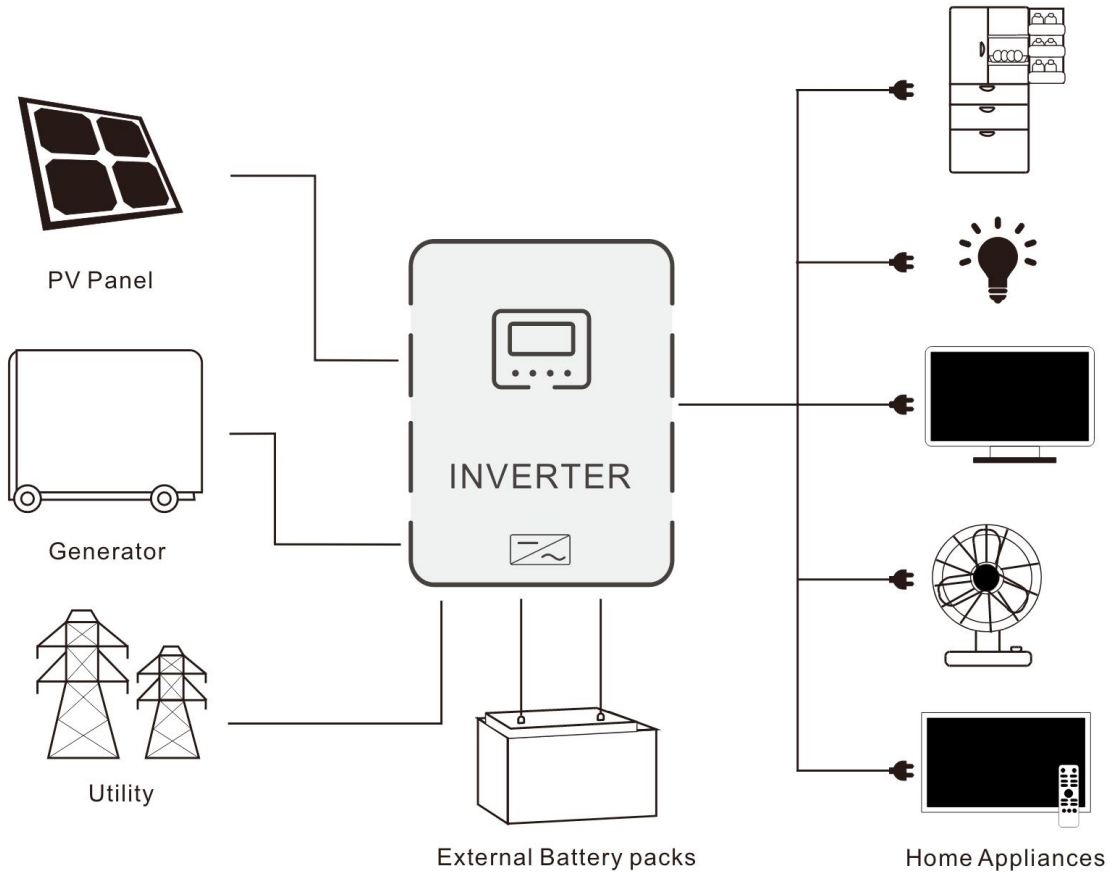
- LCD large screen dynamic flow diagram design, easy to understand the system data and operation status.
- 360° protection with complete short circuit protection, over current protection, over under voltage protection, overload protection, backfill protection, etc.
- Support CAN, USB, and RS485 communication.
- Support WiFi data loggers.

2.3 System Connection Diagram

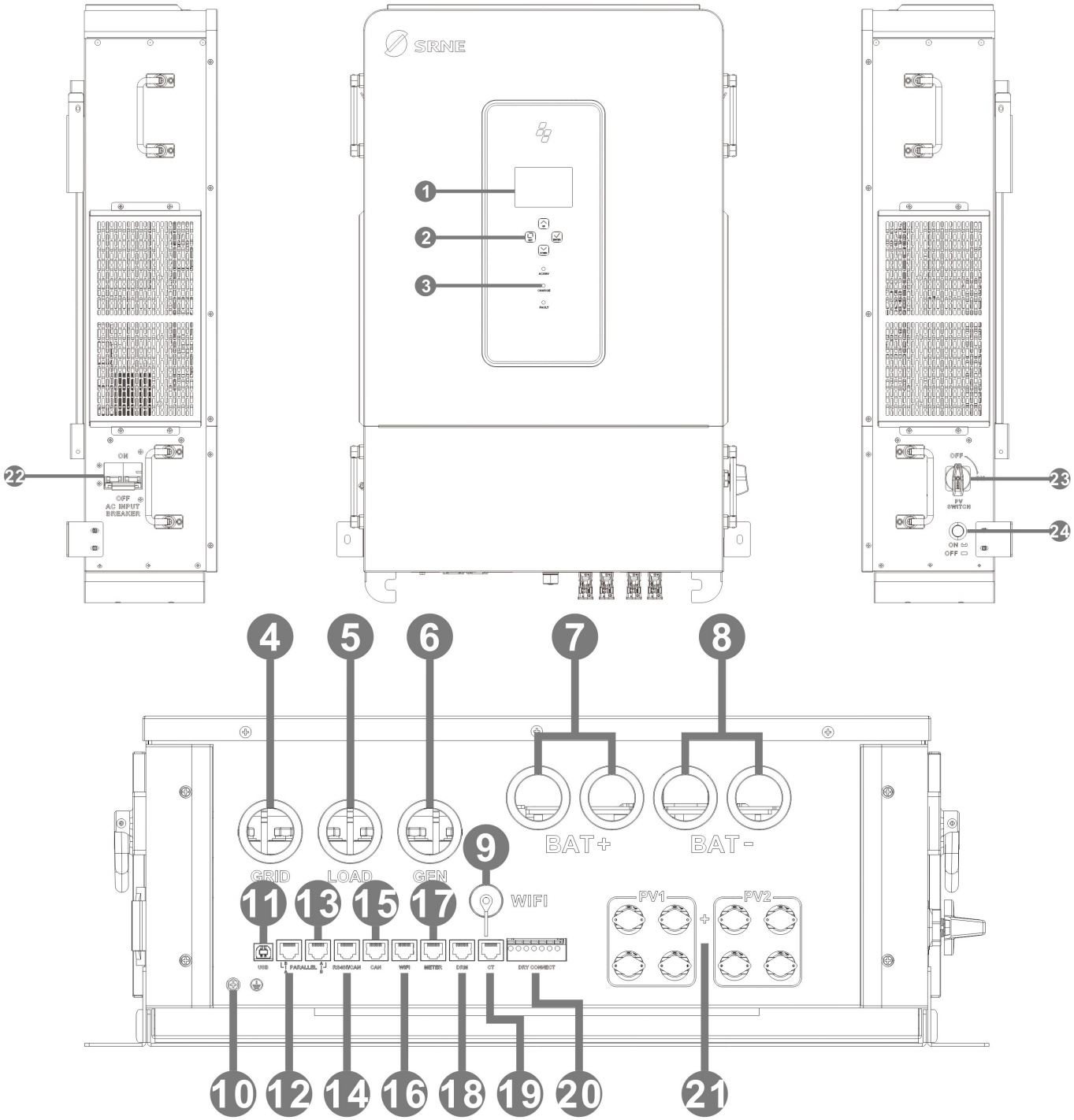
The diagram below shows the system application scenario of this product. A complete system consists of the following components:

- **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.
- **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.

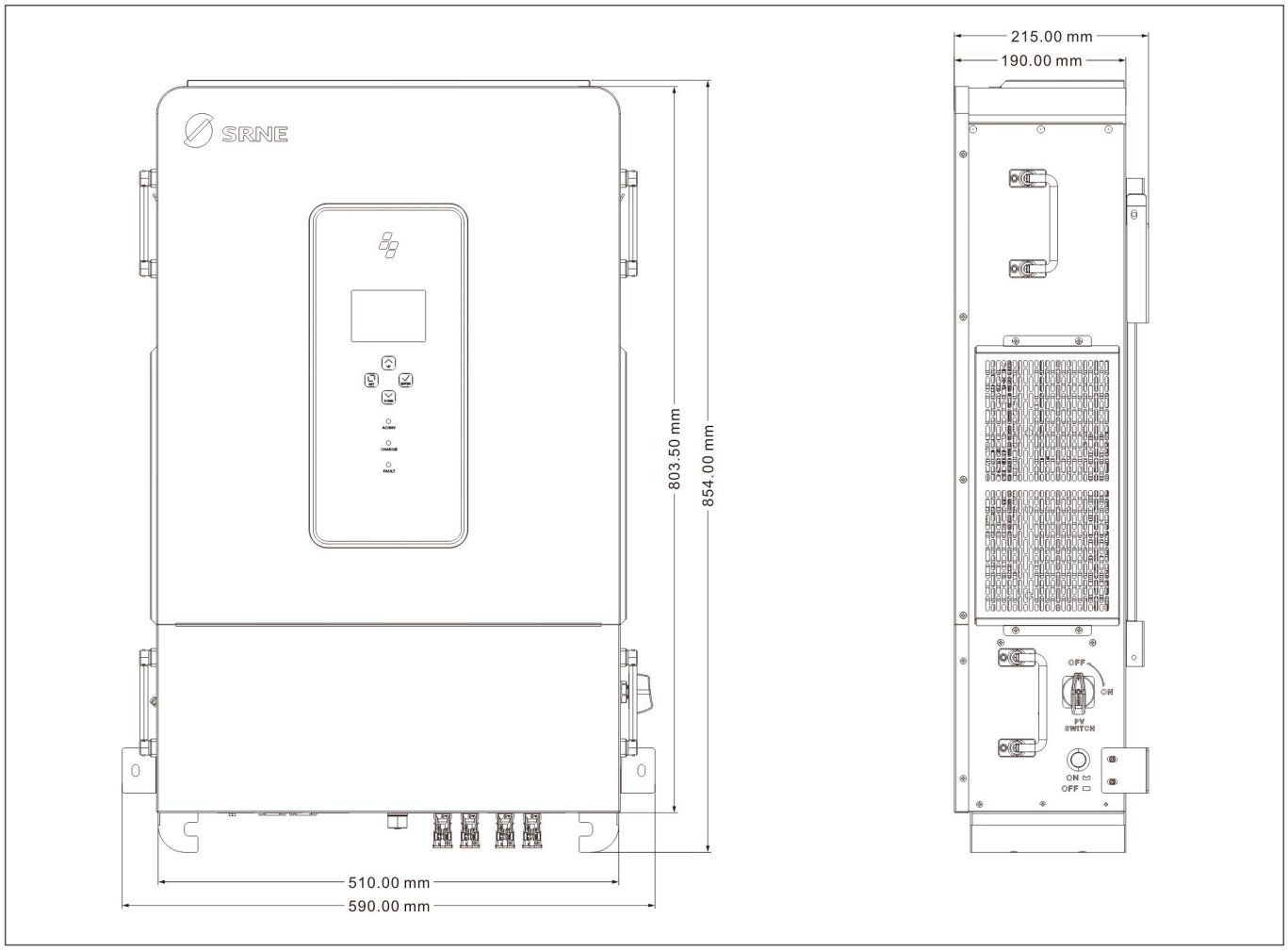


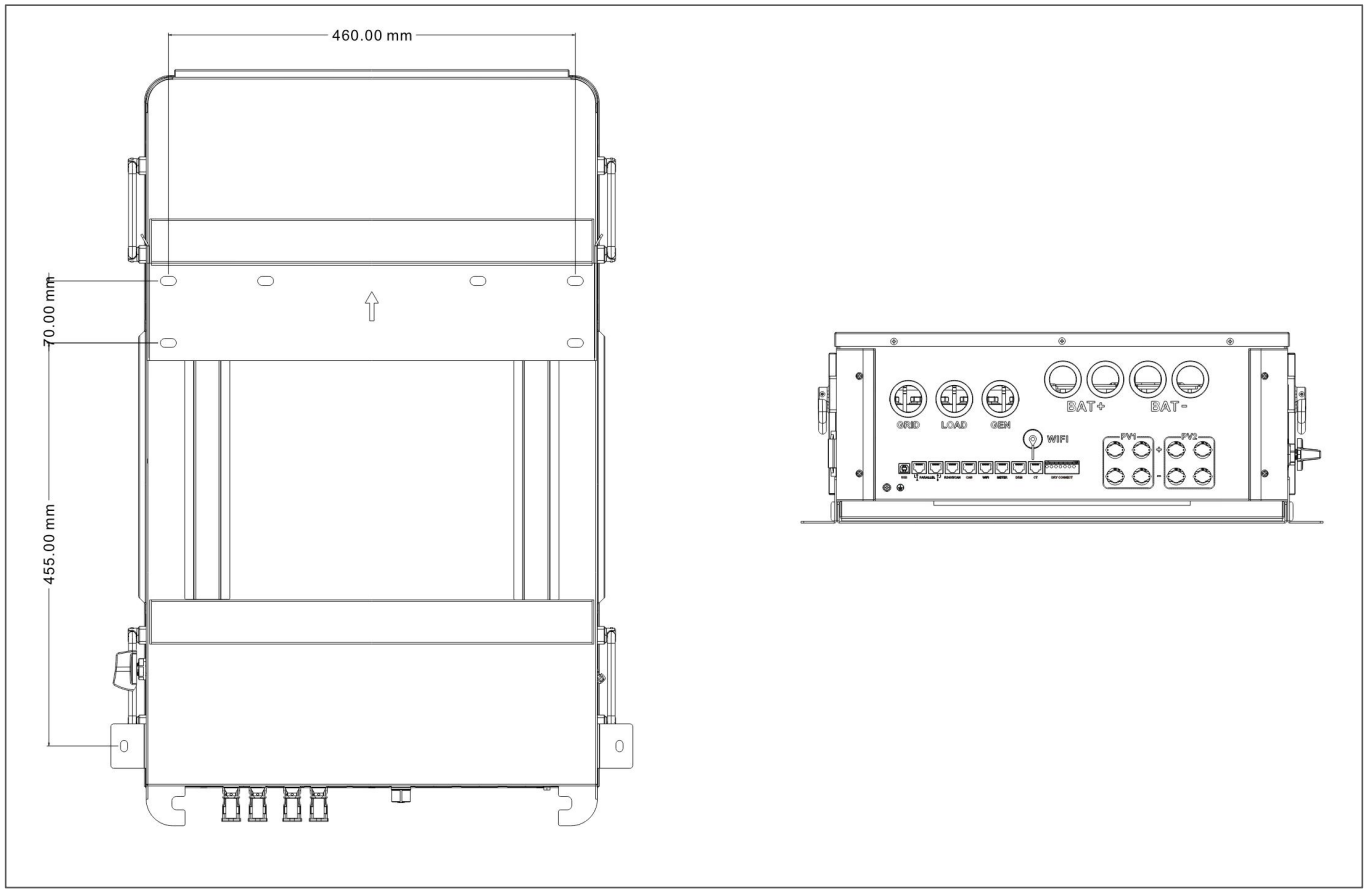
2.4 Product Overview



1	LCD Screen	2	Operation Buttons	3	LED Indicators
4	Grid Input (L + N)	5	Load Output (L + N)	6	Generator Input (L + N)
7	Battery +	8	Battery -	9	WIFI Port 2
10	Grounding Screw	11	USB Port	12	Parallel Port (B-A)
13	Parallel Port (A-B)	14	RS485/CAN Port	15	CAN Port
16	WIFI Port 1	17	Meter Port	18	DRM Port
19	CT Port	20	Dry Contact Prot	21	PV Input (PV1 + PV2)
22	AC Input Breaker	23	PV Switch	24	Power on/off switch

2.5 Product Size

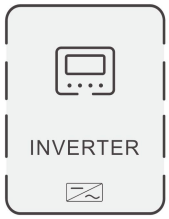




3. Installation

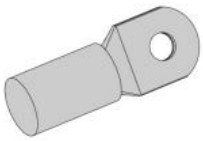
3.1 Parts List

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:



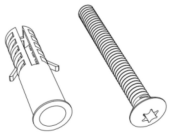
Inverter
x 1pcs

Wall mount bracket
x 1pcs



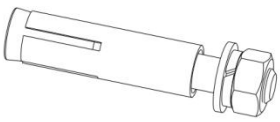
Crimp Terminal SC95-8
x 4pcs

M8 Socket screwdriver
x 1pcs

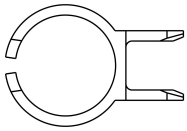


Round-head self-tapping screws FA6x35 + white rubber plugs
x 1bag

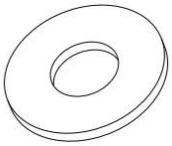
Black screw M4*8mm
x 4pcs



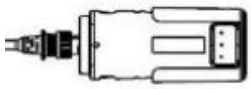
Expansion bolt
M8*60mm
x 4pcs



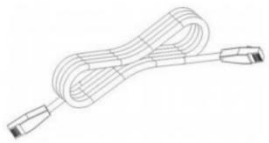
MC4 unlocking tool
x 1pcs



M8 flat washer
x 3pcs

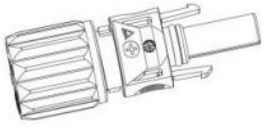


WIFI logger
x 1pcs

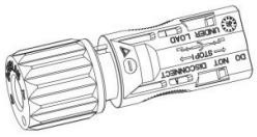


Parallel cable
x 1pcs

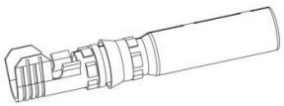
Hexagon socket cross recessed screw
M8*12mm / M5*10mm
x 5pcs / x 4pcs



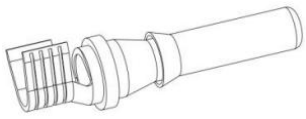
PV+ terminal
x 4pcs



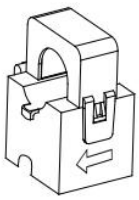
PV- terminal
x 4pcs



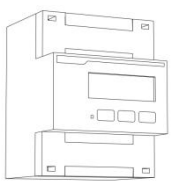
PV+ input metal core
x 4pcs



PV- input metal core
x 4pcs



CT (Optional)
x 1pcs



Meter (Optional)
x 1pcs

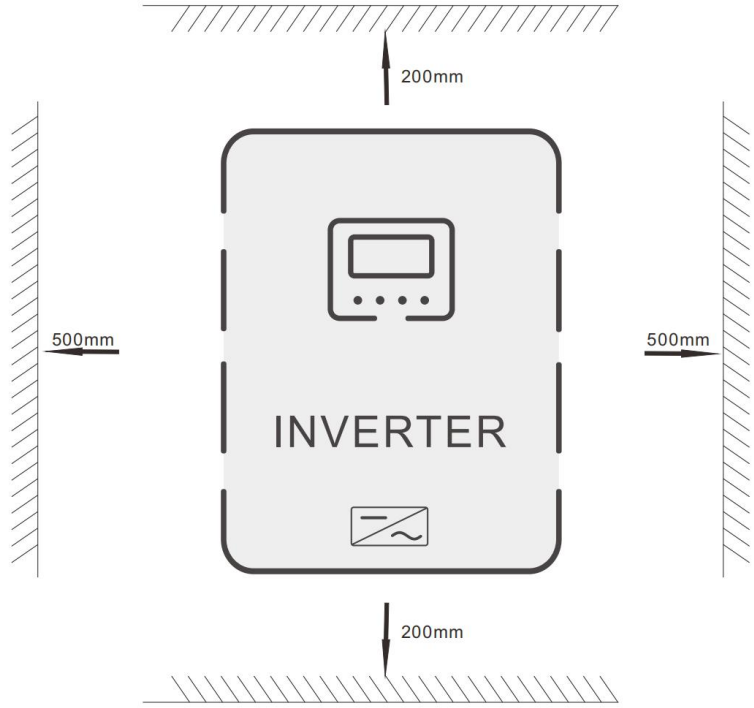
User manual	x 1pcs
Quality certificate	x 1pcs
Outgoing inspection report	x 1pcs
Warranty Card	x 1pcs

3.2 Mounting Instructions

3.2.1 Installation Location Selection

The product is designed for indoor use only (IP20 rated). Consider the following factors when selecting the installation location:

- Choose the solid wall to install the inverter.
- Mount the inverter at eye level.
- Adequate heat dissipation space must be provided for the inverter.
- The ambient temperature should be between -10℃ ~ 55℃ (14℉ ~131℉) 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

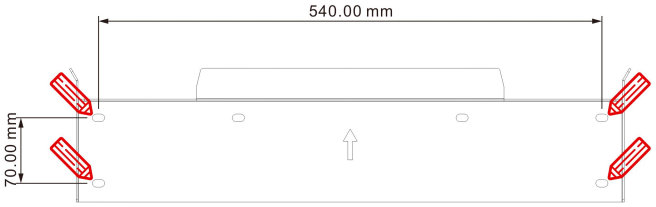
- Do not install the inverter in direct sunlight.
- Do not install or use the inverter in a humid environment.

