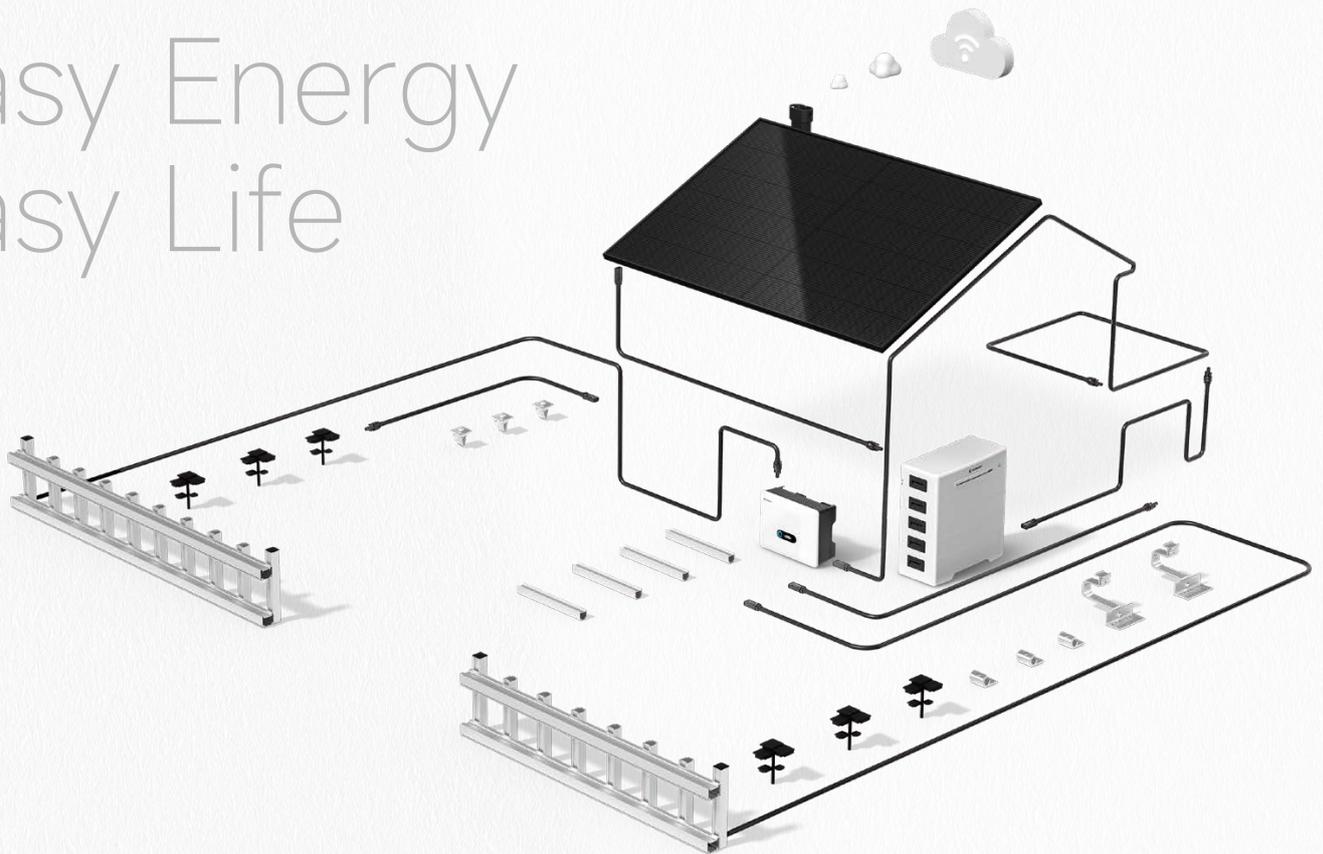


Easy Energy
Easy Life



 **Share-Home**

Smart Solar System User Manual

1

System Introduction



1.1 System schematics and wiring diagram

The system in this manual is composed of PV module, inverter, battery, iBox, mounting structure and cable sets, and can convert the DC power generated by the PV system into 230Vac single-phase AC power via the inverter. The system is connected to the original distribution box of the user. It is a smart power generation system that meets the local grid connection needs and controls the feed to the grid. The iBox in this manual works in an iShare-home PV power generation system. The basic variant of iShare-home residential PV power generation system is composed of PV modules, inverter, iBox, mounting structure and cables, Figures 1.1-1 and 1.1-2 respectively show the schematics and wiring diagram of the basic variant of iShare-home system.

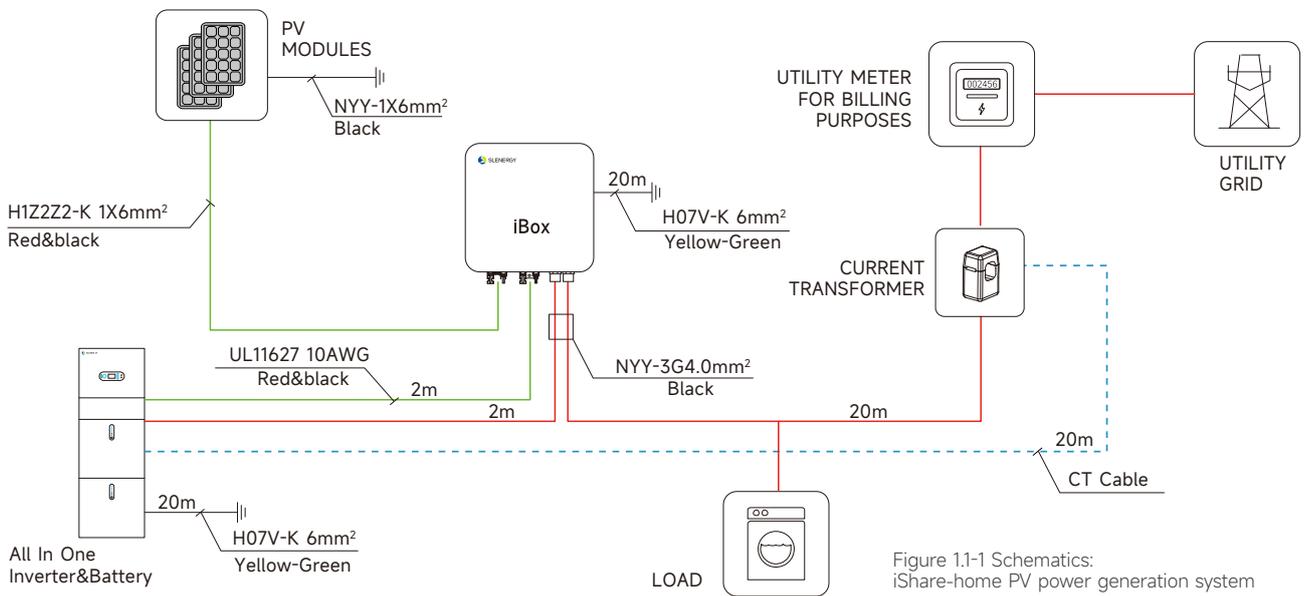


Figure 1.1-1 Schematics: iShare-home PV power generation system

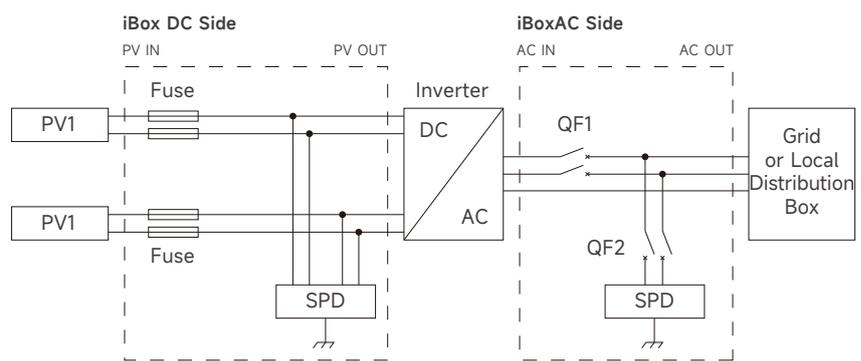


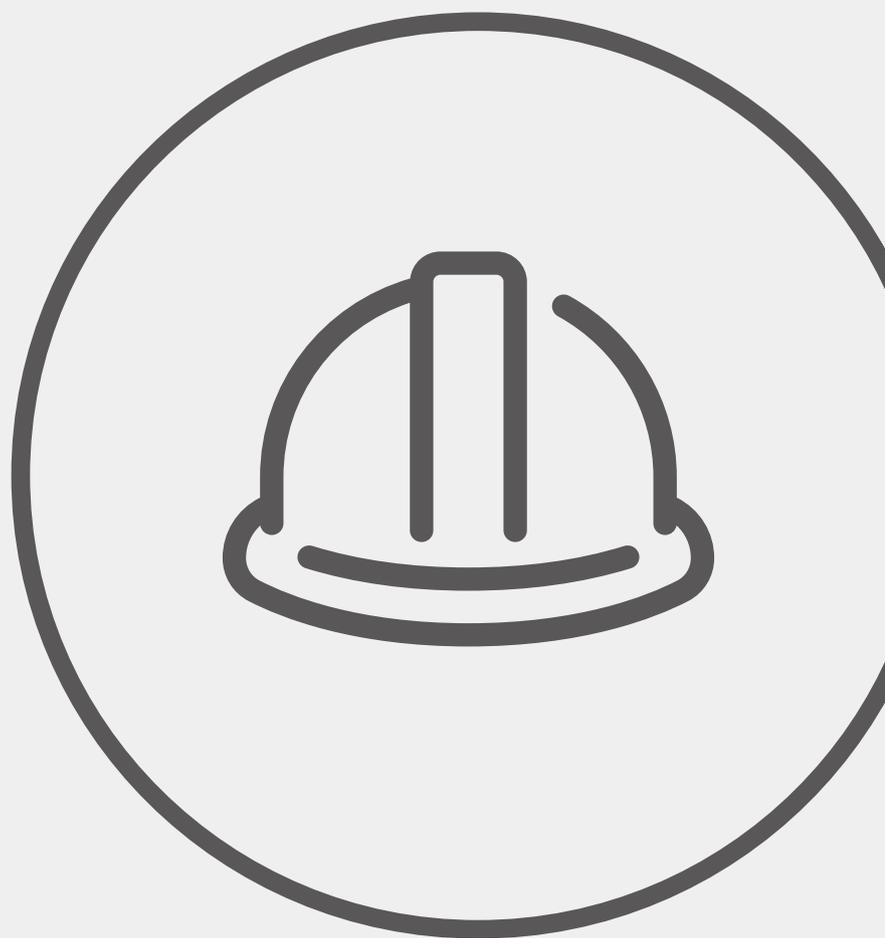
Figure 1.1-2 iBox Topography

Solution	Configuration	
	Inverter	ESS
SL-D5-5	SL-D5KTL-L100	SL-BL-1-5
SL-D5-10	SL-D5KTL-L100	SL-BL-2-10
SL-D5-15	SL-D5KTL-L100	SL-BL-3-15
SL-D5-20	SL-D5KTL-L100	SL-BL-4-20

Table 1.1-3 iShare Home Smart Solar System Configuration

2

Safety Introduction



2.1 Safety Introduction

2.1.1 Manual Keeping

This manual contains important information about operating the system. Before operating, please read it very carefully. The system should be operated in strict accordance with the instructions in the manual, otherwise it can cause damages or loss to equipment, personnel and property. This manual should be kept carefully for maintenance and repairation.

