Solavita

SWH

3/4/5/6 kW

Single-phase Hybrid Inverter (High Voltage)

User Manual

File version-202407-V1-EN Information might be subject to change without notice during product improving.

Contents

Notes on This Manual

Scope of Validity:

This manual is an integral part of the hybrid inverter.This manual describes the assembly, installation, commissioning, maintenance and troubleshooting of the following model(s) of products:

SWH3000H-S1 SWH4000H-S1 SWH5000H-S1
SWH6000H-S1

Note: Please keep this manual where it will be accessible at all times.

Target Group:

This manual is for qualified electricians. The tasks described in this manual only can be performed by qualified electricians

Keep the User Manual Properly：

This manual serves as an integral part of the device, and you may print out the electronic copy of the user manual on paper as needed, and keep the paper and electronic files in a safe place for subsequent reference. Anyone operating the device at any time must do so in accordance with the requirements of this manual.

Copyright Statement

This manual may be updated based on user or customer feedback. Please visit our website at www.solavita-ess.com to view the latest version.

Symbols Used

The following types of safety instructions and general information appear in this document as described below:

	**Danger!** "Danger" refers to a dangerous situation that, if not avoided, will result in a high level of risk such as serious injury or even death.
	**Warning!** "Warning" indicates a dangerous situation, which, if not avoided, may result in serious injury or death.
	**Caution!** "Caution" indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.
	**Note!** "Note" provides tips that are valuable for the optimal operation of our product.

1. Important Safety Instructions

This chapter contains important safety and operating precautions. Read and save this manual for future reference. Before using this device, please read all instructions and warning signs on the device to understand the battery and all relevant sections of this manual.

The following types of safety instructions and general information appear in this document as described below:

	**Danger!** **Danger to life due to high voltages in the inverter!** The personnel responsible for the installation, electrical connection, debugging, maintenance and fault handling operation of this product need to be trained, master the correct operation method, have the corresponding electrician qualification and safety operation knowledge.
	**Caution!** When the inverter is working, it is strictly forbidden to touch the shell. The temperature of the shell is high and there is a risk of scalding.
	**Caution!** To reduce the risk of injury, charge only deep cycle lithium iron phosphate rechargeable batteries. Other types of batteries may explode, causing personal injury and damage.
	**Warning!** Before performing maintenance, cleaning or operation on the circuit connected to the inverter, authorized maintenance personnel must first disconnect the AC and DC power supplies of the inverter.
	**Warning!** Ensure that the input DC voltage is below the inverter limit. Excessive DC voltage and current may cause permanent damage or other losses to the inverter, which is not covered by the warranty.
	**Note!** Ground PV system. Finish PV modules and photovoltaic system grounding in accordance with local requirements to achieve optimal protection of systems and personnel.

This section explains the symbols shown on the energy station and on the type label:

	Symbol Explanation CE mark. The inverter complies with the requirements of the applicable CE guidelines.
	UKCA mark. The inverter complies with the requirements of the applicable UKCA guidelines.
	Regulatory Compliance Mark. The inverter complies with the requirements of applicable of RCM Guidelines in Australia market.
	Beware of hot surface. The inverter can become hot during operation. Avoid contact during operation.
	Danger of high voltages. Danger to life due to high voltages in the inverter!
	Danger. Risk of electric shock!
	Danger to life due to high voltage. There is residual voltage existing in the inverter after powering off, which needs 5 min to discharge. Wait 5 min before you open the upper lid or the DC lid.
	Observe enclosed documentation.
	The inverter can not be disposed together with the household waste. Disposal information can be found in the enclosed documentation.
	PE conductor terminal.

2. Introduction

2.1 Basic Information

SWH3000~6000H-S1 inverters are single-phase PV hybrid inverters that combine a grid-connected PV inverter with high voltage battery storage. It has built-in multiple operating modes to suit the diversified needs of users.

The SWH3000~6000H-S1 inverters provide a complete solution for the rising cost of energy such as oil and coal, the decreasing energy subsidy for grid-connected PV systems, mountainous areas or base stations without power grids, and the need for uninterruptible power supply and emergency power supply.

2.2 Basic Features

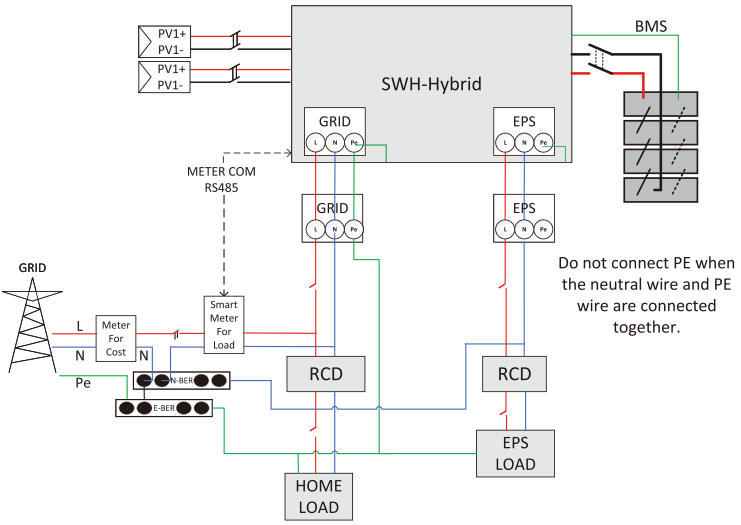
SWH3000~6000H-S1 photovoltaic energy storage inverters allow up to 10% overload for maximum power output. The uninterruptible power supply (UPS) mode can support inductive loads with an automatic switching time of less than 10 milliseconds.

A. Support 150% PV input power /110% AC output power/2 Times AC input Power.
B. IP66 outdoor design.
C. Up to 97.8% efficiency, EU efficiency up to 97%.
D. Safe and reliable: Design with hardware and software protection.
E. LCD screen display, friendly human-machine interface.
F. On grid and off grid switching time < 10ms.

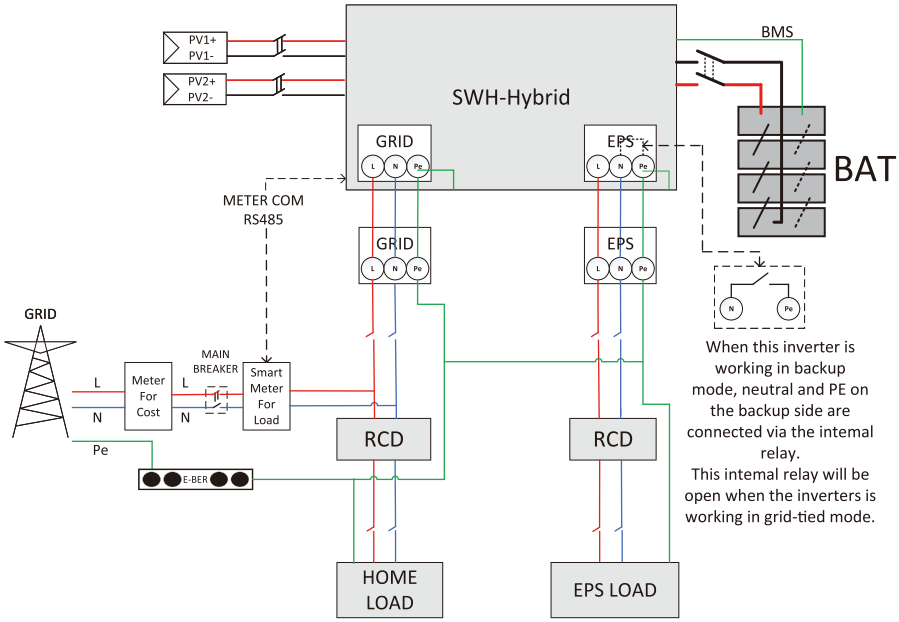
Note: In accordance with Australian safety standards, the neutral wires of the on-grid side and backup side must be connected together. Failure to do so will result in the backup function not operating correctly.

This diagram illustrates an example where the neutral is connected to the PE in a distribution box.

For countries like Australia, New Zealand, South Africa, etc., please follow local wiring regulations.



For countries such as China, Germany, the Czech Republic, Italy, etc, please follow local wiring regulations.



2.3 Work Mode

● Forced charging period

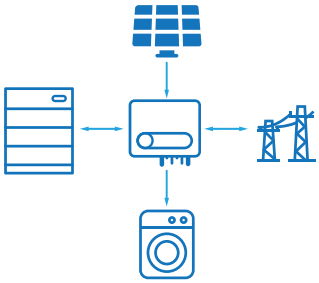
The priority of forced charging period is higher than all work modes. Under the forced charging period, the inverter will charge the battery first until the battery SOC reaches the value of "charge battery to".

● Allowed discharging period

Under the allowed discharging period, the inverter will allow the battery to discharge (but not force the battery to discharge).

The following work modes will take effect under the allowed discharging period.

Mode 1: Self-Use Mode



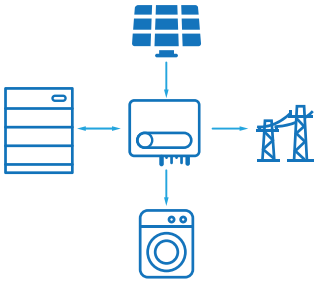
During daylight hours with sufficient sunlight (clear weather), solar photovoltaic (PV) power is first supplied to meet household loads. Any surplus PV energy is used to charge the battery. If there is excess electricity remaining, it is exported to the grid for power trading (with an export limit power value setting).

In the event of insufficient sunlight during the day (cloudy/rainy/snowy weather), electricity required beyond what the PV system can provide is primarily sourced from discharging the battery. If additional power is still needed, it is supplemented by purchasing electricity from the grid.

Supply Priority: PV > Battery > Grid

Load Priority: Household Loads > Battery > Grid

Mode 2: Feed in Grid Mode



During daytime with sufficient sunlight (clear weather), solar photovoltaic (PV) generation first supplies electricity to meet household loads. Any surplus PV energy is exported to the grid for power trading (with an export limit power value setting).

