SRNE

USER MANUAL

Solar Hybrid Inverter

HESP80SH3

HESP100SH3

HESP120SH3

SRNE

CONTENTS

1. Safety

1.1 How to use this manual

This manual contains important information、guidelines、operation and maintenance for the following products : **HESP80SH3、HESP100SH3、HESP120SH3**

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

1.2 Symbols in this manual

Symbols	Description
DANGER	DANGER indicates a hazardous situations which if not avoided will result in death or serious injury.
WARING	WARING indicates a hazardous situations which if not avoided could result in death or serious injury.
CAUTION	CAUTION indicates a hazardous situations which if not avoided could result in minor or moderate injury.
NOTICE	NOTICE provide some tips on operation of products.
	Refer to the operating instructions
	Danger. Risk of electric shock!
	CE certification
	Do not touch the product in5mins after shut down
	Hot surface
	Danger of high voltages. Danger to life due to high voltage in the energy storage system
	The Energy storage system should not be disposed together with the Household waste.

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1.3 Safety instructio

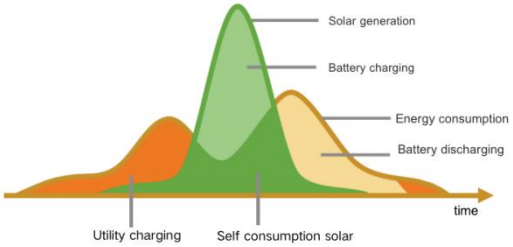
⚠ DANGER

- This chapter contains important safety instructions. Read and keep this manual for future reference.
- Be sure to comply the local requirements and regulation to install this inverter.
- Beware of high voltage. Please turn off the switch of each power sources before and during the installation to avoid electric shock.
- For optimal operation of this inverter, select the appropriate cable size and the necessary protective devices as specified.
- Do not connect or disconnect any connections when the inverter working.
- Do not open the terminal cover when the inverter working.
- Make sure the inverter is well grounding.
- Be careful not to cause short-circuiting of the AC output and DC input.
- Do not disassembly this unit, for all repair and maintenance, please take it to the professional service center.

2. Production Instructions

2.1 Instructions

HESP SH3 series is a new type of solar energy storage inverter control inverter integrating solar energy storage & utility charging and energy storage, AC sine wave output. It adopts DSP control and features high response speed, reliability, and industrial standard through an advanced control algorithm.



2.2 Features

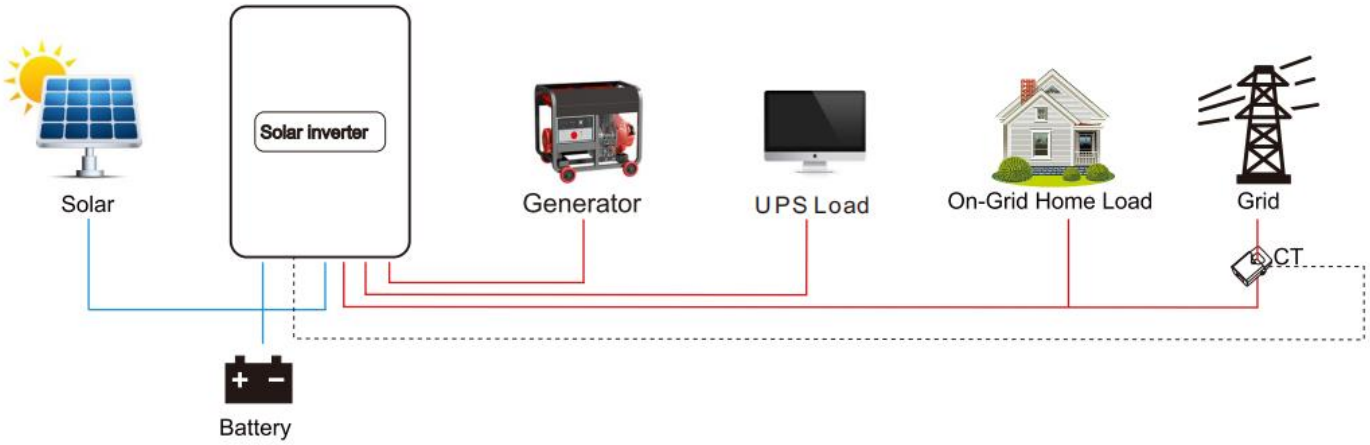
- Supports li-ion battery connections.
- Support three-phase pure sine wave output.
- Supports phase voltage adjustment in the range of 200, 208, 220, 230, 240Vac.
- Supports two PV inputs, with the function of simultaneously tracking the maximum power charging or carrying capacity of two MPPT.
- Dual MPPT, efficiency up to 99.9%, single maximum current of 16A, perfectly adapted to high-power modules.
- 2 charging modes are available: solar only, grid and PV hybrid charging.
- With time-slot charging and discharging setting function, it helps users to take advantage of peak and valley tariffs and save electricity costs.
- 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-voltage protection, under-voltage protection, over-load protection, etc.
- Support CAN, USB, and RS485 communication.

2.3 System connection diagram

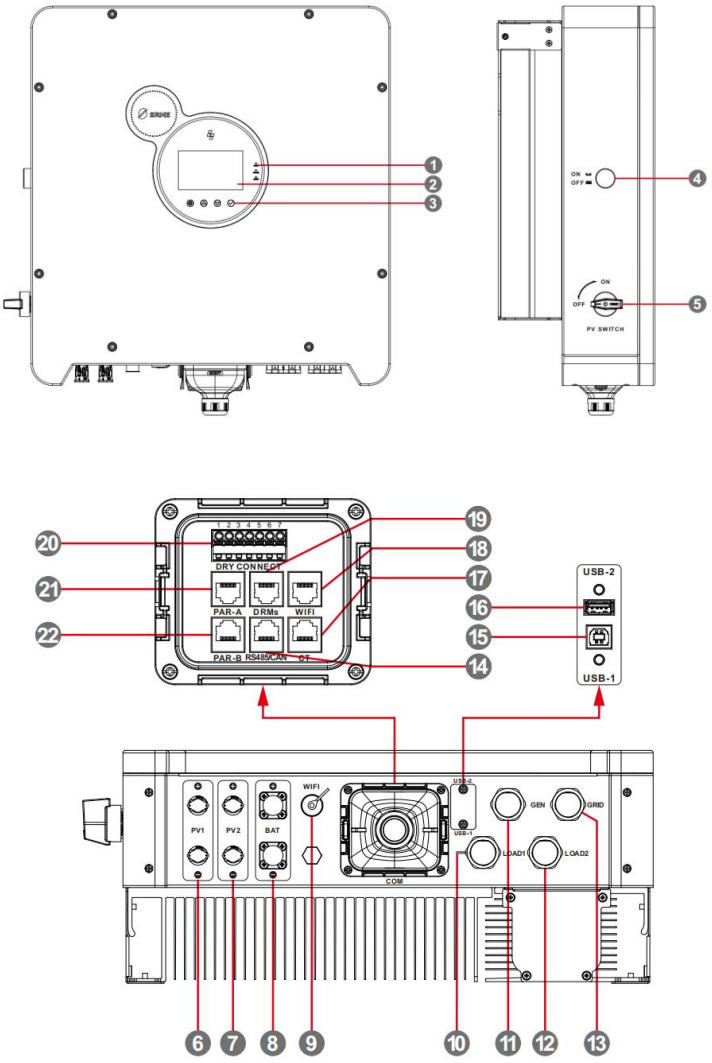
The diagram below shows the system application scenario of this product. A complete system consists of the following components:

1. **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.
2. **Utility grid or generator:** connected to the AC input, either of the connected utility and generator can charge the battery while supplying the load. When the batteries and photovoltaic modules supply the load, the system can operate without the utility or generator.
3. **Battery:** The role of the battery is to ensure the normal power supply of the system loads in case of insufficient photovoltaic and no utility power.
4. **UPS load:** The load that connected to the inverter "Load" port
5. **Home load:** connects to a variety of home and office loads including refrigerators, lamps, TVs, fans, air conditioners and other AC loads.
6. **Inverter:** it is the energy conversion device of the whole system.

The actual application scenario determines the specific system cabling.

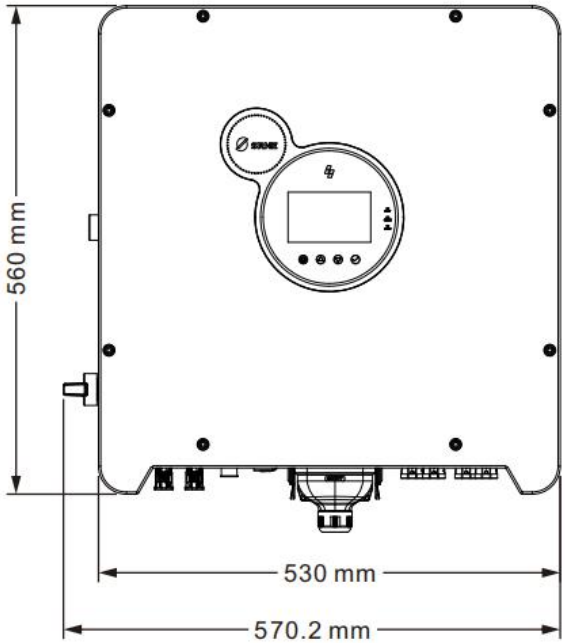


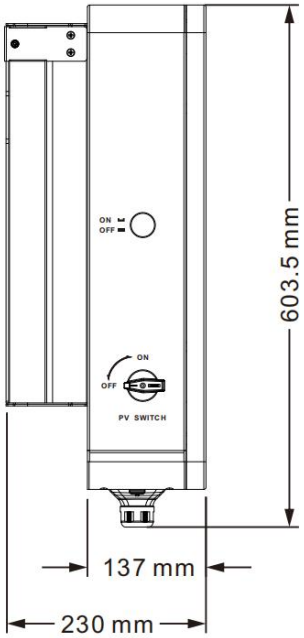
2.4 Production overview

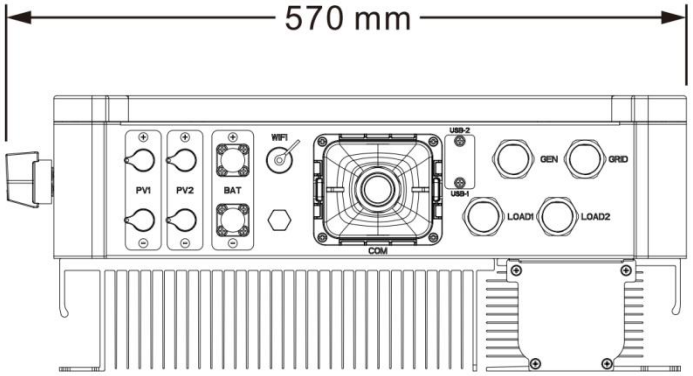


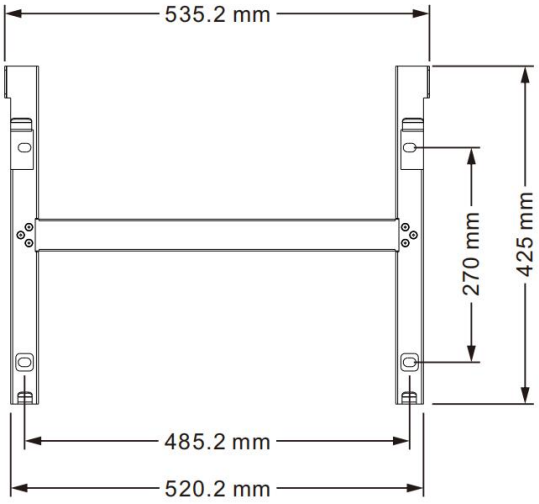
1	LED indicator	2	LCD screen	3	Physical key
4	ON/OFF switch	5	PV circuit breaker	6	PV1 terminal
7	PV2 terminal	8	Battery terminal	9	WIFI port 1
10	LOAD terminal 1	11	Generator terminal	12	LOAD terminal 2
13	Grid terminal	14	RS485/CAN port	15	USB-1 port
16	USB-2 port	17	CT port	18	WIFI port 2
19	DRMS	20	Dry contact	21	Parallel communication A port
22	Parallel communication B port				

2.5 Dimension drawing









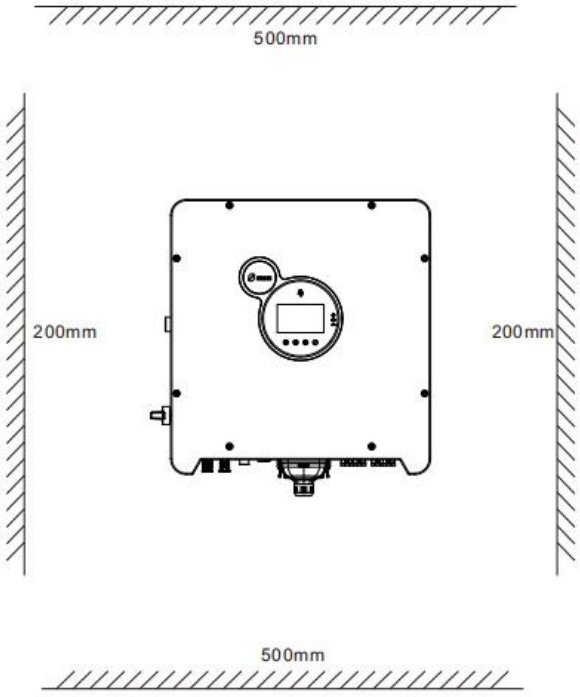
3. Installation

3.1 Select the mount location

HESP SH3 series can be used outdoors (protection class IP65). Please consider the followings before selecting

the location:

- Choose the solid wall to install the inverter.
- Mount the inverter at eye level.
- Adequate heat dissipation space must be provided for the inverter.
- The ambient temperature should be between-30~60℃（-22~140℉） to ensure optimal operation.



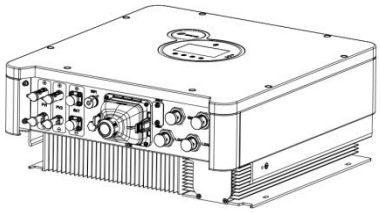
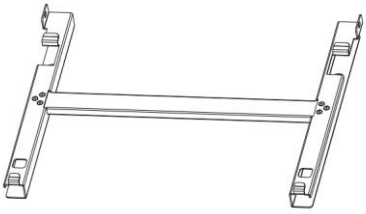
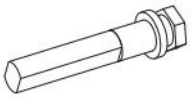
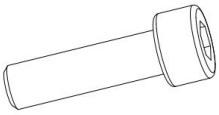
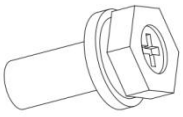
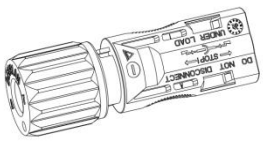
⚠ DANGER

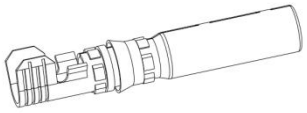
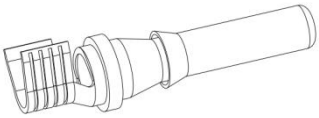
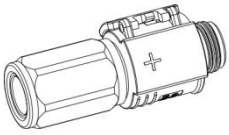
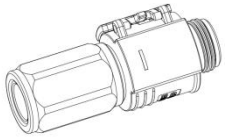
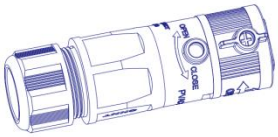
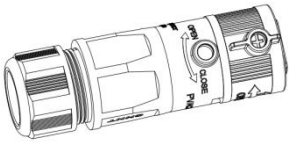
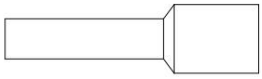
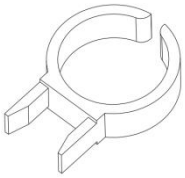
- Do not install the inverter near highly flammable materials.
- Do not install the inverter in a potentially explosive area.
- Do not install the inverter in a confined space with lead-acid batteries.