3.2.2 Mounting the Inverter

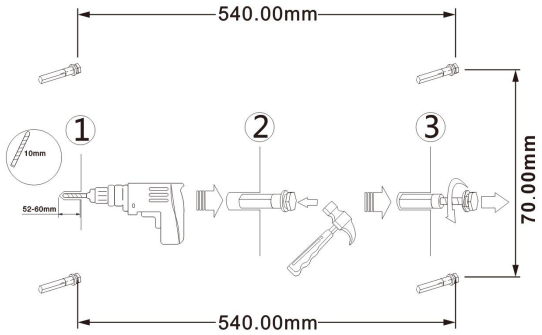
- **Step 1:** Use the wall-mounting bracket as a template to determine the drilling positions. Ensure the holes are level, mark them with a marker, and use a rotary hammer to drill into the wall. Keep the drill perpendicular to the wall to avoid shaking and prevent surface damage. If there is significant deviation in hole positioning, remeasure and reposition.

- **Step 2:** Select a solid wall with a thickness of at least 80 mm, and drill four holes according to the marked positions (hole diameter: φ8, depth: 45–50 mm). Insert M8 expansion bolts into the holes and tighten the nuts securely.
- **Step 3:** Align the wall-mounting bracket with the drilled holes, and fasten it firmly to the wall by tightening the expansion bolts and nuts.
- **Step 4:** ① Install the inverter. Slowly hang the inverter on the frame via the matching hooks, then tighten the screws on both sides. ② Mark the positions of the bent feet on both sides according to the hole positions. Remove the bent feet and drill two holes with a diameter of φ6 and a depth of 35-40 mm. Then install the bent feet and tighten them with M6 self-tapping screws.

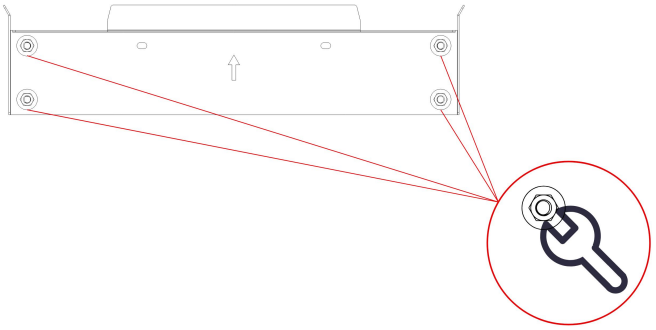
Step 1



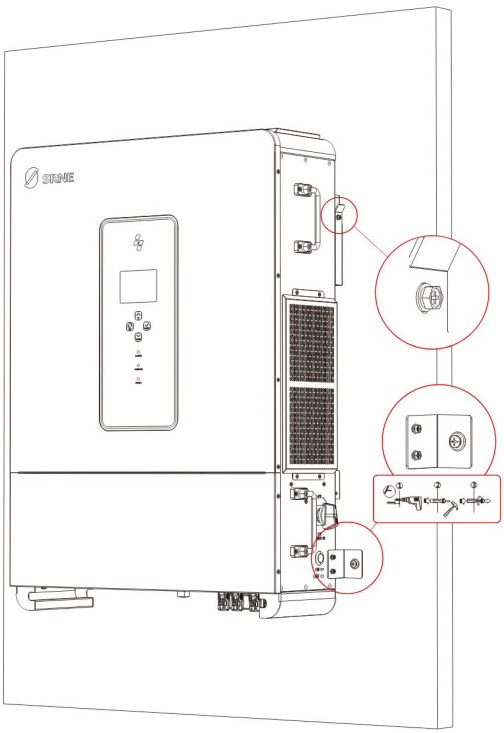
Step 2



Step 3

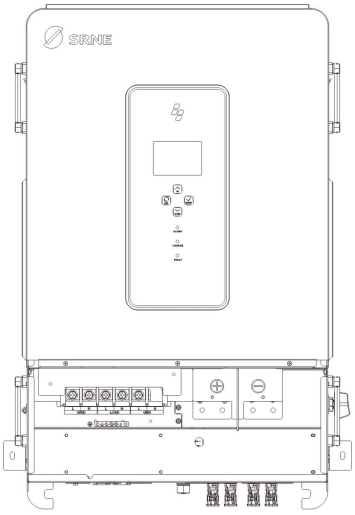


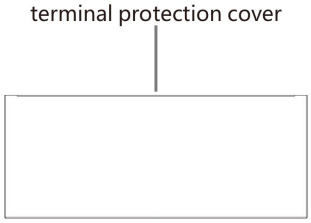
Step 4



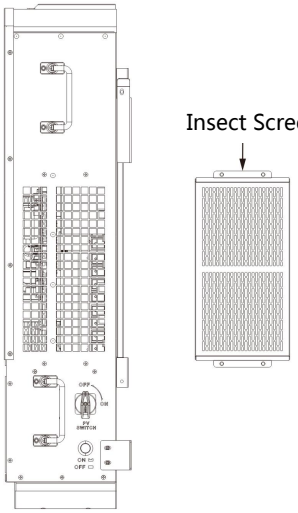
3.2.3 Removing the Terminal Protection Cover

Use a screwdriver to remove the terminal cover and insect screen.





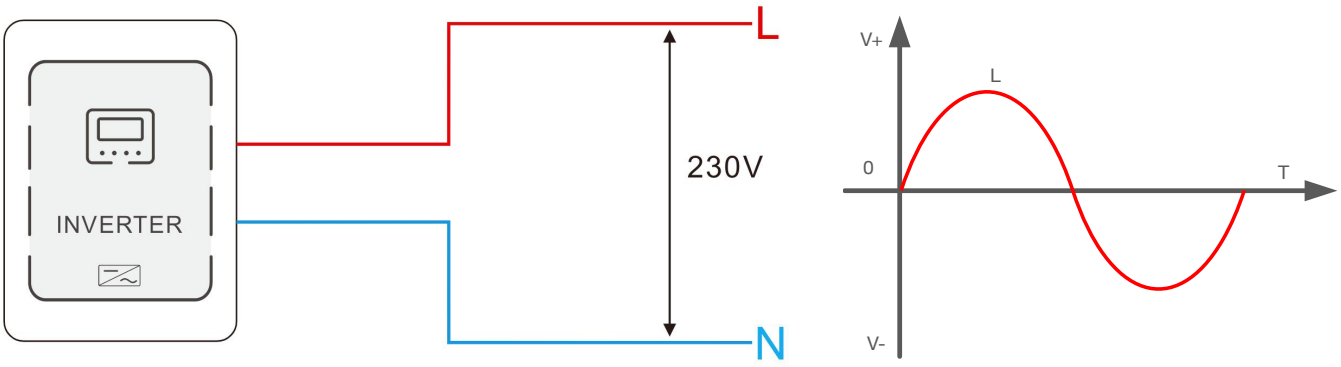
Remove the insect-proof net when cleaning.



> **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

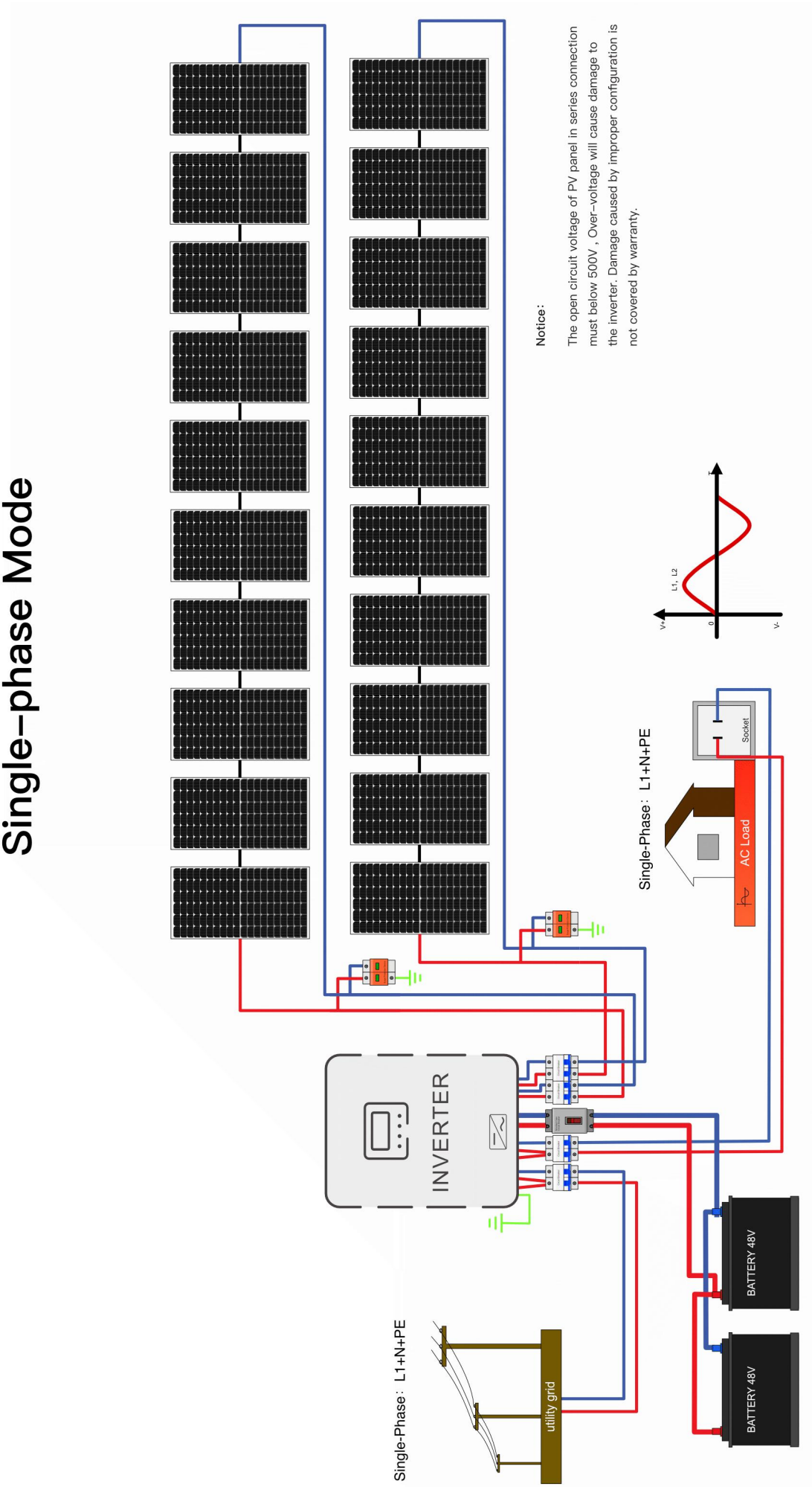
4.1 Single-Phase Mode



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

> **NOTICE**
>
> - Users can change the 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

Models	Circuit Count	Cable Diameter	Max. Input Current	Circuit Breaker Spec
ASP48140S300-H ASP48150S300-H ASP48160S300-H	PV1	6mm²/10 AWG	36A	2P-45A
	PV2	6mm²/10 AWG	36A	

■ Battery

Models	Cable Diameter	Max. Input Current	Circuit Breaker Spec
ASP48140S300-H ASP48150S300-H ASP48160S300-H	85mm²/000 AWG	300A	2P-350A

■ Grid

Models	Cable Diameter	Max. Input Current	Circuit Breaker Spec
ASP48140S300-H ASP48150S300-H ASP48160S300-H	35mm²/2 AWG	100A	2P-125A

■ Generator

Models	Cable Diameter	Max. Input Current	Circuit Breaker Spec
ASP48140S300-H ASP48150S300-H ASP48160S300-H	35mm²/2 AWG	69.6A	2P-100A

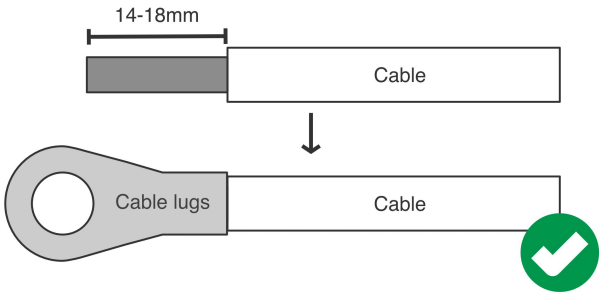
■ Load

Models	Cable Diameter	Max. Input Current	Circuit Breaker Spec
ASP48140S300-H ASP48150S300-H ASP48160S300-H	35mm²/2 AWG	100A	2P-125A

NOTICE

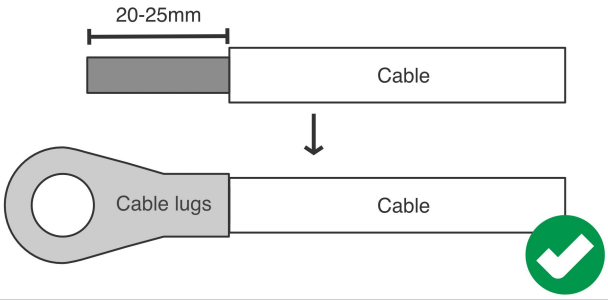
- **AC input and AC output:**

1. Use a wire stripper to remove 14-18mm of insulation from the cable.
2. Secure a ring terminal to the cable end (to be provided by the user).



- **Battery:**

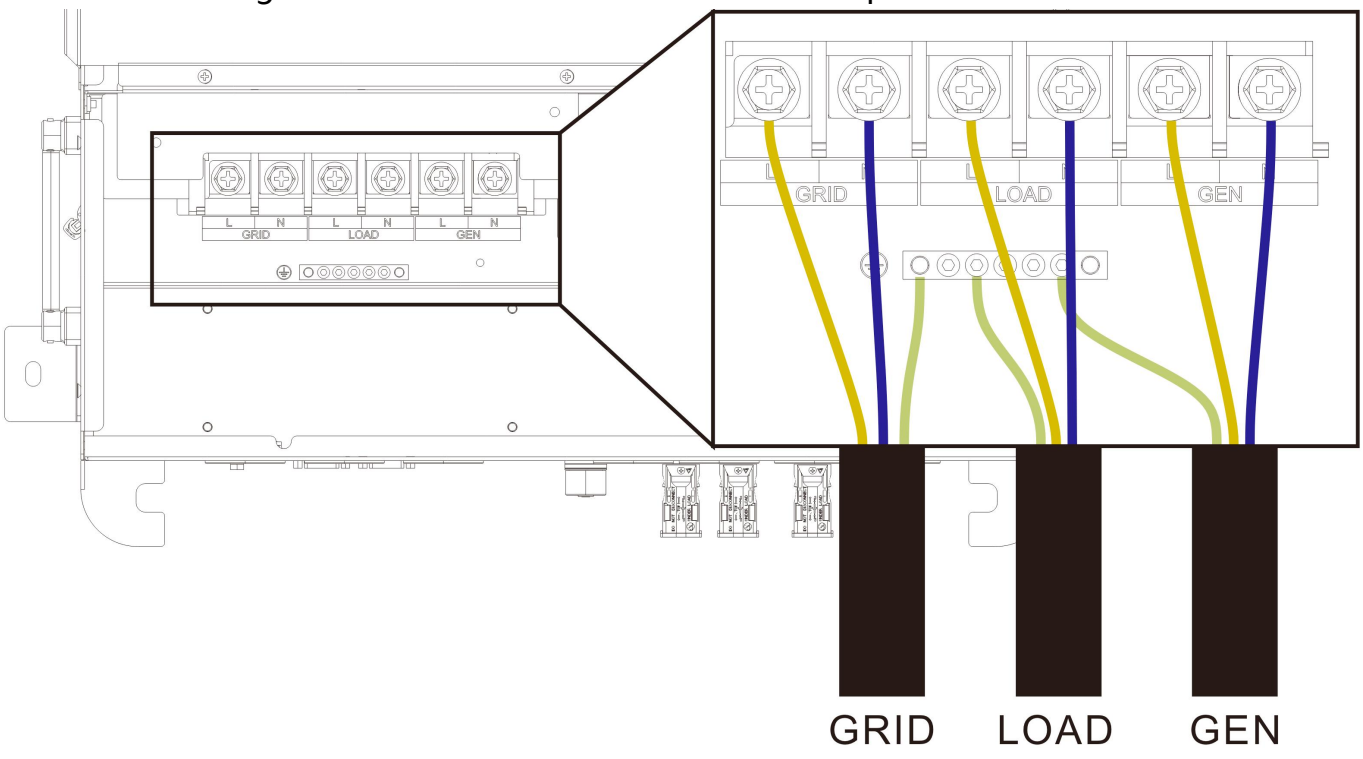
1. Use a wire stripper to remove 20-25mm of insulation from the cable.
2. Fix the cable lug provided with the package at the cable end.