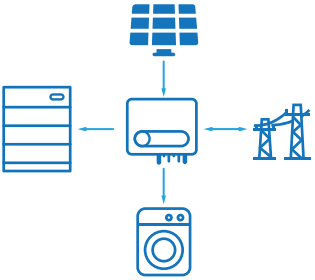
In case of insufficient sunlight during the day (cloudy/rainy/snowy weather), electricity needed for household loads beyond what the PV system can provide is primarily sourced from discharging the battery. Surplus battery power is exported to the grid for power trading. If the battery discharge rate cannot meet load demands, electricity is then purchased from the grid to supplement.

The power generated by the PV system will first supply the loads. Any surplus will be fed into the grid, with the remaining power then used to charge the battery.

Supply Priority: PV > Battery > Grid

Load Priority: Household Loads > Grid > Battery

Mode 3: Back-Up Mode



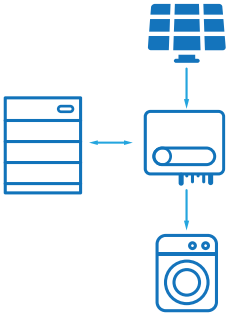
During daylight hours with sufficient sunlight (clear weather), solar photovoltaic (PV) generation first charges the battery up to its maximum charging capacity. Any surplus electricity after achieving maximum charge is then used to supply household loads. If the PV system cannot meet the full electricity demand of the loads, electricity is supplemented by purchasing from the grid.

In case of insufficient sunlight during the day (cloudy/rainy/snowy weather), all PV generation is directed towards charging the battery. Any shortfall in the required charging power for the battery is supplemented by purchasing electricity from the grid. Household loads are powered directly from the grid.

Supply Priority: PV > Grid

Load Priority: Battery > Household Loads > Grid

Mode 4: Off_Grid Mode



In the event of grid abnormalities or power outage, causing the inverter to enter Off_Grid mode:

EPS loads are powered by both solar PV and the battery simultaneously.

Solar PV generation first satisfies the load requirements. Any surplus solar energy is used to charge the battery.

If solar PV output fluctuates and is insufficient to support the load, the battery quickly discharges to support the load.

Tips:

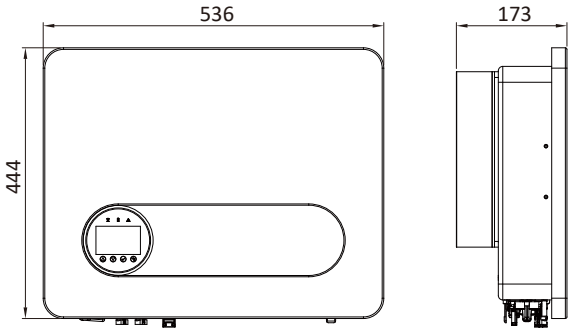
A pure solar PV input system cannot enter Off_Grid mode. It requires a reliable battery connection with a minimum State of Charge (SOC) requirement for energy storage systems to operate in Off_Grid mode.

Different battery combinations provide varying EPS load capacities, with detailed information provided in the manual.

Application Scenario:

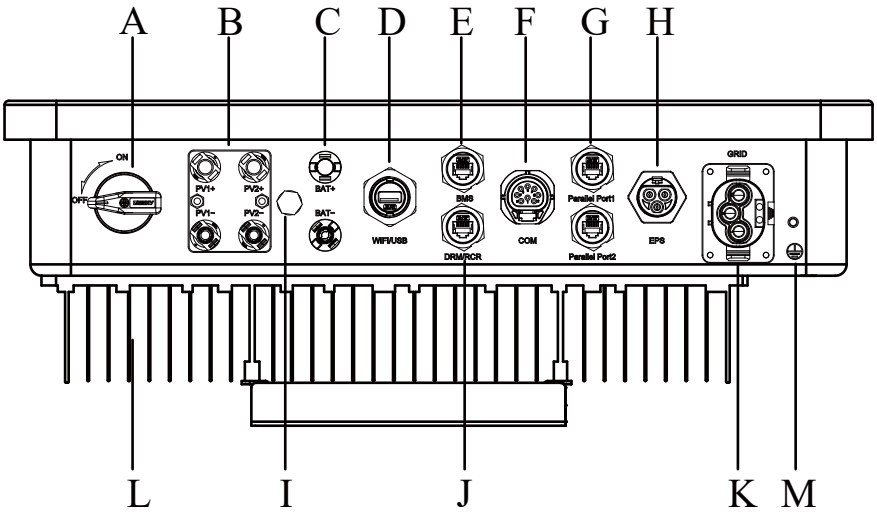
Ideal for areas with frequent grid fluctuations or power outages.

2.4 Dimensions



Front View Side View

2.5 Terminals of Inverter



Object	Description	Object	Description
A	DC Switch	H	EPS(off-grid) Output
B	PV	I	Waterproof Lock Valve
C	Battery Connector	J	DRM/RCR Port DRM for Australia; RCR for Europe
D	USB	K	Grid Output
E	BMS	L	Radiator
F	COM	M	Ground Connection
G	Parallel Connection		

Note: Only authorized personnel can set up a connection.

3. Installation

Note:

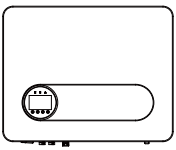
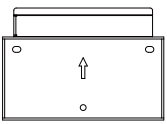
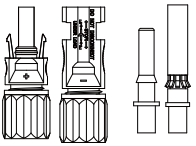
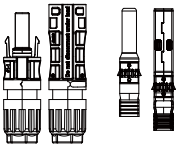
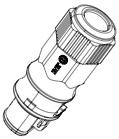
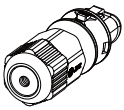
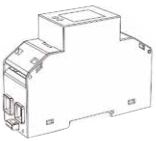
⚠	Danger: Do not install SWH3000~6000H-S1 on flammable materials. Do not install SWH3000~6000H-S1 in a place where flammable or explosive materials are stored.
⚠	The casing and radiator of the inverter become extremely hot during operation. Avoid installing SWH3000~6000H-S1 in areas where accidental contact may occur.
⚠	Consider the weight of the inverter when transporting and moving it. Select a suitable mounting location and surface. Equip at least 2 persons to install the inverter.

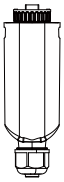
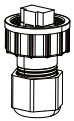
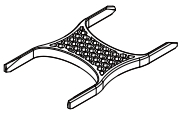
3.1 Check for Transport Damage

Ensure that the inverter is in good condition via transportation. If there is any visible damage such as cracks, please contact the dealer immediately.

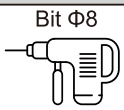
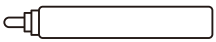
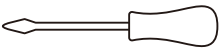
3.2 Packing List

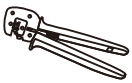
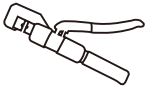
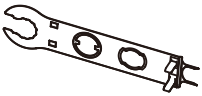
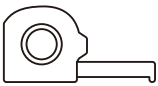
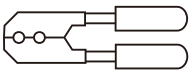
Open the package and take out the product, please check the accessories first. The packing list is shown below.

			
Inverter*1	Bracket*1	PV connector(+)*2 PV connector(-)*2	Battery connector(+)*1 Battery connector(-)*1
			
COM connector*1	AC connector*1 (on grid)	EPS connector*1 (off-grid)	Smart meter*1

			
Certificate of conformity*1	Factory Inspection Report*1	Expansion tube*3 Expansion screw*3	Phillips screw*1
			
User manual*1	Data logger*1	Ground terminal*1	RJ45*4
			
AC disassembly tool*1			

3.3 Tool Preparation

Number	Tool	Description
1		Hammer drill (Recommended 6mm drill bits)
2		Spirit level
3		Marker pen
4		Screwdrivers (125mm)

5		PV connector terminal crimping tool
6		Wire stripper
7		PV disassembly tool
8		Multimeter
9		Tape rule
10		Network cable crimper

3.4 Installation Environment

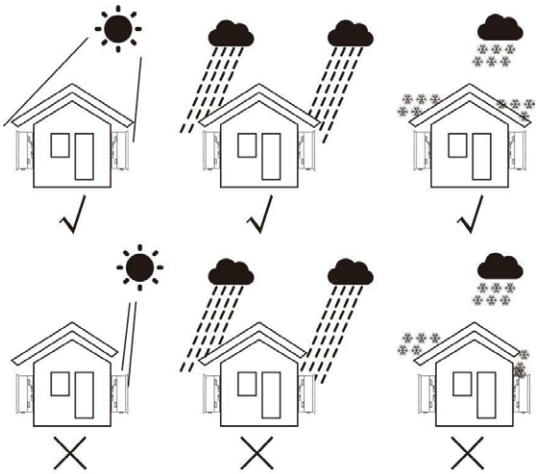
1) The inverter operates optimally when the ambient temperature is not higher than 45°C. The inverter is also designed for use in a wide range of applications.

2) The mounting height should preferably be parallel to the line of sight for ease of operation and maintenance.

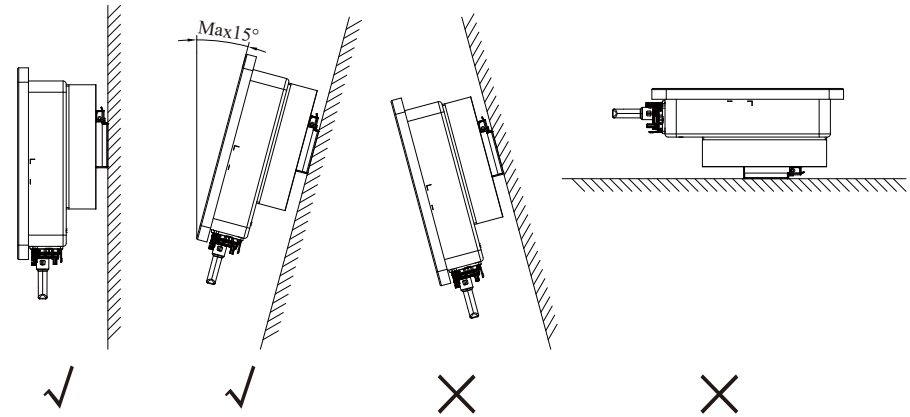
3) The installation environment of the inverter should be far away from flammable and explosive materials and ensure that there is no strong electromagnetic interference equipment around.