2.1.2 Setting of Warning Sign for Safety

During instruction, maintenance and repair, follow the instructions below to prevent non-specialist personnel from causing misuse or accident:

- 1 Obvious signs should be placed at front switch and rear-level switch to prevent accidents caused by false switching.
- 2 Warning signs or tapes should be set near operating areas.
- 3 The system must be reinstalled after maintenance or operation.

2.1.3 Measuring Equipment

To ensure the electrical parameters to match requirements, related measuring equipment is required when the system is being connected or tested. Ensure that the connection and use matched specification to prevent electric arcs or shocks.

2.1.4 Moisture Protection

It is very likely that moisture may cause damages to the system. Repair or maintaining activities in wet weather should be avoided or limited.

2.2 Equipment List

System configuration is as the following

System Configuration	5kW					
PV Module	2.43kW	3.24kW	4.05kW	4.86kW	5.67kW	6.48kW
No. PV modules (pcs)	6	8	10	12	14	16
Inverter	5kW*1set	5kW*1set	5kW*1set	5kW*1set	5kW*1set	5kW*1set
Battery	5kWh~10kWh	5kWh~15kWh	5kWh~20kWh	5kWh~20kWh	5kWh~20kWh	5kWh~20kWh
iBox	1 set	1 set	1 set	1 set	1 set	1 set
Cable set	DC Cable: H1Z2Z2-K 1×6mm ² ; UL 11627 10AWG					
	AC Cable: NYY- 3G 4.0mm ²					
	Grounding Cable: NYY-1×6mm ² ; H07V-K 6mm ²					
	Connectors					
Mounting Structure set	Rail, hook kit/Hanger Bolt, rail connector, mid-clamp, end-clamp, earthing lug and other accessories					
Cloud & APP	1 set	1 set	1 set	1 set		

2.3 Technical data of PV module —

2.3.1 Modules identification

3 labels on the modules contain information below:

- 1 Nameplate: product type, rated power, rated current, rated voltage, open circuit voltage, short circuit current under testing conditions, certification indicator, maximum system voltage, etc.
- 2 Current classification label: Rated working current (H indicates High, M indicates Medium, L indicates Low).
- 3 Serial Number label: A unique serial number which is laminated inside the module permanently which can be found in the front of the module. There is another same serial number beside the module nameplate.

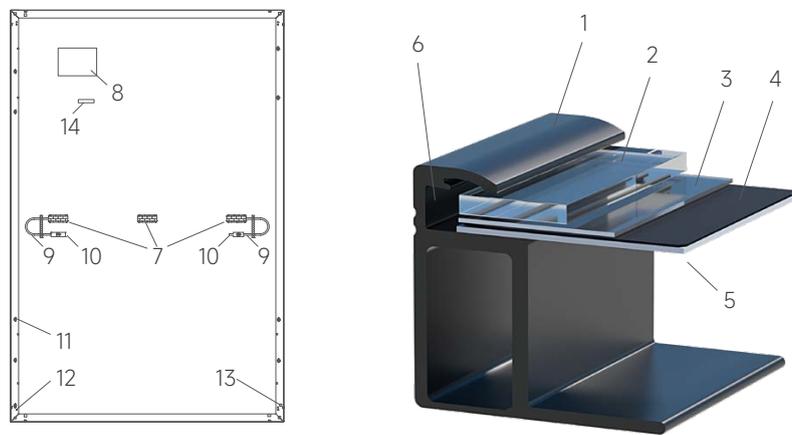


Figure 1.3.1-1 Regular modules Mechanical drawing

1 Frame	2 Glass	3 EVA	4 Solar Cell
5 Backsheet	6 Silica Gel	7 Junction Box	8 Name Plate
9 Cable	10 Connector	11 Mounting Hole	12 Grounding Hole
13 Drain Hole	14 Bar Code		

2.4 Technical data of All-in-one energy storage system

2.4.1 All-in-one energy storage system

Battery Model		SL-BL-1-5	
Battery		Operation	
Battery type	LFP (LiFePO ₄)	Max. Charge/Discharge Current	50A/80A
Weight (kg)	54	Rated DC power	4096W
Dimension (W×H×D) (mm)	540*490*240	Max. Charge/Discharge Power	2825W/4096W
IP Protection	IP65	Operating Temperature Range	-10 to 50°C charging -10 to 50°C discharging
Warranty	5 Year Product Warranty, 10 Year Performance Warranty	Humidity	0~95% (No condensation)
Electrical		BMS	
Usable Capacity (kWh)	4.6	Capacity	100-400Ah
Depth of Discharge (DoD)	0.9	Power Consumption	<2W
Nominal Voltage (V)	51.2	Communication	CAN & RS485
DC Circuit Breaker (A)	125	Monitoring Parameters	System voltage, current, cell voltage, cell temperature, PCBA temperature measurement
Operating Voltage Range (V)	44.8-56.5V		
Internal Resistance (mΩ)	<20mΩ	Certificate	
Cycle Life	10000 cycle	Safety (Cell)	Pack: IEC/EN 62619;UN38.3 Cell: IEC/EN 62619;UN38.3;UL1973

Hybrid Inverter Model	SL-D5KTL-L100
PV String Input	
Max. DC Voltage (V)	580
Nominal Voltage (V)	400V
MPPT Voltage Range (V)	80-560
Start Voltage (V)	150
Number of MPPT Tracker	2
Strings Per MPPT Tracker	1
Max. Input Current Per MPPT (A)	15
Max. Short-circuit Current Per MPPT (A)	18
AC Output (Grid)	
Nominal AC Output Power (W)	5000
Max. AC Apparent Power (VA)	7360 (from grid)
Max. AC Output Power (W)	50001
Nominal AC Voltage (VAC)	230
AC Grid Frequency Range (Hz)	50 / 60±5
Max. Output Current (A)	22A2
Max. Input Current (A)	32
Power Factor (cosΦ)	0.8leading-0.8lagging
THDi	<3%
Battery Input	
Battery Type	LFP (LiFePO ₄)
Nominal Battery Voltage (V)	48
Charging Voltage Range (V)	40-60
Max. Charging Current (A)	100
Max. Discharging Current (A)	100
Battery Capacity (Ah)	100-400
Charging Strategy for Li-ion Battery	Depend on the BMS
AC Output (Backup)	
Max. Output Apparent Power (VA)	5000
Peak Output Apparent Power (VA)	6900VA 10sec
Max. Output Current (A)	20
Nominal Output Voltage (V)	230
Nominal Output Frequency (Hz)	50/60
Output THDv (@Linear Load)	<3% (Linear Load)
Efficiency	
Euro. PV Efficiency	97.00%
Max. PV Efficiency	97.60%

Hybrid Inverter Model	SL-D5KTL-L100
Protection	
DC Switch	Bipolar DC Switch (125A/Pole)
Anti-islanding Protection	Yes
Output Over Current	Yes
DC Reverse Polarity Protection	Yes
String Fault Detection	Yes
AC/DC Surge Protection	DC Type II; AC Type III
Insulation Detection	Yes
AC Short Circuit Protection	Yes
General Specifications	
Dimensions W×H×D (mm)	540*590*240
Weight (kg)	32
Operating Temperature Range (°C)	-25°C~+60°C
Noise (dB)	<25
Cooling Type	Natural Convection
Max. Operation Altitude (m)	2000
Operation Humidity	0~95% (No Condensation)
IP Class	IP65
Topology	Battery Isolation
Communication	RS485/CAN2.0/WIFI/4G
Display	LCD/APP
	IEC/EN61000-6-1; IEC/EN61000-6-2; EN61000-6-3; IEC/EN61000-6-4; IEC/EN61000-3-11; EN61000-3-12; IEC60529; IEC60068; IEC61683; IEC62116; IEC61727; EN50549-1; AS 4777.2; NRS 097; VDE-AR-N-4105; CEI0-21;G98; G99;C10/C11; NTS 631 TYPE A
Certification & Standard	

*1. Nominal AC output power is 4999W for Australia and 4600W for Germany and South Africa.

*2. Maximum output current is 21.7A for Australia and 20A for Germany and South Africa.