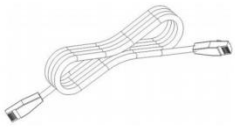
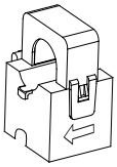
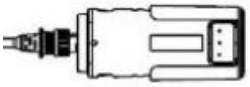
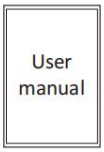
⚠ CAUTION

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

3.2 Pack list

NO	Picture	Description	Quantity
1		inverter	1pcs
2		Wallhanger	2pcs
3		M8*60 Expansion bolts used to Secure the wall-mount bracket To the wall	4pcs
4		M5X18mm Backup	1pcs
5		M6X16mm Screw the side of Wallhanger	3pcs
6		PV+ input terminal	2pcs
7		PV- input terminal	2pcs

8		Metal terminals secured to PV+ input power cables	2pcs
9		Metal terminals secured to PV- input power cables	2pcs
10		Battery positive terminal	1pcs
11		Battery negative terminal	1pcs
12		GRID terminal (blue)	1pcs
13		(Load+Generator) terminal (black)	3pcs
14		Insulated sleeve terminal	20pcs
15		Remove PV terminal tool	1pcs
16		4mmHex head screwdriver	1pcs

17		Parallel communication cable	1pcs
18		CT	3pcs
19		WIFI logger (optional)	1pcs
20		User manual	1pcs
21		The warranty card	1pcs
22		Quality Certificate	1pcs
23		Outgoing inspection report	1pcs

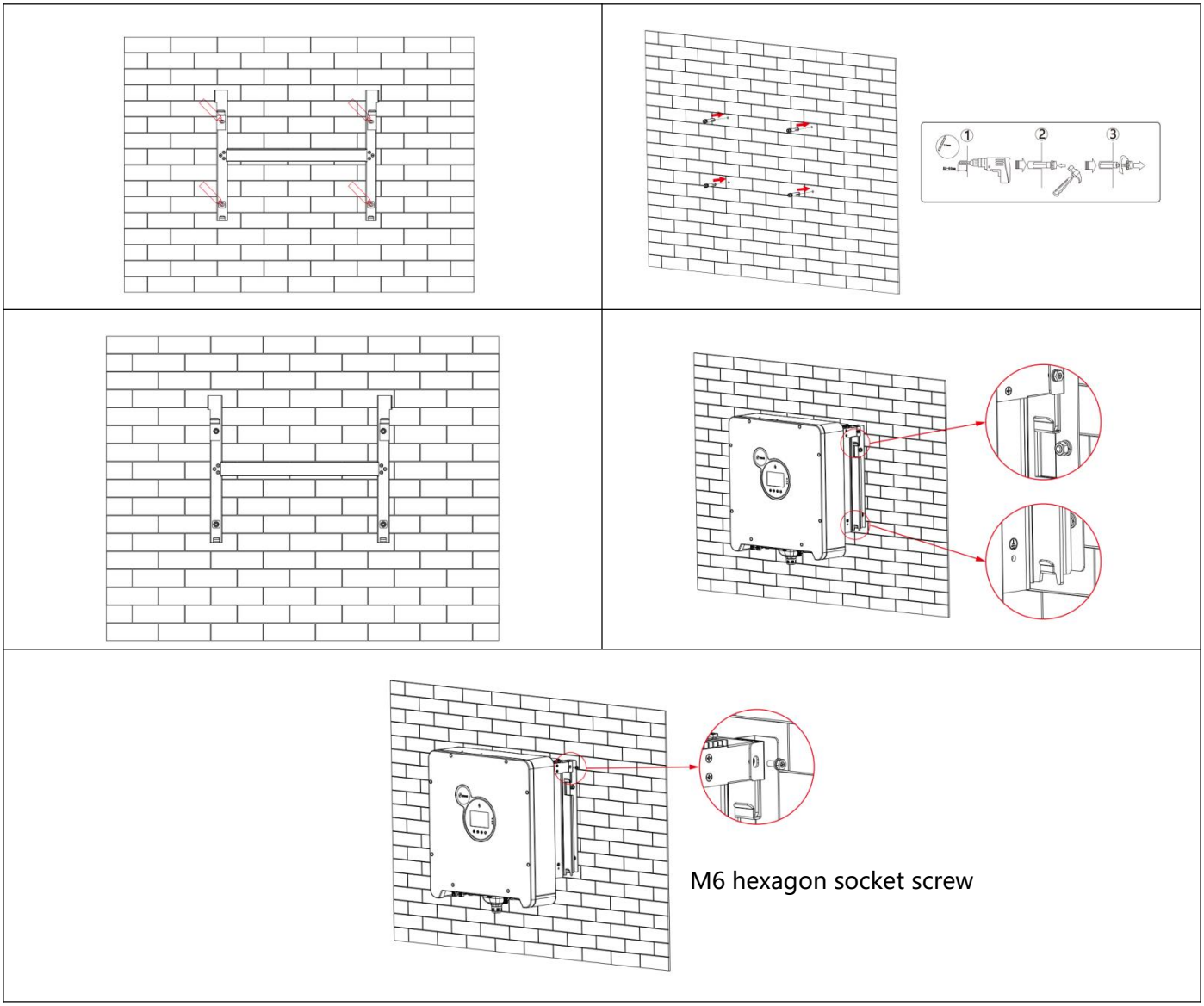
3.3 Mount the inverter

Step1: Determine the positions for drilling holes,ensure the position of holes are level,then mark them with a marker pen,use the hammer drill to drill holes on the wall.Keep the hammer drill perpendicular to the wall,do not shake when drilling, so as not to damage the wall.If the error of the hole is too big,you need to reposition.

Step2: Insert M8*60 expansion bolt vertically into the hole and pay attention to the insertion depth of the expanding bolt(should be deep enough)

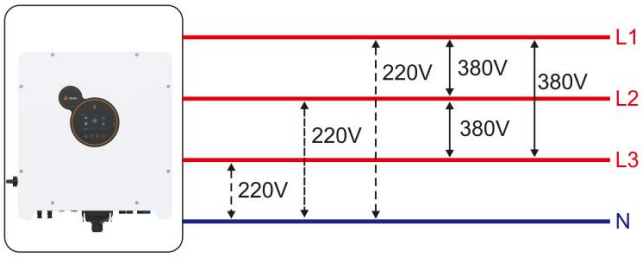
Step3: Align the wall hanger with the position of holes,fix the wall hanger on the wall by tightening the expansion bolt with nuts.

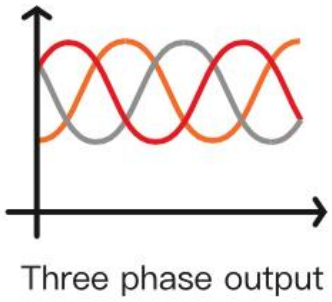
Step4: Hang the inverter on the wall hanger first,and then fix the inverter and the wall hanger with M6 hexagon socket screws.



4. Connection

4.1 Three-phase mode





Items	Description
Applicable models	HESP series SH3 model
AC output phase voltage (L-N)	200~240Vac, 230Vac default

NOTICE

- The user can change the output phase mode and output voltage through the setup menu.
- The output voltage corresponds to item [output voltage] of the parameter setting, and the output phase voltage can be set within the range of 200V to 240V.

4.2 Cable & circuit breaker requirement

- PV input

Models	Cable Diameter	Max. PV Input Current
HESP80SH3	6mm^2/10AWG	16A/16A
HESP100SH3	6mm^2/10AWG	16A/16A
HESP120SH3	6mm^2/10AWG	16A/16A

- GRID

Models	Output Mode	Max. Phase Current	Cable Diameter
HESP80SH3	Three-phase	25.5A	6mm²/10AWG(L1/L2/L3/N)
HESP100SH3	Three-phase	31.9A	7mm²/10AWG(L1/L2/L3/N)
HESP120SH3	Three-phase	38.2A	7mm²/10 AWG(L1/L2/L3/N)

- Generator

Models	Output Mode	Max. Phase Current	Cable Diameter
HESP80SH3	Three-phase	11.6A	5mm²/10AWG(L1/L2/L3/N)
HESP100SH3	Three-phase	14.5A	5mm²/10AWG(L1/L2/L3/N)
HESP120SH3	Three-phase	17.4A	5mm²/10AWG(L1/L2/L3/N)

- Battery

Models	Cable Diameter	Max. Current
HESP80SH3	10mm^2/8AWG	40A
HESP100SH3	10mm^2/8AWG	40A
HESP120SH3	10mm^2/8AWG	40A

- Battery

Models	Output Mode	Rated phase Current	Max.bypass phase	Cable Diameter
HESP80SH3	Three-phase	11.6A	25.5A	6mm²/8 AWG(L1/L2/L3/N)
HESP100SH3	Three-phase	14.5A	31.9A	7mm²/8 AWG(L1/L2/L3/N)
HESP120SH3	Three-phase	17.4A	38.2A	7mm²/8 AWG(L1/L2/L3/N)

4.3 AC input & output connection

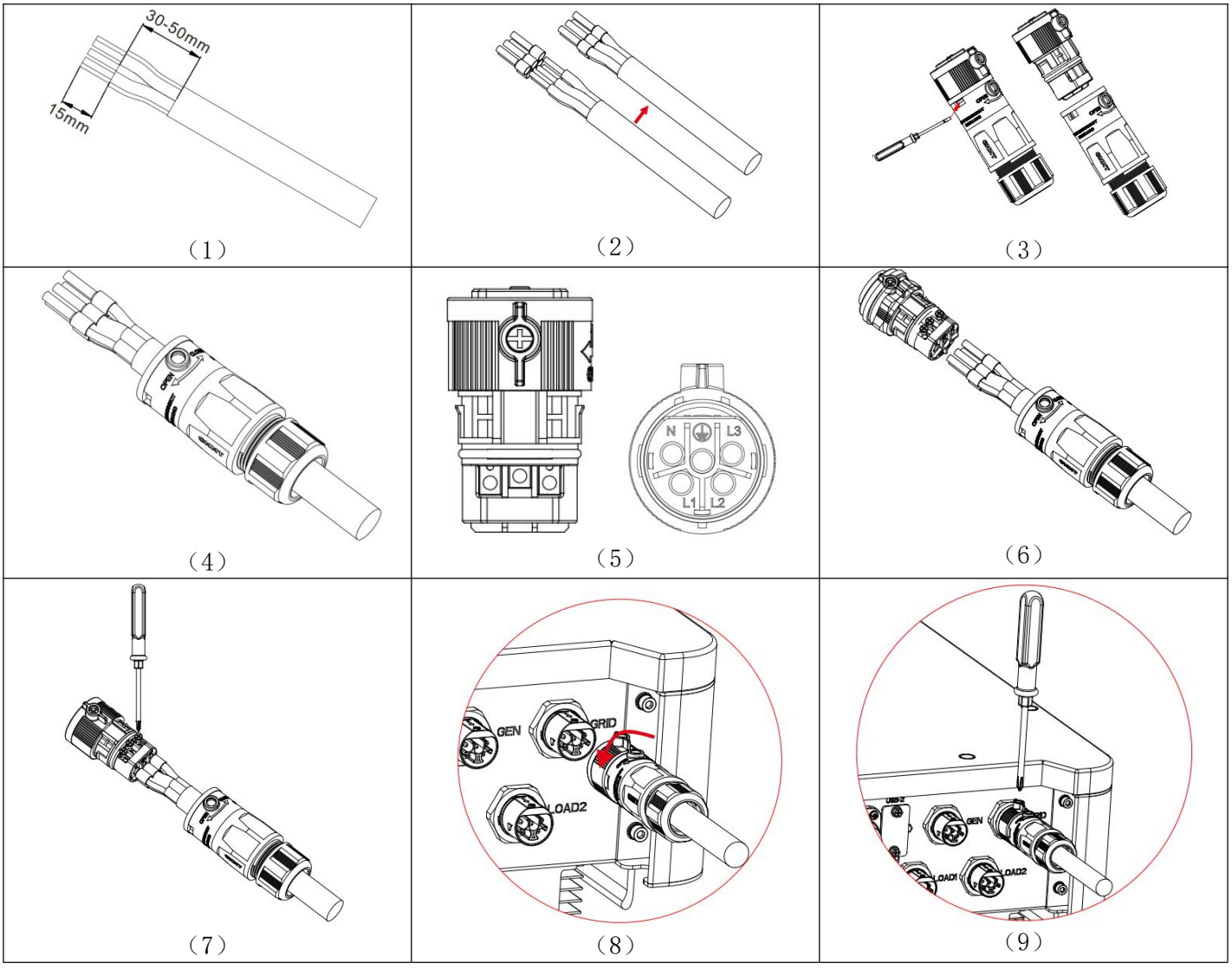
Step1: Select the appropriate cable type and specification.The cable shall be stripped,and the specific stripping length is shown below Fig(1)

Step2: After stripping the cable and insert the insulated bushing terminal

Step3: According to the indication shown Fig (5),insert the correct port, and Tighten it with a Phillips screwdriver.

Step4: Connect the terminal to the machine port and rotate the clamp counterclockwise

Step5: Tighten it with a Phillips screwdriver.



（1） （2） （3）

（4） （5） （6）

（7） （8） （9）

⚠ DANGER

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

4.4 Battery connection

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

Step1: Select the appropriate cable type and specification.The cable shall be stripped,and the specific stripping length is shown below Fig(1)

Step2: Insert the tripped positive and negative power cables into the positive and negative terminal and crimp them using a clamping tool

Step3: Before connect the terminal please open the safety catch shown below fig(5)

<table>
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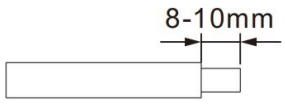
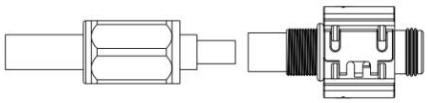
<td> 

(1)</td>
<td> 
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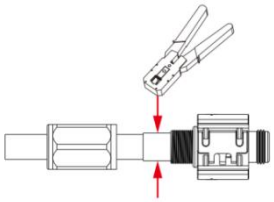
<td> 
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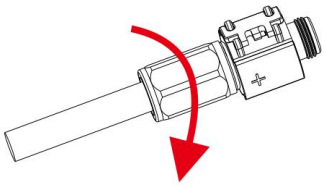
<td> 
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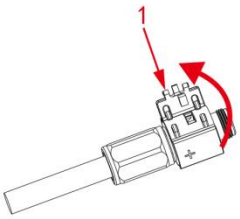
<td> 

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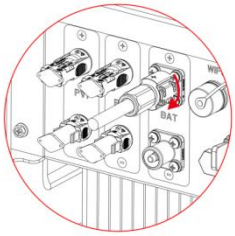
<td> 
(6)</td>
</tr>
</table>

⚠ DANGER

- Before connecting the battery, the circuit breaker must be disconnected to avoid the risk of electric shock and must not be operated with electricity.
- Please ensure that the positive and negative terminals of the batteries are correctly connected and not reversed, otherwise the inverter may be damaged.
- 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.