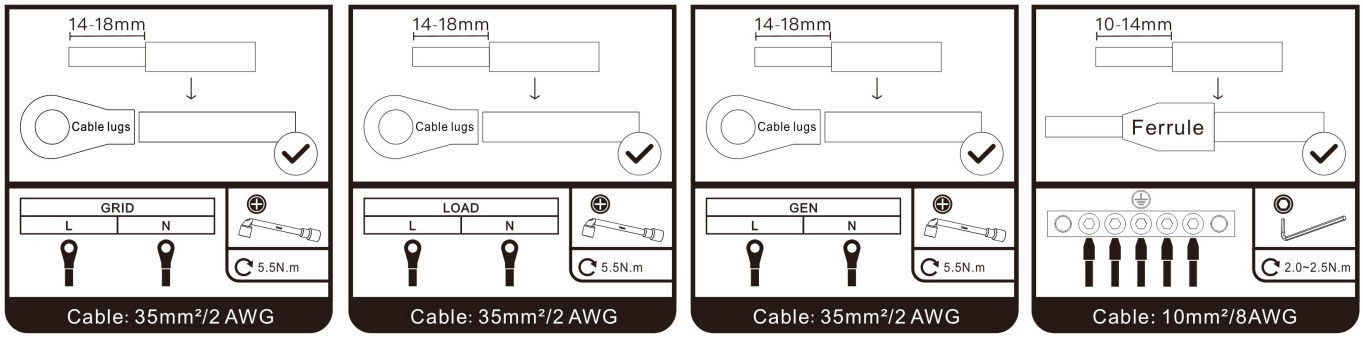


The wire diameter is for reference only. If the distance between the PV array and the inverter or between the inverter and the battery is long, using a thicker wire will reduce the voltage drop and improve the performance of the system.

4.3 Grid & Load & Generator Connection

Connect the live,neutral and ground wires according to the cables' position and order shown in the diagram below. Recommended use of crimp terminals SC50-8.



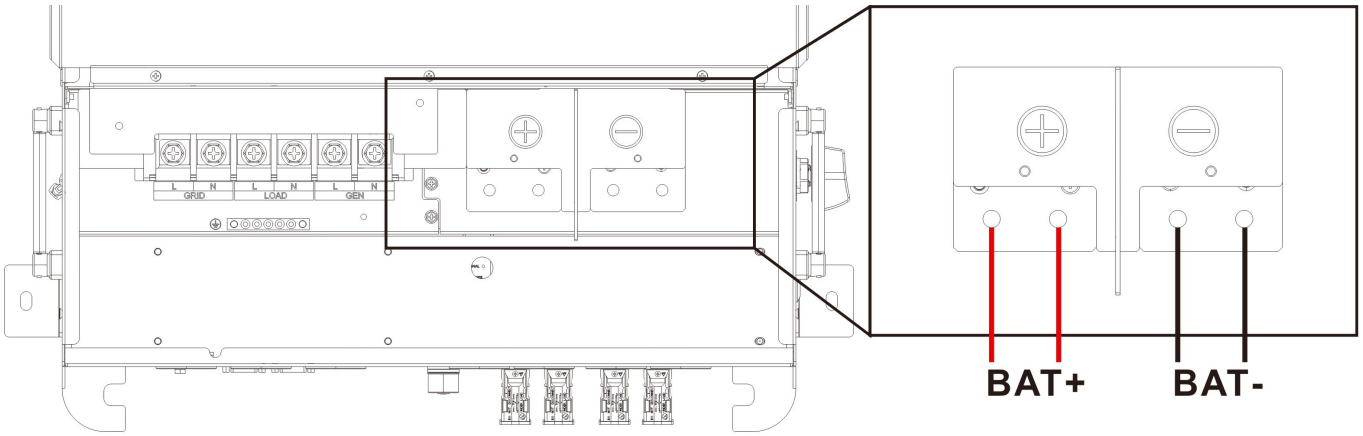


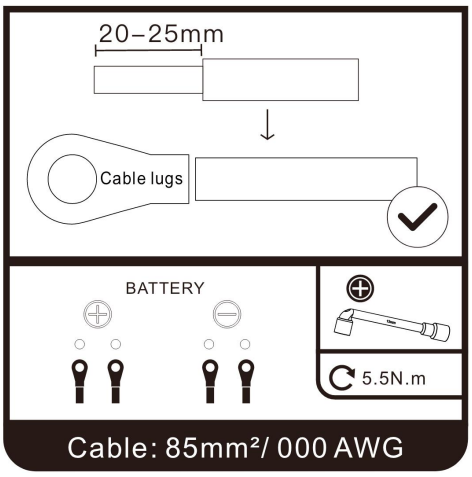
DANGER

- 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. Both the positive and negative terminals require the installation of two cables.Each cable is recommended to be 85 mm² / 000 AWG, using crimp terminals SC95-8.





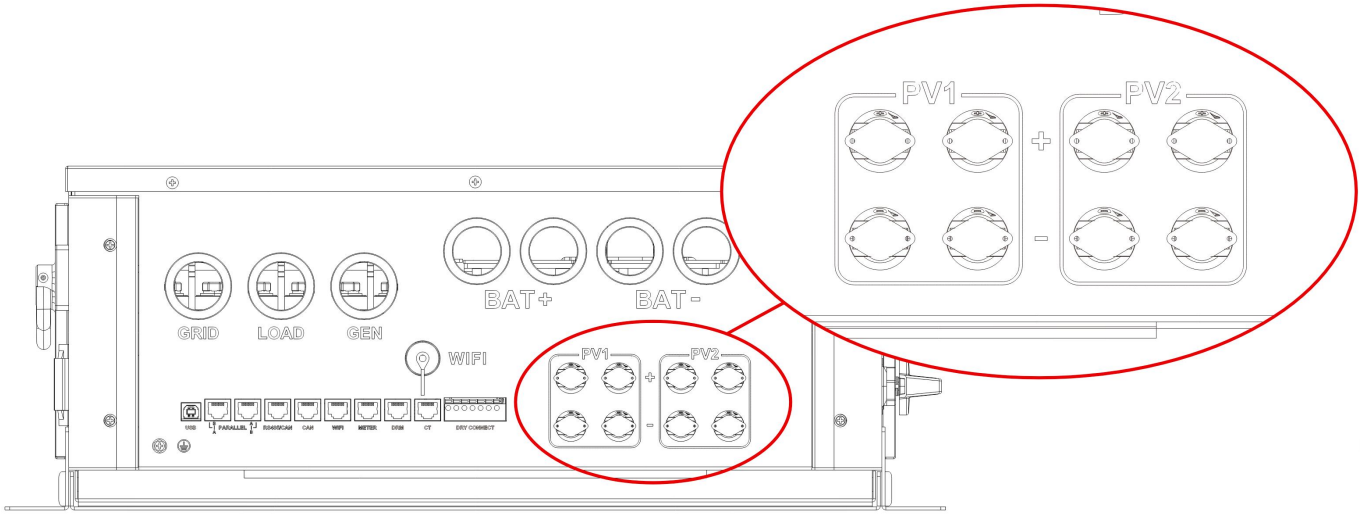
DANGER

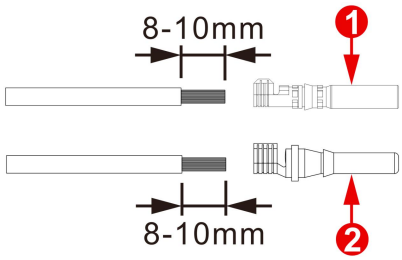
- Before connecting battery, the circuit breaker must be turned off to avoid electric shock hazards, and never operate with electricity.
- Make sure that the positive and negative terminals of the battery are connected correctly, reversed polarity connection on battery will damage the inverter.
- Please check that the cable used is sufficient for the requirements, too thin, poor quality cables are a serious safety hazard.

4.5 PV Connection

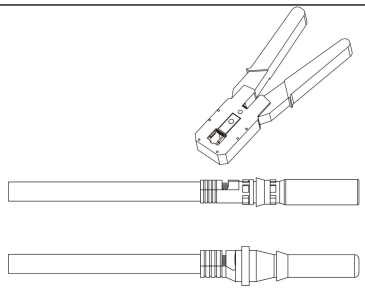
1.Before connecting PV, first close the external circuit breaker and make sure that the cable used is sufficiently thick. Please refer to section "4.2 Cable & Circuit Breaker Selection".

2.According to the cable sequence and terminal positions shown in the figure below, correctly connect the PV input wires. When using in parallel, different units must be connected to different PV arrays or PV sources.

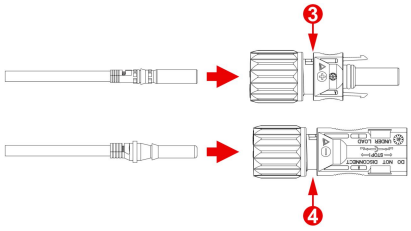




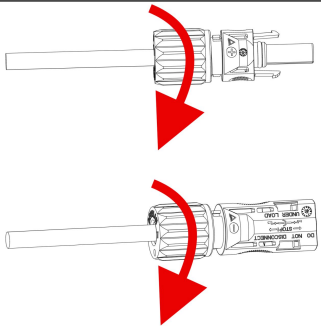
① PV+ metal contact
② PV- metal contact



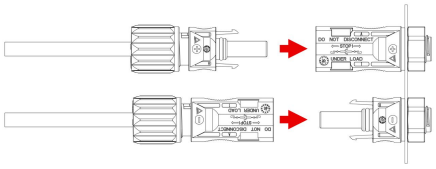
Press the wire by crimping tool



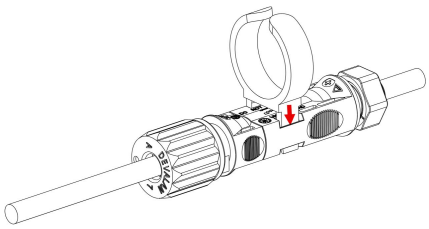
③ Positive connector
④ Negative connector
Hear "click"



Tighten terminal



Connect to the inverter port



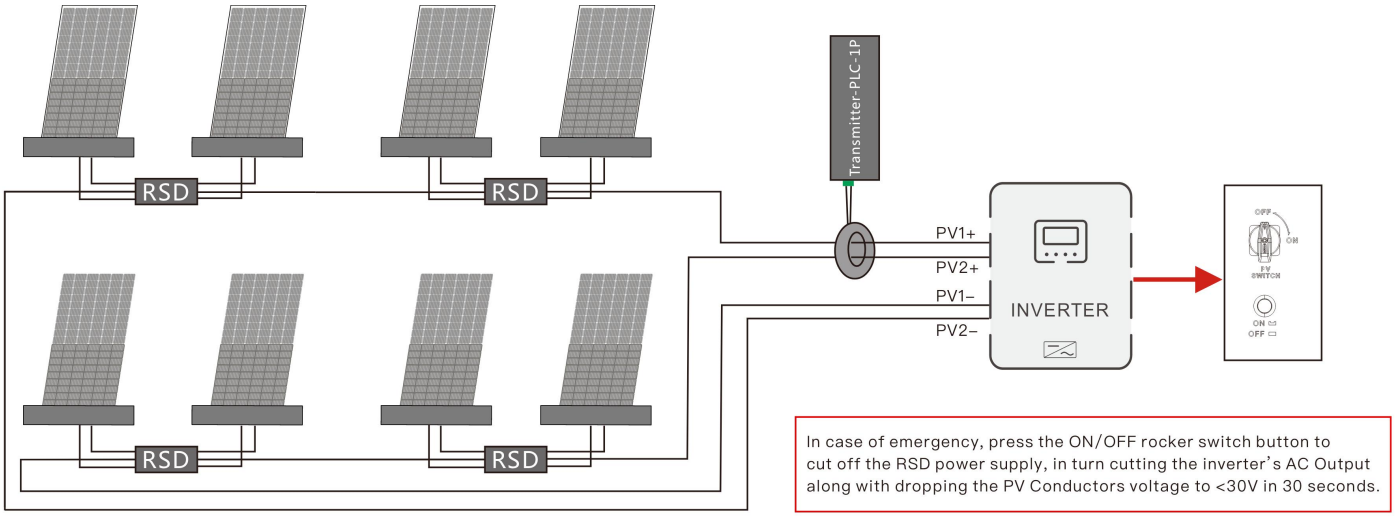
Disconnect PV terminal

DANGER

- Before connecting the PV, the circuit breaker must be turned off to avoid electric shock hazards, and never operate with electricity.
- Make sure that the open-circuit voltage of the PV modules connected in series does not exceed the maximum open-circuit voltage of the inverter (the value is 650V), otherwise the inverter may be damaged.

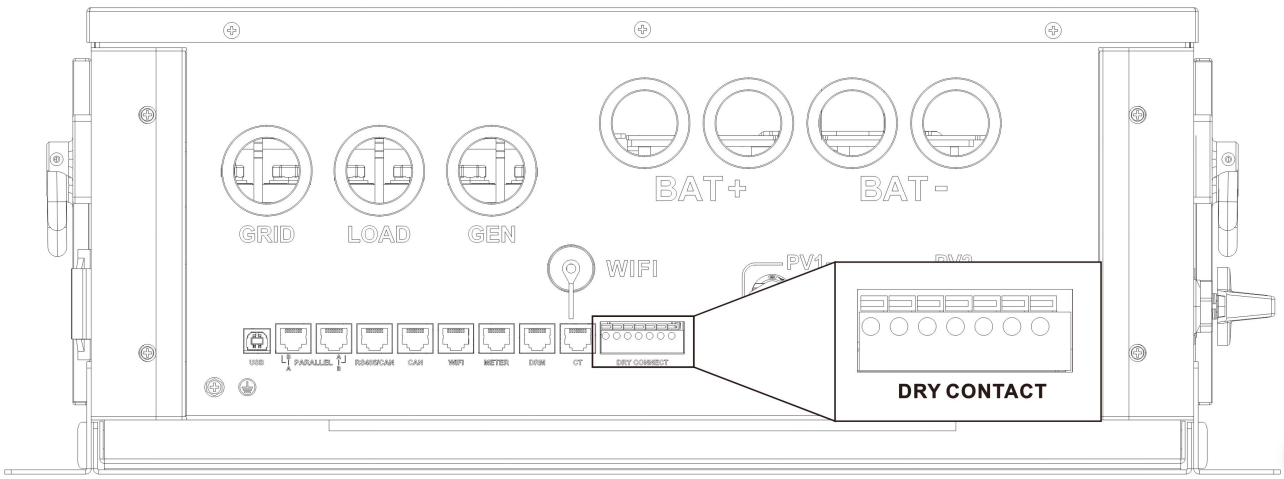
Transmitter-PLC Device (Optional)

The inverter includes a rapid shutdown system that complies with 2017 and 2020 NEC 690.12 requirements. A rapid shutdown switch should be connected to the RSD terminals on the inverter and mounted on a readily accessible location outdoors (check with your AHJ for requirements).
The APsmart Rapid Shutdown System Transmitter-PLC is part of a rapid shutdown solution when paired with APsmart RSD, a PV module rapid shutdown unit. While powered on, the Transmitter-PLC sends a signal to the RSD units to keep their PV modules connected and supplying energy. RSD units automatically enter rapid shutdown mode when the Transmitter-PLC is switched off and resume energy production when power is restored to the Transmitter-PLC.



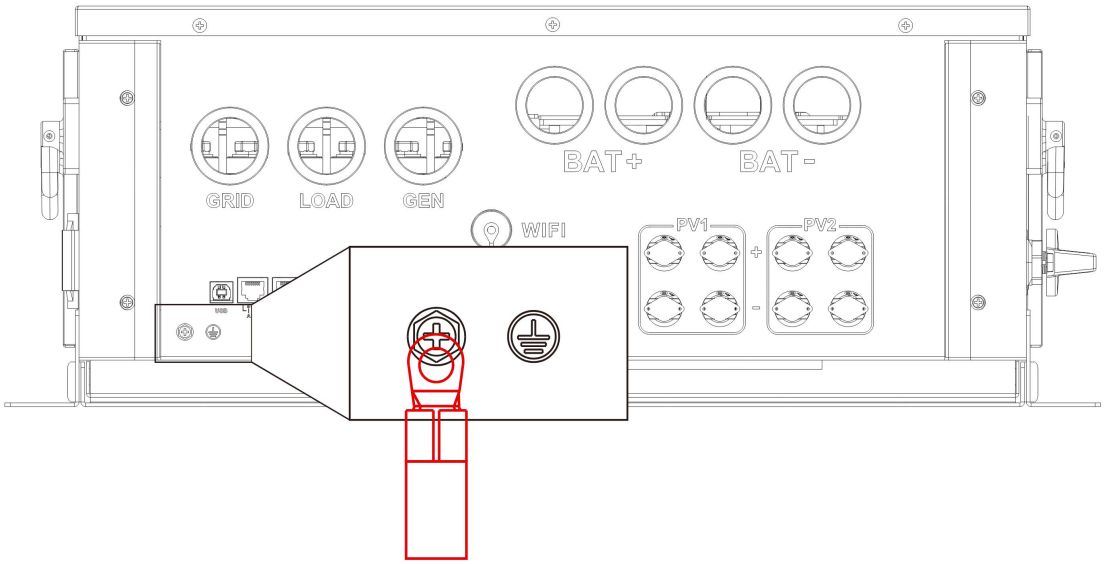
4.6 Dry Contact Connection

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 Inverter Start

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

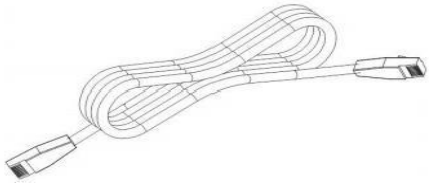
- **Step 1:** Close the circuit breaker of the battery.
- **Step 2:** Press the ON/OFF switch on the side of the inverter. The screen and indicator lights turning on indicates that the inverter has been activated.
- **Step 3:** Sequential close of the circuit breakers for PV, AC input and AC output.
- **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. Up to six units connected in parallel.
2. When using the parallel operation function, the following connecting lines (package accessories) shall be firmly and reliably connected.