2.5 Technical data of mounting system

Technical Parameter	
Product Name	Solar Mounting System
Building Type	Pitched Roof
Tile Type	Concrete Tile, Clay Tile, Slate Tile
Tilt Angle	15-60°
Wind Load	0.52KN/m ²
Snow Load	0.6KN/m ²
Applicable Solar Module	Framed
Panel Layout	Portrait or Landscape
Design Standard	EN 1991-1-1: 2002 UNE EN1991-1-3-2018 UNE EN 1991-1-4-2018
Main Material	AL6005-T6 (Anodized)
Fastener	SUS304 & Zinc-Nickel Alloy Electroplated Steel
Small Components	AL6005-T6 (Anodized)
Color	Silver and black
Certificate	TUV

	Item No.	Description	Material
	51211786A	Rail H40	AL6005-T6
	31220174A	Rail Splice	AL6005-T6
	31101261A	Universal clamp kit	AL6005-T6
	31101262A	Tile hook	AL6005-T6
	31101262A	Hanger Bolt	AL6005-T6
	51230026R	End cap	Silica Gel
	55110091	Cable clip	SUS304
	31510043A	Grounding Lug	AL6005-T6
	51500011F	Earthing clip	SUS304

2.7.2 DC Cable

Type	1×6mm ² DC 1500V
Conductor	Stranded tinned copper (IEC 60228 Class 5) 84/0.285mm (mix0.277mm max0.293mm)
Stranded OD	3.01mm
Inner Insulation	Halogen free crosslinked polyolefin Color: black
Outer Insulation	Halogen free crosslinked polyolefin Color: black
Inner Diameter	4.6±0.15mm
Outer Diameter	6.3±0.15mm
Maximum resistance of conductor at 20°C	≤3.39Ω/km
Insulation resistance at 20°C	≥610 MΩ·Km
Insulation resistance at 90°C	≥0.61 MΩ·Km
Surface resistance of sheath	≥10 ⁹ Ω
DC Voltage test of insulation	900V, 240h(85°C, 3%NaCl) No break
Tensile strength of insulation	≥10.3Mpa
Rating voltage	IEC/EN: DC1500V AC 1000V
Working temperature	-40~90°C
Max. conductor temperature	120°C
Short circuit temperature	250°C 5S
Bending radius	6×D
Current rating	
Free in air	70A
On surface without opposite contact	67A
On surface with opposite contact	57A
Rating voltage	IEC/EN: DC1500V AC 1000V
Working temperature	-40~90°C
Max. conductor temperature	120°C
Short circuit temperature	250°C 5S
Bending radius	6×D

	CABLE TYPE	UL 11627 10AWG	
CONDUCTOR	Area	1×10AW	
	Material	TXR tinned copper wire	
	Size	105/0.254±0.008mm	
	O.D	3.00 mm	
	20°C max conductor resistance	3.546 Ω/k	
INSULATION	Material	PVC	Insulation: BK
	Normal thickness	0.76 mm	
	O.D.	4.80±0.20m	
1.Rated voltage: 2000V		1.Tensile Strength: ≥10.3 Mpa	
2.Rated temperature: -15°C~105°C		2.Elongation: ≥100%	
3.Voltage withstand test: 5.0kV		3.Flame test: VW-1	
4.Reference Standards: UL758, UL1581			
5.Maximum conductor Capacity: 30A			

3

Transportation and storage



3.1 Storage and transportation of PV modules

3.1.1 Transportation and handling

PV module is made of glasswork and fragile silicon wafer, need to be quite careful during transportation and handling;

- 1 Do not stack module at the project site.
- 2 If the module needs to be covered with rain cloth during long-term turnover to prevent the module from moisture, and do not remove the packaging.
- 3 The packed finished products can be transported by land, sea and air. During the transportation, it is necessary to ensure that the packaging will not roll over.
- 4 Turnover: normal truck transportation can be carried out after stacking up to two layers.
- 5 Do not use the backboard support assembly or the single-back assembly when transporting or installing module. Do not use the rope back assembly.
- 6 It is forbidden to turn around the tricycle. When the project is turned over, only one layer of transportation is allowed.
- 7 Please use a forklift to unload the module from the truck. The forklift can support up to two modules at a time and place the module on the horizontal ground.

3.1.2 Storage

Module should be stored in a dry and ventilated environment to avoid direct sunlight and moisture. If the modules are stored in an uncontrolled environment, the storage time should not exceed three months and additional measures are required to prevent the connectors from getting wet or the module being exposed to sunlight. For example, use a connector cover. Under no circumstances should you stand, climb, walk or jump on module. Partial heavy loads can create microcracks on the battery, which in turn can degrade module reliability.

- 1 Do not support the backboard support assembly when handling or installing module.
- 2 Do not drop or stack items (such as installation tools) on the module.
- 3 It is forbidden to contact the module with sharp objects. In particular, it is necessary to prevent the back plate of the module from being scratched by sharp objects. The scratches directly affect the safety of the module.
- 4 Do not place the module in an environment where there is no reliable support or is not fixed.
- 5 It is forbidden to change the wiring method of the bypass diode.
- 6 Please protect the package from damage. Open the package according to the recommended unpacking procedure. Care must be taken to open the packaging, transportation and storage process.

3.2 Storage and transportation of All-in-one energy storage system

3.2.1 Transporting

- 1 Do not install the system in any environment of temperature below -10°C or over 50°C and in which humidity is over 95%.
- 2 Do not touch the system with wet hands.
- 3 Do not put any heavy objects on top of the system.
- 4 Do not damage the system with sharp objects.
- 5 Do not install or operate the system in potentially explosive atmospheres or areas of high humidity.
- 6 Do not mount the inverter and the battery pack in areas containing highly flammable materials or gases.
- 7 If moisture has penetrated the system (e.g. due to a damaged enclosure), do not install or operate the system.
- 8 Do not move the system when it is already connected with battery modules. Secure the system to prevent tipping with restraining straps in your vehicle.
- 9 The transportation of SL-D5 must be made by the manufacturer or instructed personnel. These instructions shall be recorded and repeated.
- 10 A certified ABC fire extinguisher with minimum capacity of 2kg must be carried along when transporting.
- 11 It is totally prohibited to smoke in the vehicle as well as close to the vehicle when loading and unloading.
- 12 For the exchange of a battery module, please request for new hazardous goods packaging if needed, pack it and let it be picked up by the suppliers.

3.2.2 Storage environment requirements:

- **Ambient temperature:** -10°C~45°C; recommended storage temperature: 20°C~30°C;
- **Relative humidity:** 0%RH~95%RH (No condensation) ;
- In a dry, ventilated and clean place;
- No contact with corrosive organic solvents, gases and other substances;
- No direct sunlight;
- Less than 2 meters from any heat source.

3.2.3 Storage expiration

In principle, it is not recommended to store the battery for a long time. Be sure to use it in time. The stored batteries should be disposed according to the following requirements.

Table 3.2.3-1 Stored lithium battery recharging interval

Required Storage Temperature	Actual Storage Temperature	Recharge Interval
-10°C~+45°C	-10°C≤T≤30°C	12 months
	30°C<T≤45°C	8 months

- 1 If a battery is deformed, broken or leaking, discard it immediately regardless of its storage time.
- 2 The allowable maximum stored battery recharging period is 3 years and the allowable maximum stored battery recharging times is 3. For example, if recharging is performed once every 8 months, the allowable maximum recharging times is 3 times; if recharging is performed once every 12 months, the allowable maximum recharging times is 3 times; if the allowable maximum stored battery recharging period or times is exceeded, it is recommended to discard the battery.
- 3 A lithium battery will have its capacity decreasing after being stored for a long time, and typically will have its capacity irreversibly decreasing by 3%~10% after being stored at the recommended storage temperature for 12 months. If the customer conducts the discharge test and acceptance according to the specification, there is a risk that the battery with a capacity less than 100% after being stored will fail the test.

3.2.4 Inspection before battery recharging

Before recharging a battery, check its appearance: Deformation/Shell damage/Leakage

3.2.5 Recharge Operation Steps

Step 1 Connect power cables to the battery charger correctly. The maximum number of battery PACK connected parallel is 5.

Step 2 Turn on the battery PACK DC breaker to ON; Press the battery “start key” for 3 second to start the battery PACK. Check the LED on the battery PACK is on.

Step 3 Turn on the battery charger.

Step 4 Set charging parameter on the battery charger.

Case #1, one battery PACK is charged. Set the charge limited voltage 56.5V; Set the charge limited current 50A;

Case #2, Two ~ Five battery PACKs are charged. Set the charge limited voltage 56.5V; Set the charge limited current 100A;

Step 5 after the battery is charged, switch off the battery charger and then the battery DC breaker. Disconnect the DC cables and then press the battery “start key” for 3 second to switch off the battery PACK.

3.3 Transportation and storage of iBox

If the iBox does not need to be installed for the time being, the following should be noted when storing.

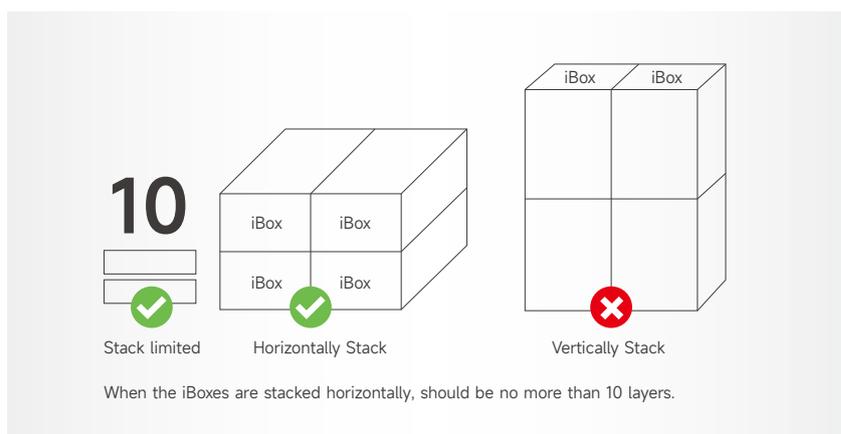
3.3.1 Storage environment

The iBox shall be stored in a cool, dry, water-free steam-free or corrosive gas-free, dust-free environment with ambient temperature not exceeding -25°C~60°C.

Design protection grade of iBox is IP54, but before installing wiring, the inlet and outlet holes are not locked and may be in open state. At this point, if exposed to rain or water vapor, ingress of water vapor or corrosive gas into the iBox may occur, and then affect the electrical performance of the iBox and safe use.

3.3.2 Stacking Restrictions

The iBox should be stacked horizontally, vertical stacking is prohibited.