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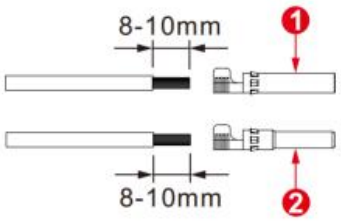
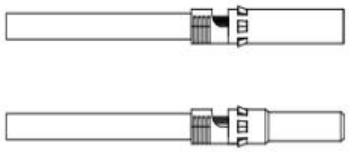
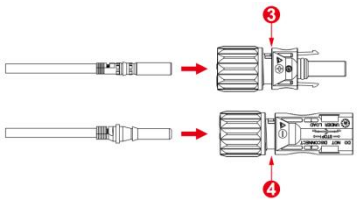
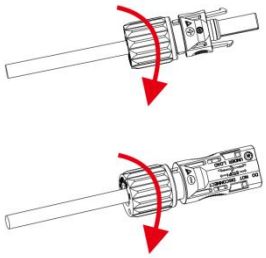
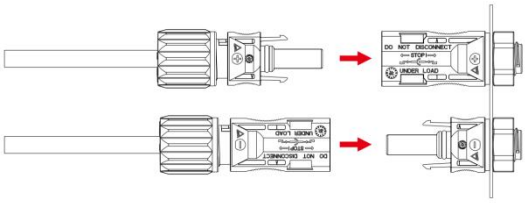
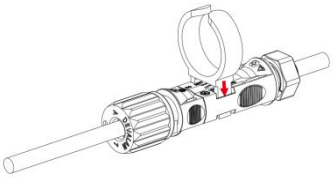
<td> 

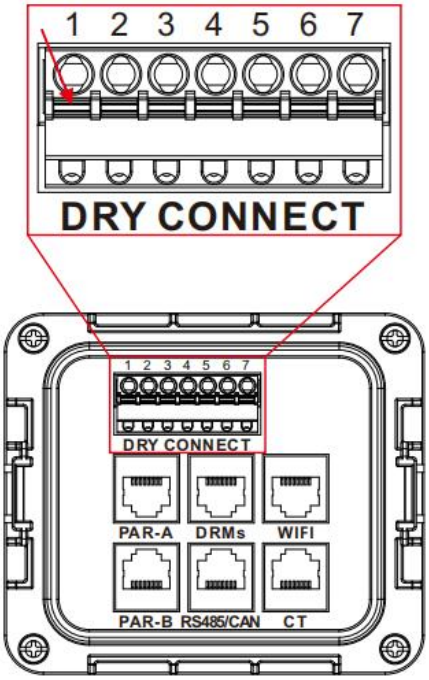
1.PV+metal contact
2.PV-metal contact</td>
<td> 
Press the wire by crimping tool</td>
<td> 
3.Positive connector
4.Negative connector
Hear “click”</td>
</tr>
<tr>
<td> 
Tighten terminal</td>
<td> 
Connect to the inverter port</td>
<td> 
Disconnect
PV terminal</td>
</tr>
</table>

⚠ DANGER

- Before connecting the PV, the circuit breaker must be disconnected to avoid the risk of electric shock and must not be operated 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 1000V), otherwise the inverter may be damaged.

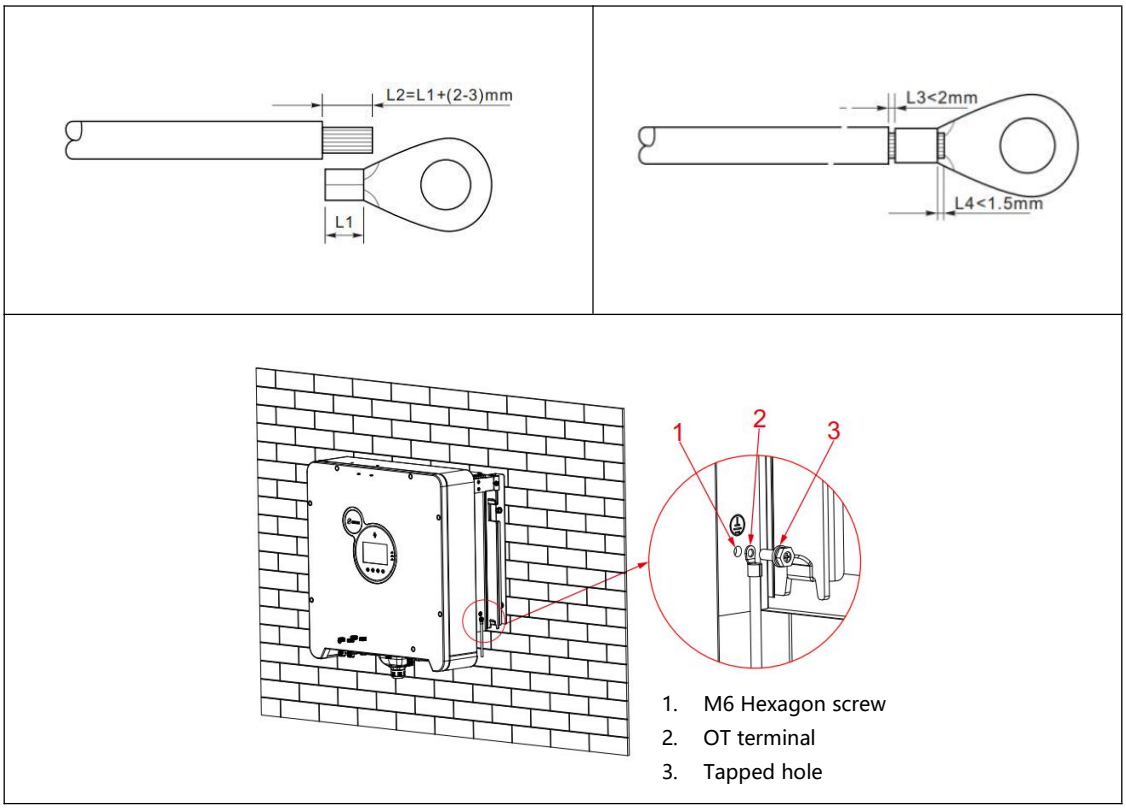
4.6 Dry contact connection

Use a small screwdriver to push back the direction indicated by the arrow, and then insert the communication cable into the dry junction port. (Communication cable cross section 0.2~1.5mm^2)



4.7 Grounding connection

Make sure that the earth terminal is securely connected to the grounding busbar.



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

4.8 Final assembly

After ensuring that the wiring is reliable and the wire sequence is correct, restore the terminal protection cover to its original position.

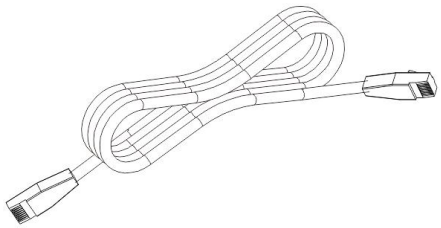
- Step 1: Close the circuit breaker of the battery.
- Step 2: Press the ON/OFF switch on the bottom of the inverter, the screen and the indicator light come on to indicate that the inverter is activated.
- Step 3: Sequential close of the circuit breakers for PV, AC input and AC output.
- Step 4: Start the loads one by one in order of power from small to large.

4.9 Parallel wiring

4.9.1 Parallel operation

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

Parallel communication cable*1



4.9.2 Cautions for parallel connection

Warning:

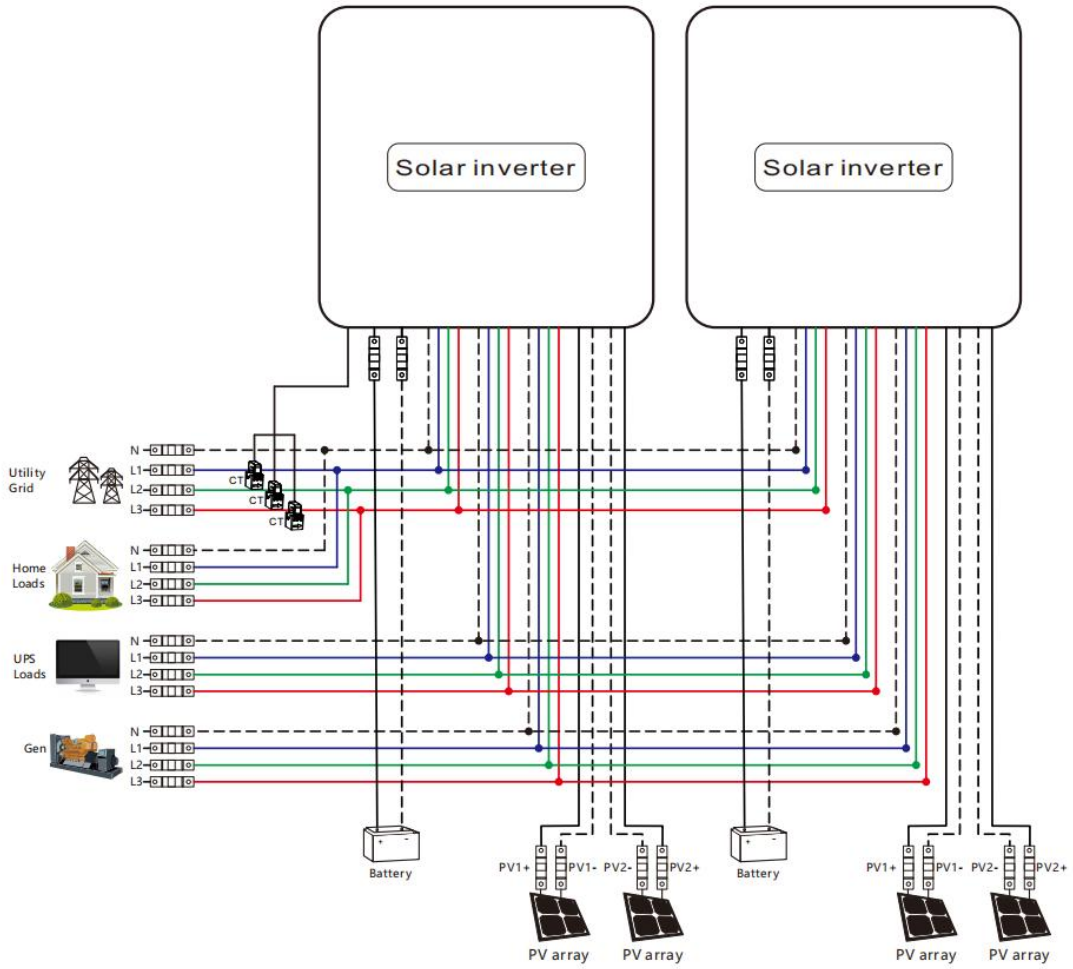
1. **PV wiring:**
   In parallel connection, the PV array of each inverter must be independent, and the PV array of PV1 and PV2 for one inverter must also be independent.
2. **Battery wiring**
   When parallel connection, each inverters need to connecte different battery, not together with one battery.
3. **LOAD wiring:**
   In single-phase parallel connection, all solar storage inverters must be connected in the manner of L-to-L, N-to-N, and PE-to-PE, and before power on and start-up, it is necessary to check and ensure correct connection, wiring length, and cable size, so as to avoid the abnormal operation of parallel system output caused by wrong connection.
   In three-phase parallel connection, all solar storage inverters must be connected in the manner of N-to-N and PE-to-PE. The L lines of all inverters in the same phase shall be connected together, but the AC output L lines of different phases shall not be connected together. Other cautions are the same as those for single-phase parallel connection.
4. **GRID wiring:**
   In single-phase parallel connection, all solar storage inverters must be connected in the manner of L-to-L, N-to-N, and PE-to-PE, and before power on and start-up, it is necessary to check and ensure correct connection, wiring length, and cable size, so as to avoid the abnormal operation of parallel system output caused by wrong connection. Meanwhile, it is not allowed to have multiple different AC source inputs to avoid damage to the external equipment of the inverter. The AC source input shall be consistent and unique.
   In three-phase parallel connection, all solar storage inverters must be connected in the manner of N-to-N and PE-to-PE. The L lines of all inverters in the same phase shall be connected together, but the AC output L lines of different phases shall not be connected together.

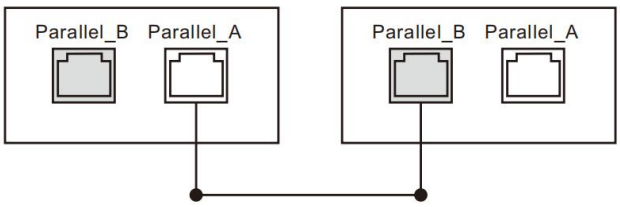
5. **Communication wiring:**
   Our parallel communication cable is a shielded 8Pin network connection cable, which can be used for three-phase parallel connection. Each machine must be connected with one out and one in. This means that the machine "Parallel_A" is connected to the machine to be parallelized "Parallel_B", and that the machine "Parallel_A" is not allowed to connect to the "Parallel_B". "Parallel_B" or "Parallel_A" is connected to the machine to be parallelized "Parallel_A". At the same time, the parallel communication cable of each machine should be fastened with 8Pin network connection cable to avoid disconnection or poor contact of the parallel communication cable, which may cause abnormal operation or damage to the system output.
6. Before and after connecting the system, please carefully refer to the following system wiring diagrams to ensure that all wiring is correct and reliable before power on.
7. After the system is correctly wired, powered on, and in normal operation, if a new inverter needs to be connected, make sure to disconnect the battery input, PV input, AC input and AC output, and that all solar storage inverters are powered off before reconnecting into the system.