4) The parameter labels and warning signs must be clearly visible after the inverter is installed.

5) When installing the inverter, ensure it is protected from sunlight, rain, and snow during operation.



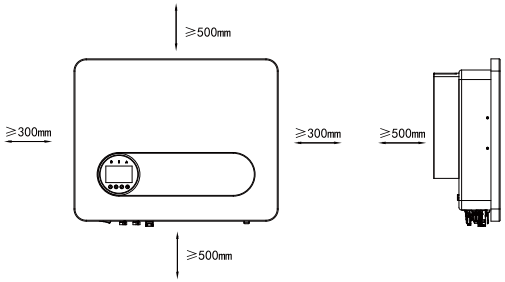
Install the inverter at a maximum back tilt of 15 degrees, the inverter can not be tilted forward, inverted, excessive back tilted or side tilted.



3.5 Installation Space Requirements

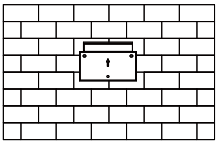
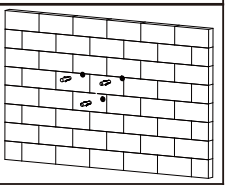
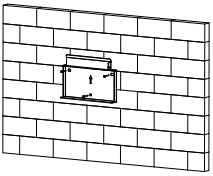
⚠	Danger! Always ensure that the inverter cooling system or vents are unobstructed.

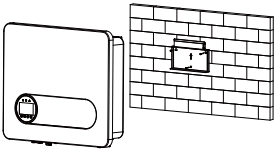
Considering heat dissipation and ease of disassembly, as well as ensuring sufficient space around the inverter for ventilation, the minimum distance around the inverter should not be less than the following values.



Position	Min Distance
Left	300mm
Right	300mm
Top	500mm
Bottom	500mm

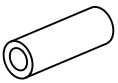
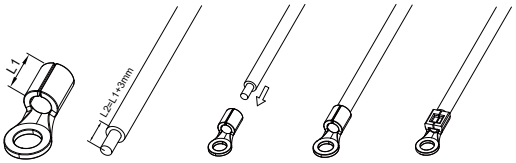
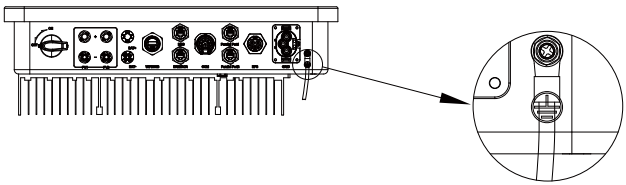
3.6 Mounting

Procedure		
Step 1	Place the bracket at the installation point and use a level to adjust it to a horizontal angle. Mark the drilling positions with a marker.	
Step 2	Drill holes in the wall using a hammer drill. Ensure the drill is held perpendicular to the wall, and make the holes slightly deeper than the length of the plastic expansion anchors.	
Step 3	Carefully hammer the expansion anchors into the drilled holes, and then secure the bracket with expansion screws.	

Step 4	Lift the inverter onto the bracket, ensuring the grooves align properly. Secure the inverter to the bracket with screws.	

4. Electrical Connections

4.1 Grounding Connection

Procedure	
Step 1	Prepare a one-core cable (4 mm²), and then find the ground terminal in the accessories.  one-core cable (4 mm²)  Phillips screw  OT terminal
Step 2	Strip the grounding cable insulation(length L2), insert the stripped cable into the ring terminal, and then clamp it. 
Step 3	Find the ground connection port on the inverter, and screw the ground wire on the inverter. 

4.2 PV Connection

Note:

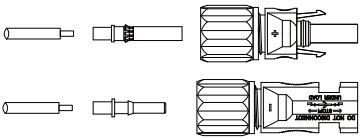
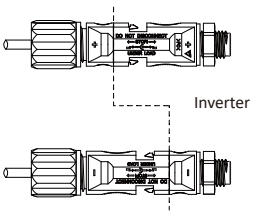
1) Before connecting the photovoltaic (PV) strings, ensure that the DC switch is in the off position.

2) Ensure that the polarity of the PV strings matches that of the DC connectors; otherwise, the inverter may be damaged.

3) Ensure that under no circumstances does the open-circuit voltage of the PV strings exceed the inverter's maximum input voltage of 600V.

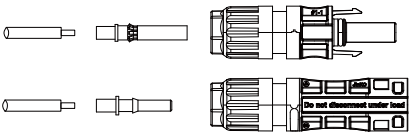
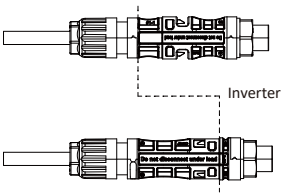
4) The positive and negative terminals of the PV strings must not be connected to the PE (ground) line, as this will cause damage to the inverter.

Inverter Model	SWH3000H-S1	SWH4000H-S1	SWH5000H-S1	SWH6000H-S1
Recommended Cable	10AWG	10AWG	10AWG	10AWG

Procedure	
Step 1	Turn off the DC switch, connect the PV module, prepare a 4~6 mm² (10AWG) PV cable, and trim 7-10mm of insulation from the wire end.
Step 2	Separate the DC connector (PV) as below. 
Step 3	Insert the stripped cable into the pin contact, ensuring all conductor strands are fully enclosed within the pin contact.
Step 4	Use a crimping tool to crimp the pin contact. Place the pin contact with the stripped cable into the appropriate slot of the crimping tool and crimp it securely.
Step 5	Insert the pin contact through the cable nut to secure it into the back of the male or female plug. A “click” sound or tactile feedback indicates that the pin contact is properly seated. 
Unlock	Unlock the DC connector Use the specified wrench tool. When separating the DC + connector, push the tool down from the top When separating the DC - connector, push the tool down from the bottom. Separate the connectors by hand.

4.3 Battery Connection

Inverter Model	SWH3000H-S1	SWH4000H-S1	SWH5000H-S1	SWH6000H-S1
Recommended Cable	10AWG	10AWG	10AWG	10AWG

Procedure	
Step 1	Turn off the DC switch, connect the PV module, prepare a 4~6 mm²(10AWG) BAT cable, and trim 7-10mm of insulation from the wire end.
Step 2	Separate the DC connector (battery) as below. 
Step 3	Insert the stripped cable into the pin contact, ensuring all conductor strands are fully enclosed within the pin contact.
Step 4	Use a crimping tool to crimp the pin contact. Place the pin contact with the stripped cable into the appropriate slot of the crimping tool and crimp it securely.
Step 5	Insert the pin contact through the cable nut to secure it into the back of the male or female plug. A “click” sound or tactile feedback indicates that the pin contact is properly seated. 
Unlock	Unlock the DC connector Use the specified wrench tool. When separating the DC + connector, push the tool down from the top When separating the DC - connector, push the tool down from the bottom. Separate the connectors by hand.

4.4 Grid Connection

Inverter Type	SWH3000H-S1	SWH4000H-S1	SWH5000H-S1	SWH6000H-S1
Grid	6AWG	6AWG	6AWG	6AWG
EPS	10AWG	10AWG	10AWG	10AWG
AC Breaker	32A	50A	63A	63A

4.4.1 EPS Wiring

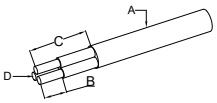
Locate the Correct AC Load Terminal:

Refer to the terminal accessory labels to find the correct AC load wiring terminal, marked internally in yellow. The yellow terminal on the machine is designated for the AC load.

Procedure

Step 1

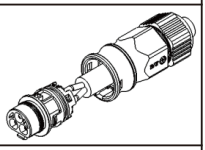
Select the appropriate cable type and specification according to the table; And perform wire stripping treatment on the cables. Please refer to the specific wire stripping length in the diagram.



Position	Description	Recommend size
A	Outdoor cable outer diameter range	Ø 12~Ø 18mm
B	Stripping length of insulation layer	7-10mm
C	The stripping length of the outer layer of the cable	50-55mm
D	Outdoor copper core cable (3 cores)	4~6mm²

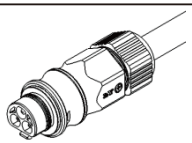
Step 2

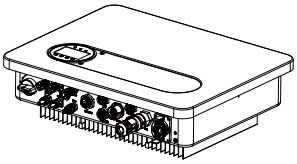
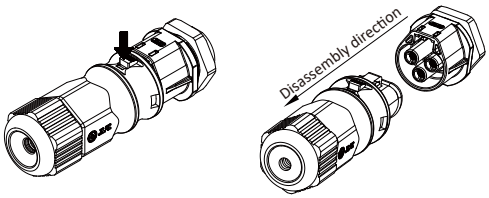
Insert the cable into the main assembly and lock the screws with a hex wrench.(M4 screw recommended locking torque 1.2N.m)



Step 3

Push the main component into the core and assemble it into place when you hear the click sound.Lock the nut with the body.(Recommended locking torque 2.0± 0.5N.m)



Step 4	Align the AC port slot at the bottom of the inverter and insert this terminal into it. 
Unlock	 Place your hand on the connector housing, with your thumb on the button indicated by the arrow, and then pull the whole assembly outward together.

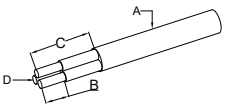
4.4.2 AC Grid Wiring

Please locate the correct AC power grid wiring terminal (black inside) according to the instructions on the terminal accessory label. The black terminal on the machine represents the AC load.