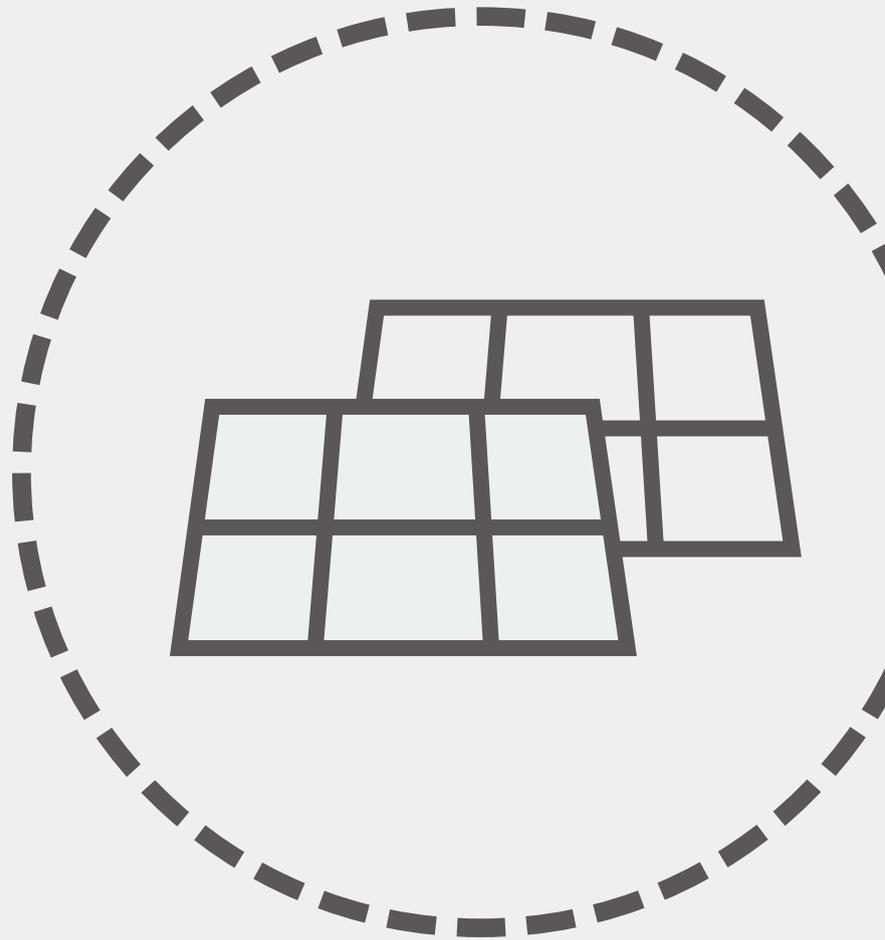


3.3.3 Using after long-term storage

If the iBox is stored for more than one year, the user should have it checked and tested by a professional person before use, or contact the manufacturer.

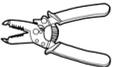
4

Equipment installation



4.1 Checking Before Installation

4.1.1 Installation tools

Type	Tools			
Installation Tools				
	Hammer drill: Drill bit: $\Phi 10$ mm	Socket wrench set	grinding machine	Multimeter DC voltage measurement range ≥ 1100 V DC
				
	Torque screwdriver Phillips head: M5	Removal wrench Model: H4TW0001; manufacturer: Amphenol	Crimping tool Model: H4TC0003/H4TC0002 manufacturer: Amphenol	Wire stripper
				
	Diagonal pliers	Utility knife	Cable cutter	OT terminal crimping tool
				
	Hammer	Measuring tape	Bubble or digital level	Vacuum cleaner
				
	Heat shrink tubing	Heat gun	Cable tie	Marker
PPE				
	Safety gloves	Safety goggles	Anti-dust respirator	Safety shoes

4.1.3 Checking Before iBox Installation

The following cautions should be noticed before installing the AC Box.

- 

Electric shock! Installation and operation by on-professional personnel is prohibited. Make sure the power is off during installation and maintenance/operation.
- 

Do not operate AC IN or AC OUT plug when load is on.
- 

If the AC IN or AC OUT plug needs to be disconnected, make sure both are disconnected, do not leave only one of the plugs connected to the box. After disconnecting both the plugs, wait for no less than 2 minutes to make sure no electricity is left in the box.
- 

Install the iBox and All-in-one energy storage system in the same room of the original distribution box of the user, and the distance should be less than 5m between the iBox and the original distribution box, the distance between iBox and All-in-one energy storage system should be less than 2m.

Packing List of iBox package

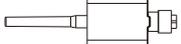
No.	Item	Specification	Qt'y	Unit	Remarks
1	iBox	SL-BH5KL	1	Pcs	
2	Installation Accessories	Mounting plate-A 1pcs Mounting plate-B 1pcs Mounting plate-C 1pcs Screws M6×10 5pcs Screws ST6.3×60 T30 4pcs Expansion tubeφ6×60 T30 4pcs	1	Set	
3	Inspection report	\	1	Pcs	
4	Feedback Form	\	1	Pcs	
5	Installation Dimensions	\	1	Pcs	
6	Quality Certificate	\	1	Pcs	
7	PV Connector Accessories	PV Connector Positive Electrode Housing 4pcs PV Connector Positive Electrode Terminal 4pcs	1	Set	
8	PV Connector Accessories	PV Connector Negative Electrode Housing 4pcs PV Connector Negative Electrode Terminal 4pcs	1	Set	

4.1.5 Checking before All-in-one energy storage system Installation

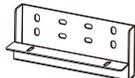
Check the following parts list to ensure it is complete.

Delivers a total system separately on site to client, this consists of:

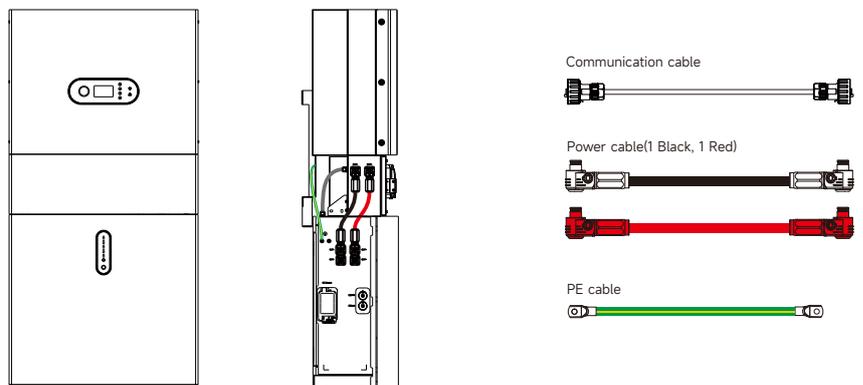
Inverter

				
4×M5*12	2×ST6.3*50	2×D10*50	1×CT Connector	1×CT and com cable
				
2×MC4	1×Collector	1×Mounting Panel	1×User Manual	

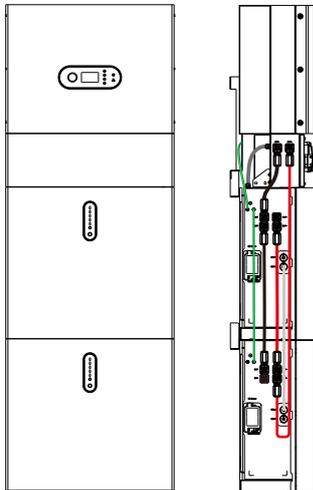
PACK5.1

			
4×ST6.3*50	4×D10*50	2×M5*12	4×M6 Gasket
			
1×Mounting Panel			

Accessory - Cable (PACK5.1)



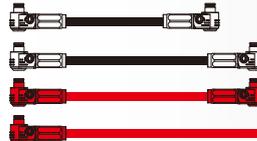
Accessory - Cable (PACK10.2)



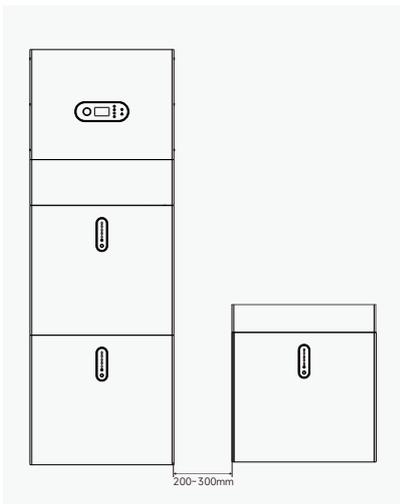
Communication cable



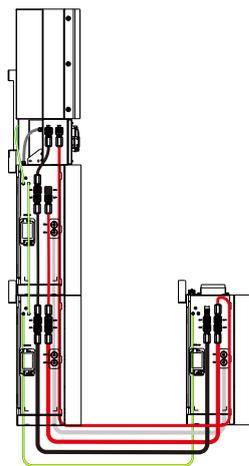
Power cable



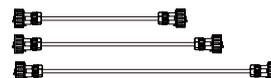
PE cable



Accessory - Cable (PACK15.3)



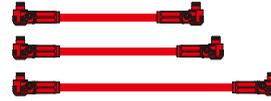
Communication cable



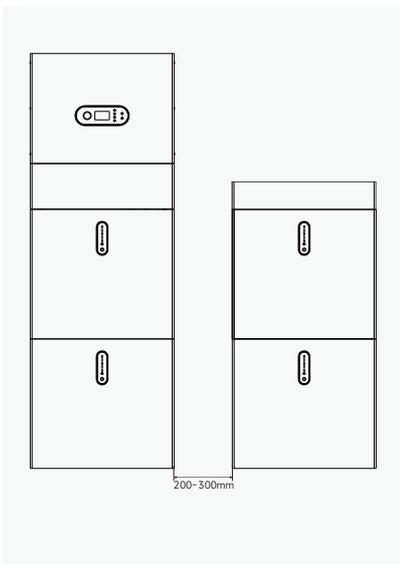
Power cable(Black)



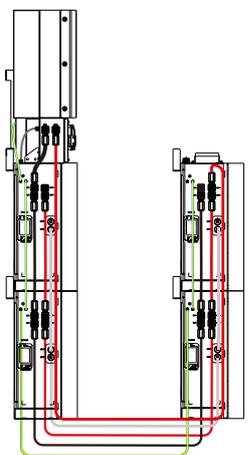
Power cable(Red)



PE cable



Accessory - Cable (PACK20.4)



Communication cable(1*PCS)



Communication cable(2*PCS)



Communication cable(1*PCS)



Power cable(1*Black)



Power cable(2*Black)



Power cable(1*Black)



Power cable(2*Red)



Power cable(1*Red)



Power cable(1*Red)



PE cable(2*PCS)



PE cable(1*PCS)



PE cable(1*PCS)

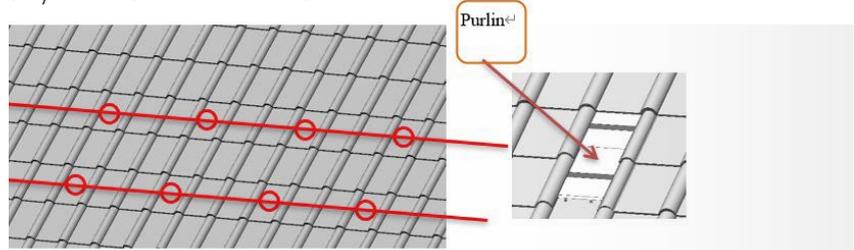


4.3.2 Installation of Tile Hook/Hanger Bolt

Self-tapping screws of tile hook or hanger bolt need to be fixed to the roof purlins. Please mark the positions of tile hook/hanger bolt according to shop drawing and make sure all tile hooks/hanger bolts are installed on the same horizontal line. Then install the tile hooks/hanger bolts accordingly and fasten them to the roof purlins by self-tapping screws.