4.9.3 Schematic diagram of parallel connection

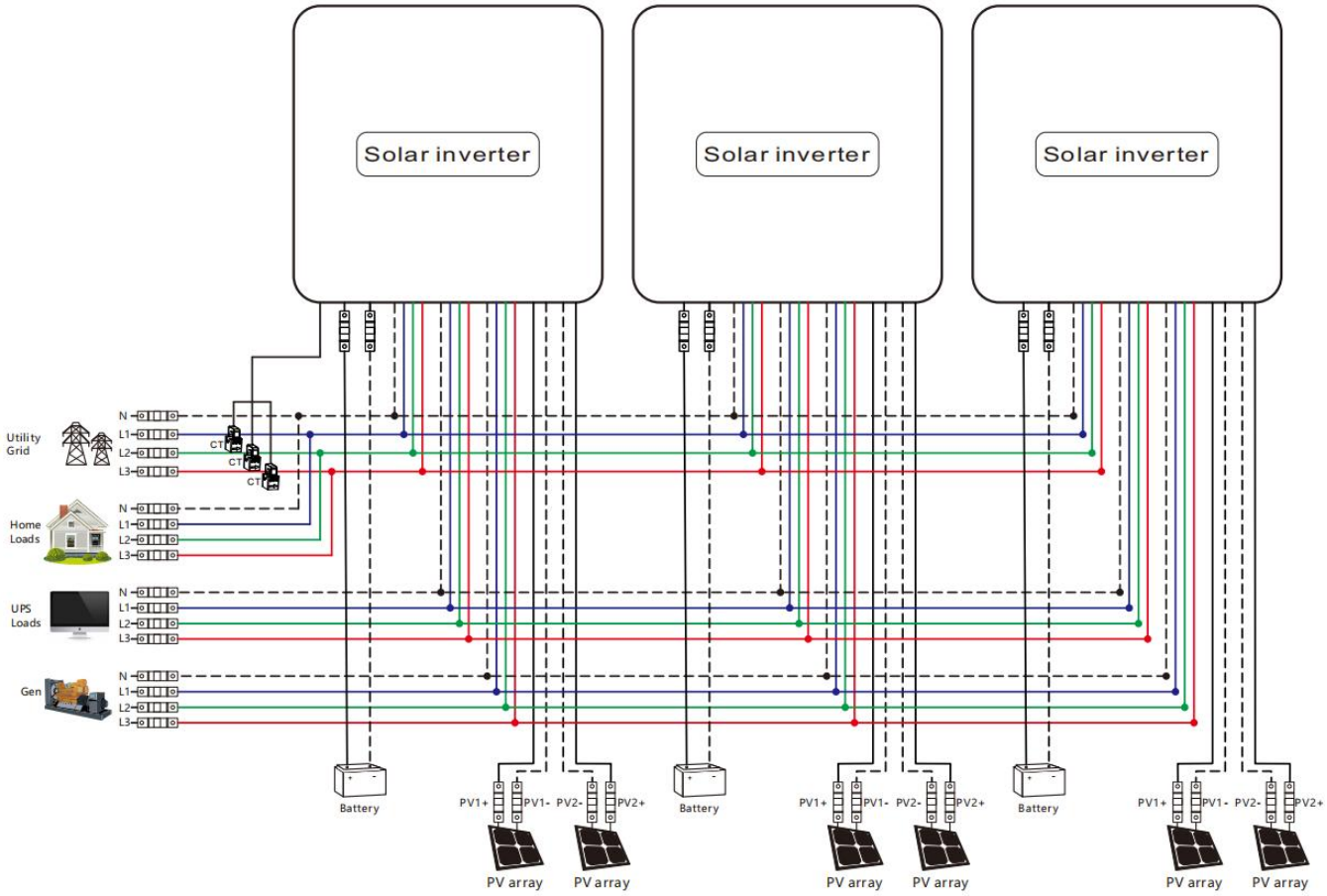
The parallel mode need to be set as" parallel" for each inverters

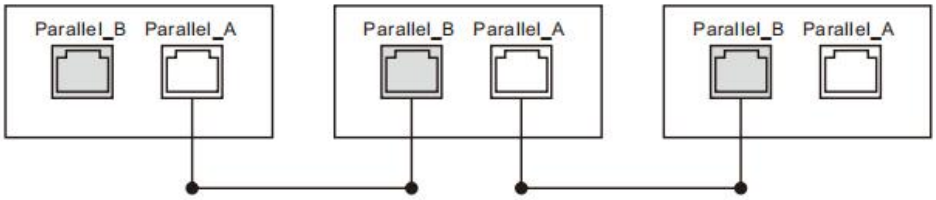
a) **Two units connected in parallel:**



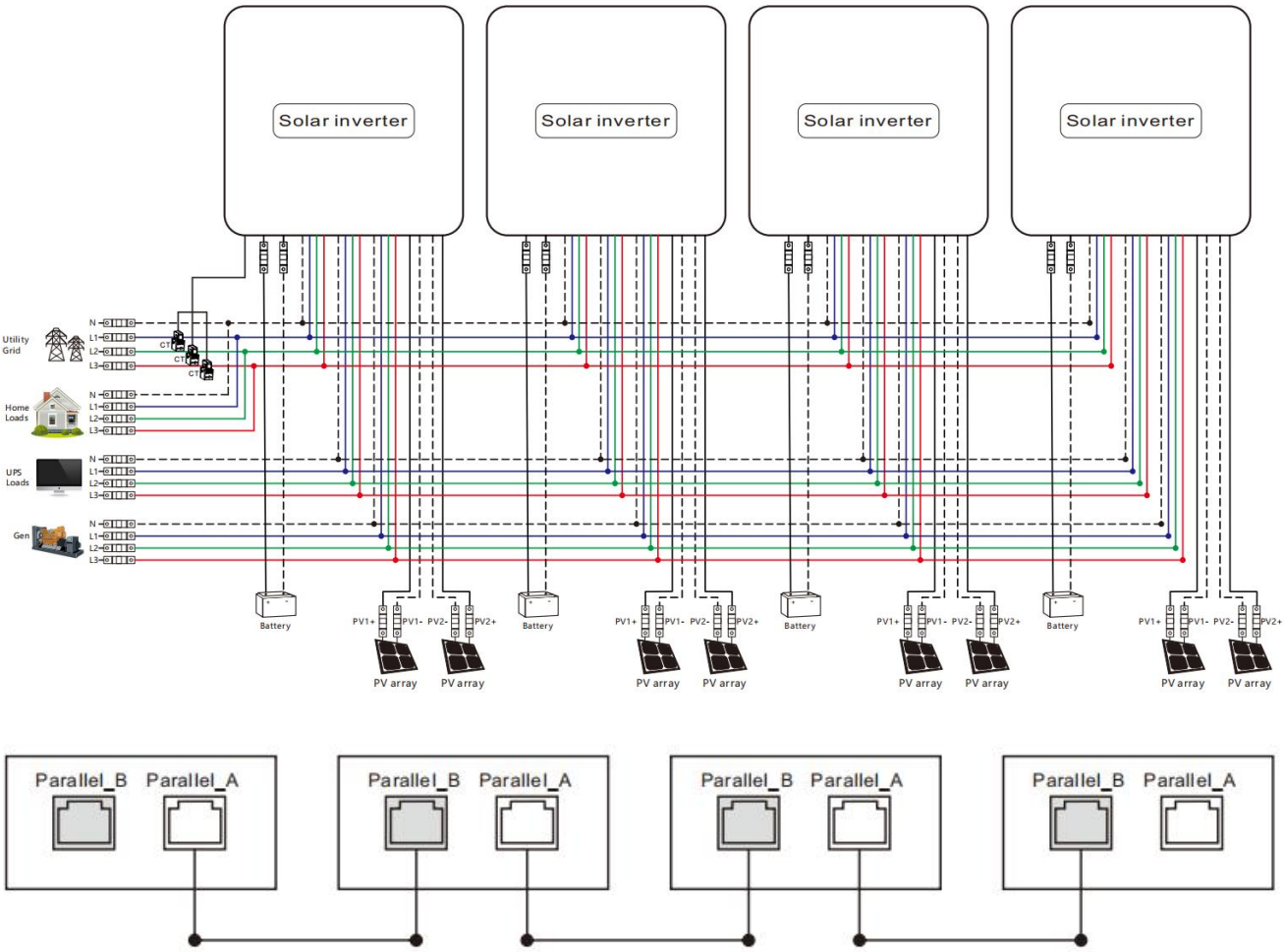


b) Three units connected in parallel:

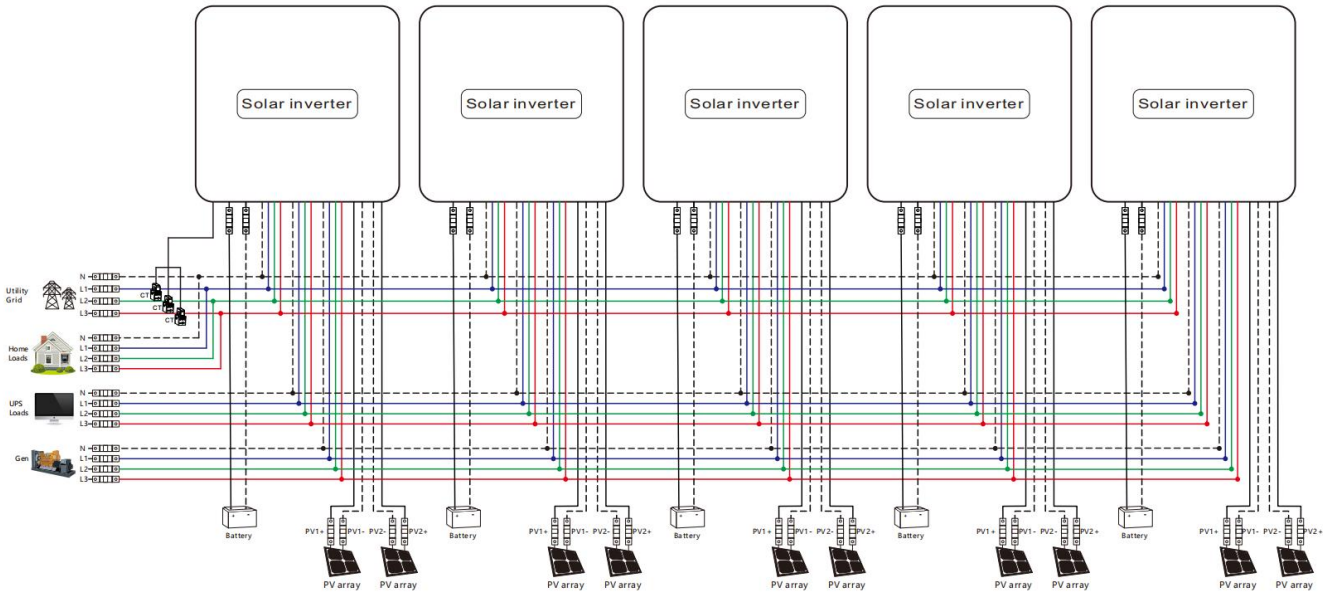


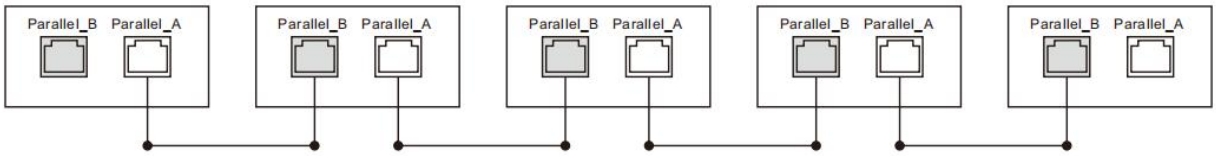


c) **Four units connected in parallel:**

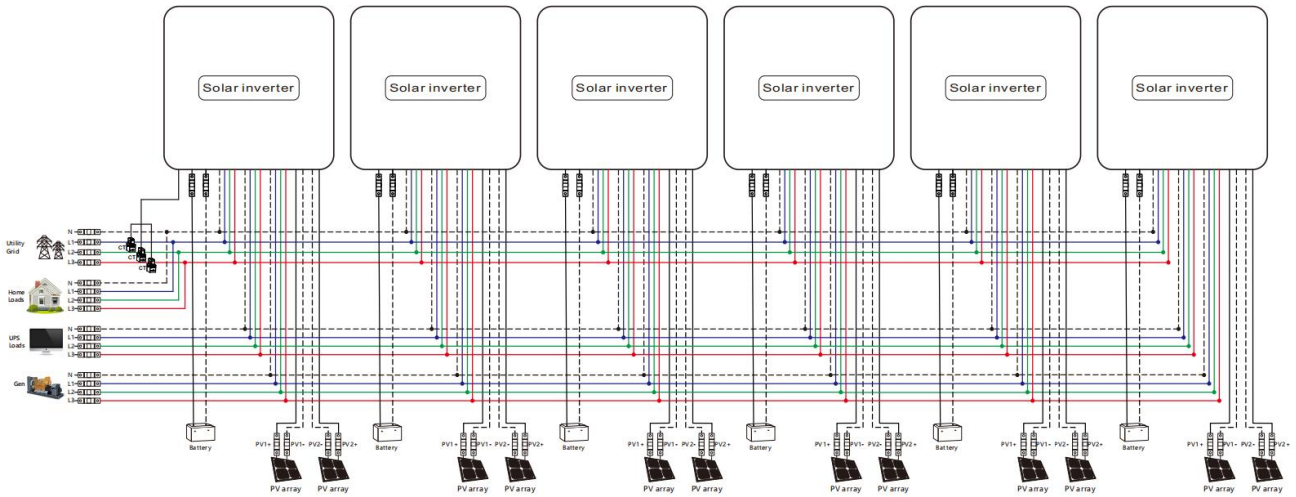


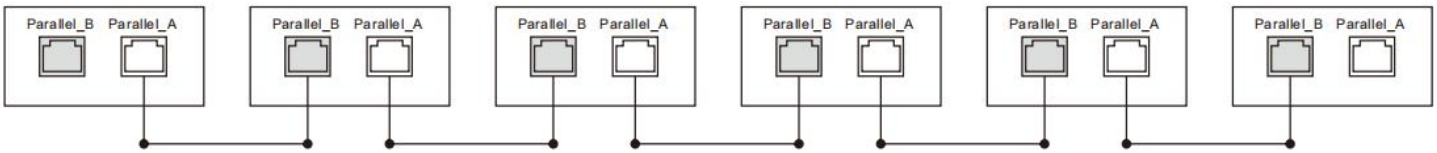
d) **Five units connected in parallel:**





e) Six units connected in parallel:

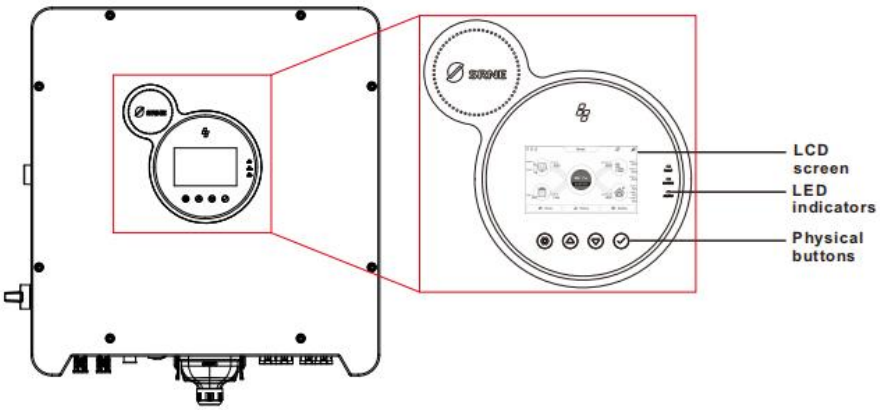




5. Operation

5.1 Operation and display panel

The operation and display panel below includes 1 LCD screen, 3 indicators, 4 touchable keys.