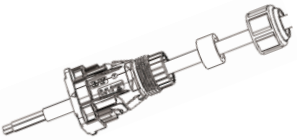
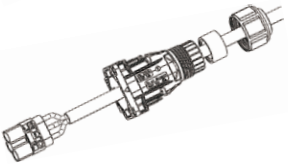
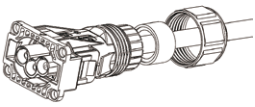
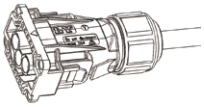
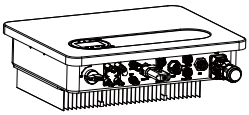
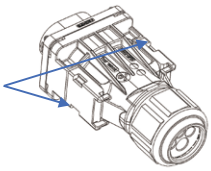
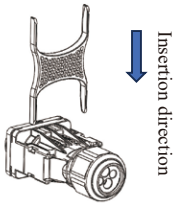
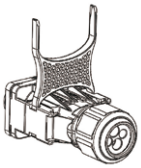
Procedure

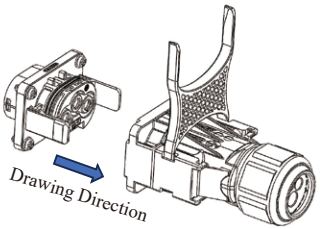
Step 1

Select the appropriate cable type and specification according to the table; And perform wire stripping treatment on the cables. Please refer to the specific wire stripping length in the diagram.



Position	Description	Recommend size
A	Outdoor cable outer diameter range	≤ Ø 22mm
B	Stripping length of insulation layer	7-10mm
C	The stripping length of the outer layer of the cable	50-55mm
D	Outdoor copper core cable (3 cores)	10~16mm²(6AWG)

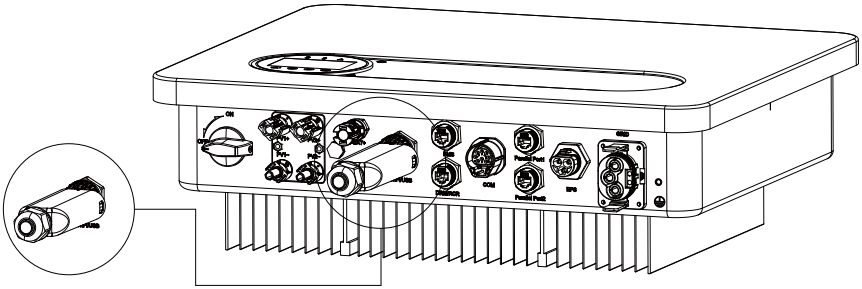
Step 2	Insert the main body of the shell into the cable with insulated terminals.	
Step 3	Insert the insulated core wires into the corresponding screw holes according to the wiring identification requirements, and tighten the screws. (Recommended tightening torque for M5 screws is 1.5~2.0 N.m.)	
Step 4	Push the housing component into the wiring terminal and hear a clicking sound to confirm that it is assembled properly.	
Step 5	Tighten the locking nut with a wrench. (Suggested tightening torque of 2.0~2.5N. m)	
Step 6	Align the AC port slot at the bottom of the inverter and insert this terminal into it.	
Unlock	Attachment parts on both sides protect the two side catches from being unlocked with hands.	
	Insert the unlocking tool into the side unlocking hole.	
	Insert the unlocking tool to the bottom, the unlocking tool will top open the carabiners.	

	Disconnect the cable end by pulling it out along with the unlocking tool.	

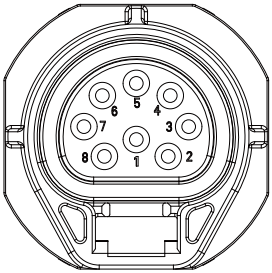
4.5 Communication Connection

4.5.1 APP/WEB Connection

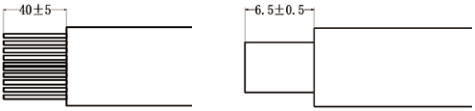
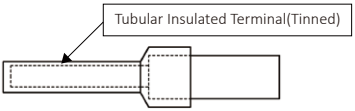
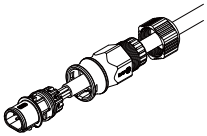
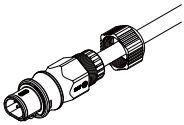
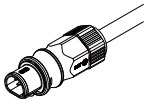
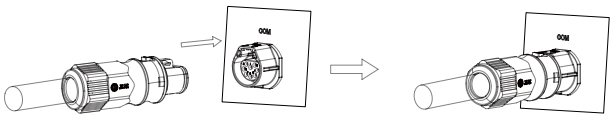
The USB data interface is primarily used to connect a Data logger.



4.5.2 COM Definition

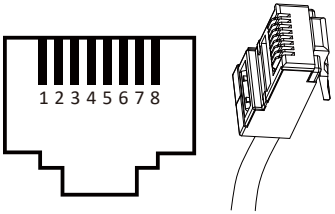


PIN	1	2	3	4	5	6	7	8
Define	RS485+_Meter	RS485-_Meter	RS485+_Meter	RS485-_Meter	CT1+	CT1-	CT2-	CT2-

Procedure	
Step 1	Select the appropriate cable type (recommend 20AWG) and specifications; And perform wire stripping treatment on the cables. Please refer to the specific wire stripping length in the diagram.  Trim size of the cable: 40±5mm Trim size of the insulation: 6.5±0.5mm
Step 2	Terminal the core wire/immerse it in tin to ensure that the copper wire is not dispersed. 
Step 3	Insert the cable into the main component and lock the screw with a Phillips screwdriver. (Recommended tightening torque for screws is 0.1~0.2N. m) 
Step 4	Push the main component into the rubber core and assemble it into place when you hear a clicking sound. 
Step 5	Tighten the nut to the main body. (Suggested tightening torque of 3.5 ± 0.5 N.m). 
Step 6	Align the COM port slot at the bottom of the inverter and insert this terminal. 

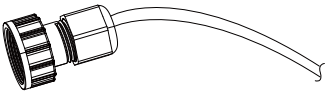
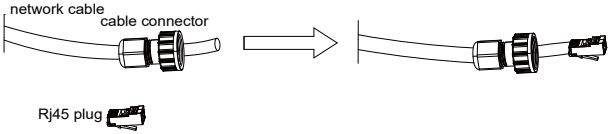
4.5.3 BMS Connection

The BMS (Battery Management System) communication interface is used for CAN communication between the inverter and the lithium battery BMS.If this wire is poor, the communication between the inverter and BMS will not work properly. The stable SOC value displayed on the inverter home page is a good performance of communication.



PIN	1	2	3	4	5	6	7	8
Define	1(5V)	/	2(GND)	/	4(CANL/485-)	/	3(CANH/485 +)	/
Color/T568B	White/orange	/	White/green	/	White/ blue	/	White /brown	/

Installation steps:

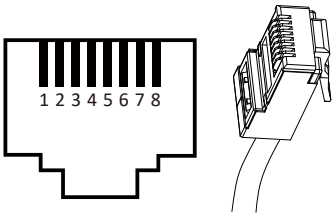
Procedure	
Step 1	Prepare a standard network cable and cable connector, then insert the network cable through the cable connector. 
Step 2	Crimp the cable with a RJ45 plug which is inside of the cable connector. 
Step 3	Insert the cable into the main component and lock the screw.

4.5.4 DRM Connection

DRM is provided to support several demand response modes by emitting control signals as below.

Mode	Requirement
DRM0	Operate the disconnection device.
DRM1	Do not consume power.
DRM2	Do not consume at more than 50% of rated power.
DRM3	Do not consume at more than 75% of rated power and source reactive power if capable.
DRM4	Increase power consumption (subject to constraints from other active DRMs).
DRM5	Do not generate power.
DRM6	Do not generate at more than 50% of rated power.
DRM7	Do not generate at more than 75% of rated power and sink reactive power if capable.
DRM8	Increase power generation (subject to constraints from other active DRMs).

DRM PIN Definition
The installation steps are the same as BMS connection.

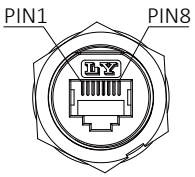


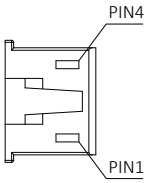
PIN	1	2	3	4	5	6	7	8
Color	Orange/White	Orange	Green/White	Blue	White/ blue	Green	/	/
Define	DRM1/5	DRM2/6	DRM3/7	DRM4/8	REF_GEN/DRM0	COM_LOAD/DRM0	/	/

4.5.5 Parallel Connection

On-Grid Parallel Connection

PIN	1	2	3	4	5	6	7	8
Define	+5V_COM	/	GND_COM	/	RS485+	/	RS485-	/
Color	White/ orange	/	White/ green	/	White/ blue	/	White /brown	/





SWH series inverters provide the parallel connection function which should make five inverters maximumly connected in one system when the grid is power on. In this system, one inverter will be set as the "Master inverter" which will control every other inverter's energy management and dispatch control. Only one meter needs to be connected in this system and communicate with the "Master inverter", and all other slaver inverter communicate with "Master inverter" by RS485 communication-parallel connection.

4.5.6 EPS Connection

Common loads description

Under Off_Grid mode, if need to connect the inductive load on EPS port, please ensure that the instantaneous power of the load at startup is lower than the maximum power of the EPS mode. Please refer to your loads' manual for the actual specs.

*Unipolar load is not supported. Half-wave load is not supported.

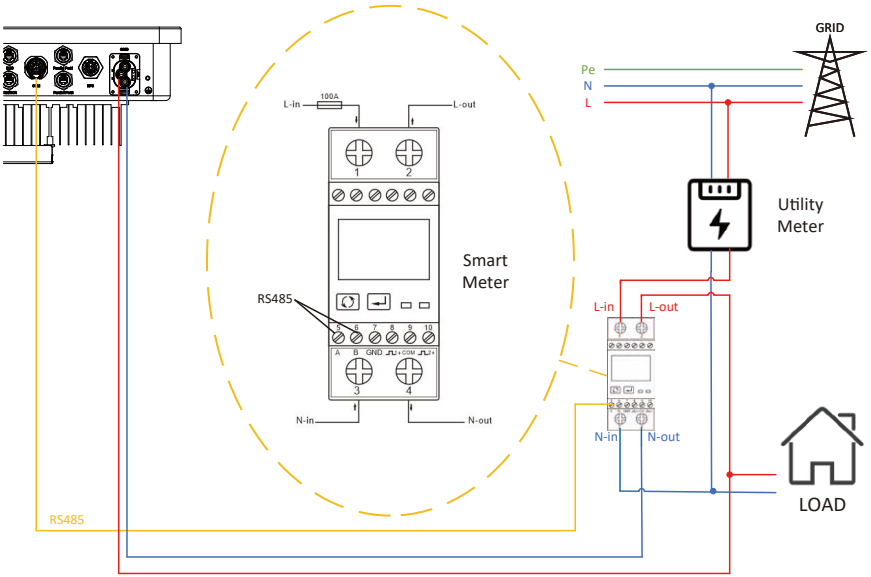
For some motor loads, the starting current may be far more than 5 times the current, which is also not supported.