Shown as bellow:

- Mark the positions of tile hook on the roof and make sure they are on the same horizontal line.

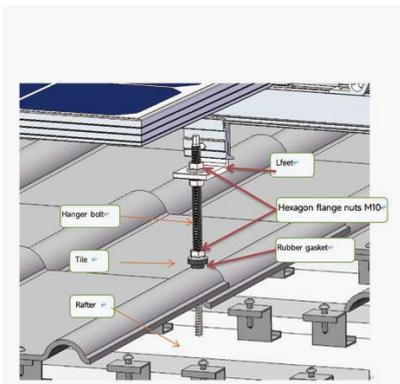


For Spain and Italy country, two types of fixtures of mounting structure are provided. The installation guide is listed here for both. Please refer to the corresponding guide for the type you are using.

4.3.2.1 installation of hanger bolt

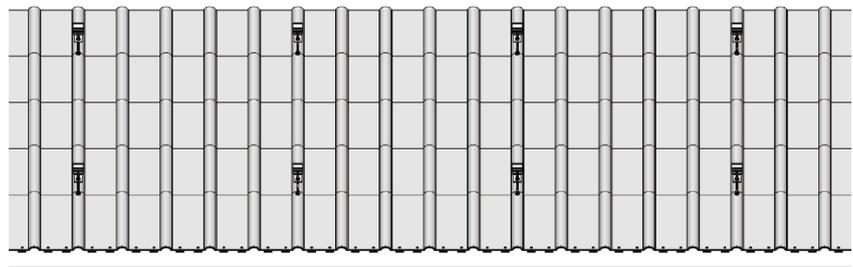
Calculate the hanger bolt span in Slenergy calculation tool based on snow zone, wind zone, altitude and other parameters. The actual installed hanger bolt span has to be not more than the calculated value in Slenergy calculation tool, otherwise the mounting structure might have risk of failure when it comes to extreme condition.

The hanger bolts need to be fixed on the rafter underneath tile, plan the location where hanger bolt kit will be installed on rooftop first, then use alignment line to ensure the subsequence hanger bolt are installed on the same line, make a mark on the wave crest of tile, and then use electrical drill to dill a $\Phi 10$ hole at the marked position. Finally, pass the hanger bolt through the predrilled hole and fix it on the rafter. the installation step is also shown in the figure below:



- The installation diagram of hanger bolt, L feet and rail clamp:

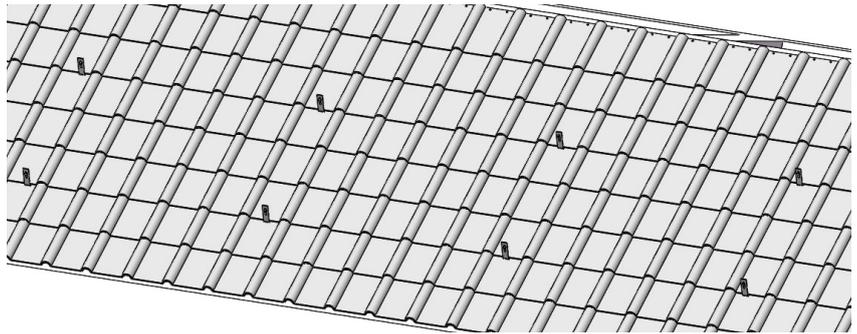
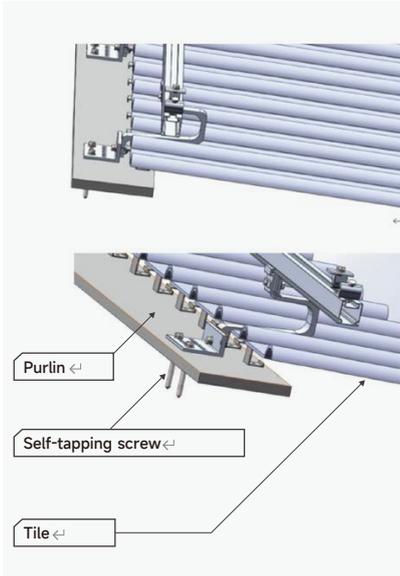
- The hanger bolt kits are installed on tile as shown figure below:



4.3.2.2 installation of tile hook

Calculate the hook span in Slenergy calculation tool based on snow zone, wind zone, altitude and other parameters. The actual installed hook span has to be not more than the calculated value in Slenergy calculation tool, otherwise the mounting structure might have risk of failure when it comes to extreme condition.

- Install all hooks to the tile roof.



4.3.3 Installation of Rail

Fix rails to tile hooks after adjusting the length and height and tighten them by bolts.

After fixing the hook, adjust the height of the rail, loosen the bolt on the upper end of the hook to separate the key A and key B for a certain distance, first align the protrusion of key B with the groove of the rail, and then rotate the rail until the concave on the other side is aligned with the protrusion of key A and locked. The length of rail shall be selected according to the corresponding drawings.

- Connect and fix the remaining rails to the hook according to the previous step.

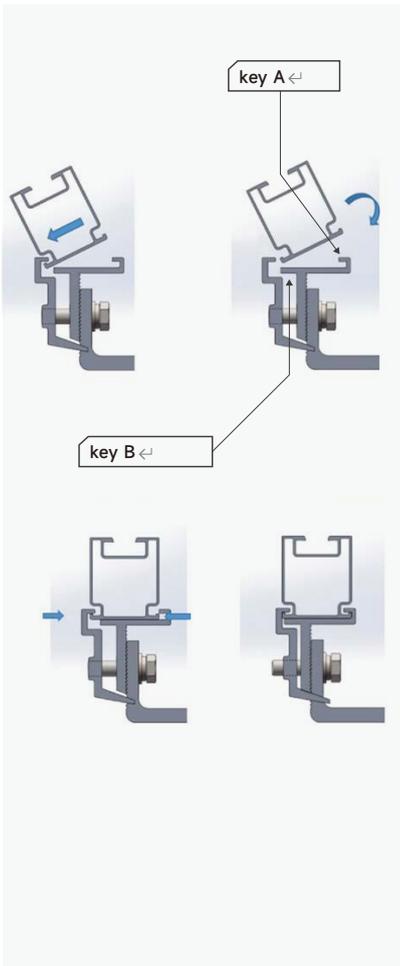


Figure 4.3.3-2 Hook type

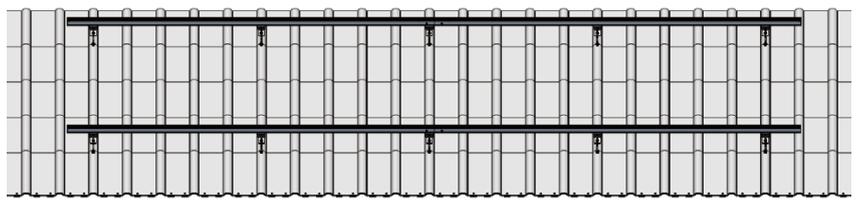
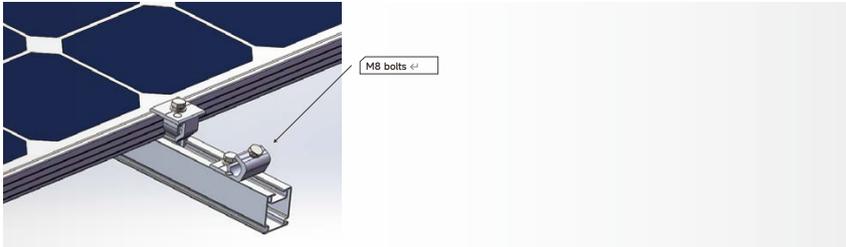


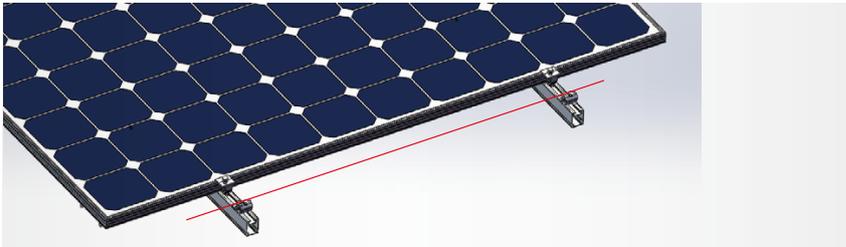
Figure 4.3.3.-3 Hanger bolt type

4.3.6 Installation of Grounding Lug

Install grounding lug at the end of the rail as the picture shown below and fix it with bolts.

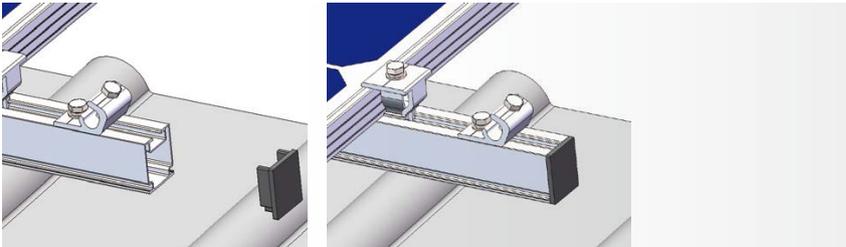


At the edge of the layout, connect each grounding lug with PE NYY 1*6mm² ground cable, use knife to cut a small notch at the position where grounding cable sit on the grounding lug, and then fix the ground cable with M8 bolts, and conduct the end of the ground cable to the grounding point.