- **Keys**

Keys	Description
	To enter/exit the setting menu
	To lastselection
	To next selection
	To confirm/enter the selection in setting menu

- **LED Indicators**

Indicators	Color	Description
FAULT	Red	Flash: error occur
CHARGE	Green	Continued: charging complete
		Flash: charging
AC/INV	Yellow	Continued: utility grid by-pass output
		Flash: inverter output

• **Display panel**

Icon	Description	Icon	Description
	Solar panel		Load
	Battery		Grid or Generator
Home	Home page	INVERTER	Inverter is Working
History	History data	Setting	Setting
0 :0 :0	Local time		The buzzer is slient
	Indicates that the machine is currently in energy-saving mode		The enery direction
UPS	UPS load (connected to inverter load port)	**HOME**	HOME load (connected to grid port)

• View real-time data

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

System data			
No.	**Item**	**No.**	**Item**
1	Machine state	14	SN
2	MCU1 version	15	Min version number
3	LCD version	16	Rated power
4	MCU2 version	17	RS485 Address
5	Customer ID	18	External Temperature
6	Inverter temperature	19	PV temperature
7	Transformer Temperature	20	L1 Voltage
8	L1 Current	21	L2 Voltage
9	L2 Current	22	L3 Voltage
10	L3 Current	23	Positive busbar voltage
11	Negative busbar voltage	24	Total busbar voltage
12	Total parallel local load power	25	Total parallel home load power
13	Total parallel grid power	26	Total parallel generator power
Battery data			
1	SOH	6	Discharge current
2	SOC (Percentage of remaining battery capacity)	7	BMS protocol
3	Battery voltage	8	Battery type
4	Battery current	9	Battery Charge Status
5	Battery power (Battery charging and discharging power)		
Grid data			
1	L1 Voltage	8	L2 Voltage
2	L1 Current	9	L2 Current
3	L1 Active power	10	L2 Active power
4	L1 Apparent power	11	L2 Apparent power
5	L3 Voltage	12	L3 Active power
6	L3 Current	13	L3 Apparent power
7	Frequency	14	Grid charging Current
Load data			
1	L1 Voltage	10	L2 Voltage

2	L1 Current	11	L2 Current
3	L1 Active power	12	L2 Active power
4	L1 Apparent power	13	L2 Apparent power
5	L1 Home Load Power	14	L2 Home Load Power
6	L3 Voltage	15	L3 Apparent power
7	L3 Current	16	L3 Home Load Power
8	L3 Active power	17	Load Rate
9	Frequency	18	Overall machine load rate
PV data			
1	PV1 voltage V	5	PV2 current
2	PV1 current A	6	PV2 power
3	PV1 power W	7	PV total Power
4	PV2 voltage V		

• Click on the history TAB in the menu bar below to access the historical data and view various types of historical data.

Tody data			
1	Battery charging energy	6	Load consumption energy
2	Battery discharging energy	7	Grid charging energy
3	Solar generated energy	8	Load consumption energy from grid
4	On-grid energy	9	Generator charging energy
5	Generator discharging energy		
Historiy			
1	PV generation last seven days history	4	Mains charge eneryfor last 7 days
2	Battery charging enery for last 7 days	5	Load consumption eneryfor last 7 days
3	Battery discharge for last 7 days	6	Load consumption from the grid for last 7 days
Enery Statistics			
1	Total Battery Charging Energy	6	Total load consumption energy

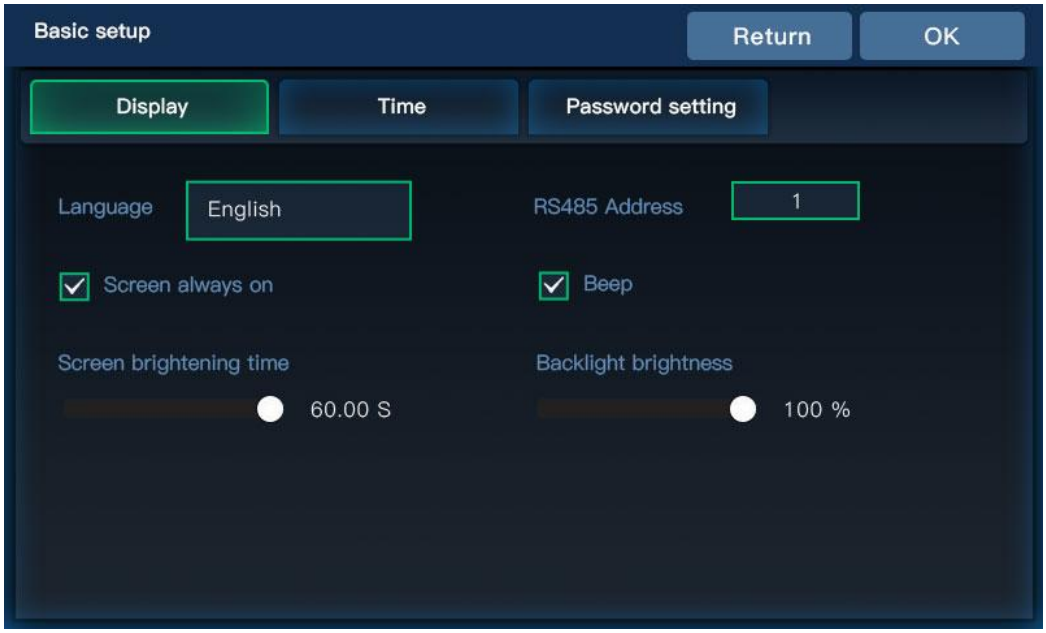
2	Total solar generated energy	7	Total load consumption energy from grid
3	Total grid charging energy	8	Total on-grid energy
4	Total Battery Disharging Energy	9	Total generator charging energy
5	Total generator load energy		
Historical faults			

5.2 Setting

Operating instructions: Click on the settings in the menu bar at the bottom of the screen to enter the setup interface, including the basic settings, work mode setup, battery setup,on grid setup, advanced setup of the five major setup items

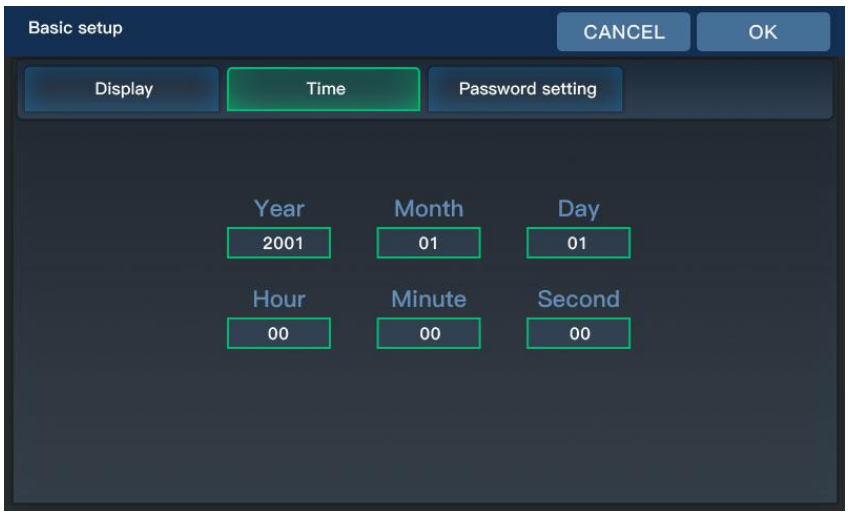
5.2.1 Basic Setup

5.2.1.1 Display Setup

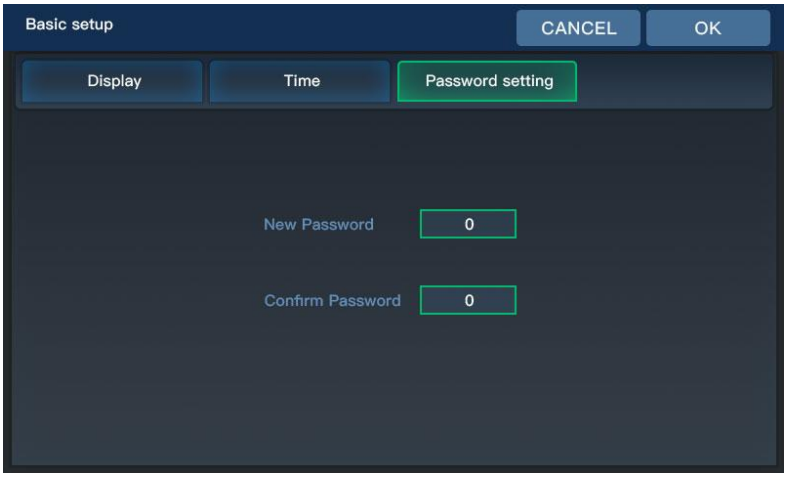


Parameter Meaning	Description
Language	English, Italian, German, Spanish, Chinese
RS485 Address	Display and current inverter RS485 address, range 1-254
Screen always on	Selectable whether the screen is always on or not
Beep	You can choice whether enable the Beep alarm
Screen brightening time	Setting range 0-60S
Backlight brightness	0-100%

5.2.1.2.Time Setup



5.2.1.3.Password Setting（Password is required to access the Grid Settings and Advanced Settings）

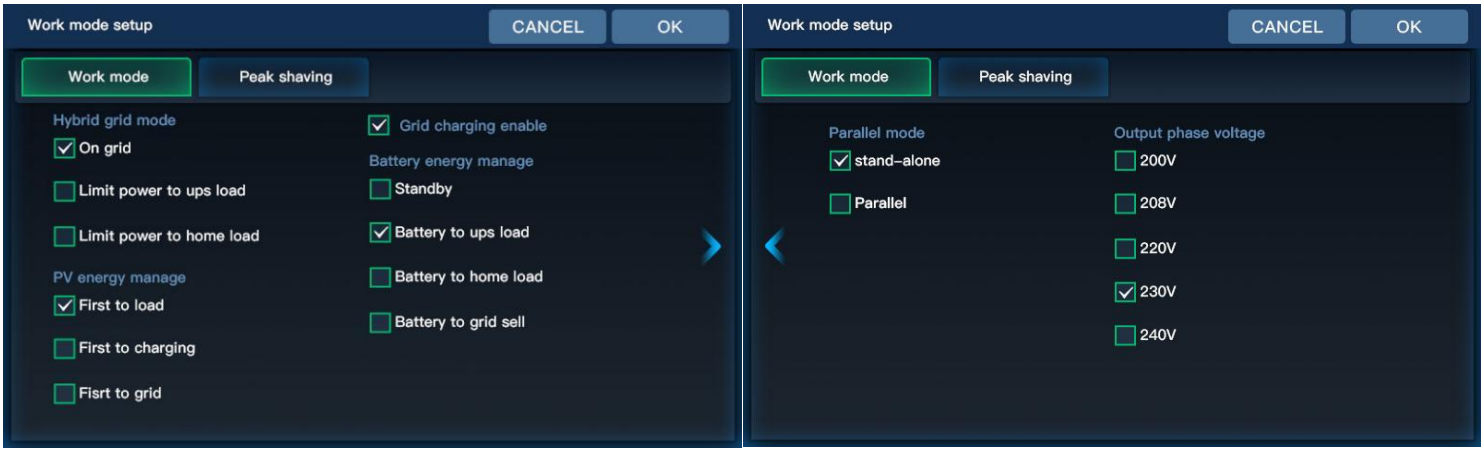


Default password is "0000".

Password setting value range: 0-65535

5.2.2 Work Mode Setup

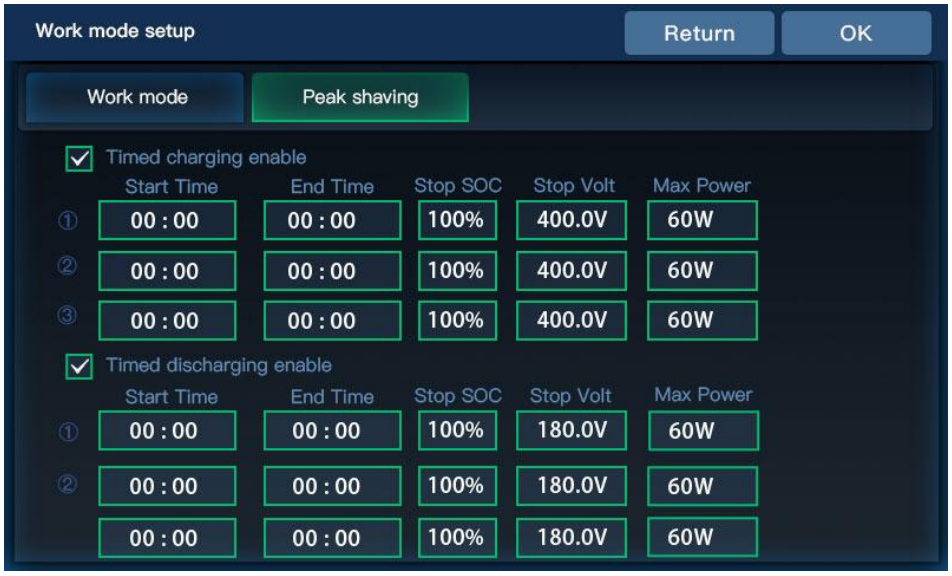
5.2.2.1.Work Mode



Home Load: connected to the GRID port of the machine, requires external CT for monitoring.
Ups Load: connected to the LOAD port of the machine.