4.5.7 Meter Connection

The smart meter included in the accessory box is essential for system installation. It provides the inverter's operating status via RS485 communication.

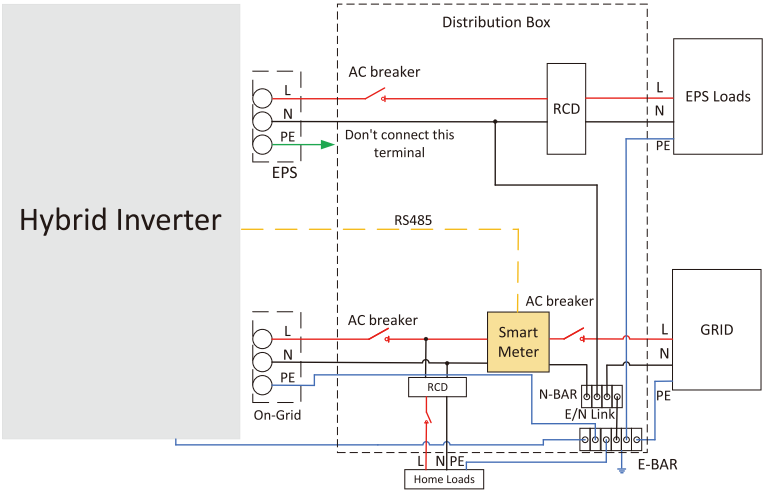
⚠	Before connecting the smart meter, ensure that the AC cable is totally isolated from the AC power source.

Electric meter connection diagram (Meter Model: SDM230-Modbus)



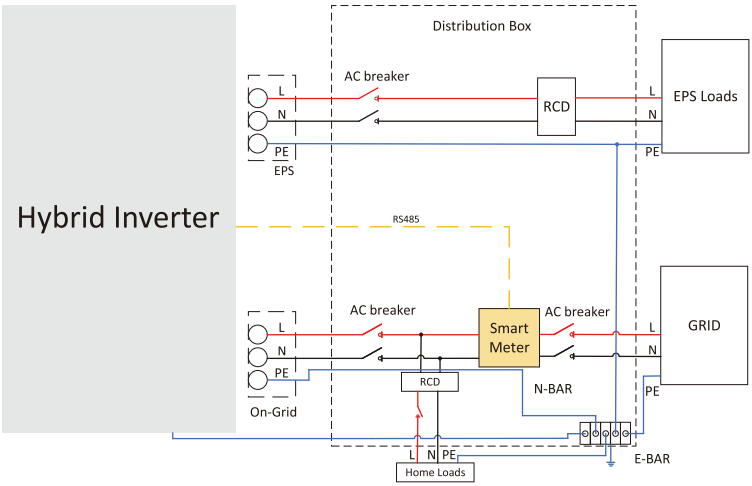
4.5.8 System Connection Diagrams

For countries such as Australia, New Zealand, South Africa, etc, please follow local wiring regulations. According to Australian safety requirements, the N cables of the GRID side and EPS side must be connected together. Otherwise, the EPS function will not work.



For countries such as China, Germany, the Czech Republic, Italy, etc, please follow local wiring regulations.

This diagram is an example for an application in which neutral is separated from the PE in the distribution box.



4.5.9 Inverter Start-Up

Please refer to the following steps to start up the inverter.

1. Ensure the inverter fixed well.
2. Make sure all the DC wiring and AC wiring are completed.
3. Make sure the meter is connected well.
4. Make sure the battery is connected well.
5. Make sure the external EPS contactor and data logger are connected well.
6. Make sure the BMS buttons and battery switches are off.
7. Turn on the PV/DC switch , AC breaker, EPS breaker and battery breaker.
8. Enter the settings page, default password is '8888' , select Run / Stop and set the inverter to start.

Note:

1. When starting the inverter for the first time, the country code will be set by default to the local settings. Please check if the country code is correct.

2. Set the time on the inverter by using the APP.

4.5.10 Inverter Switch Off

Please refer to the following steps to switch off the inverter.

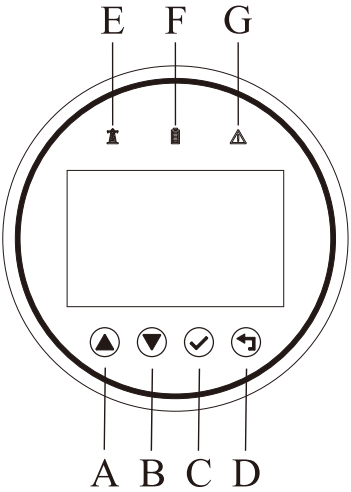
1.Enter the settings page, select Run / Stop and set it to stop.

2.Turn off the PV/DC switch, AC breaker, EPS breaker and battery breaker.

3.Wait 5 min before you open the upper lid (if in need of repair).

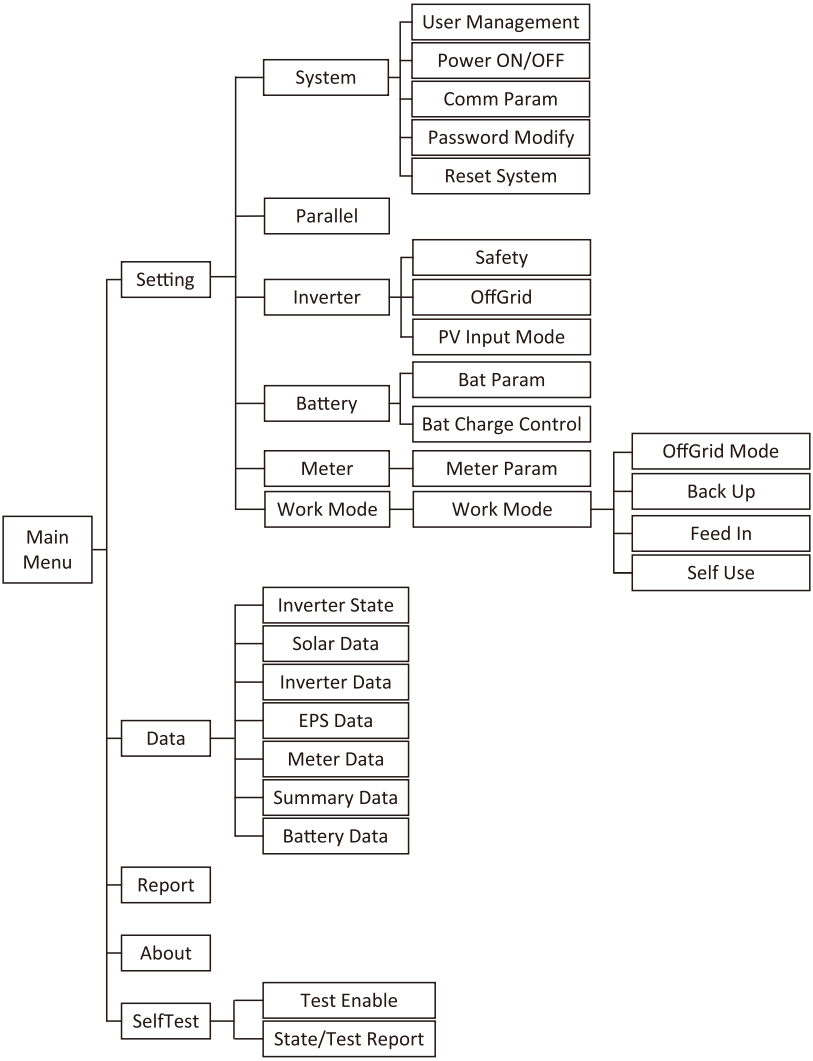
5. LCD Operation

5.1 Control Panel



Name	Number	Description
Button	A	Up
	B	Down
	C	Confirm
	D	Return
Indicator	E	Green light steady on: Normal operation Green light flashing: The smart meter is connecting to the inverter. Green light is not flashing: Smart meter not configured
	F	Green light steady on: The inverter is normally connected to the battery.
		Green light flashing: The inverter is connecting to the battery.
	G	Red light on: Device fault Yellow light on: Device warning

5.2 Menu Structure

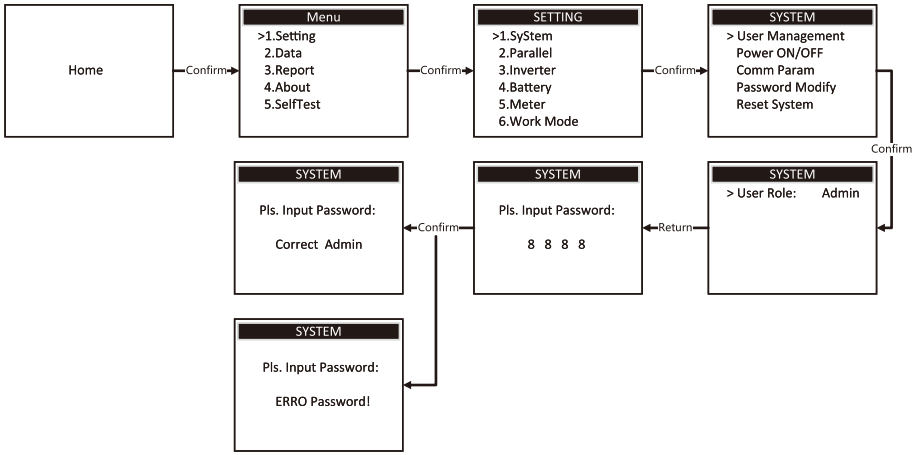


5.2.1 General setting

The following settings require the engineer user to set except for the first and second items.