4.3.7 Installation of Rail Cap

Align the rail cap with the end of the rail and buckle it in.



4.3.8 Installation Diagram

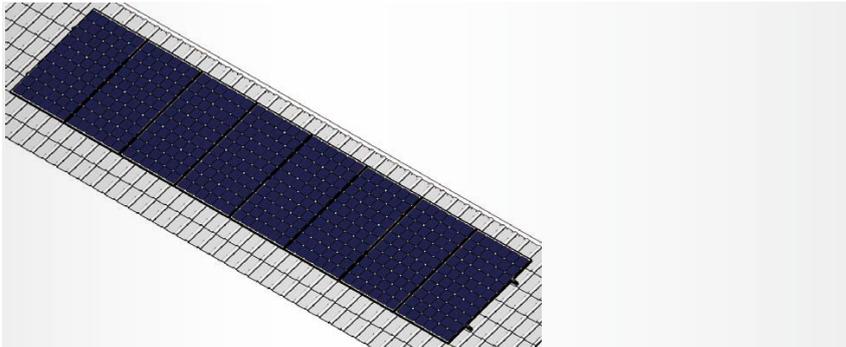
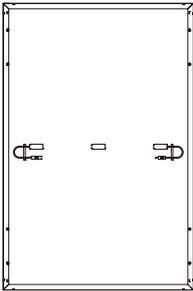
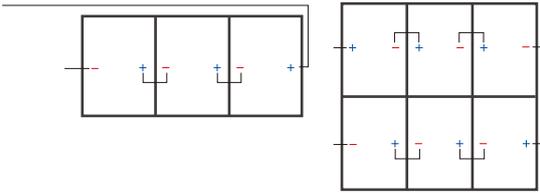
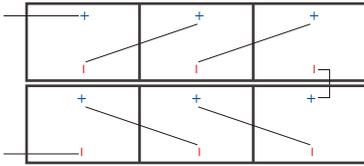


Figure 4.3.8-1 Axonometric drawing

4.3.9 Electrical Connections of PV Modules

4.3.9.1 Recommended Wiring Method

Junction Box Location Icon	Recommended Wiring Method
 <p data-bbox="635 1070 770 1122">Standard cable length: 1.2m</p>	<p data-bbox="844 512 1362 584">Vertical Installation: Standard Cable length (Note: An extension cord is required at the rotor head of the double row assembly and at the end of the single row.)</p> <div data-bbox="826 622 1366 815">  </div> <p data-bbox="844 864 1370 936">Horizontal Installation: It is not recommended to install PV modules horizontally. If it is necessary to install PV modules horizontally, an extension line should be added.</p> <div data-bbox="882 983 1246 1149">  </div>

The electrical performance parameters of the module were tested under standard test conditions, i.e., light intensity of 1000 W/m², AM 1.5, and ambient temperature of 25°C. In some cases, module may produce higher or lower voltage or current values than the rating. When the other modules of the PV system are rated voltage, conductor rated current, fuse size, and the specifications of the control module connected to the output of the solar module, the short-circuit current and open-circuit voltage values marked on the module are multiplied by a factor of 1.25.

All wiring should be performed by qualified installers in accordance with local regulations and procedures.



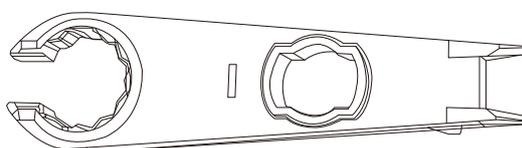
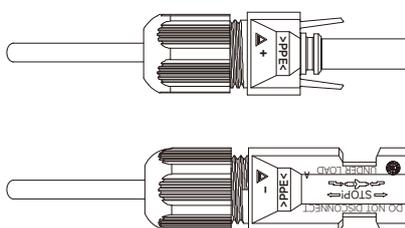
5kW inverter: Please be aware that the number of PV modules in one string might be between 6-16.

4.3.9.2 Assembling the PV Connector

Make sure that the connectors are securely connected and properly connected. The connectors must not be subjected to external pressure. The connectors can only be used for circuit connection functions and should not be used to turn the circuit on and off. Connections should be kept dry and clean to prevent rain and moisture. Avoid direct sunlight and water soaking of the connector.

(1) Insert the positive and negative cables into the corresponding positive and negative connectors, pull back the DC cable to ensure that the terminal is tightly attached in the connector.

(2) Use an open-end wrench to screw the nut to the end to ensure that the terminal is well sealed.



(Open-end Wrench)

- 1 The connector does not have any waterproof function before docking. When installing the module, it is necessary to dock the connector as soon as possible or take waterproof measures to prevent the connector from being exposed to moisture and dust.
- 2 When connecting in series, the solar modules with the same gear current must be selected for connection. The voltage of the module connected in series cannot be higher than the maximum voltage allowed by the system. The number of modules per string depends on the system design, inverter type and environmental conditions.
- 3 The maximum rated fuse current value of each string of module is identified in the product label and specification sheet. The rated fuse current corresponds to the maximum reverse current value of the module. Based on the maximum fuse current and local electrical performance installation requirements, match the appropriate fuse to protect the series-parallel module in the circuit.

4.4 All-in-one energy storage system installation

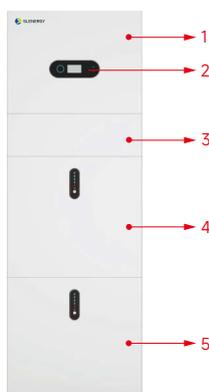


Figure 4.4.1-1 SL-D5 Delivery scope

4.4.1 System Appearance

Object	Description
1	Hybrid Inverter
2	EMS Display Screen
3	Cable Box (connected to Inverter)
4	PACK5.1 (Battery 1)
5	PACK5.1 (Battery 2, if configured)

4.4.2 Cable Box Part

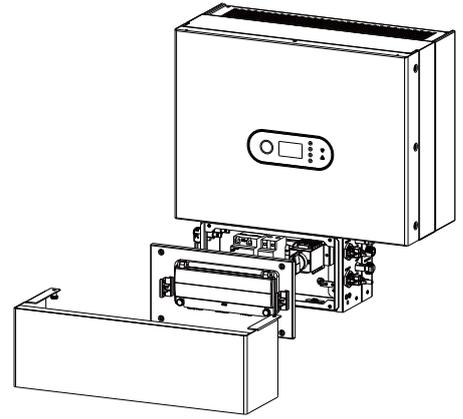


Figure 4.4.2-1 Inverter without Cable Box Covers-Front View

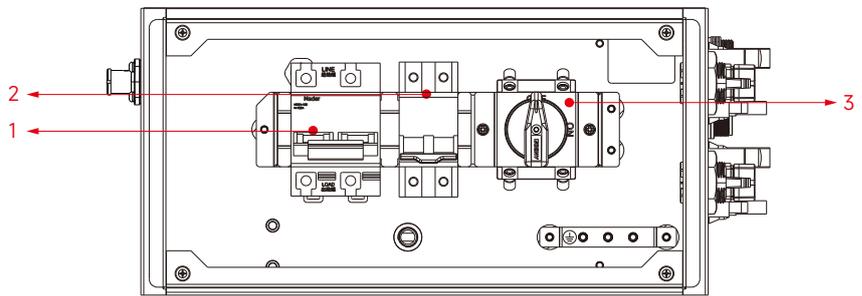


Figure 4.4.2-2 Cable Box Part without Covers-Front View

Object	Description
1	Battery circuit breaker
2	Output terminal block (BACK UP)
3	DC isolation switch

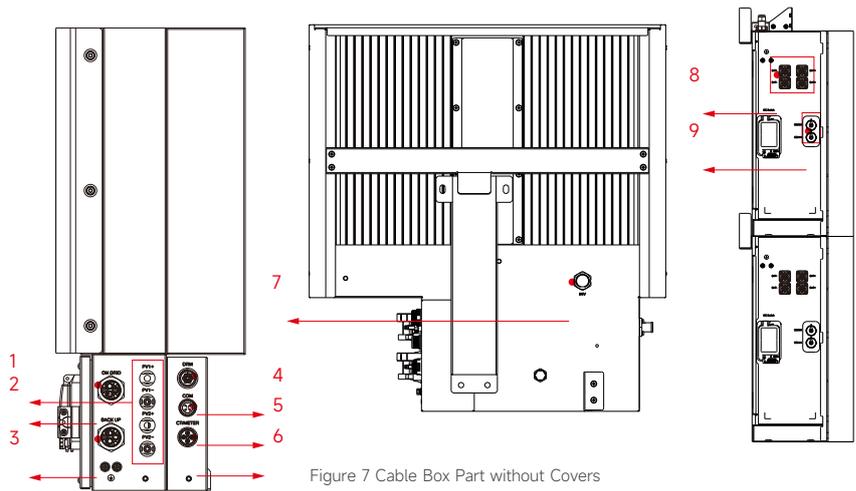


Figure 7 Cable Box Part without Covers

Object	Description	DVC class	Object	Description	DVC class
1	PV1, PV2	DVC C	2	GRID	DVC C
3	BACKUP	DVC C	4	DRM	DVC A
5	COM	DVC A	6	CT/METER	DVC A
7	INV	DVC C	8	BAT+, BAT-	DVC C
9	RJ45	DVC C			

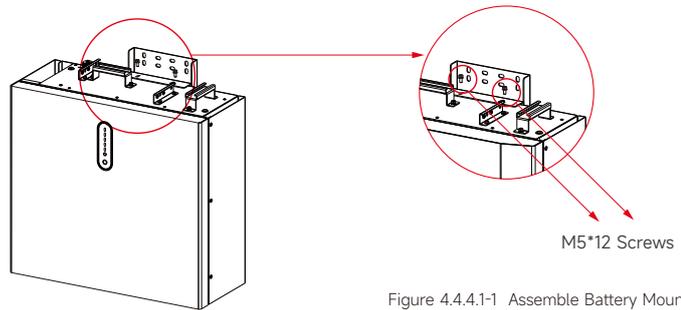
4.4.4 Installation

Step 1 Remove the battery and inverter from the packaging box.