Parameter Meaning	Option	Description
Hybrid grid mode	On grid	Direct grid connection of excess PV energy
	Limit Power to ups load	Ups load backflow prevention, photovoltaic or battery energy is only for the ups load, excess energy will not be connected to the grid
	Limit Power to home load	Home load anti-backflow, solar or battery energy is only supplied to the home load, excess energy will not be connected to the grid.
PV energy manage	● When mixed grid mode is set to "Limit Power to ups load" or when CT is not connected, the following load refers to the ups load. ● When mixed grid mode is set to "Limit Power to home load/On grid" and CT is connected, the following load refers to the ups load plus the home load.	
	First to Load	PV power supply logic: load-charge-grid connection
	First to charging	PV power supply logic: charge-load-grid connection
	First to grid	PV power supply logic: load-grid connection-charge
Grid charging enable	Selectable grid participation in battery charging	
Battery energy manage	Standby	The battery does not discharge, and the battery is discharged only when the working state is off the grid.
	Battery to ups load	When the PV power is less than the UPS load power, the battery discharge is added.
	Battery to home load	The battery can supply the power to Home load
	Battery to grid sell	The battery can supply the power to grid.
Parallel mode	Stand-alone	
	Parallel	
Output phase voltage	Settable： 200V,208V,220V,230V,240V	

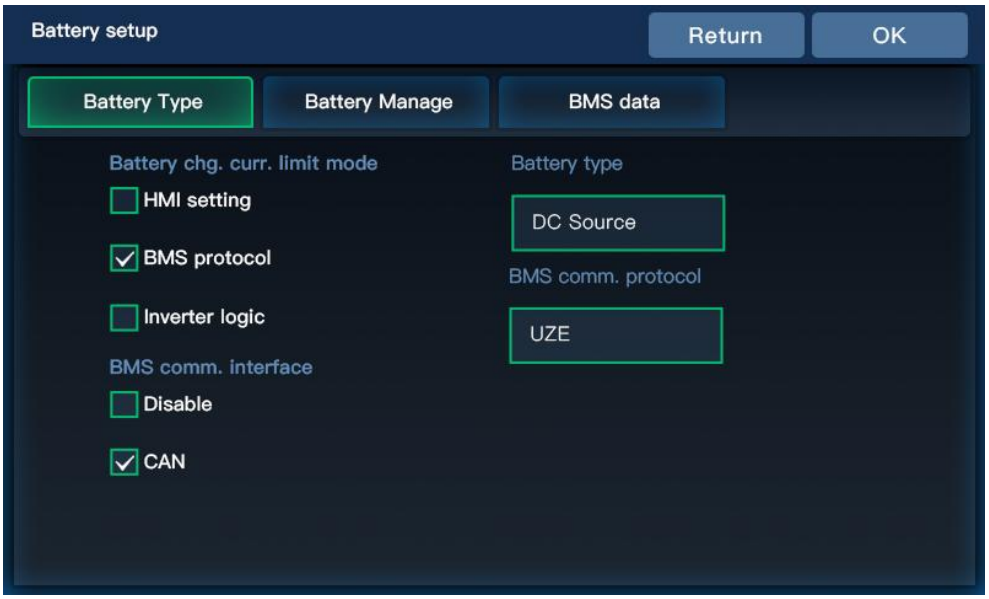
5.2.2.2.Peak Shaving



Parameter Meaning	Description
Time charging/ discharging enable	Select whether to turn on timed charging and discharging
Start/End Time	Setting the time period for timed charging and discharging
Stop SOC	Setting the battery charging cut-off SOC value and the cut-off SOC value for discharging during the timed charging and discharging time period (during BMS communication)
Stop Volt	Setting the battery charging cut-off voltage value and discharging cut-off voltage value during the timed charging and discharging time period (when the BMS is not communicating)
Max Power	Setting the battery charging power and discharging power during the timed charging and discharging time period

5.2.3 Battery setup

5.2.3.1.Battery Type



Parameter Meaning	Option	Description
Battery chg. curr. limit (Valid for BMS communication)	HMI	Maximum battery charging current is limited according to the inverter battery charging current setting value.
	BMS	Maximum battery charging current is limited by the current limit value of the BMS.
	Inverter	Maximum battery charging current is limited by the machine's derating logic.
BMS comm. interface	Disable	BMS does not communicate
	CAN	BMS CAN communication function
Battery Temperature Compensation	Select whether to turn on temperature compensation	
Battery Type	USER	User customizable to set all battery parameters
	Lithium	Lithium battery
	No battery	Without battery
BMS comm.protocol	When the BMS port selection setting item = CAN, you need to select the corresponding lithium battery manufacturer brand for communication: **CAN protocol:** UZE-UZENERGY	

5.2.3.2.Battery Manage

Parameter Meaning	Description
Maximum chg.voltage	When the battery is charging, the voltage reaches the value to stop charging
Batt. Recharging voltage	When the battery is fully charged, the inverter stops charging and resumes charging when the battery voltage falls below this voltage value.
Battery curr. stop chg.	when the charging current falls below this setting, the battery will stop charge.
Maximum chg. current	Setting the amount of current when charging the battery
Max. chg. curr. by Grid	When using mains charging, set the size of the battery mains charging current (the value is the battery current)
Bat.SOC stop chg.	"Charging will stop when the SOC value reaches this set point (effective when BMS communication is normal)."
SOC balancecorrection	The larger the value of this setting item, the larger the difference between charging and discharging currents of different batteries during SOC balance
Grid dischg.SOC balancing enable	When inverters are parallel, SOC imbalance may occur in batteries connected to different machines. Enable this setting to balance SOC values when batteries are discharged
Grid chg.SOC balancing enable	When inverters are parallel, SOC imbalance may occur in batteries connected to different machines. Enable this setting to balance SOC values when batteries are charging
Batt volt.stop dchg	When the battery reach this setting, it will stop discharging.
Batt volt.restart dischg	When the battery voltage is too low to discharge, the battery voltage needs to reach this setting to discharge again.
Battery under volt. alarm	Battery under-voltage alarm point, when the battery voltage is lower than the judgment point, the under-voltage alarm will be reported and the output will not be turned off.

Batt volt low fault recovery	When the battery report voltage low fault, the battery voltage reach this setting, the fault will be cleard.
Batt voltage low fault	When the battery voltage reach this setting, the inverter will report battery voltage low fault.
Battery max.curr.dcharge	Set the max battery discharger current
Batt.soc.stop.dchg	When the SOC value reaches this setting, the battery will stop discharge(valid when BMS communication is normal).
Batt.soc restart dischg	When the battery report SOC low fault, the battery SOC reach this setting, it can restart discharge(valid when BMS communication is normal).
Batt under capacity alarm	SOC value up to this setting will alarm. The inverter output will not shut down and the fault disappears if the SOC value exceeds 5% of the set value. (Valid when BMS communication is normal)
Batt.soc low fault	When the battery voltage reach this setting, the inverter will report battery SOC low fault and stop discharging(valid when BMS communication is normal).
Batt. Volt. low fault delay	When the battery voltage reaches the "Batt voltage low fault" setting, the battery will stop diacharging with a delay.

5.2.3.2.BMS date(When the battery communicate with inverter)

Check the data that battery BMS uploade to inverter

5.2.4 On grid setup

To enter this setting, you need to enter the password set by the user, the default password is "00000".

5.2.4.1.Basic

Parameter Meaning	Description
Grid Standard	German:VDE-AR-N-4105
	Other regions:GNL
	Not Initialized
Grid Frequency	Selection of local grid frequency，50Hz/60Hz
CT ratio	When connecting an external CT, enter the ratio on the CT specification.
Sell power Max	On grid power
Buy power Max	Maximum power drawn from the grid. If the grid charging power + load power exceeds this setting, the machine reduces the charging power. (Setting range: 0 to rated power)
Zero-export power	Error calibration power in the case of backflow prevention, recommended setting 20-100W
On-Grid Reactive Power	Setting range 0-100%, % of reactive power
Reactive power over/under excited	Over indicates 0%-100% / Under indicates -100%-0%
On Grid PF	Setting range 0.8-1
Power factor over/under excited	Over indicates 0.8-1 / Under indicates -0.8 ~- 1

5.2.4.2. Enter Service(This setting is not recommended to be changed by the customer, the value depend on the grid standard)

Parameter Meaning	Description
Enter Service enable	Grid-connect enable setting (on by default)
Connect Voltage Low	Grid-connected low voltage protection voltage
Connect Frequency Low	Grid-connected low-frequency protection points
Connect Voltage High	Grid-connected high-voltage protection voltage
Connect Frequency High	Grid-connected high-frequency protection points
Normal connect delay time	Grid normal connection, grid connection delay time
Normal connect Power Ramp Rate	Normal grid connection, rate of rise of grid-connected power
Reconnect delay time	Grid down reconnection, grid connection delay time
Reconnect Power Ramp Rate	Grid disconnection and reconnection, rate of rise of grid-connected power

5.2.4.3. Grid Protection (This setting does not recommend to be changed by the customer, the value depend on the grid standard)

Parameter Meaning	Description
LV1	Class 1 undervoltage protection point
LF1	Class 1 underfrequency protection point
LV2	Class 2 undervoltage protection point
LF2	Class 2 underfrequency protection point
HV1	Class 1 overvoltage protection point
HF1	Class 1 overfrequency protection point
HV2	Class 2 overvoltage protection point
HF2	Class 2 overfrequency protection point
Time	Protection Response Time

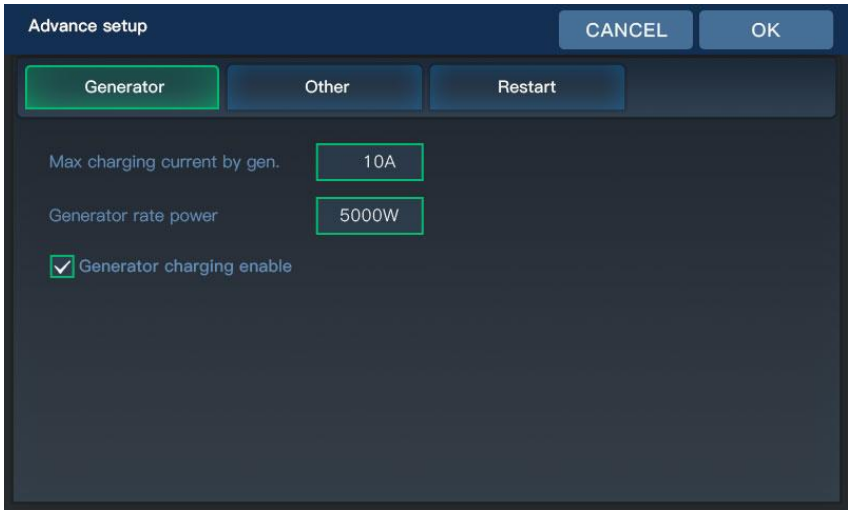
5.2.4.4. Other (This setting does not recommend to be changed by the customer, the value depend on the grid standard)

Parameter Meaning	Description
Frequency Droop (F-P) enable	Adjustment of inverter output power according to grid frequency
Volt -Watt (V-P) curve enable	Adjustment of the inverter active power according to the set grid voltage
Volt-Var (V-Q) curve enable	Adjustment of the inverter reactive power according to the set grid voltage
Watt-Var (P-Q) curve enable	Adjustment of the inverter reactive power according to the set active power
Watt-PF (P-PF) curve enable	Adjustment of the power factor of the inverter according to the set active power
LVRT/HVRT enable	Adjustment of grid HV ride-through / LV ride-through values
Reactive power percentage enable	
Discharge PF enable	
Charge PF enable	
DRMS enable	Only for Australia

5.2.5 Advance Setup

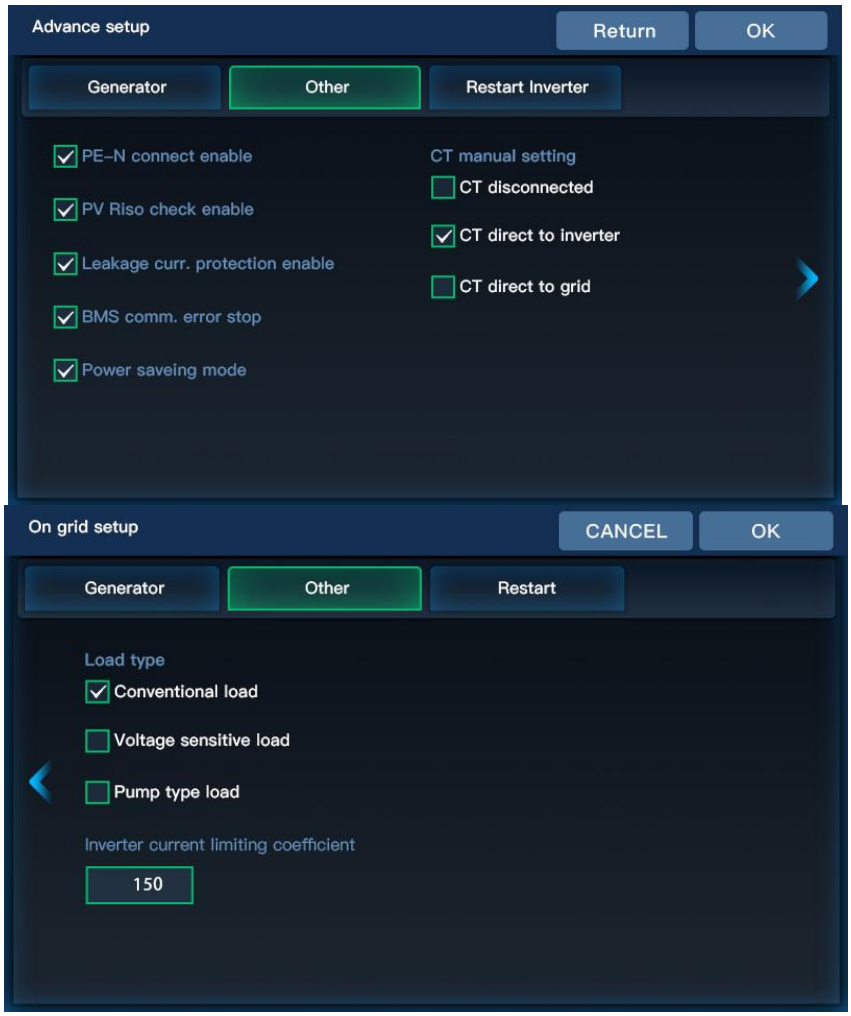
To enter this setting, you need to enter the password set by the user, the default password is "00000".