Parallel communication line*1



4.9.2 Precautions for Connecting the Parallel Connecting Lines

Warning

1.PV connection:

When connecting in parallel, the PV arrays connected to each inverter must be independent of each other. The PV arrays corresponding to PV1, PV2 ports of the same inverter must also be independent.

2.Battery connection:

When paralleling, all solar energy storage inverters must be connected to the same battery, with BAT+ connected to BAT+ and BAT- connected to BAT-. Before powering on and starting, it is necessary to check and ensure that the connections, wiring length, and cable size are correct to prevent abnormal operation of the parallel system output caused by incorrect connections.

3.Load 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.Refer to the schematic diagram for wiring.

4.Grid 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 input L lines of different phases shall not be connected together.Refer to the schematic diagram for wiring.

5.Communication Lines:

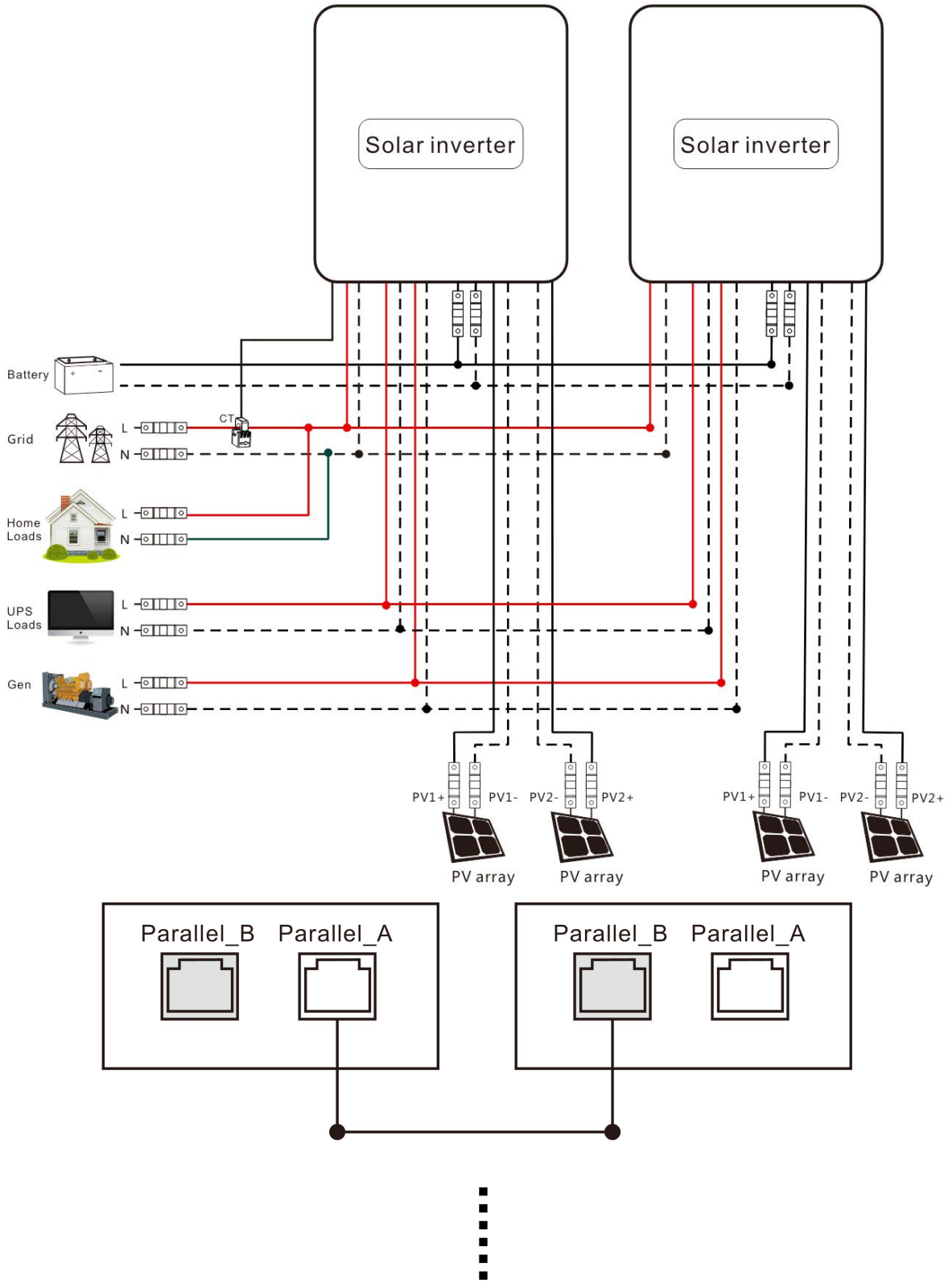
Our parallel communication cable is a shielded 8-pin network cable suitable for parallel connections. Each unit must have one input and one output connection.
In a parallel system, the "Parallel A" interface of this machine must be connected to the "Parallel B" interface of the target machine. It is strictly prohibited to connect the "Parallel A" interface of this machine to either the "Parallel B" interface of the same machine or the "Parallel A" interface of the target machine. Additionally, secure each unit's parallel communication cable firmly to the 8-pin network connector to prevent disconnections or poor contacts, which may lead to abnormal system operation or damage to the output.

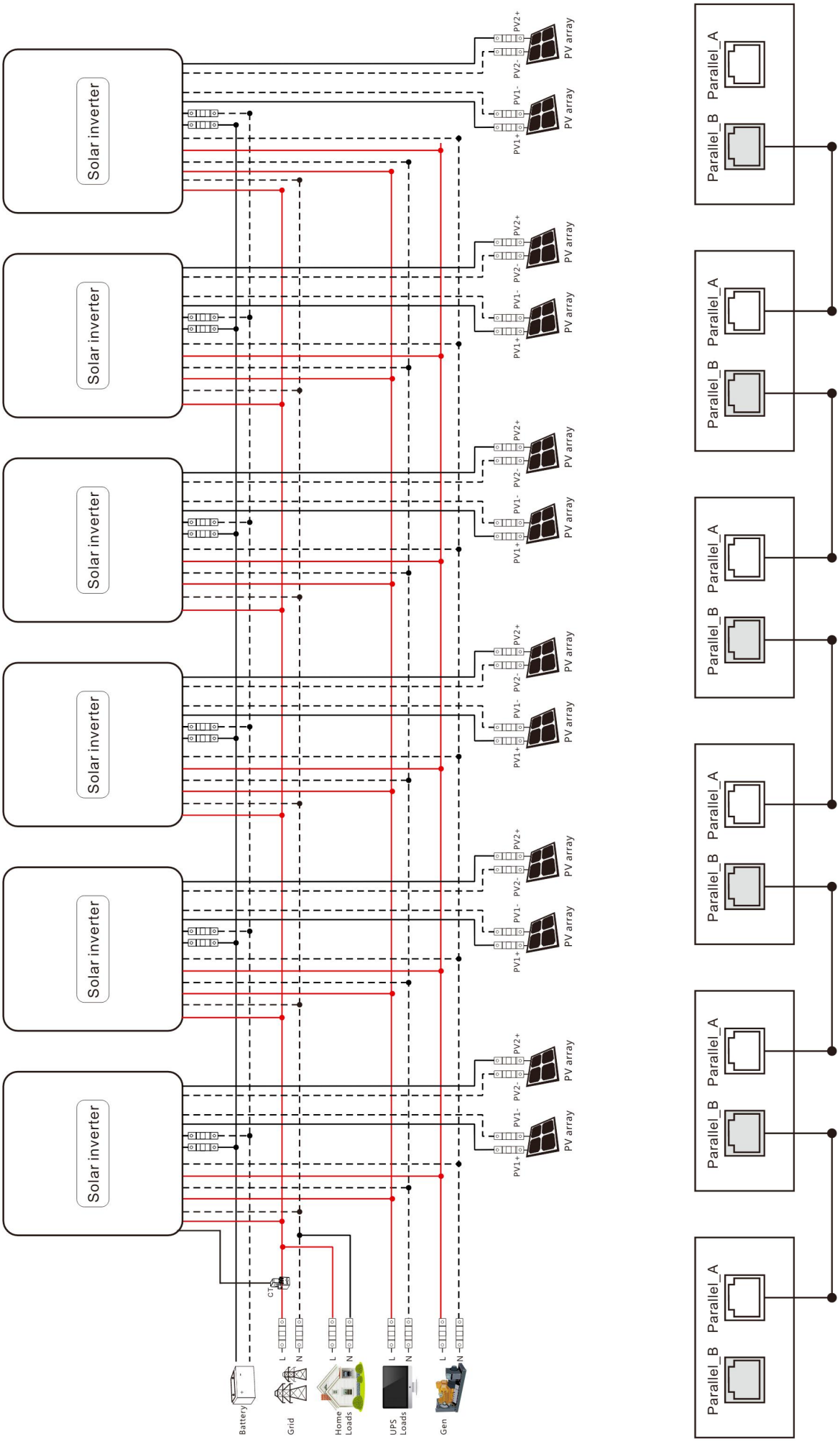
6.Before and after connecting the system, carefully refer to the system wiring diagram below. Ensure all connections are correct and secure before powering on.

7. After the system is correctly wired, powered on, and operating normally, if a new inverter needs to be connected, ensure that the battery input, PV input, AC input, and AC output are disconnected, and all solar energy storage inverters are powered off before reconnecting to the system.

4.9.3 Schematic Diagram for Single-Phase Parallel Connection

In case of parallel operation with multiple inverters, the schematic diagram of parallel connection is as follows:




Solar inverter
Solar inverter
Solar inverter
Solar inverter
Solar inverter
Solar inverter
PV1+
PV1-
PV2+
PV2-
PV array
CT
L
N
Battery
Grid
Home Loads
UPS Loads
Gen
Parallel_A
Parallel_B

4.9.4 Schematic Diagram for Three-Phase Parallel Connection

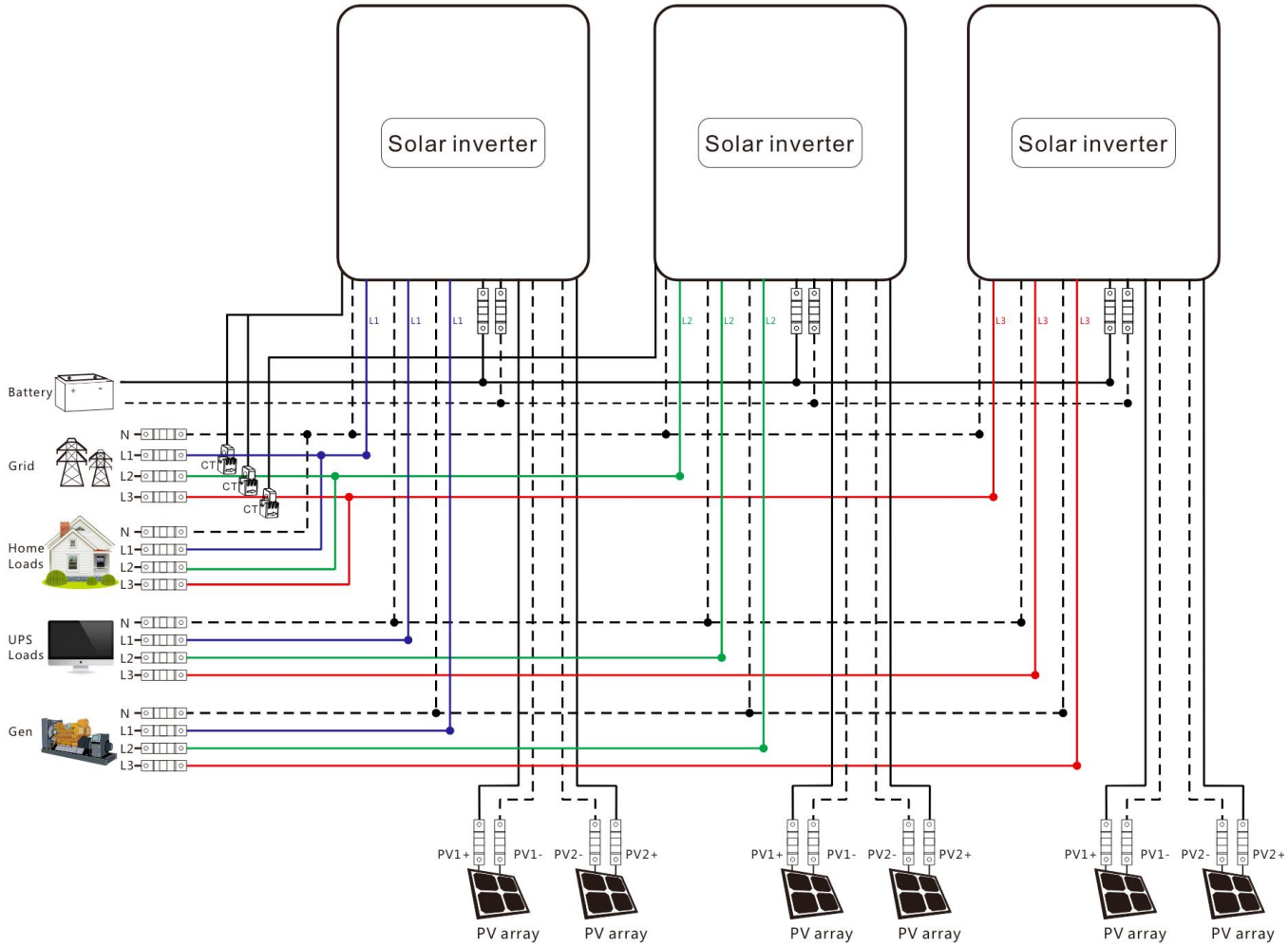
Ensure the parallel communication cables of the solar energy storage inverters are securely clamped with no loose connections.

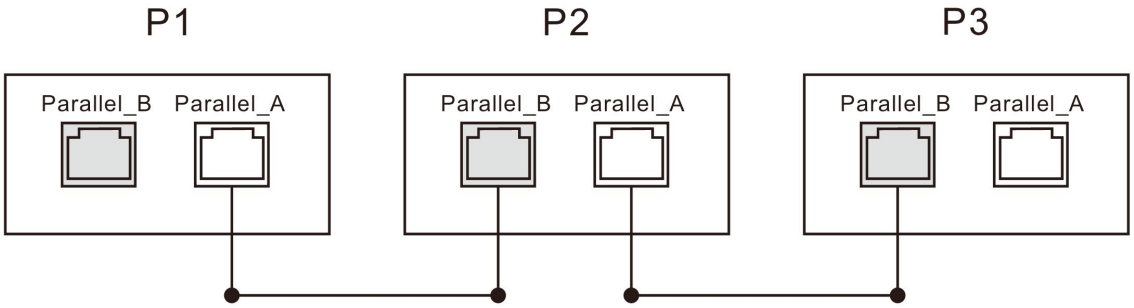
When multiple inverters operate in parallel, refer to the following schematic diagram:

Parallel Operation in three phase :

Three all-in-one solar storage inverters of the system connected in three phase:

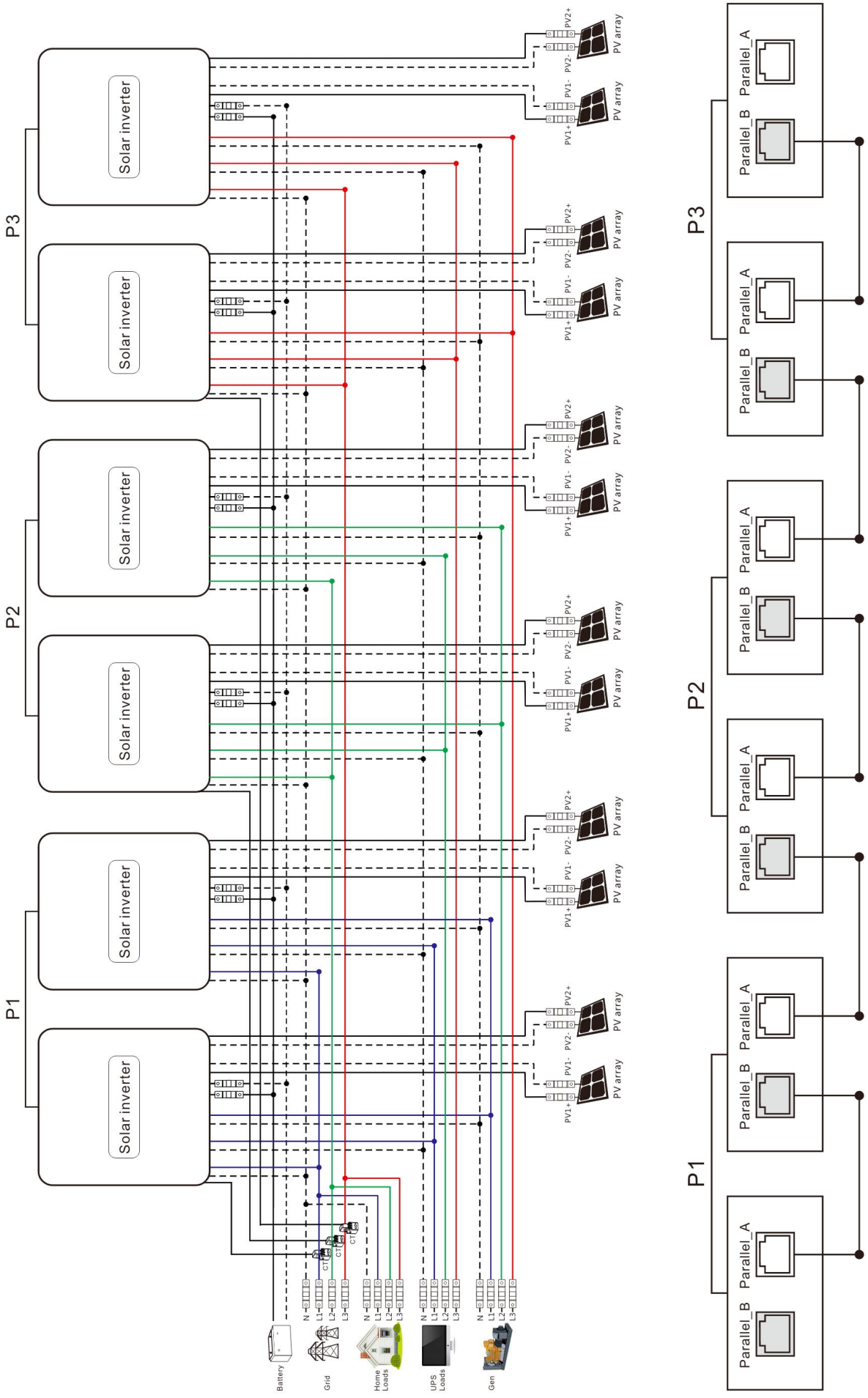
1+1+1 system:





Six all-in-one solar storage inverters of the system connected in three phase:

2+2+2 system:



Notice:

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, split-phase 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.