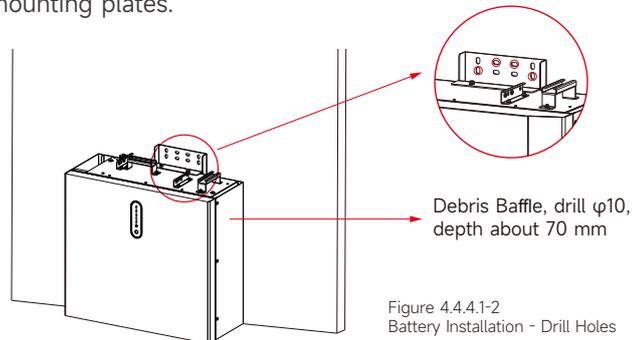


4.4.4.1 Battery Installation

Step 2 Assemble the battery mounting panel on the battery.



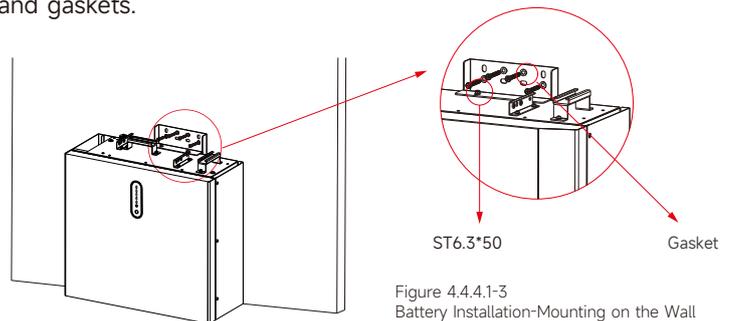
Step 3 Position the battery parallel to the wall and use a $\Phi 10\text{mm}$ drill to drill holes at a depth of about 70mm in the wall for subsequent fix action of the mounting plates.



NOTE

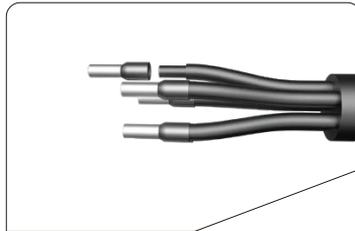
The inverter's built-in residual-current monitoring unit (RCMU) removes DC residual current above 6mA, so an external RCD (type A or type B) can be used with the system ($\geq 30\text{mA}$). In addition, the installation of inverter must fulfill AS/NZS 3000, AS/NZS 4777.1 and AS/NZS 5033. The internal N line of converter is connected to grid neutral via internal relays, when in stand-alone mode.

Step 4 Remove the debris baffle and secure the battery to the wall with screws and gaskets.

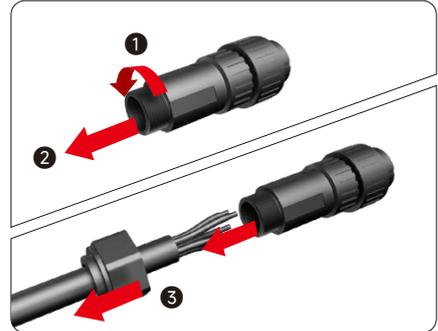


1-6 steps have been pre-installed during manufacturing.

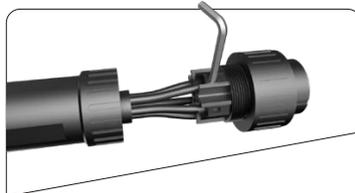
1. Insert the conductor into the suitable ferrule acc. to DIN 46228-4 and crimp the contact.



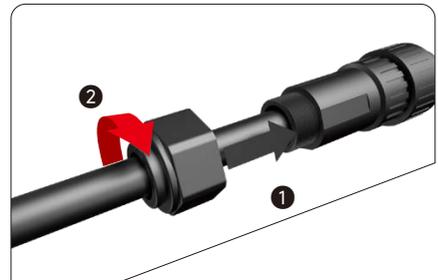
2. Unscrew the swivel nut from the threaded sleeve and thread the swivel nut and threaded sleeve over the AC cable.



3. Insert the crimped conductors L, N and PE into the corresponding terminals and tighten the screw with a hex key wrench screwdriver (size: 2.5, 1.2-2.0 N.M). Ensure that all conductors are securely in place in the screw terminals on the bush insert.



4. Screw the swivel nut onto the threaded sleeve. This seals the AC connector and provides strain relief for the AC cable. When doing so, hold the bush insert firmly by the locking cap. This ensures that the swivel nut can be screwed firmly onto the threaded sleeve.



5. Assembly the plug shell ,adapter as below picture, Push the adapter and Shell by hand until a “Click” is heard or felt.



6. Plug the AC connector into the jack for the AC connection by hand until a “Click” is heard or felt.

Step 9 Connect the BAT communication cable of the cable box from Step 13 to the topmost battery at the right side. Then use the communication cable supplied with the batteries to connect the batteries to each other via the respective connectors on the left side. After you have connected all the modules together, close all covers (if you want to connect further battery modules, you must mount them before closing).

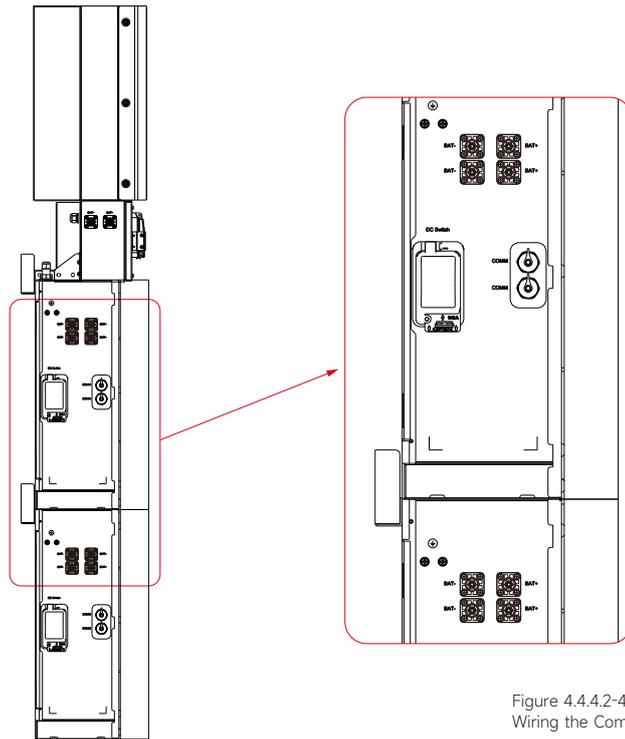


Figure 4.4.4.2-4
Wiring the Communication Cable

Step 10 Connect the power cables of the bottom battery from Step 4 to the side terminals of the top battery. Make sure that red connects to red and black connects to black.

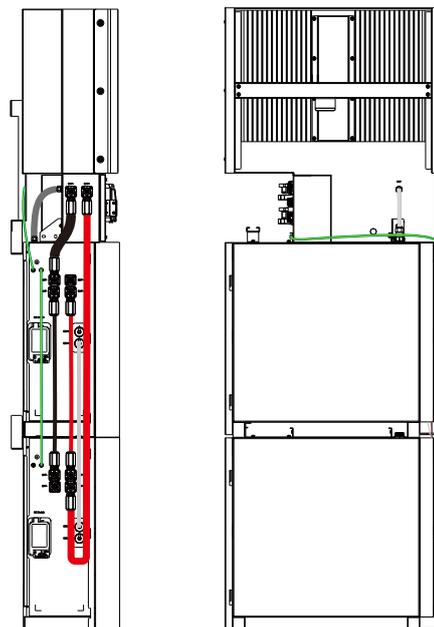


Figure 4.4.4.2-5
Wiring the Battery Power Cable

Step 11 Close the battery covers and connect the PV-MC4 connectors to the system (connection on both sides). Also, connect all AC cables, the meter communications cable METER, and the Ethernet cable LAN. Then close the cable box cover. The installation is now complete.

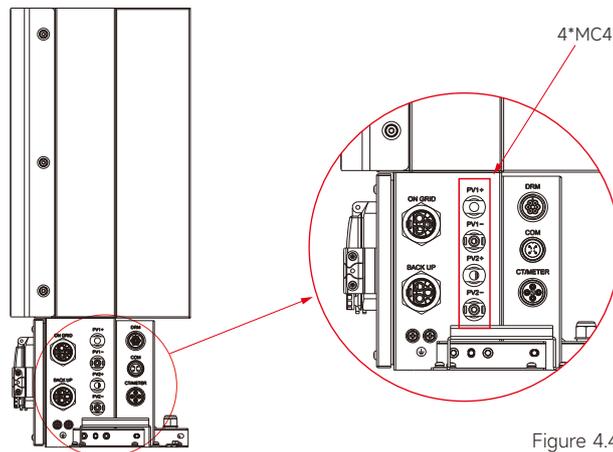
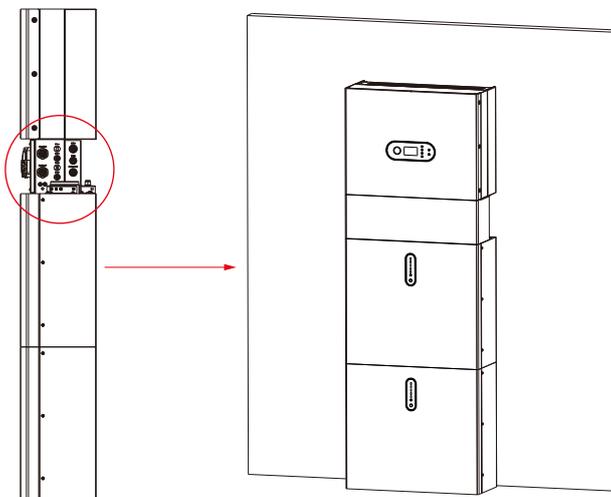


Figure 4.4.4.2-6 PV Wiring

Step 12 Close the lid and tighten the screw.