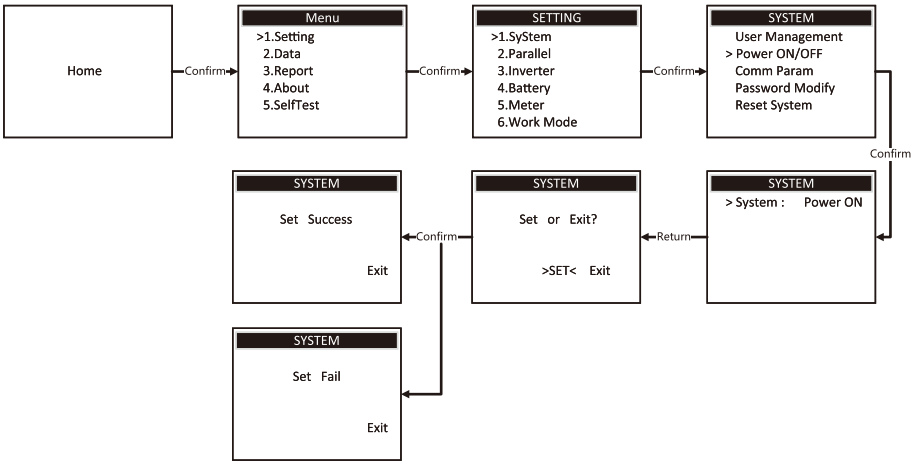
1. Set user role

The setup user can select either an Admin or a Guest account.
Set user role as described below:



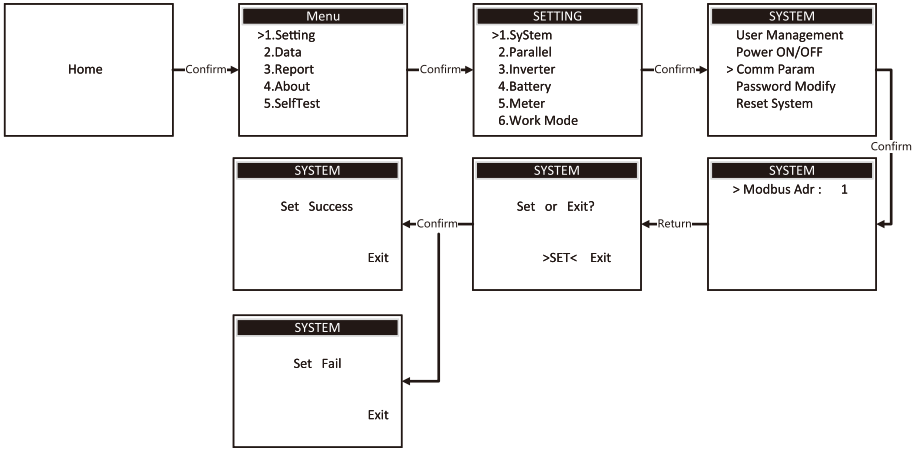
2. Power ON/OFF

Run or stop the inverter by setting "Power ON/OFF".
Set Power ON/OFF as described below:



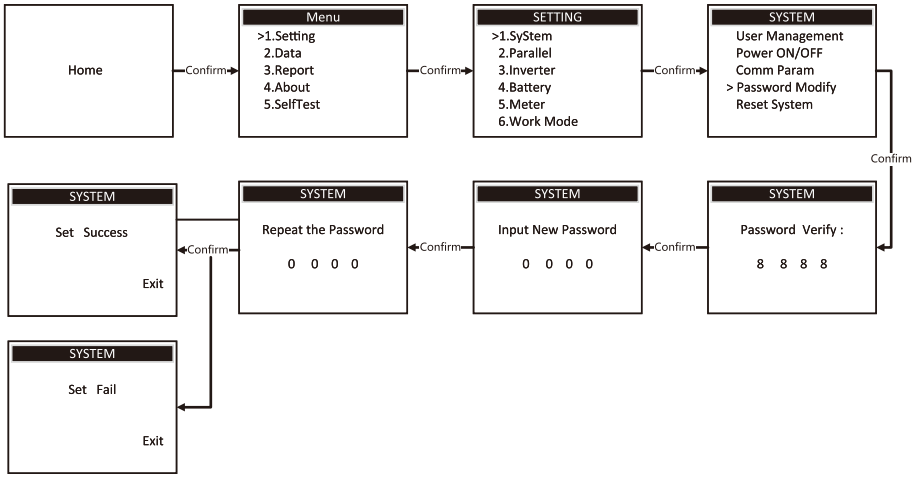
3. Set Modbus address（Admin role）

The inverter default Modbus address is 1. The Setting as described below:



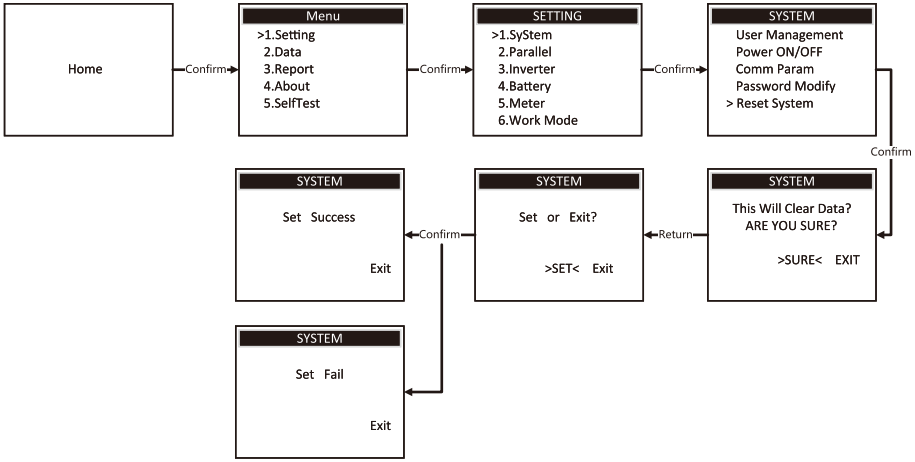
4. Set password（Admin role）

Engineer users can change the password.
The Setting as described below:



5. System reset（Admin role）

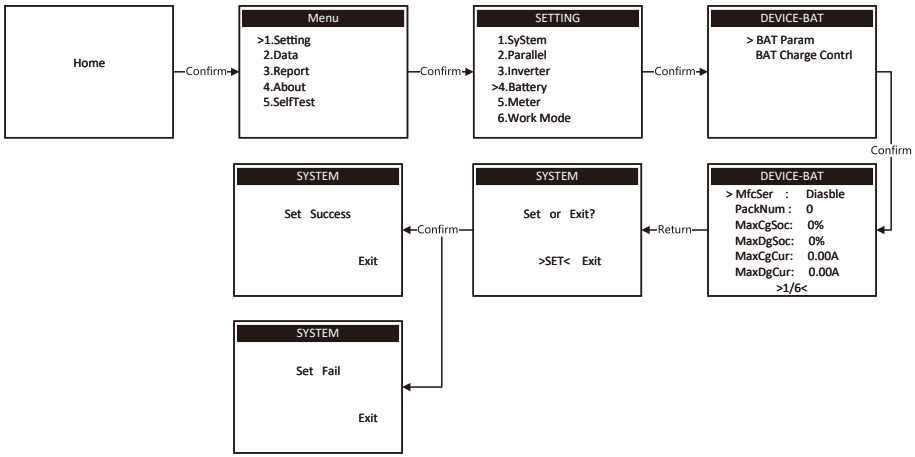
System reset will reset the inverter configuration and data, and set it up according to the steps below:



6. Battery configure（Admin role）

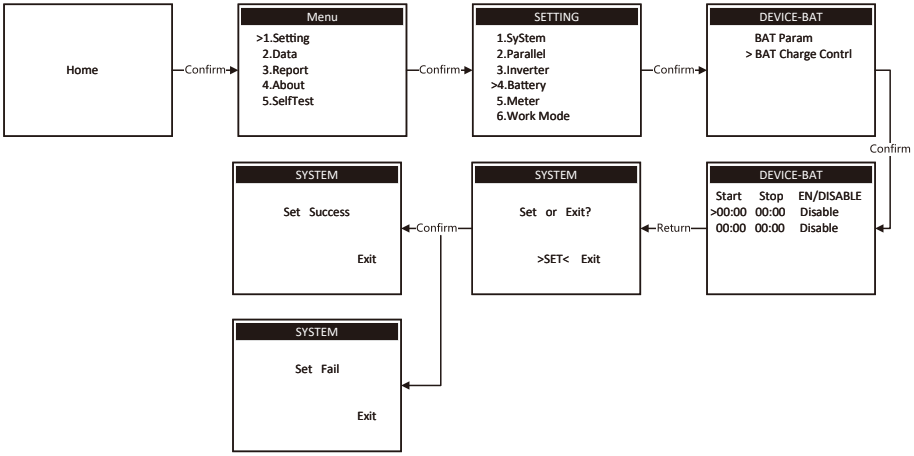
① Battery parameter settings

When the inverter configures the battery, you need to set the battery model and other parameters. The Setting as described below:



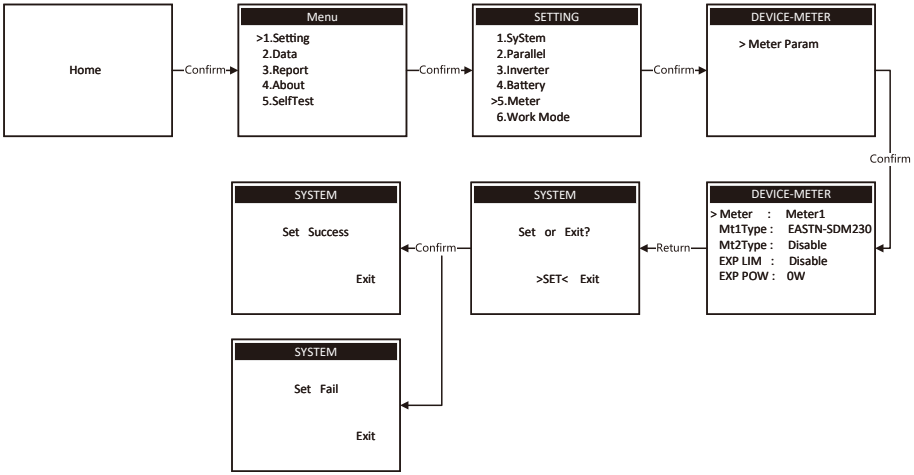
② Battery charging time period setting

To set the battery charging period, set it as follows:



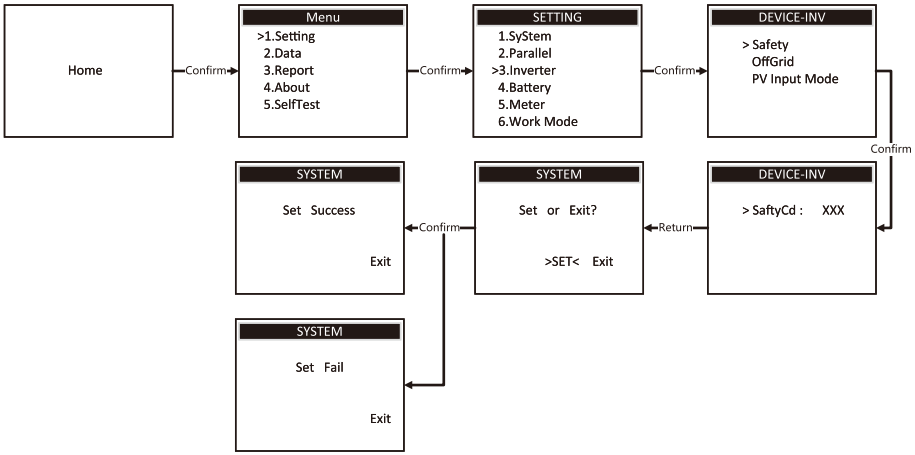
7. Meter configure（Admin role）

When configuring the inverter with a meter or CT, you need to set up configuration information such as the type and installation location. Please follow the steps below to complete the setup.



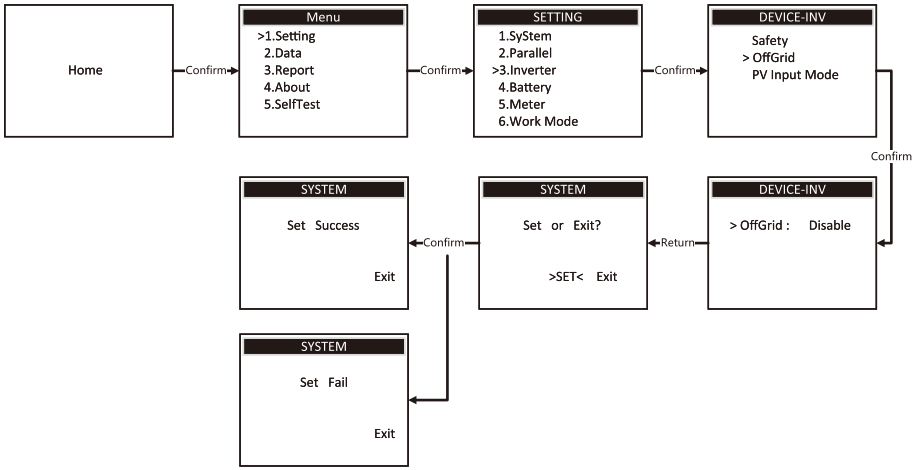
8. Safety configure（Admin role）

Set safety as described below:



9. Off-grid configuration（Admin role）

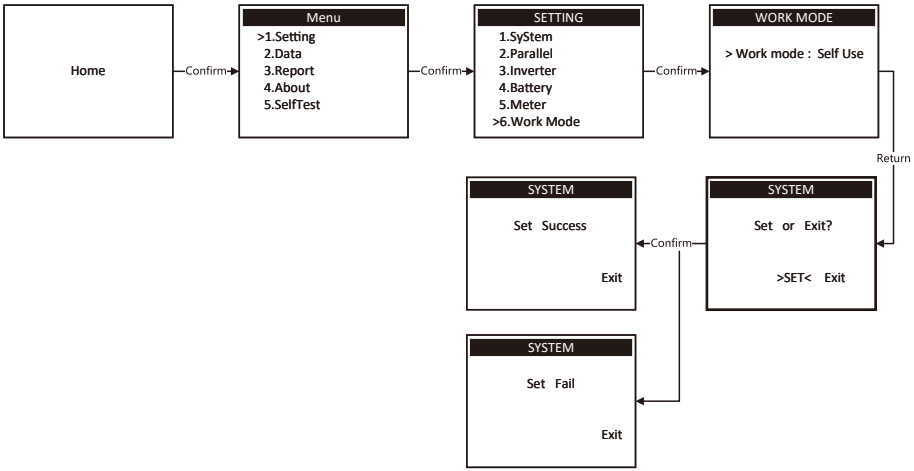
The off-grid configuration is set up as follows:



10. Set work mode（Admin role）

There are five working modes that can be set by the user, Self use, Feed in, Back up, Offgrid, TOU. Users can set the inverter to work in different modes.

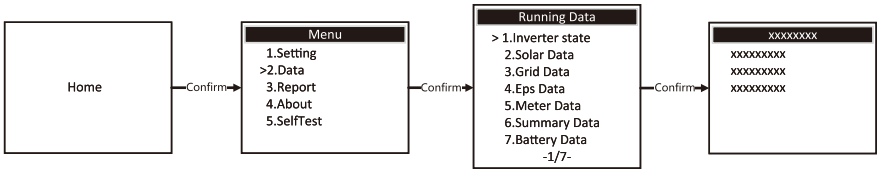
Set work mode as described below:



5.2.2 Inverter information

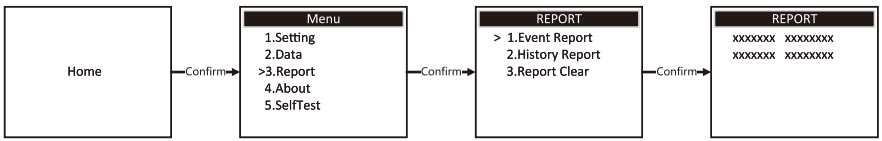
1. Inverter run data

We can check the inverter operation data. Please follow the steps below:

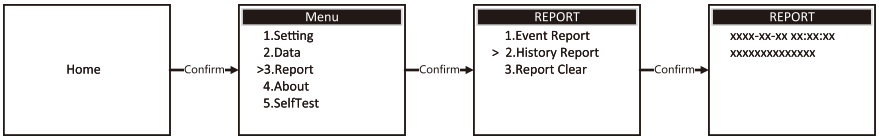


2. Error log

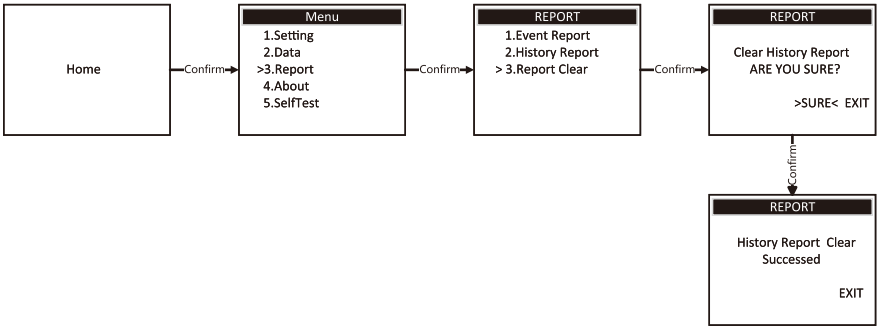
We can check the real-time fault information of the inverter. Please follow the steps below:



We can check the inverter historical fault information. Please follow the steps below:

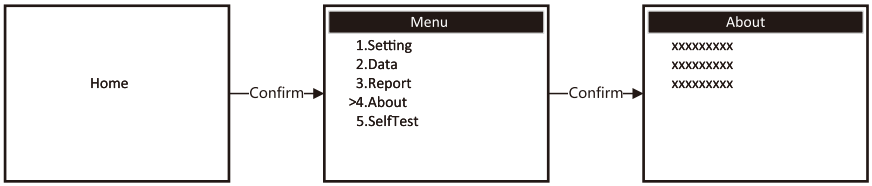


We can clear the inverter's historical fault information (Admin role) by following the steps below:



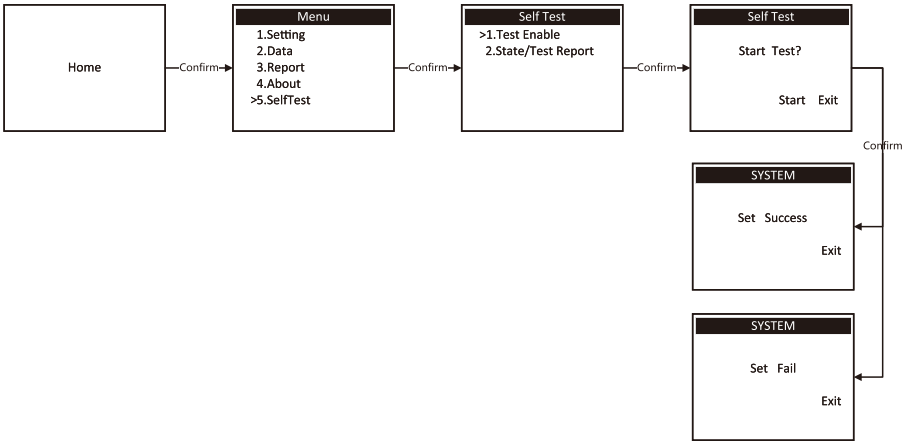
3. About

We can view the inverter device information by following these steps:

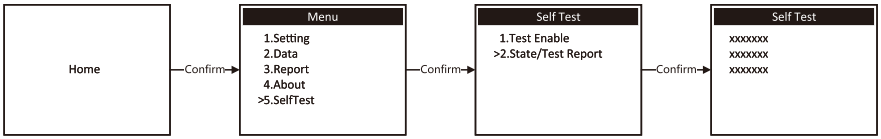


5.2.3 Italy Selftest

1. Selftest enable



2. Selftest state and test report



6. Solavita Cloud

The Solavita Cloud App is a mobile software application that communicates with the energy storage inverter via WiFi, GPRS, or WLAN modules. The app offers the following key functions:

1. View the operational data, software version, and alarm information of the energy storage inverter.
2. Configure grid parameters and communication settings of the energy storage inverter.
3. Perform device maintenance.
4. Upgrade the device's software version.