5.2.5.1. Generator



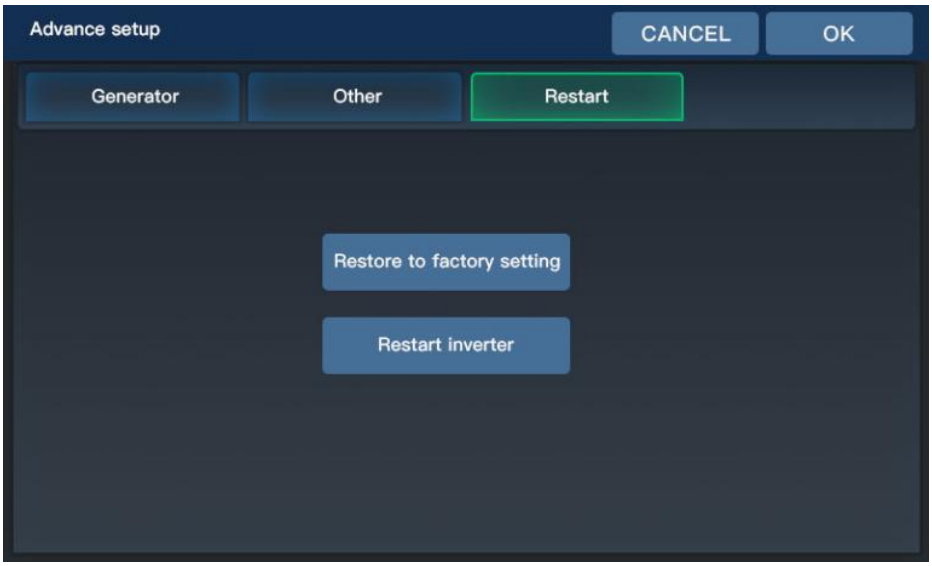
Parameter Meaning	Description	
Max charging current by gen.	Maximum battery charging current during generator charging	
Generator rate power	Setting the power of the generator up to the rated power of the inverter	
Generator work mode	Generator input	When the Generator connect to the Gen port, select Generator input

5.2.5.2. Other



Parameter Meaning	Description
PE-N connect enable	Enable automatic switching of PE-N connections
PV Riso check enable	Enable PV insulation impedance detection
Leakage curr. protection enable	Enable leakage current protection
BMS comm.error stop	When the BMS communication is fault, the inverter stop output
Power saveing mode	After turning on the energy-saving mode, if the load is empty or less than 25W, the inverter output will be shut down after a delay of 5min; when the load is more than 40W, the inverter will start automatically.
CT manual setting	According to the CT installation, select the CT direction
Load type	According to the load that you have connected, select the load type
Inverter current limiting coefficient	When the inverter soft start, adjust the current coefficient(This setting doesn’ t recommend to be changed by the customer)

5.2.5.3. Restart



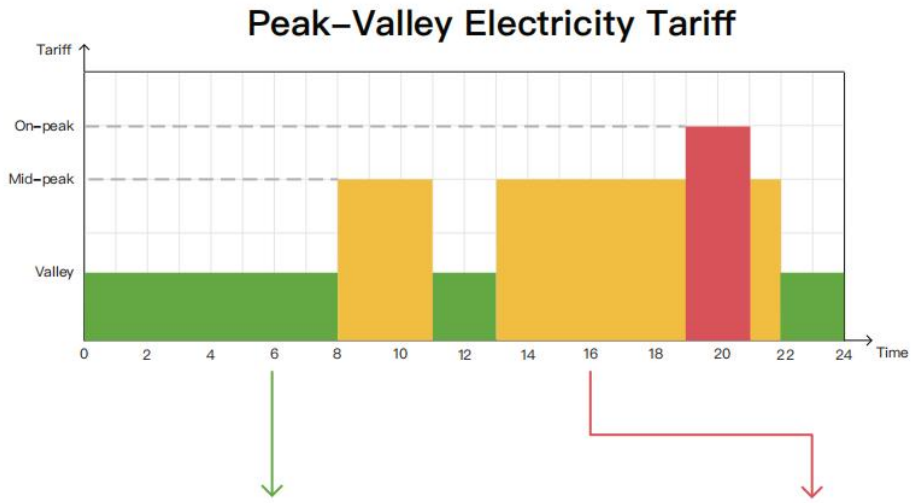
Parameter Meaning	Description
Restore Factory Settings	Reset all inverter settings
Reboot Inverter	Restart the inverter

5.3 Time-slot charging/discharging function

HESP H3 series 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 inverter can be used to supply power to the loads. When the utility price is cheap, the utility power can be used to supply and charge the loads, 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. Here is a case example to help users understand the function.

NOTICE

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/Carrying Function

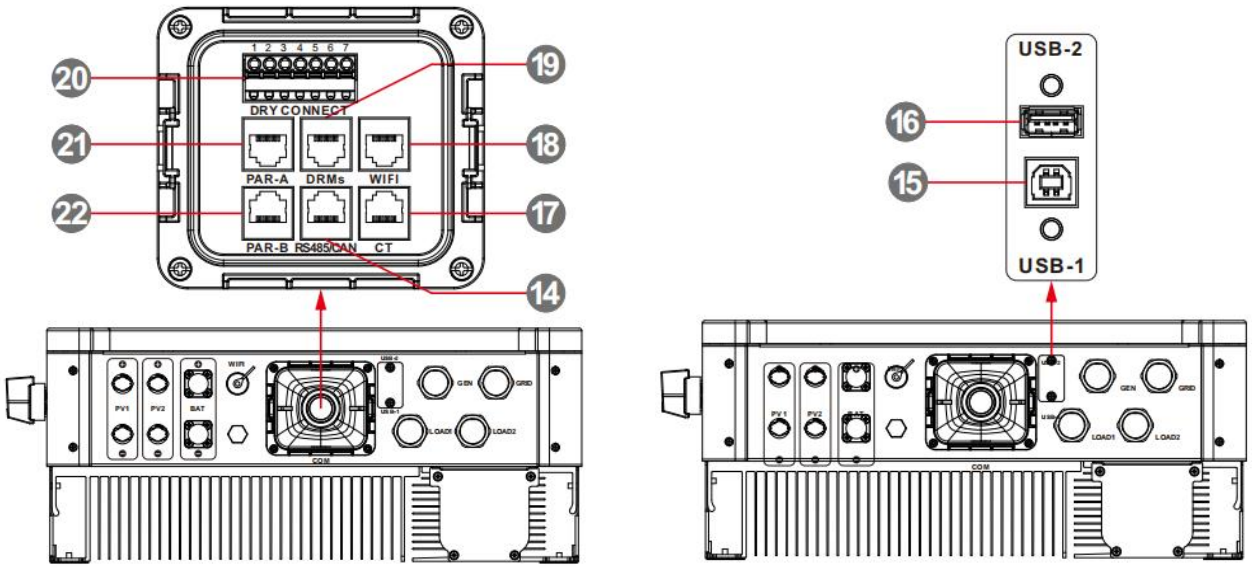
With 3 definable periods, the user can freely set the mains charging/carrying time within the range of 00:00 to 23:59. During the time period set by the user, if PV energy is available, PV energy will be used first, and if PV energy is not available or insufficient, utility energy will be used as a supplement.

Time–slot Battery Disacharging 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.

6. Communication

6.1 Overview

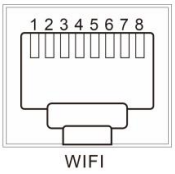


14	RS485/CAN port	15	USB-1 port(USB typeB)
16	USB-2 port(USB typeA)	17	CT port
18	WIFI port	19	DRMS port
20	Dry contact	21	Parallel communication A port
22	Parallel communication B port		

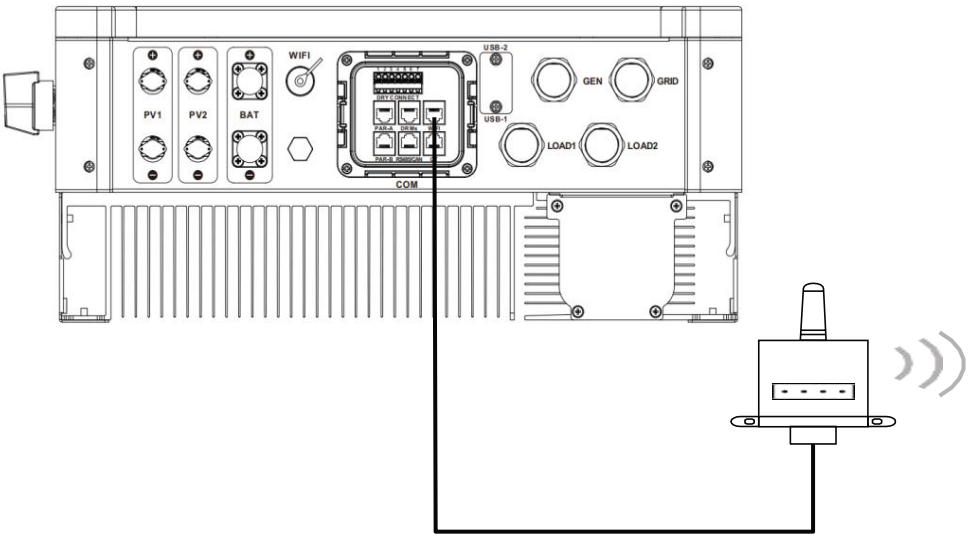
6.1 WIFI port

The WIFI port is used to connect to the Wi-Fi/GPRS logger module, which allows users to view the operating status and parameters of the inverter via mobile phone APP.

WIFI port 1and WIFI port 2 can’ t work at the same time.

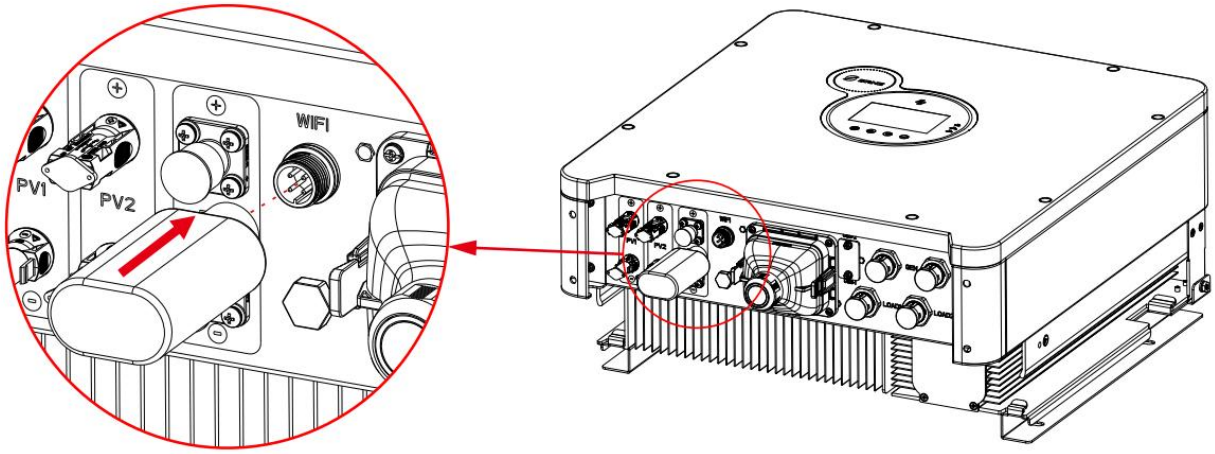


WIFI port 1:

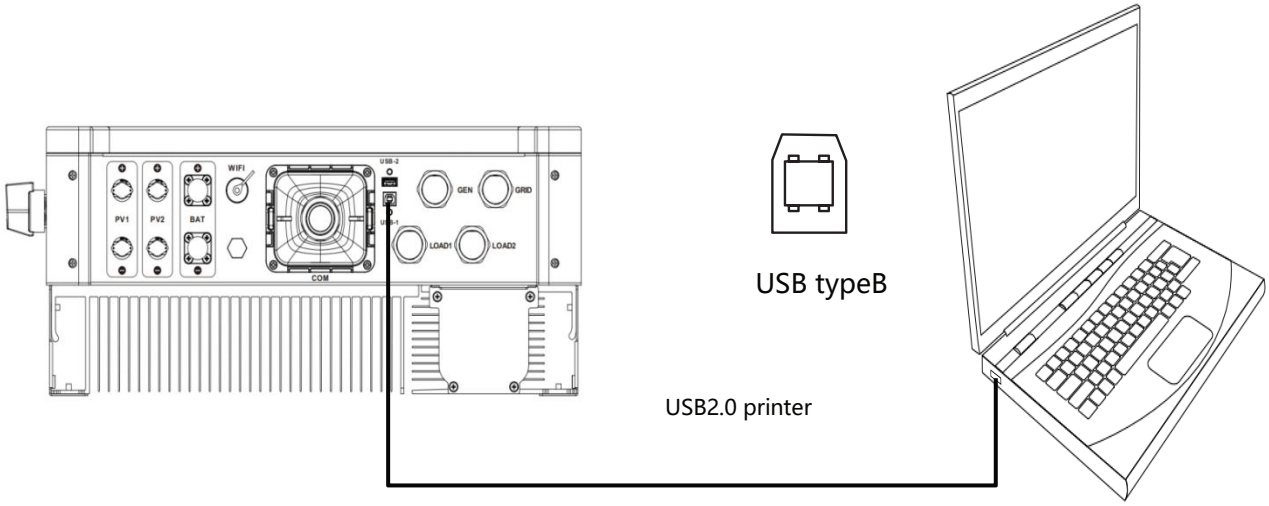


RJ45	定义
Pin 1	5V
Pin 2	GND
Pin 3	/
Pin 4	/
Pin 5	/
Pin 6	/
Pin 7	RS485-A
Pin 8	RS485-B

WIFI port 2:



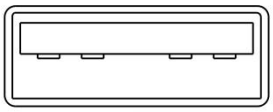
6.2 USB-1 port



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

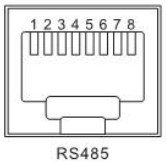
6.3 USB-2 port

It is used to updated the screen firmware.
When update the screen, it is better to turn off grid.



6.4 RS485 port

The RS485 port is used for the RS485 communication of BMS for lithium-ion batteries.

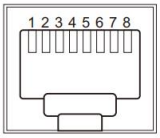


RS485

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

6.5 CAN port

The CAN port is used for the CAN communication of BMS for lithium-ion batteries.



CAN

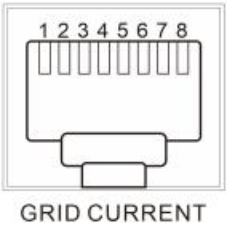
RJ45	Definition
Pin 1	/
Pin 2	/
Pin 3	/
Pin 4	CANH
Pin 5	CANL
Pin 6	/
Pin 7	/
Pin 8	/

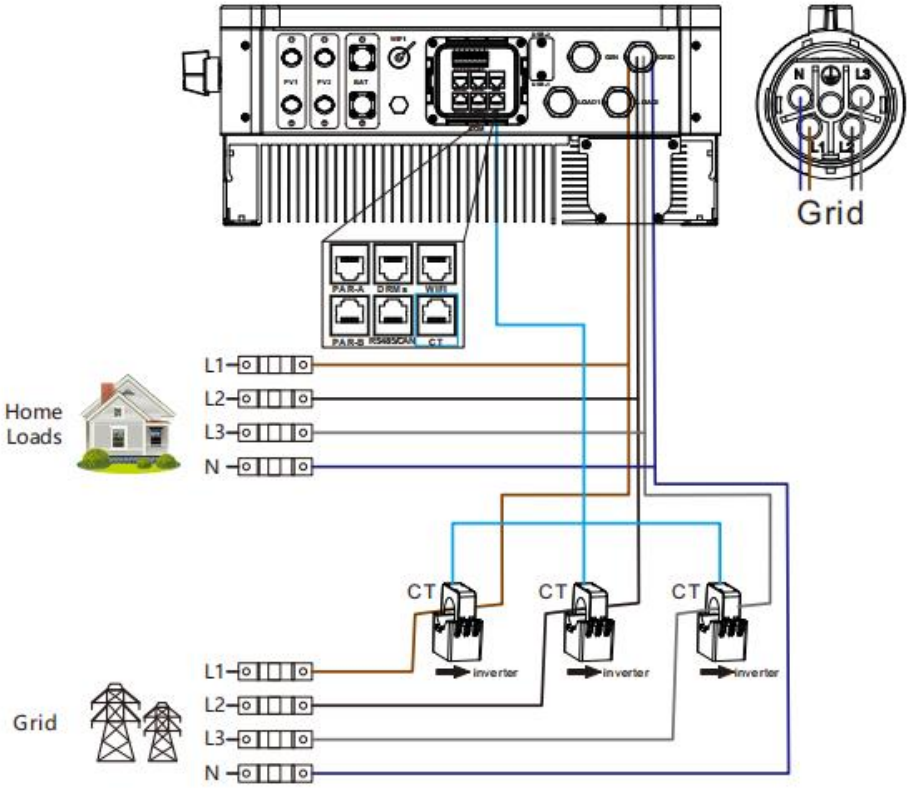
NOTICE

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

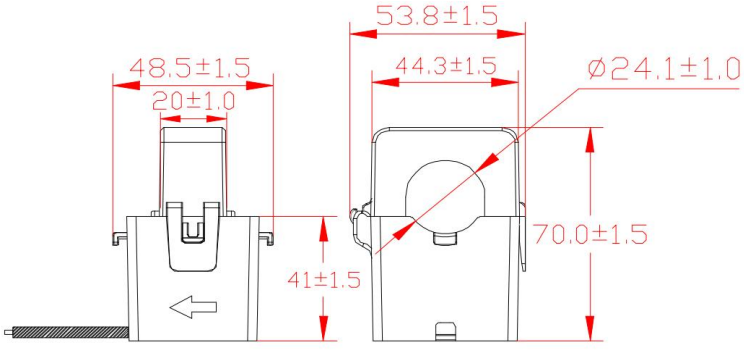
6.6 External CT port

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

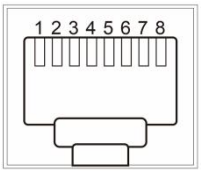




RJ45	定义
Pin 1	CT3+
Pin 2	CT3-
Pin 3	/
Pin 4	CT2+
Pin 5	CT2-
Pin 6	/
Pin 7	CT1+
Pin 8	CT1-