6) The [31] setting item :

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

When in three phase parallel connection, setting【31】 should be set as follows :

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.

When the output voltage set in the setting【38】 is 230Vac (S model), the line voltage between the live wire L1 in phase 1 and the live wire L2 in phase 2 is 230*1.732 = 398Vac, and similarly the line voltage between L1-L3, L2-L3 is 398Vac; the single phase voltage between L1-N, L2-N, L3-N is 230Vac.

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

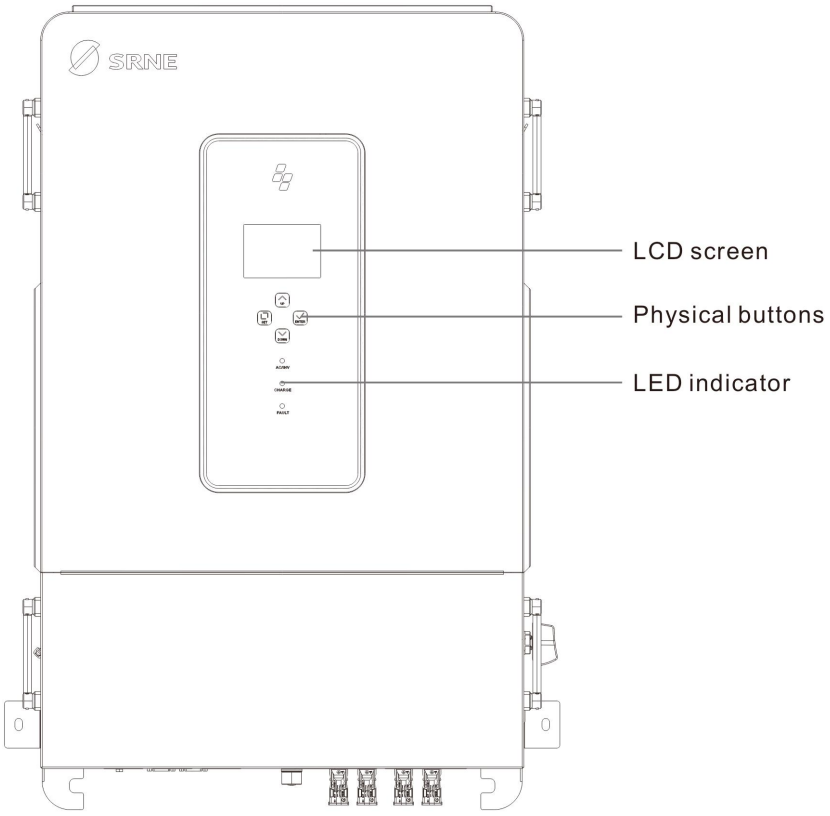
8) For other three-phase parallel connection configurations, such as: 1+1+2; 1+2+3; 2+2+1; 3+1+1; 4+1+1 systems, please contact the manufacturer for technical support.

9) When operating in parallel, inverters shall be installed in accordance with the proximity principle to avoid communication abnormalities caused by excessively long communication lines. If the line length is unavoidable, additional network cables can be used for end-to-end connection to optimize the communication loop.

5.Operation

5.1 Operation and Display Panel

The operation and display panel below includes 1 LCD screen, 3 LED indicators, and 4 Operation buttons.



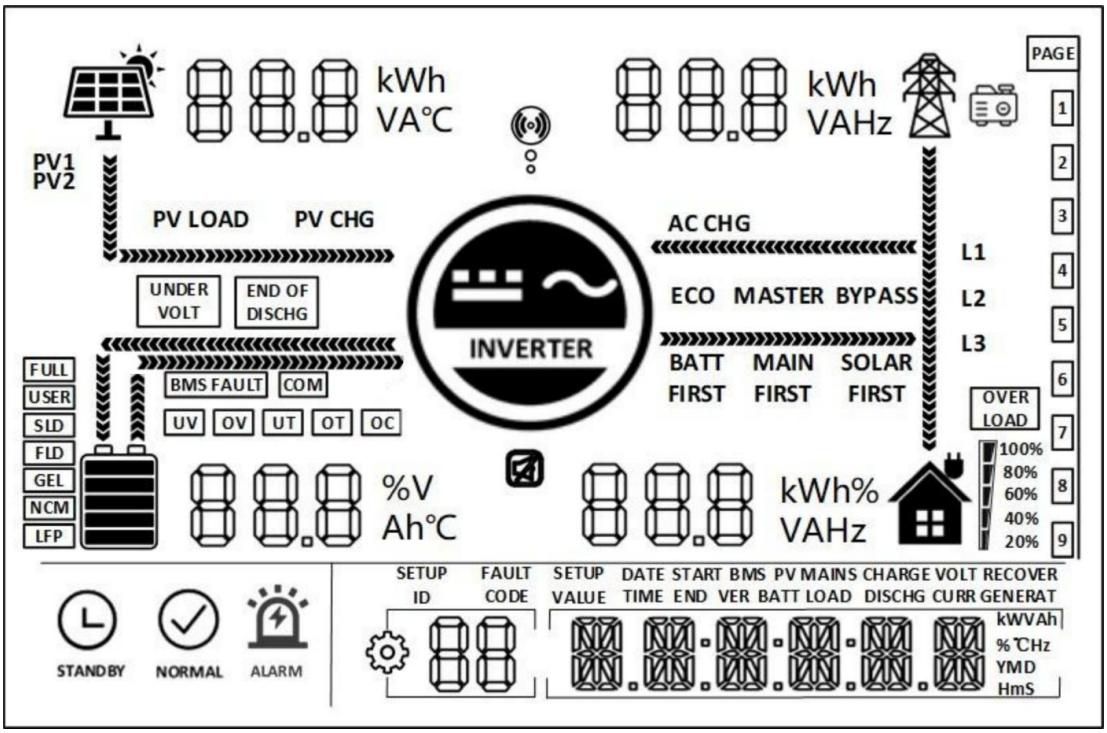
■ Operation buttons

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

■ LED indicators

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

■ Display Panel

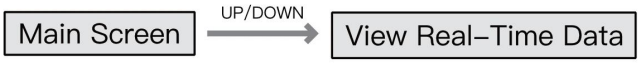


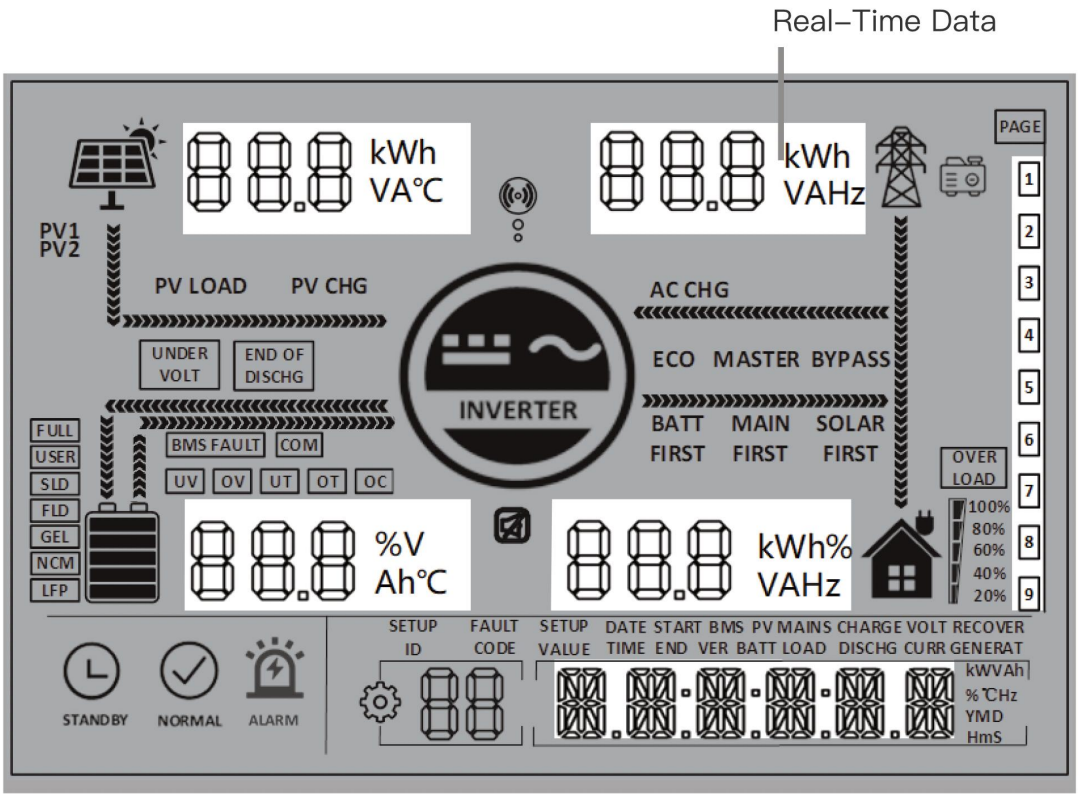
Icon	Description	Icon	Description
	Solar Panel		Grid
	Battery		Generator
	Inverter Working Status		Home load
	The inverter is communicating with the data collector		The buzzer is in mute mode
	Power Flow Direction		
	The inverter is in standby mode		The inverter is working normally
	There is a fault		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	System temperature too low
OT	Too high system temperature	OC	System over-current
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
PV LOAD	PV energy is carrying the load	PV CHG	PV power is charging the battery
AC CHG	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 Solar 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.

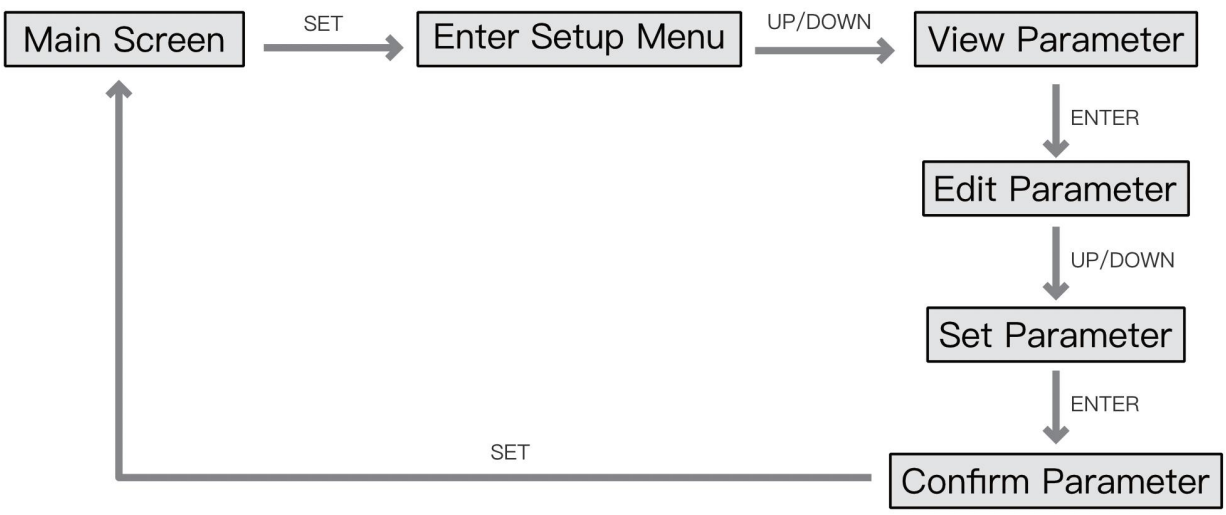


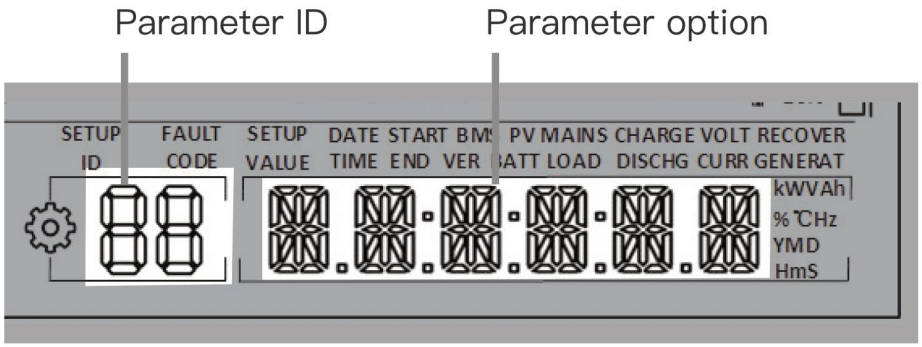


Page	PV	Battery	AC input	Load	General
1	PV input voltage	Battery voltage	AC input voltage	Load phase voltage	Current time
2	PV input current	Battery current	AC input current	Load phase current	Current date
3	PV input power	Battery power	AC input phase power	Load phase active power	Total PV power generation
4	PV daily power generation	BMS battery voltage	AC daily charging capacity	Load phase apparent power	Total load power consumption
5	PV - side heat sink temperature	Battery SOC	AC frequency	AC output frequency	RS485 address
6	INV heat sink temperature	Max. charging current	Bus voltage	UPS phase active power	Main chip software version
7	BAT heat sink temperature	Grid Max. charging current	Grid / diesel generator maximum current	UPS phase apparent power	Slave chip software version
8	Daily on-grid power	Diesel generator Max. charging current	Home load active power	Secondary load phase active power	Parallel operation mode
9			On-grid power	Secondary load phase apparent power	Customer ID

5.2 Setting

NOTICE





ID	Parameter	Option	Description
Battery 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. (parameter item [06] Settings as" OSO(only PV)", the grid power will not charge), the battery discharges during the scheduled discharge period or when operating in off-grid mode.
		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] or battery under-voltage (When connected to a BMS, the condition will be triggered when the SOC is less than or equal to the value specified in Parameter Item [61] or parameter item [59]). When the battery voltage is higher than the value in parameter item [5] or reaches the preset full-charge threshold (when connected to a BMS, this condition applies when the SOC is greater than or equal to the value of parameter item [62] or parameter item [60]), it switches back to the PV from the grid to supply the load.
		SUB **default**	PV energy first used for charging. When PV is insufficient, the battery will be charged by a combination of the utility grid and PV power (if parameter item [06] settings as " OSO(only PV) " , he grid energy will not used for charging), and the utility grid will supply power to the loads simultaneously. When the PV system can fully meet the charging demand, the surplus PV energy will be combined with the utility grid to supply power to the loads. The battery will discharge during the scheduled discharge period or when operating in off-grid mode.
		SOL	PV first mode. When the PV power is unavailable or the battery voltage is lower than the set value in the parameter item [04] or battery under-voltage, it will switch to the grid mode
02	AC output frequency	50.0 Hz **default**	In grid mode the AC output frequency will adapt to the grid frequency, otherwise the output will follow the preset values.
		60.0 Hz	
03	AC input voltage range	UPS **default**	When the output voltage is 220/230V, the input voltage range is 170-280V
		APL	When the output voltage is 220/230V, the input voltage range is 90-280V

04	Voltage point of battery switch to grid	49.2V **default**	When parameter **[01]= SBU/SOL**, output source will switch to grid from battery when the battery voltage below the preset value. Setting range: 40V~52V.
05	Voltage point of grid switch to battery	56.8V **default**	When parameter **[01]=SBU/SOL**, output source will switch to battery from grid when the battery voltage above the preset value. Setting range: 48V~60V.
06	Battery charging 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	200A **default**	Setting range: 0~300A.
08	Battery type	USER	User-defined, user can set all battery parameter.
		SLd	Sealed lead-acid battery.
		FLd	Flooded lead-acid battery.
		GEL	Gel lead-acid battery.
		L14/ L15/ L16 **default**	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	Boost charging voltage	56.8V **default**	Setting range 48V~58.4V, step 0.4V, valid when battery type is custom and lithium battery.
10	Boost charging maximum time	120 **default**	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 float charging voltage	56.8V **default**	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)	48.8V **default**	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	30 **default**	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 point	49.6V **default**	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 limiting voltage	43.2V **default**	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	56.8V **default**	Setting range 48V~58V in 0.4V steps, valid when battery type is FLd, SLd, and USER.
18	Battery equalization charging duration	120 **default**	Setting range 5min~900min in 5 min steps, valid when battery type is FLd, SLd, and USER.
19	Battery equalization charging delay time	120 **default**	Setting range 5min~900min in 5 minute steps, valid when battery type is FLd, SLd, and USER.
20	Battery equalization charging interval	30 **default**	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.
25	Buzzer alarm	DIS	Disable buzzer alarm.
		ENA **default**	Enable buzzer alarm.
26	Mode Change Reminder	DIS	Disable alarm prompt when the status of the main input source changes.
		ENA **default**	Enable alarm prompt when the status of the main input source changes.
27	Inverter Overload 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	150A **default**	Setting range: 0~300A.
29	BMS fault causes the battery to stop	DIS **default**	Disable BMS Faulty battery stops working.

		ENA	Enable BMS Faulty battery stops working.
30	RS485 communication address	ID: 1	RS485 address setting range: 1~254.
31	AC output mode (can be set in the standby mode only)	SIG **default**	When single inverter is used, the default is **SIG mode**.
		PAL	In parallel operation.
32	RS485 communication	DIS **default**	Disable the BMS communication function.
		485	RS485 BMS communication function.
		CAN	CAN BMS communication function.
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, XWD=SUNWODA, DAQ=DYNESS, WOW=SRNE, PYL=PYLONTECH , POW=POWMr, VOL=VILION, SGP=SGP, GSL Energy, PYT=Pylon tech 2
			CAN protocol: UZE=YUZE, SGP=SGP, GSL Energy, PYT=Pylon tech 2
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	52.0V **default**	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	52.0V **default**	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 phase voltage	230V **default**	Setting range: 200/208/220/230/240Vac.
39	Charging current limiting method (when BMS is enabled)	LCSET	The maximum battery charge current is not greater than the set value of [item 07]
		LCBMS **default**	The maximum battery charge current is not greater than the maximum value of BMS
		LCINV	The maximum battery charge current is not greater than the logical judgment value of inverter
40	1st slot grid start charging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
41	1st slot grid end charging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
42	2nd slot grid start charging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
43	2nd slot grid end charging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
44	3rd slot grid start charging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
45	3rd slot grid end charging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
46	Time slot grid charging function	DIS **default**	Disable this function.
		ENA	After enabling the Time slot grid charging function, the power supply mode will switch to SBU mode, and the system will switch to utility grid for charging during the preset charging period or after battery over-discharge. If the scheduled discharge function is enabled simultaneously, the system power supply mode will switch to UTI mode: the system will only switch to utility grid for charging during the preset charging period, and will switch to battery inverter power supply during the preset discharge period or when the utility grid fails.
47	1st slot battery start discharging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
48	1st slot battery end discharging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
49	2nd slot battery start discharging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
50	2nd slot battery end discharging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
51	3rd slot battery start discharging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.
52	3rd slot battery end discharging	00:00:00 **default**	Setting range: 00:00:00-23:59:00.