For more details, refer to the "Solavita Cloud App User Manual".

7. Troubleshooting

When the system is in alarm, please log into the Solavita Cloud App to review. The possible causes and their troubleshooting are detailed in the following table:

Display	Handling Suggestions
INV_OC_HW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BAT_OC_HW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
PV_OC_HW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
EPS OVER LOAD	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BAT_OV_HW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BUS_OV_SW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BUS_OV_HW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BAT_OV_SW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BAT_UV_SW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
GRID_OF_SW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
GRID_UF_SW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.

GROUND FAULT	1.Turn off the inverter and mark the AC Switch off. 2.Check the external PE cable connection and make sure it's correct. 3.Turn on the inverter again. 4.If the alarm continues, please contact us for assistance.
BUS_UV_SW	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
PV1 OV	1.Check the specifications and number of corresponding string PV modules. 2.If the alarm persists, please contact us for assistance.
PV2 OV	1.Check the specifications and number of corresponding string PV modules. 2.If the alarm persists, please contact us for assistance.
GRID_PH_OV	1.Ensure the inverter's safety country setting is correct. 2.Verify that the grid voltage in your area is stable and within the normal range. 3.Check if the AC cable is securely in place. 4.If the alarm continues, please contact us for assistance.
GRID_PH_UV	1.Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
ISLANDING	1.Wait for the grid to restore power. 2.If the alarm continues, please contact us for assistance.
GRID_10MIN_OV	1.The inverter will reconnect to the grid once it stabilizes. 2.If the alarm frequently occurs, please contact us for assistance.
CT FAULT	1.Check whether the sequence of CT1+&CT1- or CT2+&CT2- is correct ,and ensure a correct sequence and connection. 2. If the alarm continues, please contact us for assistance.
RCMU	1.Turn off inverter and turn the DC switch off. 2.Measure the resistance between PV input and PE. If the resistance is less than 30K ohm,Please contack us for assistance. If not, turn on DC Switch and turn on inverter again and check whether the fault is happen. 3. If the alarm continues, please contact us for assistance.
ISO	1.Turn off inverter and turn the DC switch off. 2.Measure the resistance between PV input and PE. If the resistance is less than 30K ohm,Please contack us for assistance. If not, turn on DC Switch and turn on inverter again and check whether the fault is happen. 3. If the alarm continues, please contact us for assistance.

OVER TEMP	1.Check whether the heatsink is block by something. Try to move them away and wait for 10 minutes. 2.After 10 minutes, the internal temperature of inverter will fall down and may not show the"OVER TEMP" 3. If the alarm continues, please contact us for assistance.
INV_RLY_SHORT	1.Set the inverter to run stop operation. 2.Reset the inverter run again and check whether the fault is occurred. 3. If the alarm continues, please contact us for assistance.
INV_RLY_OPEN	1.Set the inverter to run stop operation. 2.Reset the inverter run again and check whether the fault is occurred. 3. If the alarm continues, please contact us for assistance.
GRID_RLY_ SHORT	1.Set the inverter to run stop operation. 2.Reset the inverter run again and check whether the fault is occurred. 3. If the alarm continues, please contact us for assistance.
GRID_RLY_OPEN	1.Set the inverter to run stop operation. 2.Reset the inverter run again and check whether the fault is occurred. 3. If the alarm continues, please contact us for assistance.
MID_RLY_SHORT	1.Set the inverter to run stop operation. 2.Reset the inverter run again and check whether the fault is occurred. 3. If the alarm continues, please contact us for assistance.
MID_RLY_OPEN	1.Set the inverter to run stop operation. 2.Reset the inverter run again and check whether the fault is occurred. 3. If the alarm continues, please contact us for assistance.
ARM-S Hw ERR	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
MTR Comm Lost	1. Check if the Meter communication cable and terminal are functioning properly. 2. Reconnect the Meter communication cable. 3. If the alarm persists, please contact us for assistance.
ARM comm Lost	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
RTC Fault	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
BMS Lost	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.

T. Boost High	1.Check whether the heatsink is block by something. Try to move them away and wait for 10 minutes. 2.After 10 minutes, the internal temperature of inverter will fall down and may not show the" T.Boost High" 3. If the alarm continues, please contact us for assistance.
RCD OCP	1.Turn off inverter and turn the DC switch off. 2.Measure the resistance between PV input and PE. If the resistance is less than 30K ohm, please contack us for assistance. If not, turn on DC Switch and turn on inverter again and check whether the fault is happen. 3. If the alarm continues, please contact us for assistance.
DSP COMM ERR	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
ISO ERR	1.Turn off inverter and turn the DC switch off. 2.Measure the resistance between PV input and PE. If the resistance is less than 30K ohm, Please contack us for assistance. If not, turn on DC Switch and turn on inverter again and check whether the fault is happen. 3. If the alarm continues, please contact us for assistance.
T. Inv High	1.Check whether the heatsink is block by something. Try to move them away and wait for 10 minutes. 2.After 10 minutes, the internal temperature of inverter will fall down and may not show the "T.Inv High" 3. If the alarm continues, please contact us for assistance.
GFCI ERR	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
+12V Fault	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
+15V Fault	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
+5V Fault	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
+3.3V Fault	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.
+3.3vs Fault	1.Internal error of the inverter. Switch off the inverter, wait 5 minutes and then switch the unit on again. 2.If the alarm continues, please contact us for assistance.

Display	Handling Suggestions
BMS Hw ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS InWay Err	1. Check if the corresponding string has reverse polarity. If it does, disconnect the DC switch and adjust the polarity when the string current drops below 0.5 A. 2. If the alarm continue, please contact us for assistance.
BMS Check Err	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.C OV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.C LV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS LV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS OV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS Relay ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS EMRG Stop	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS InCmm ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
T.BMS High	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
T.BMS Low	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS OC	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.

BMS Safety ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
Cell.V IMB	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS ERRO	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.V SNR ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.T SNR ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.IV OV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.C ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS DCG LV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS CG OV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.STP CRERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS BMIC ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS InBus ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS CRT ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS T.V.D ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.

BMS PreCgERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS ISO ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS HtOutCtrl	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS LowIN OV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS LowIN LV	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS.C LV2	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS SR.NM ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS CP.SZ ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS INIT ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS L2&3.CM E	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS InL2Bus E	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS L2 LOST	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS LG.C ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.
BMS C.IC ERR	1.Internal error in the connected battery. Switch off the inverter and the battery, wait 5 minutes and then switch the components on again 2.If the alarm continues, please contact us for assistance.

8. Technical Data

Model	SWH3000H-S1	SWH4000H-S1	SWH5000H-S1	SWH6000H-S1
PV Input				
Recommended Max. PV Input Power [Wp]	4500	6000	7500	9000
Max. Input Voltage [V]	600			
MPPT Voltage Range [V]	80-580			
Rated Voltage [V]	360			
Start-up Voltage [V]	90			
No. of MPPT Trackers	1	2	2	2
No. of PV Strings per MPPT	1	1/1	1/1	1/1
Max. Input Current per MPPT [A]	14	14/14	14/14	14/14
Max. Short Circuit Current per MPPT [A]	18	18/18	18/18	18/18
AC Output				
Rated Output Power [W]	3000	4000	5000	6000
Rated Output Current[A]	13.6	18.2	22.7	27.3
Max. Output Current[A]	15	20	25	30
Max. Apparent Output Power [VA]	3300	4400	5500	6600
Rated Output Voltage [V]	220/230/240			
Rated Grid Frequency [Hz]	50/60			
Power Factor [cos φ]	1(0.8leading~ 0.8lagging)			
THDi (Rated Output Power)	<3%			
AC Input (Grid)				
Max. Apparent Input Power [VA]	6000	8000	10000	12000
Max. Input Current [A]	27.3	36.4	45.5	54.5
Rated Output Voltage [V]	220/230/240			
Rated Grid Frequency [Hz]	50/60			
Battery				
Battery Module Type	Lithium Iron Phosphate (LFP)			
Battery Voltage Range [V]	80-450			
Maximum Charge/Discharge Current [A]	25			
Max. Charge Power[W]	4500	6000	7500	9000
Max. Discharge Power [W]	3000	4000	5000	6000
Battery Communication	CAN/RS485			
AC Output (OFF-Grid)				
Rated Output Power [W]	3000	4000	5000	6000
Rated Output Voltage[V]	220/230/240			
Rated Output Frequency [Hz]	50/60			
Rated Output Current[A]	13.6	18.2	22.7	27.3
THDu(Rated Output Power, R Load)	<3%			
Switch Time [ms]	10			
Peak Apparent Power , Duration[VA, s]	4500,60	6000,60	7500,60	7500,60

Efficiency	
Max. Efficiency	97.8%
Euro Efficiency	97%
Battery Charged/Discharged to AC Max. Efficiency	98.5%@Charge/97.0%@Discharge
Protection	
DC Switch	Integrated
Insulation Resistance Detection	Integrated
Input Reverse Polarity Protection	Integrated
Anti-island Protection	Integrated
Residual Current Monitoring	Integrated
Overtemperature Protection	Integrated
DC Surge Protection	Integrated（Type II）
AC Surge Protection	Integrated（Type II）
General Data	
Dimensions (W*H*D) [mm]	536*444*173
Weight [kg]	18.5
Display	LCD/WEB/APP
Communication	WIFI/RS485/LAN
Operating Temperature Range [℃]	- 25～＋60; if>45°C, Power Reduction Needed
Relative Humidity	0%~100%，Non-condensing
Operation Altitude[m]	0~4000; if ≥2000 ，Power Reduction Needed
Self Consumption (night) [W]	＜8
Topology	Transformerless
Cooling Concept	Natural Convection
Protection level	IP66
Noise	＜30dB

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