6.7 DRMS(Only Australia)



DRMS

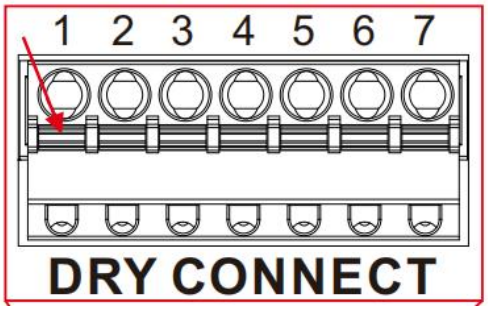
MODE	RJ45 socket asserted by shorting pins		Requirement
DRM0	5	6	Operate the disconnection device
DRM5	1	5	Do not generate power to grid
DRM6	2	5	Do not generate at more than 50% of rated power
DRM7	3	5	Do not generate at more than 75% of rated power AND Sink reactive power if capable
DRM8	4	5	Increase power generation (subject to constraints from other active DRMs)

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

6.8 Dry contact port

Dry contact port with 3 functions:

1. Remote switch ON/OFF
2. Temperature sampling (reserved)
3. Generator remote start/stop
4. The inverter fault signal



Function	Description
Remote switch ON/OFF	PIN7 is GND，PIN6 and PIN7 are short-circuited,the inverter will stop inverter output
Temperature sampling (reserved)	Pin 7 & Pin 4 can be used for battery temperature sampling compensation.
Generator remote start/stop	1-2：NC 1-3:NO 1, No grid and no BMS connection, when the battery voltage is lower than the voltage point to stop discharge, remote start the generator; 2. No grid and the BMS is connected, when the battery SOC is lower than the SOC setting point of the battery stop discharge, the generator is started remotely; 3, No grid and no BMS connection, when the battery voltage reaches the voltage point where the battery starts to discharge again or the battery is full, the generator is stopped remotely; 4, No grid and BMS connection, when the battery SOC reaches the set value of battery re-discharge SOC or the battery is full, remotely shut down the generator; Remote generator start: Pins 1 to 3 are normally open, and pins 1 to 2 are normally close. Remote generator shutdown: Pins 1 to 3are normally closed, and pins 1 to 2are normally open. (Pin 1/2/3 output 125Vac/1A,230Vac/1A,30Vdc/1A)
The inverter fault signal	When the inverter is faulty, pin5 and pin7 will output low level signal

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 and Solution

Fault code	Fault name	Description	Solution
【01】	BatVoltLow	Battery undervoltage alarm.	Charge the battery and wait until the battery voltage is higher.
【02】	BatOverCurrSw	Battery discharge average current overcurrent (software protection).	Reduce the load and restart the inverter
【03】	BatOpen	Battery not-connected alarm.	Check that the battery is reliably connected. Check that the battery circuit-breaker is off. Ensure that the BMS is able to communicate properly.
【04】	BatLowEod	Battery undervoltage stop discharge alarm.	Manual reset: Switch off and restart. Automatic reset: Charge the battery so that the battery voltage is higher than the value set in parameter item [batt volt restart dischg].
【05】	BatOverCurrHw	Battery overcurrent (hardware protection).	Reduce the load and restart the inverter
【06】	BatOverVolt	Charging overvoltage protection.	Manually power off and restart. Check to see if the battery voltage exceeds the limit. If it exceeds, the battery needs to be discharged until the voltage is below the battery over-voltage recovery point.
【07】	BusOverVoltHw	Bus overvoltage (hardware protection).	Please contact us
【08】	BusOverVoltSw	Bus overvoltage (software protection).	Please contact us
【09】	PvVoltHigh	PV overvoltage protection.	Please check the battery voltage
【10】	PvOCSw	Boost overcurrent (software protection).	Please contact us
【11】	PvOCHw	Boost overcurrent (hardware protection).	Please contact us
【12】	SpiCommErr	SPI communication fault of master and slave chips	Please contact us
【13】	OverloadBypass	Bypass overload protection.	Reduce the load and restart the inverter
【14】	OverloadInverter	Inverter overload protection.	
【15】	AcOverCurrHw	Inverter overcurrent (hardware protection).	
【16】	AuxDSpReqOffPWM	Slave chip OFF request fault	Please contact us

【17】	InvShort	Inverter short-circuit protection.	1. Carefully check the load connection and clear the short-circuit fault point; 2. Power on again, and the load will resume output
【18】	Bussoftfailed	Bus soft-start failure	Please contact us
【19】	OverTemperMppt	Buck heat sink over temperature protection.	Normal charging and discharging is resumed when the temperature of the heat sink cools below the over-temperature recovery temperature.
【20】	OverTemperInv	Inverter AC output with load or AC charging radiator over-temperature protection.	
【21】	FanFail	Fan blockage or failure fault.	Manually toggle the fan after powering off the machine to check for foreign matter blockage.
【22】	EEPROM	Memory failure.	Please contact us
【23】	ModelNumErr	Model setting error.	Please contact us
【24】	Busdiff	Positive and negative bus voltage imbalance	Please contact us
【25】	BusShort	Bus short-circuit	Please contact us
【26】	RlyShort	Inverted AC Output Backfills to Bypass AC Input.	Please contact us
【27】	LinePhaselose	Grid input phase lose	Please check AC input phase
【28】	LinePhaseErr	Grid input phase error	
【29】	BusVoltLow	Internal battery boost circuit failure.	Please contact us
【30】	BatCapacityLow1	Alarm given when battery capacity rate is lower than 15% (setting BMS to enable validity).	Wait until the battery is charged and returns to above the alarm SOC value
【31】	BatCapacityLow2	Alarm given when battery capacity rate is lower than 5% (setting BMS to enable validity).	
【32】	BatCapacityLowStop	Inverter stops when battery capacity is low (setting BMS to enable validity).	Please contact us
【33】	ControlCanFault	Control CAN fault in parallel operation.	Please contact us
【34】	CanCommFault	CAN communication fault in parallel operation.	Please contact us
【35】	ParaAddrErr	Parallel ID （communication address） setting error.	Please check the inverter address

【36】	Balance currentOC	Balance bridge arm overcurrent failure	Please contact us
【37】	ParaShareCurrErr	Parallel current sharing fault .	Check communication cable
【38】	ParaBattVoltDiff	Large battery voltage difference in parallel mode.	Check the battery voltage
【39】	ParaAcSrcDiff	Inconsistent AC input source in parallel mode.	Check the Grid input whether connect the same source
【40】	ParaHwSynErr	Hardware synchronization signal error in parallel mode.	Check whether the communication cable connection is ok
【41】	InvDcVoltErr	Inverter DC voltage error.	Please contact us
【42】	SysFwVersionDiff	Inconsistent system firmware version in parallel mode.	Check whether each inverter’ s firmware is same
【43】	ParaLineContErr	Parallel line connection error in parallel mode.	Check whether the communication cable connection is ok
【44】	Serial number error	No serial number set at factory.	Please contact us
【45】	Error setting of split-phase mode	Item “Parallel” setting error.	One of inverters in the Parallel system parallel setting is wrong.
【49】	Grid over voltage	selects the local corresponding grid standard.	Check whether the grid voltage is within the normal range, and if the grid voltage is abnormal, wait for the grid voltage to be restored
【50】	Grid under voltage		
【51】	Grid over frequency		Check whether the grid frequency is within the normal range, and if the grid voltage is abnormal, wait for the grid voltage to be restored
【52】	Grid under frequency		
【53】	Grid loss		Check the grid connection is ok
【54】	Grid DC current over		Please contact us
【55】	Grid standard un init		Set the on-grid standard
【56】	Low insulation resistance fault	PV1+, PV2+ and PV- abnormally low impedance to ground.	Check whether the system is well grounded, and check whether the photovoltaic modules and cables are worn
【57】	Leakage current overload fault	System leakage current exceeds limit.	Check whether the system is well grounded and whether the load equipment is operating abnormally
【58】	BMS communication error	Check whether the communication line is connected correctly and whether [BMS comm.interface] is set to the corresponding lithium battery communication protocol.	Check the BMS protocol setting and the communication cable pins are ok

【60】	BMS battery low temperature alarm	BMS alarm battery low temperature.	Please contact BMS factory
【61】	BMS battery over temperature alarm	BMS alarm battery over temperature.	
【62】	BMS battery over current alarm	BMS alarm battery over current.	
【63】	BMS battery undervoltage alarm	BMS alarm low battery.	

NOTICE

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

8. Protection and Maintenance

8.1 Protection function

No	Protection functions	Description
1	PV input current / power limiting protection	When the charging current or power of the PV array configured exceeds the PV input rated value, the inverter will limit the input power and charge at the rated.
2	PV input over-voltage	If the PV voltage exceeds the maximum value allowed by the hardware, the machine reports a fault and stops PV boosting to output a sinusoidal AC waveform.
3	Anti-reverse charge protection at night	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	AC input over-voltage protection	When the grid phase voltage exceeds 485Vac, the mains charging will be stopped and will switch to inverter output.
5	AC input under-voltage protection	When the grid phase voltage falls below 170Vac, the mains charging will be stopped and will switch to inverter output.
6	Battery over-voltage protection	When the battery voltage reaches the over-voltage disconnection voltage point, it will automatically stop the PV and mains charging of the battery to prevent over-charging and damage to the battery.
7	Battery under-voltage 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 over-current 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	When a short-circuit fault occurs at the load, the AC output voltage will be switched off immediately and output again after 1 min. If the output load is still short-circuited after 3 attempts, short-circuit fault of the load must be eliminated first and then manually re-powered in order to restore the normal output.
10	Heat sink over-temperature protection	When the internal temperature of the inverter is too high, the inverter will stop charging and discharging; when the temperature returns to normal, the inverter will resume charging and discharging.

11	Inverter over-load protection	Three phase overload logic: After triggering the overload protection, the inverter will resume output after 3 minutes, 5 consecutive overloads will shut down the output until the inverter is restarted. (102%<load<125%):alarm,output shut down after 5 minutes. (125%<load<150%):alarm, output shut down after 20s. (load>150%):alarm, output shut down after 10s. Single phase overload logic: 1.5*(102%<load<110%) :alarm, output shut down after 5 minutes. 1.5*(load>110%): alarm, output shut down after 10s.
12	AC output reverse	Prevents backfeeding of battery inverter AC to bypass AC inputs.
13	Bypass over-current protection	Built-in AC input overcurrent protection circuit breaker.
14	Bypass phase inconsistency 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 the use of third-party batteries.
6. Damage caused by force majeure: damage during transport or handling of the inverter.

9. Datasheet

MODEL	HESP80SH3	HESP100SH3	HESP120SH3	Settable
Inverter output				
Rated Output Power	8000W	10,000W	12000W	
Max. Peak Power	16000VA	20,000VA	24,000VA	
Rated Output Voltage	230/400Vac (three-phase)			Y
Rated AC Frequency	50/60Hz ± 0.3Hz			Y
Waveform	Pure Sine Wave			
Switch time	10ms(typical)			
AC OUT (on-grid)				
Rated Output Power	8000W	10,000W	12000W	
Max. Peak Power	8800VA	11,000VA	13200VA	
Power factor	0.8 leading to 0.8 lagging	0.8 leading to 0.8 lagging	0.8 leading to 0.8 lagging	
Rated voltage	3L/N/PE 230/400Vac	3L/N/PE 230/400Vac	3L/N/PE 230/400Vac	
Rated AC Frequency	50/60Hz	50/60Hz	50/60Hz	
Rated AC output phase current	11.6Aac	14.5Aac	17.4Aac	
MAX AC output phase current	12.7A	15.9A	19.1A	
THD	<3%	<3%	<3%	
Battery				
Battery Type	Li-ion / User Defined			Y
Rated Battery Voltage	200V	250V	300V	
Voltage Range	125-600Vdc			
Max. Charging Current	40Adc	40Adc	40Adc	Y
PV input				
Num. of MPP Trackers	2			
Max. PV array power	6000W/6000W	7500W/7500W	9000W/9000W	
Max. input current	16Adc/16Adc			
Max.PV Isc	20Adc/20Adc			
Max. Voltage of Open Circuit	1000Vdc/1000Vdc			
MPPT Voltage Range	180-850Vdc/180-850Vdc			
Grid / Generator input				
Input Voltage Range	Phase voltage 170-280V/ line voltage 295V~485V			
Frequency Range	50/60Hz			
Max.AC bypass current	25.5Aac	31.9Aac	38.2Aac	
Efficiency				

MPPT Tracking Efficiency	99.9%			
Max. Battery Inverter Efficiency	≥92%			
European Efficiency	97.2%	97.5%	97.5%	
Protection				
PV Input Lightning Protection	Yes			
Anti-islanding Protection	Yes			
PV String Input Reverse Polarity Protection	Yes			
Insulation Resistor Detection	Yes			
Residual Current Monitoring Unit	Yes			
Output Over Current Protection	Yes			
Output Shorted Protection	Yes			
Surge Protection	DC type II/AC type II			
Over Voltage Category	DC type II/AC type III			
Certified specifications				
On-grid standard	EN50549,VDE4105			
Safety	IEC62109-1, IEC62109-2			
EMC	EN61000-6-1, EN61000-6-3, FCC 15 class B			
RoHS	Yes			
Basic data				
Parallel capacity	6			
Operating Temperature Range	-30~60℃,>45℃ derated			
Humidity range	0-100%			
Noise	<35dB			
Protection Degree	IP65			
Cooling Method	Heat sink			
Self-consumption	<100W			
Dimensions	620*550*230mm			
Weight	35kg			
Communication port	RS485 / CAN / USB / Dry contact			Y
External Modules （Optional）	Wi-Fi / GPRS			Y