53	Time slot battery discharging function	DIS **default**	Disable this function.
		ENA	Enable the segmented scheduled battery discharge function. When parameter item [01] is set to SBU or SOL mode, the system will switch to inverter power supply during the preset discharge period. When parameter item [01] is set to UTI or SUB mode, the battery will work with the utility grid in hybrid load-supply mode, and the maximum discharge current of the battery will be limited by the value specified in parameter item [78]. Note: If the time-segmented battery charging function is enabled simultaneously and the time periods overlap, the system will default to the charging 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	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	N-PE bonding automatic switching 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.
70	Insulation impedance detection	DIS **default**	Disable detecting insulation impedance value.
		ENA	Enable detecting insulation impedance value.
72	Battery grid-connected	DIS **default**	The battery is not permitted to discharge to the grid.

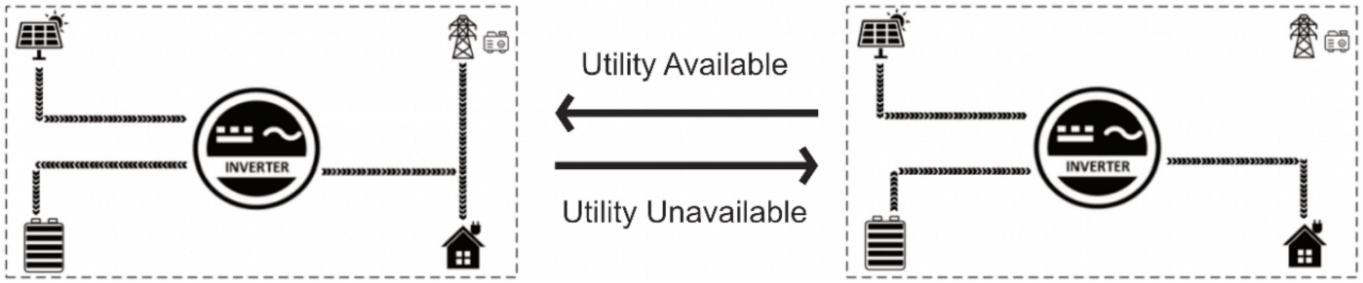
		ENA	The battery is permitted to discharge to the grid.
73	Generator charging current setting	300A **default**	Configurable when the generator is GEN_IN, with a maximum of 300A. Setting range: 0~300A
74	Generator power setting	16kW **default**	When the generator is set to GEN_IN, the maximum combined load and charging power of the generator is 16 kW. Setting range: 0~16 kW
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 network discharging current setting	300A **default**	Battery discharge hybrid network current. Setting range: 0~300A
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 **default**	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 item 01 and 34, which allows the user to set the AC output power source manually.

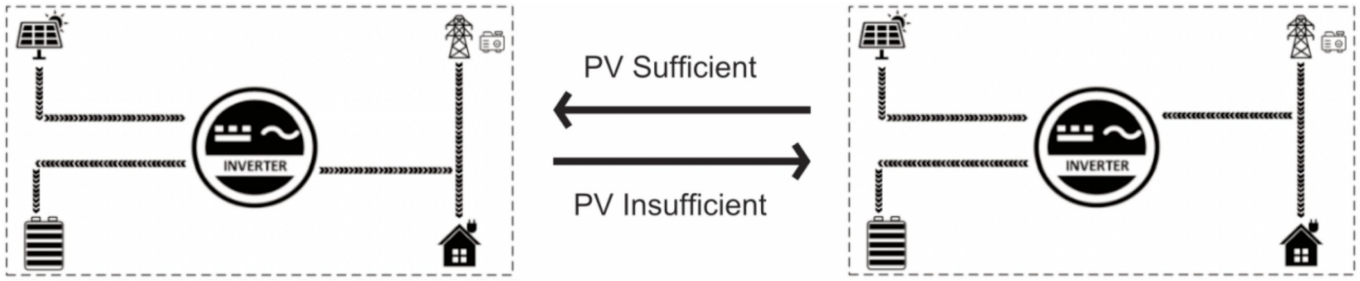
- **Utility Priority, PV Loading Priority 01 UTI**

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. (parameter item [06] Settings as" OSO(only PV)", the grid power will not charge), and the battery is only discharged when off the grid.



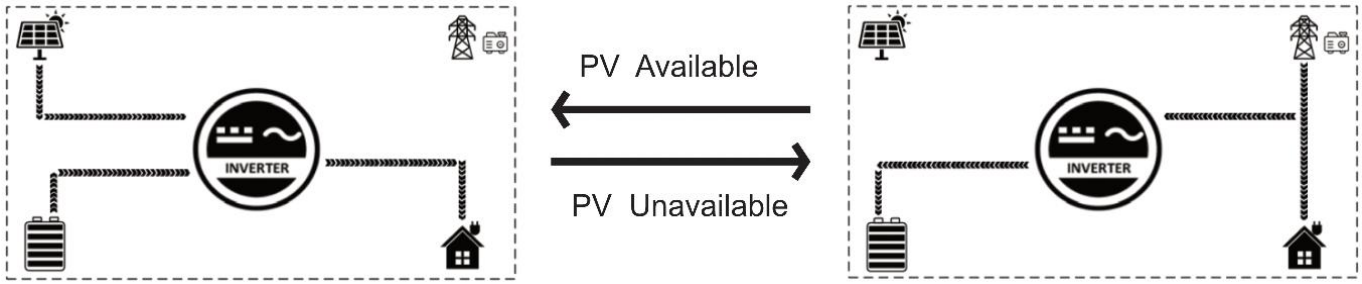
- **Utility Priority, PV Charging Priority 01 SUB (default)**

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.



- **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)

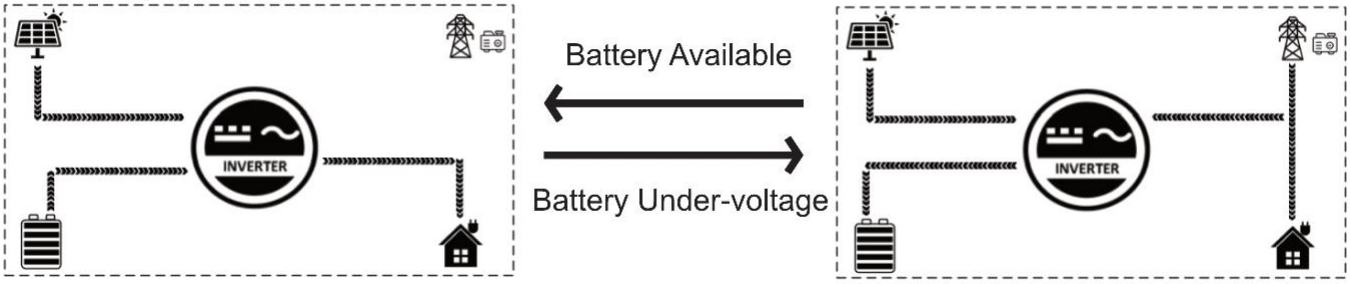


- **Inverter Priority Output 01 SBU**

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)

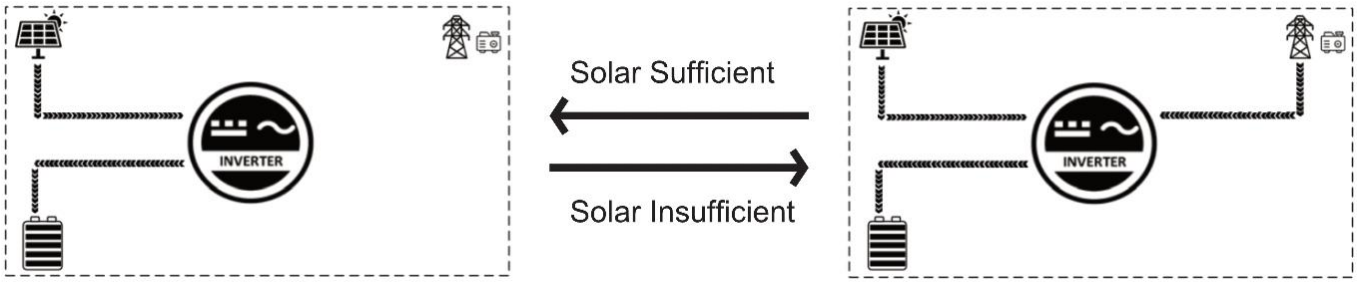


5.4 Battery Charging Mode

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

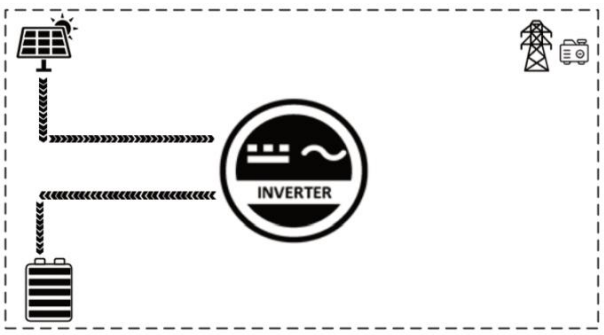
- **Hybrid Charging SNU (default)**

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**

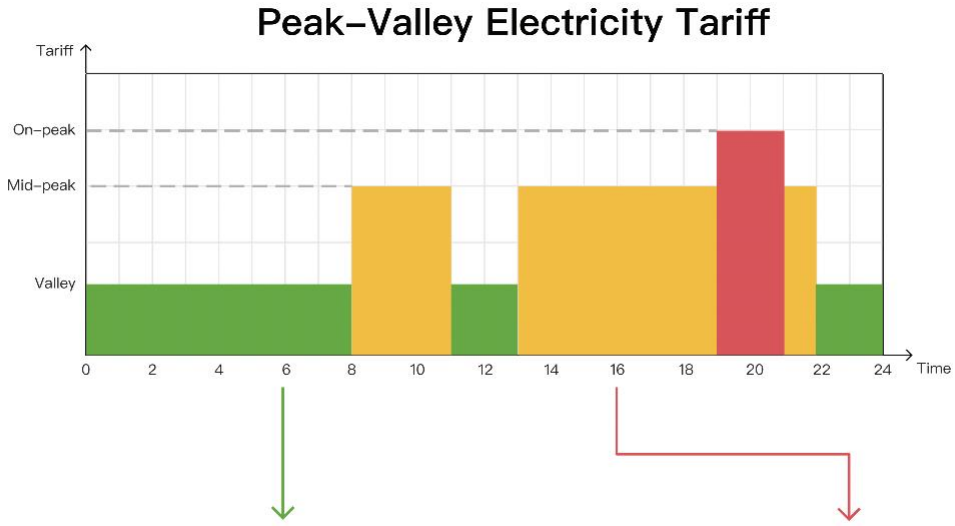
Only PV power is used to charge the battery, without starting the utility charging. This is the most energy-efficient method, with all battery power coming from solar energy, and is usually used in areas with good radiation conditions.



5.5 Time-slot Charging/Discharging Function

The Product is equipped with time-slot charging / discharging function, users can set different charging/discharging time slots according to the local peak and valley electricity price, so as to make efficient use of utility power and PV energy. When the utility price is expensive, the battery can be used to supply power to the loads. When the utility price is cheap, the utility power can be used to supply to the loads and charge, which can help users save the electricity bill to the greatest extent. Users can turn on/off the time-sharing charging/discharging function in the setting menu parameters [46] and [53], and set the charging and discharging time periods in parameters [40-45], [47-52] for timed mains charging start/time setting and timed battery discharging start/time setting. Here is a case example to help users understand the function.

Before using this function for the first time, please set the local time in parameter [54], [55], then the user can set the corresponding time slot according to the local peak and valley tariff charges.



Time-slot Utility Charging & Loading Function

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

Time-slot Battery Discharging Function

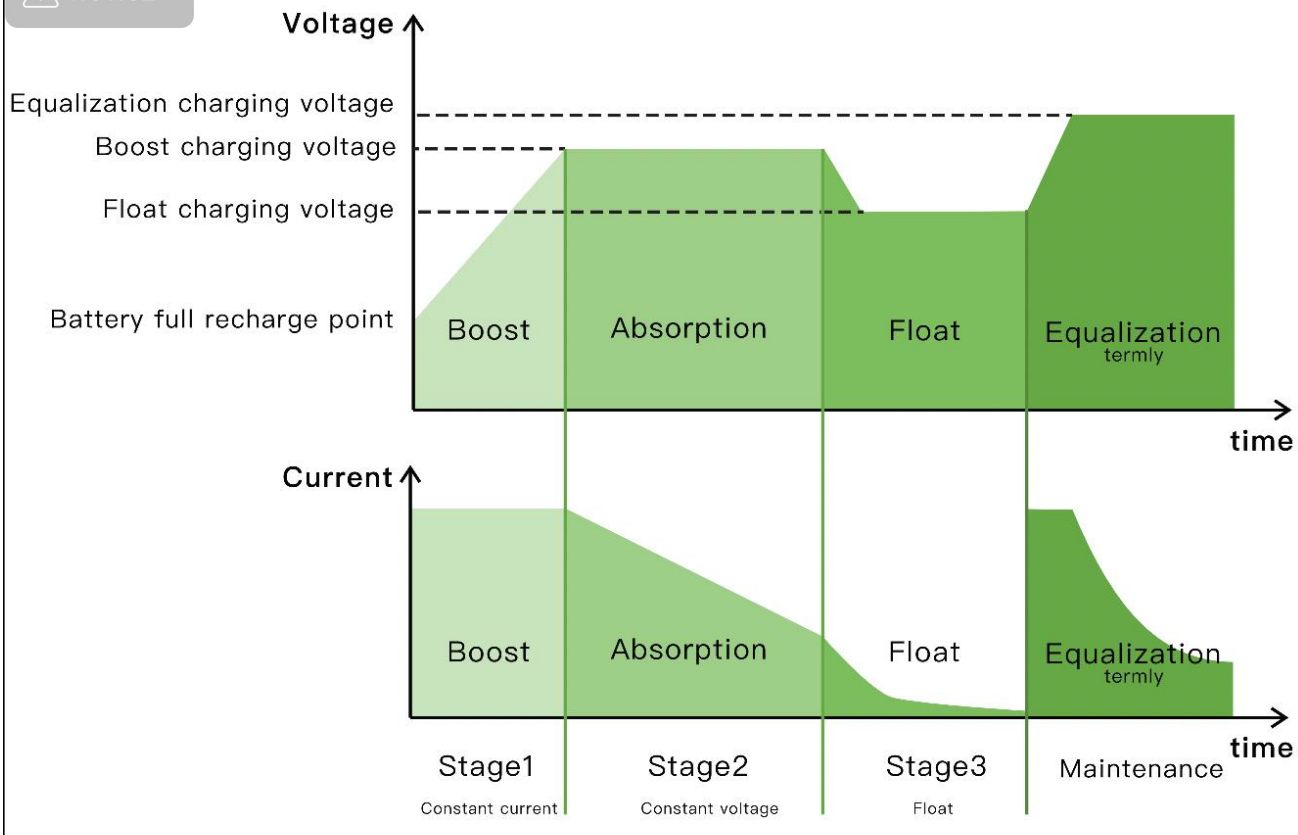
With 3 definable time periods, users can freely set the battery discharge time within the range of 00:00 to 23:59. During the time set by the user, the inverter will give priority to the battery inverter to carry the load, and if the battery power is insufficient, the inverter will automatically switch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

5.6 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

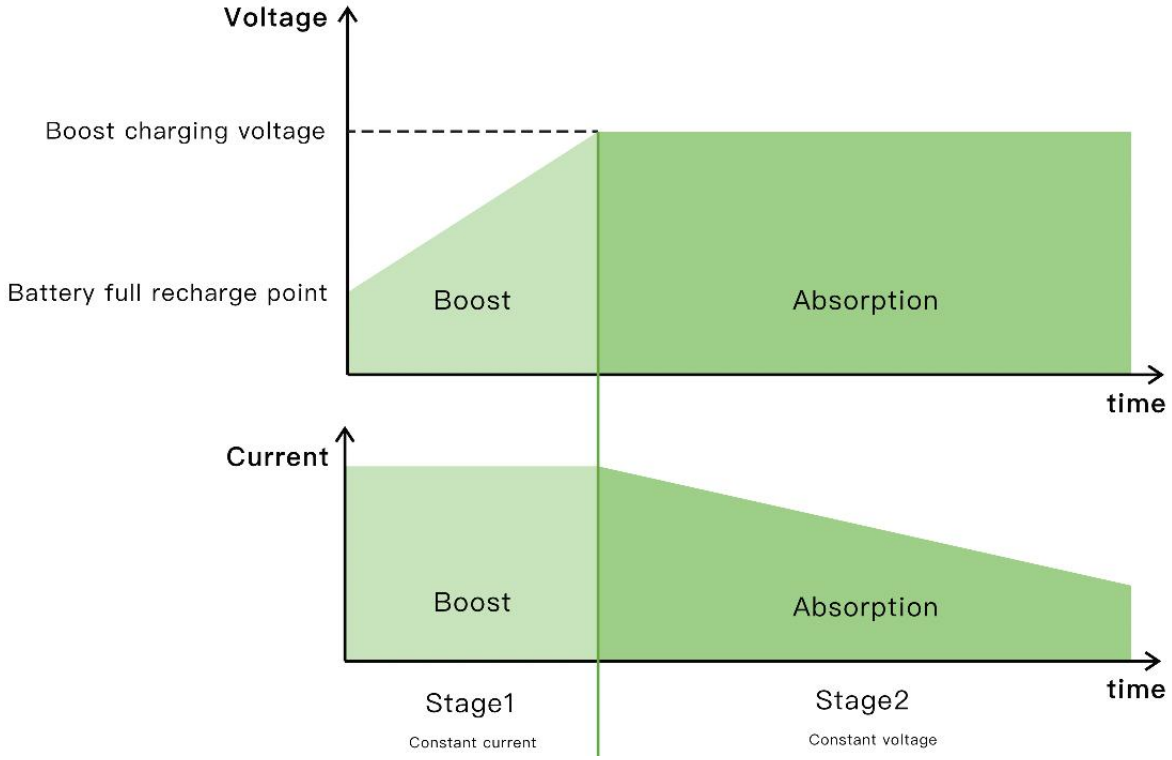


■ Lithium-ion Battery

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

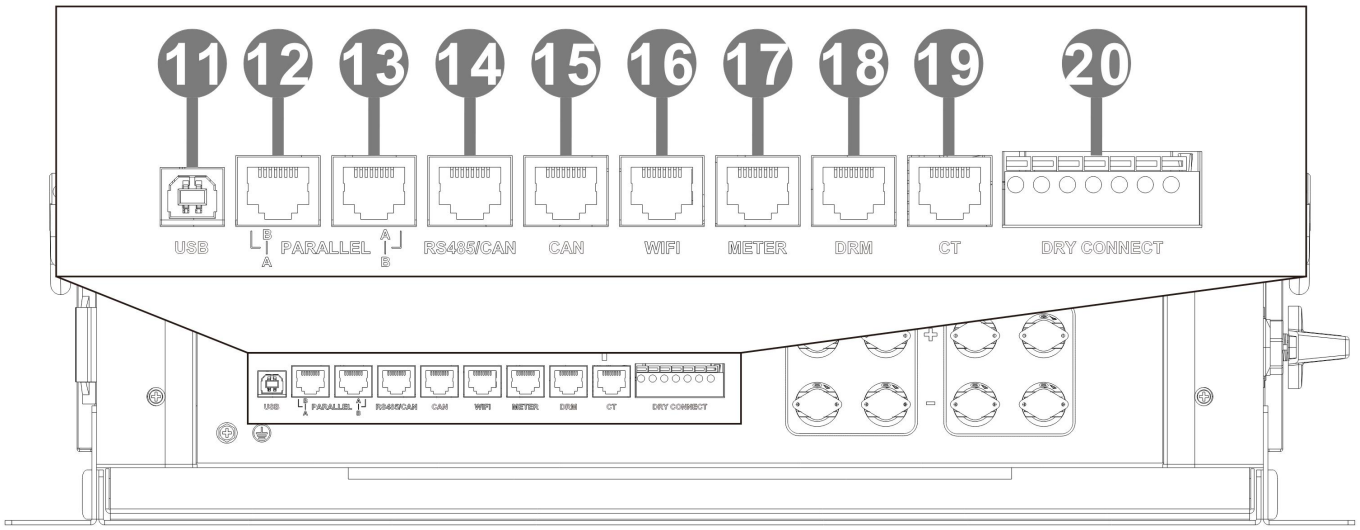
NOTICE

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

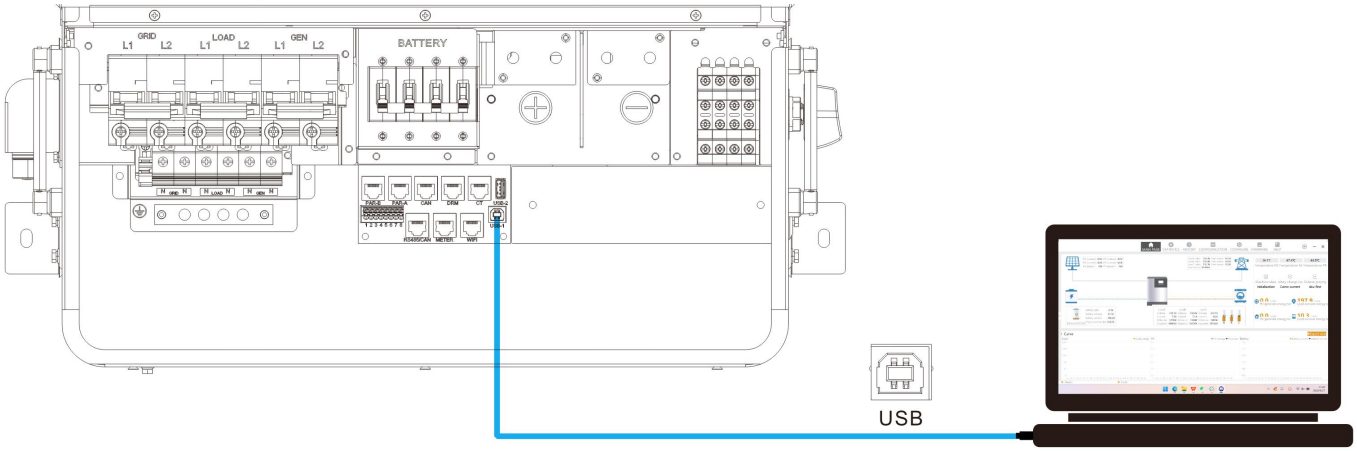
6.1 Product Overview



11	USB Port	12	Parallel Port (B-A)	13	Parallel Port (A-B)
14	RS485/CAN Port	15	CAN Port	16	WIFI Port 1
17	Meter Port	18	DRM Port	19	CT Port
20	Dry Contact Prot				

6.2 USB Communication Function

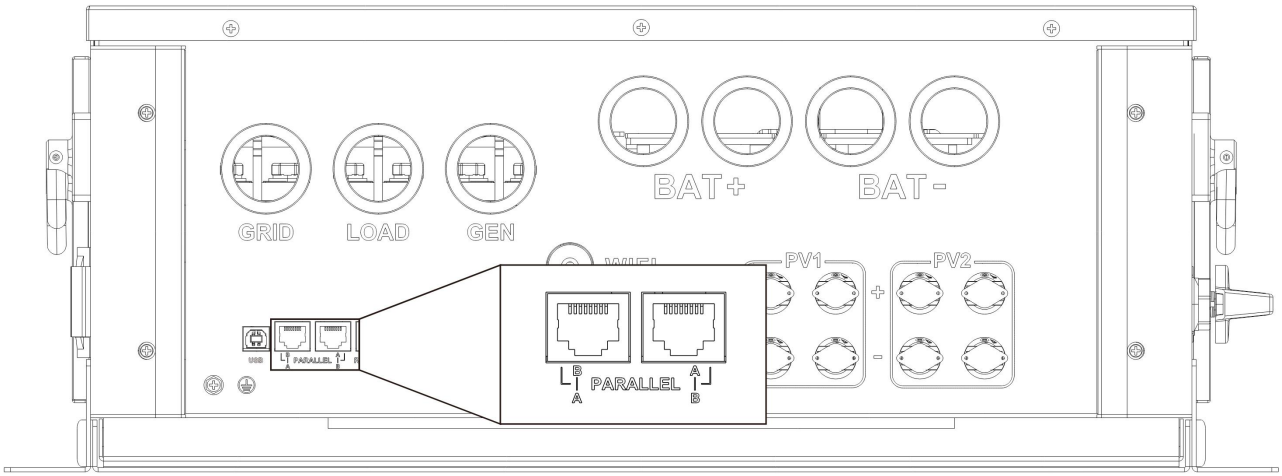
Users can use the host computer software to read and modify the device parameters through this port. If you need the installation package of the host computer software, The installation package is available for download on the official website, or you may contact us to get it.



6.3 Parallel Function (For parallel operation only)

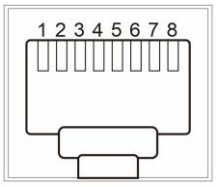
This port is a parallel communication port, through which parallel modules can communicate with each other when connected.

1.Each device is equipped with two 8-pin parallel communication ports: PAR-A (Parallel Port A) and PAR-B (Parallel Port B).
2.For connection, connect the PAR-A (Parallel Port A) of the current device to the Parallel Port B of the device to be paralleled, or connect the PAR-B (Parallel Port B) of the current device to the Parallel Port A of the device to be paralleled.
3.Direct connection between the PAR-A and PAR-B of the same device is prohibited.



6.4 RS485/CAN Communication Function

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



RS485/CAN

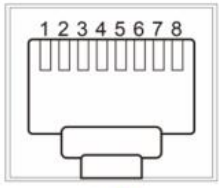
RJ45	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Description	RS485-B	RS485-A	/	CANH	CANL	/	RS485-A	RS485-B

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 CAN Function

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



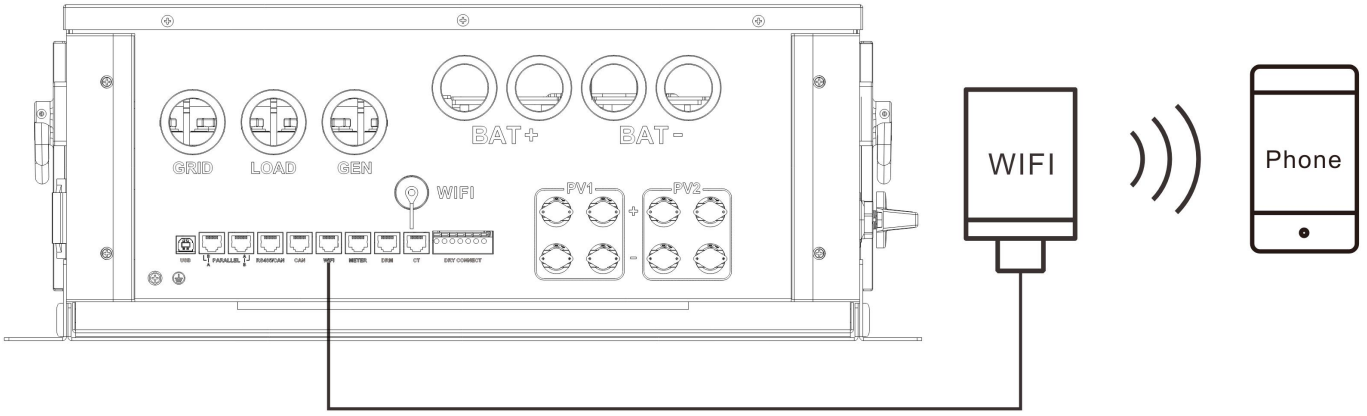
CAN

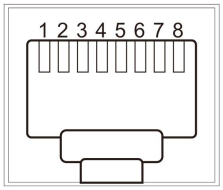
RJ45	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Description	/	/	/	CANH	CANL	/	/	/

6.6 WIFI Communication Function

The WIFI communication port can be connected to the optional RS485-to-WIFI/GPRS communication module developed by our company. After installing this module, it can connect to our inverter, allowing users to view the inverter's operating status and parameters through a mobile APP.

■ WIFI Port 1 (either one)

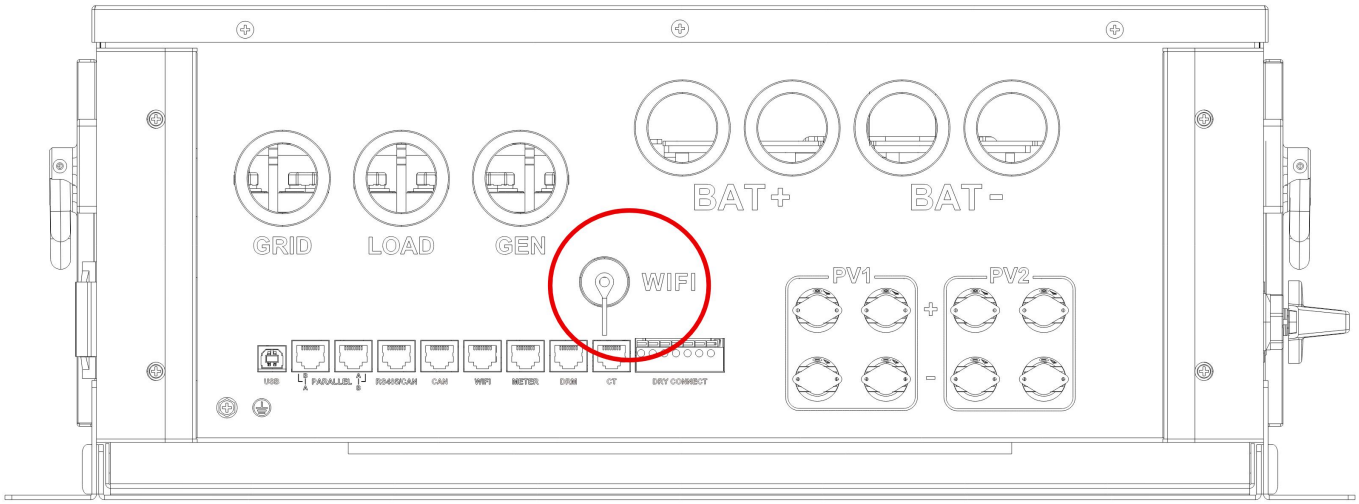




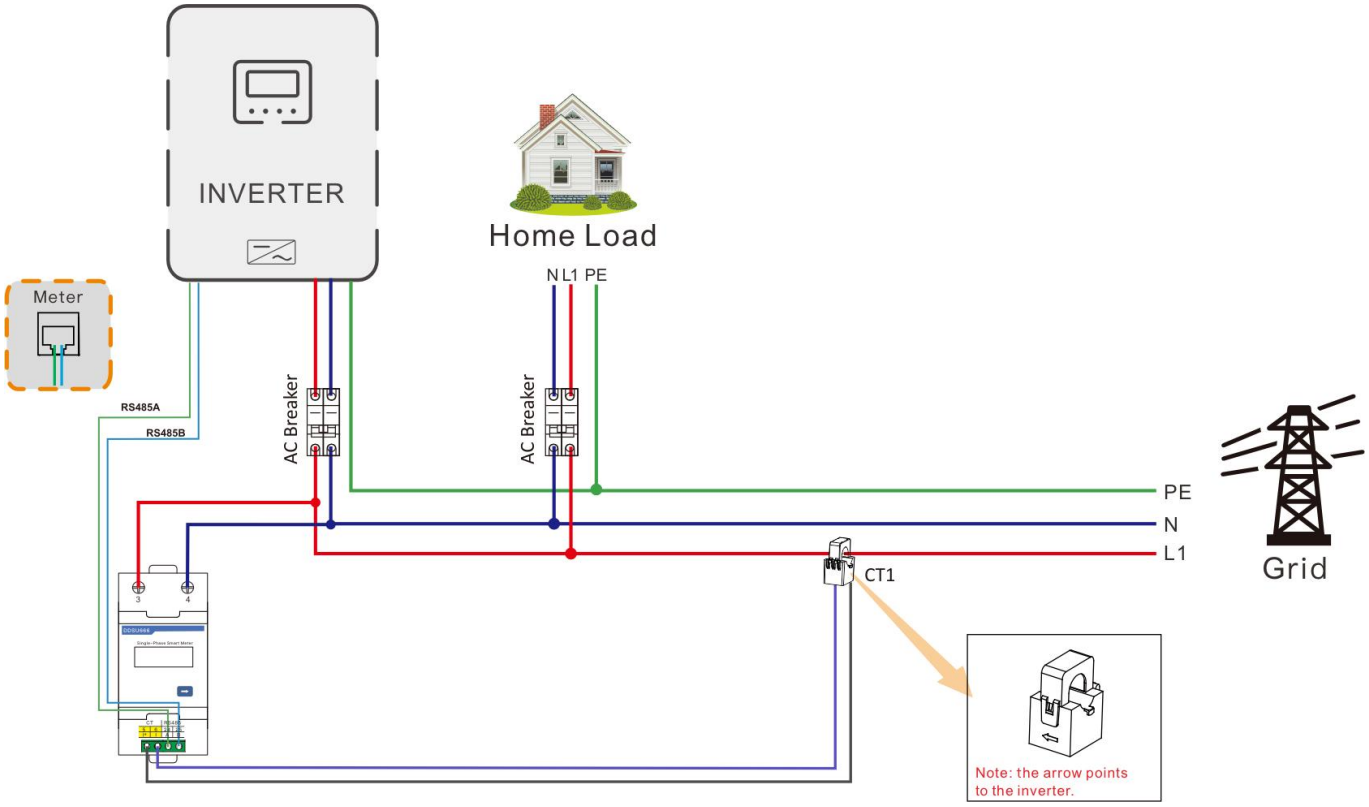
WIFI

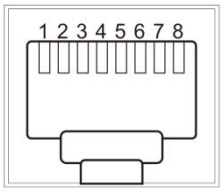
RJ45	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Description	5V	GND	/	/	/	/	RS485-A	RS485-B

■ WIFI Port 2 (either one)



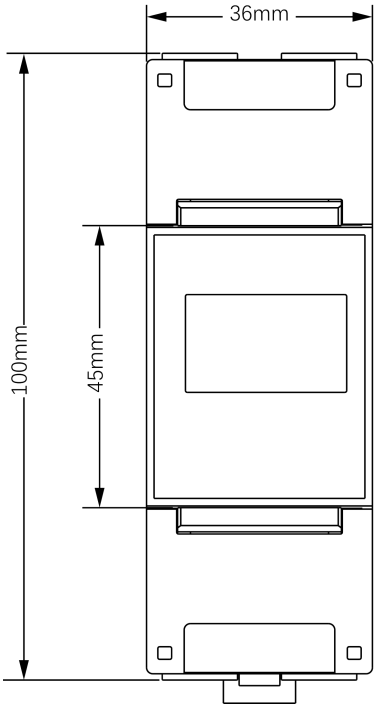
6.7 Meter Communication (Optional)



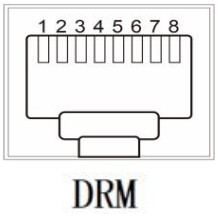


Meter

RJ45	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Description	RS485-B	RS485-A	/	/	/	/	RS485-A	RS485-B



6.8 DRM(Only Australia)

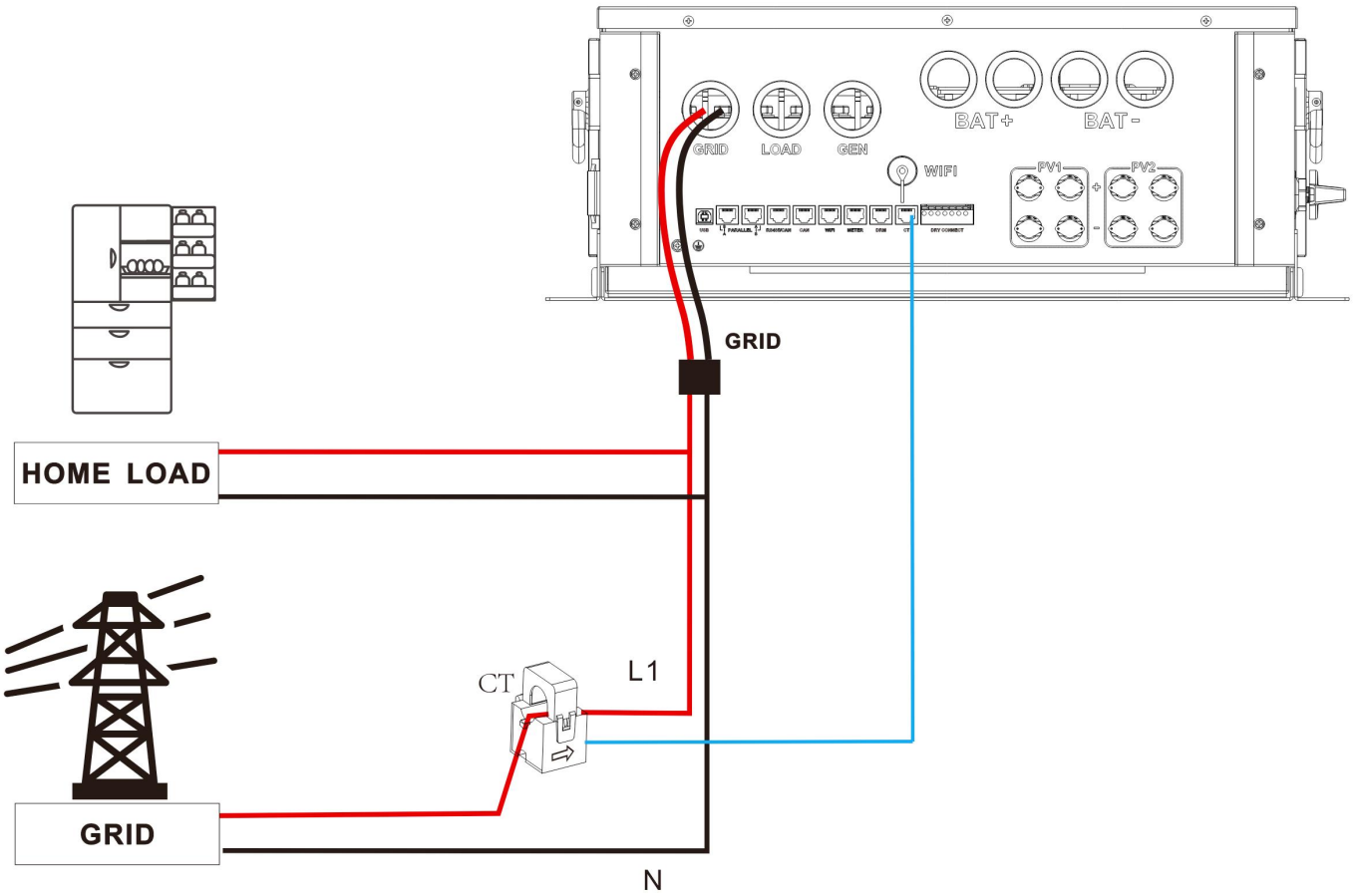


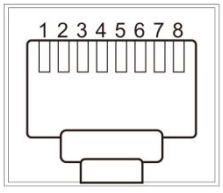
DRM

RJ45	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Description	DRM5	DRM6	DRM7	DRM8	RefGen	COM/ DRM0	V+	V-

MODEL	RJ45 socket asserted by shorting pins		Requirement
DRM0	5	6	Operate the power-off device.
DRM5	1	5	Do not generate power to the grid.
DRM6	2	5	The power generation shall not exceed 50% of the rated power.
DRM7	3	5	The power generation shall not exceed 75% of the rated power, and reactive power shall be absorbed when possible.
DRM8	4	5	Increase power generation (limited by other active DRM).

6.9 External CT Connection

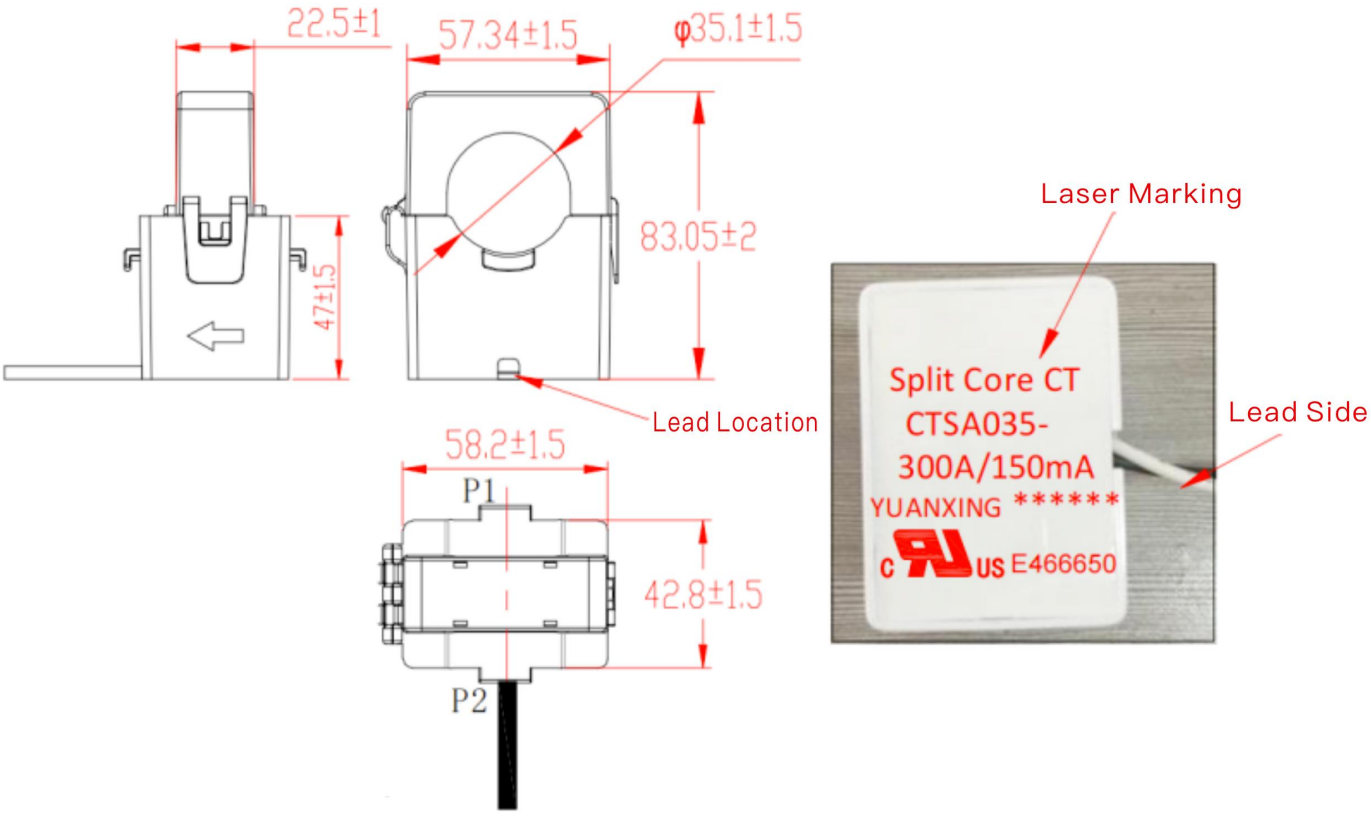




CT

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

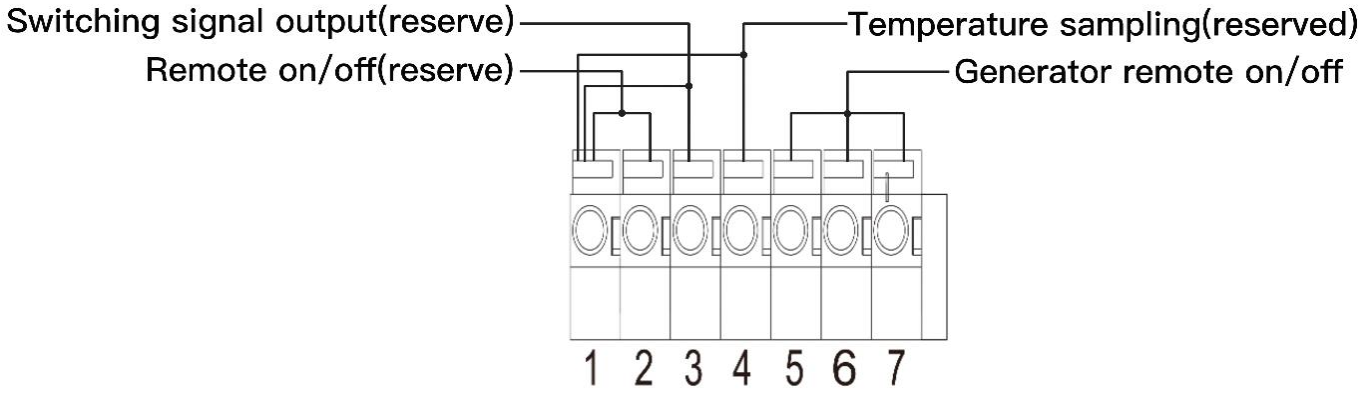
1. Split Core Current Transformer (CT) dimension: (mm)
2. Secondary output cable length is 4m.
3.The CT direction is "to inverter"



6.10 Dry Contact Function

The dry contact port has 4 functions :

1. Remote switch on/off(reserved)
2. Switching signal output(reserved)
3. Battery temperature sampling(reserved)
4. Generator remote start/stop



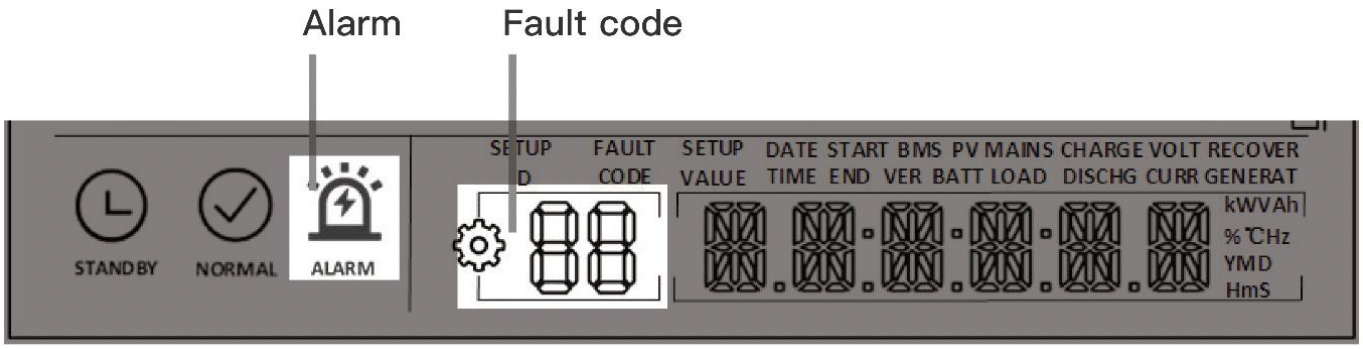
Function	Description
Remote switch on/off (reserved)	When pin 1 is connected with pin 2, the inverter will switched off the AC output. When pin1 is disconnected from pin2, the inverter outputs normally.
Switching signal output (reserved)	When the voltage of battery reaches the battery discharge limiting voltage (parameter [15]), pin 3 to pin 1 voltage is 0V. When the battery charging is normal, pin 3 to pin 1 voltage is 5V.
Temperature sampling (reserved)	Pin 1 & Pin 4 can be used for battery temperature sampling compensation.
Generator remote switch	When the voltage of battery reaches the battery under-voltage alarm point (parameter [14]) or voltage point of battery switch to utility (parameter [04]), pin 6 to pin 5 normally open, pin 7 to pin 5 normally close. When the voltage of battery reaches the voltage point of utility switch to battery (parameter [05]) or battery is full, pin 6 to pin 5 normally close, pin 7 to pin 5 normally open. (Pin 5/6/7 outputs 125Vac/1A, 230Vac/1A,30Vdc/1A)

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.

7.Fault Codes and Countermeasures

7.1 Fault Codes



Fault Code	Fault name	Whether it affects the output or not	Description
【01】	BatVoltLow	No	Battery undervoltage alarm.
【02】	BatOverCurrSw	Yes	Battery discharge average current overcurrent (software protection).
【03】	BatOpen	Yes	Battery not-connected alarm.
【04】	BatLowEod	Yes	Battery undervoltage stop discharge alarm.
【05】	BatOverCurrHw	Yes	Battery overcurrent (hardware protection).
【06】	BatOverVolt	Yes	Charging overvoltage protection.

【07】	BusOverVoltHw	Yes	Bus overvoltage (hardware protection).
【08】	BusOverVoltSw	Yes	Bus overvoltage (software protection).
【09】	PvVoltHigh	No	PV overvoltage protection.
【10】	PvAFCIErr	No	PV arc fault.
【11】	PvOCHw	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 radiator over-temperature protection.
【20】	OverTemperInv	Yes	Inverter heat dissipation over-temperature protection
【21】	FanFail	Yes	Fan blockage or failure fault.
【22】	EEPROM	Yes	Memory failure.
【23】	ModelNumErr	Yes	Model setting error.
【24】	Busdiff	Yes	Positive and negative bus voltage imbalance.
【25】	BusShort	Yes	Bus short-circuit.
【26】	RlyShort	Yes	Inverted AC Output Backfills to Bypass AC Input.
【27】	LinePhaselose	Yes	Grid input phase lose.
【28】	LinePhaseErr	Yes	Grid input phase error
【29】	BusVoltLow	Yes	Bus voltage undervoltage protection.
【30】	BatCapacityLow1	No	Alarm given when battery capacity rate is lower than 10% (setting BMS to enable validity).
【31】	BatCapacityLow2	No	Alarm given when battery capacity rate is lower than 5% (setting BMS to enable validity).
【32】	BatCapacityLowStop	Yes	Inverter stops when battery capacity is low (setting BMS to enable validity).
【33】	ControlCanFault	Yes	Control CAN fault in parallel operation.
【34】	CanCommFault	Yes	CAN communication fault in parallel operation.
【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 AC input source in parallel mode.
【40】	ParaHwSynErr	Yes	Hardware synchronization signal error in parallel mode.
【41】	InvDcVoltErr	Yes	Inverter DC component of voltage abnormality.
【42】	SysFwVersionDiff	Yes	Inconsistent parallel operation program versions.
【43】	ParaLineContErr	Yes	Parallel wiring fault.
【44】	Serial number error	Yes	Serial number not set at factory.
【45】	Error setting of split-phase mode	Yes	[31] Incorrect settings for parallel operation mode.
【46】	MeterComErr	Yes	Meter communication error.
【48】	AFCIComErr	Yes	AFCI communication error or AFCI self-test failed.
【56】	Low insulation resistance fault	No	PV1+, PV2+ and PV- abnormally low impedance to ground.
【57】	Leakage current overload fault	Yes	System leakage current exceeds limit.
【58】	BMS communication error	No	BMS communication fault.
【60】	BMS battery low temperature alarm	No	BMS low-temperature alarm (takes effect after successful BMS communication).
【61】	BMS battery over temperature alarm	No	BMS over-temperature alarm (takes effect after successful BMS communication).
【62】	BMS battery over current alarm	No	BMS over-current alarm (takes effect after successful BMS communication).
【63】	BMS battery undervoltage alarm	No	BMS under-voltage alarm (takes effect after successful BMS communication).

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	Inverter overload protection	After triggering the overload protection, the inverter will resume output after 3 minutes, 5 consecutive overloads will switch off the output until the inverter restarts. (102%<load<110%) : error, output switched off after 5 minutes. (110%<load<125%) : error reported and output switched off after 10s.
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 optimal long-term performance, it is recommended to perform the following inspections twice a year for inverter systems:

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

MODEL	ASP48140S300-H	ASP48150S300-H	ASP48160S300-H	Setting
AC OUTPUT				
Rated Output Power	14000W	15000W	16000W	
Max. Peak Power	2 times rated power,10s			
Max. Apparent Power	14000VA	15000VA	16000VA	
Rated Output Voltage	230Vac (L+N+PE)			
Rated Output Current	60.9Aac	65.2Aac	69.6Aac	√
Motor Load Capacity	9HP			
Rated Output Frequency	50/60Hz			
Waveform	Pure sine wave			
Switch Time	10 ms(typical)			
BATTERY				
Battery Types	Li-ion / Lead-Acid / User Defined			√
Rated Battery Voltage	48Vdc			
Battery Voltage Range	40-60Vdc			
Max. Grid/Generator Charging Current	300Adc	300Adc	300Adc	√
Max. Charging/Discharging Current	300Adc	300Adc	300Adc	√
Charging Curve	3 Stages / Equalization			
Charging Strategy for Li-Ion Battery	Self-adaption to BMS			
PV INPUT				
No. of MPPT Trackers	2			
Max. PV Input Power	12000W + 12000W			
Max. PV Input Current	36Adc + 36Adc			
PV Short-circuit Current	50Adc + 50Adc			
PV Start-up Voltage	90Vdc / 90Vdc			
Max. PV Open-Circuit Voltage	650Vdc / 650Vdc			
MPPT Operating Voltage Range	120-600Vdc / 120-600Vdc			
GRID / GENERATOR INPUT				
Rated Input Voltage	230Vac (L+N+PE)			
Input Voltage Range	90-280Vac			
Rated Input Frequency	50/60Hz			

Charging Current Error	2%			
Bypass Overload Current (Grid)	100Aac			
Bypass Overload Current (Generator)	60.9Aac	65.2Aac	69.6Aac	
EFFICIENCY				
MPPT Tracking Efficiency	>99%			
Max. Inverter Efficiency	94.3%			
Max. Charging Efficiency	93.4%			
PROTECTION				
Has PV Current Limiting Protection, PV Overvoltage Protection, Night Anti - backcharging Protection, Mains Input Overvoltage Protection, Mains Input Undervoltage Protection, Battery Overvoltage Protection, Battery Undervoltage Protection, Battery Overcurrent Protection, AC Output Short - circuit Protection, Heat Sink Overtemperature Protection, Overload Protection, AC Backfeed Protection, Bypass Overcurrent Protection, Bypass Wiring Error Protection, Arc Fault Protection, Leakage Current Protection, Rapid Shutdown Signal Generator (Optional)				
GENERAL DATA				
Parallel Capacity	1~6 units			
Dimensions (W * H * D)	514*804*215mm			
Weight	46.3kg			
Protection Degree	IP20, indoor use only			
Operating Temperature	-10~55℃, >45℃ Derated			
Noice	<60dB			
Altitude	2000m			
Cooling Time	Intelligent Air Cooling			
COMMUNICATION				
Internal Interface	RS485 / CAN / WIFI / Dry contact			√
External Module (optional)	Wi-Fi/4G Stick			√
CERTIFICATION				
Safety	IEC62109-1, IEC62109-2			
EMC	EN61000-6-1, EN61000-6-3			

SRNE Solar Co,.Ltd

Mail	service@szshuori.com
Web	www.srnesolar.com
Address	4-5F,Building13A,Taihua Wutong Industrial Park ,Gushu Development Zone , Hangcheng Street,Baoan, Shenzhen, China PR