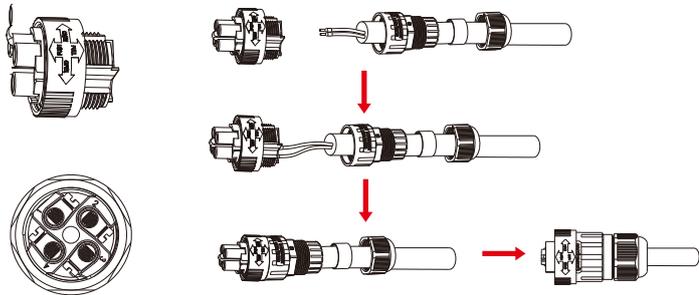
If you connect more than 2 battery modules to the system, please only install the additional batteries 3-5 on the side of the system. You can connect up to 5 batteries, 2 each mounted on top of each other, to the SL-D5. To do this, carry out the individual installation steps as for the first two batteries.

4.4.4.3 External CT Connection

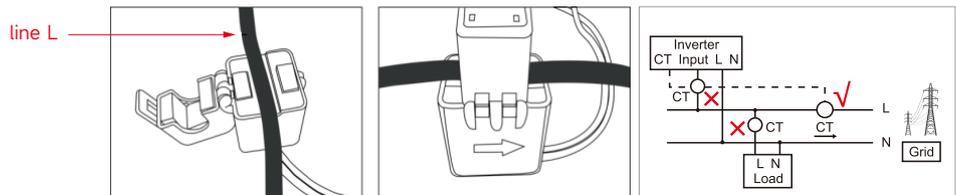
The electricity meter should be mounted and connected at the grid transition point (feed-in point) so that it can measure the grid reference and feed-in power.

- 1 Loosen the nut, and untangle the single-aperture sealing ring.

Pin	Description	Pin	Description
1	CT positive electrode (White)	3	RS485-A
2	CT negative pole (Black)	4	RS485-B



- 2 Install the waterproof component and screw on the waterproof sheath nut.
- 3 Open the external CT wiring port, the arrow points to the direction of the power grid, put the wire into the external CT card slot, and buckle the buckle.



External CT should be placed near the power grid.
If CT test pass but inverter still can't achieve export power (power is not controllable or always 0 power output). Please check installation location of the CT.

4.4.4.4 DRED/ RRCR Port Connections (optional)

DRED means demand response enable device. The AS/NZS 4777.2:2015 required inverter needs to support demand response mode (DRM). This function is for inverter that complies with AS/NZS 4777.2:2015 standard. Inverter which fully complies with all DRM. A 6P terminal is used for DRM connection.

The default state of DRM/RRCR function is disabled. Only when the "DRM enabled" is enabled, the function will be activated according to the specific grid code (e.g., Australia, Germany or UK)

Pin	Description	RRCR	Description
1	DRM 1/5	DI_1	
2	DRM 2/6	DI_2	
3	DRM 3/7	DI_3	
4	DRM 4/8	DI_4	REF_1
5	RefGen	Ref_2	DY_IN
6	Com/DRM 0		

Please follow below figure to assemble DRM connector.

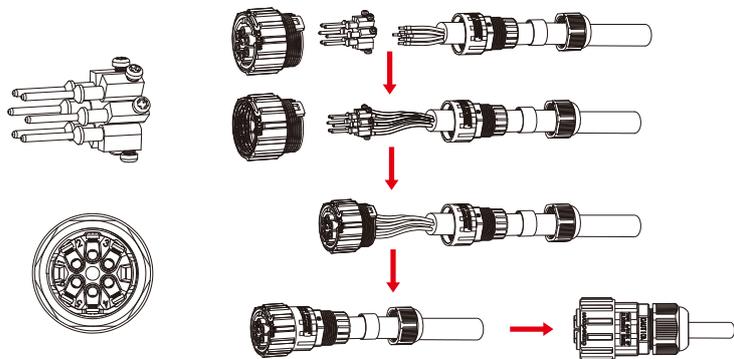
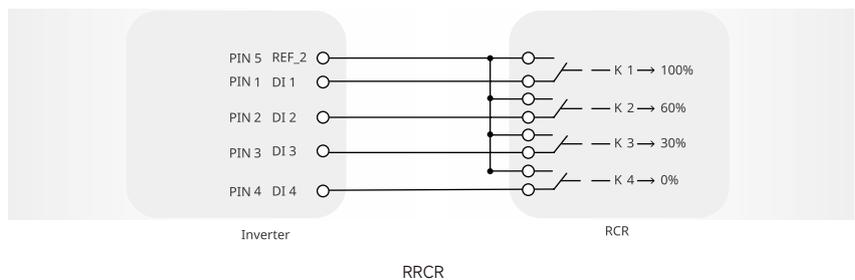
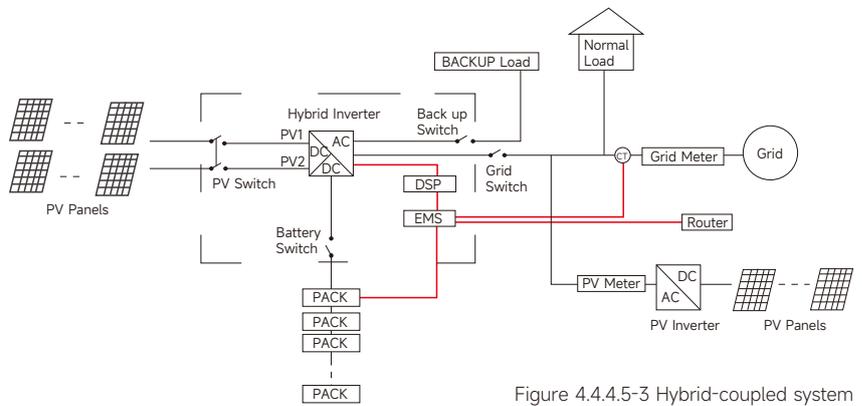
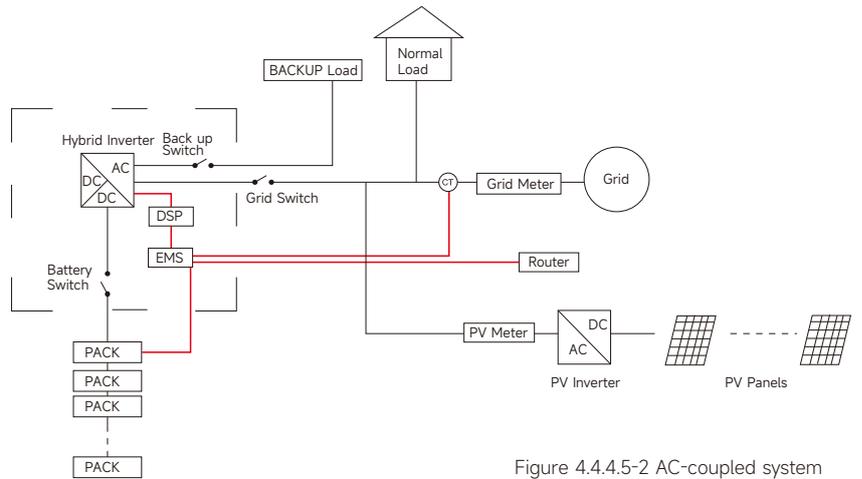
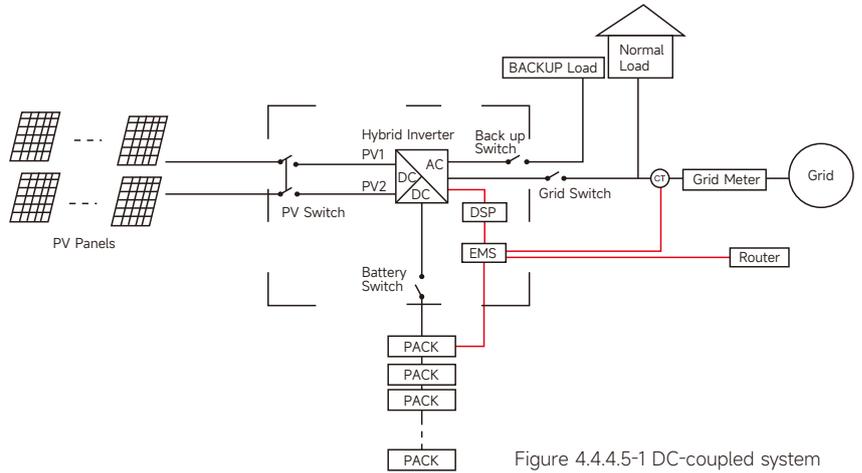


Figure 4.4.4.4-1 DRM connector



4.4.4.5 Single Line Diagram

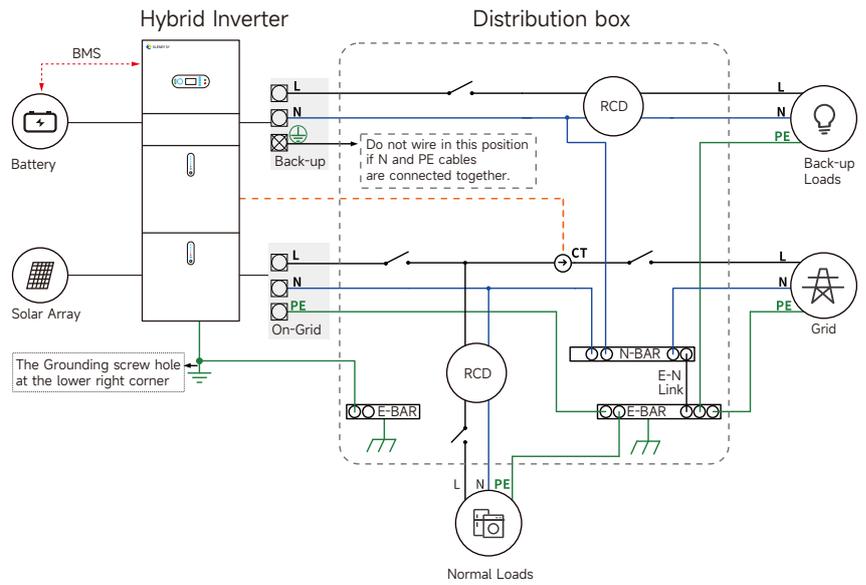
The single line diagrams of DC-, AC- and Hybrid-coupled system are as below:



4.4.4.6 Wiring Diagram

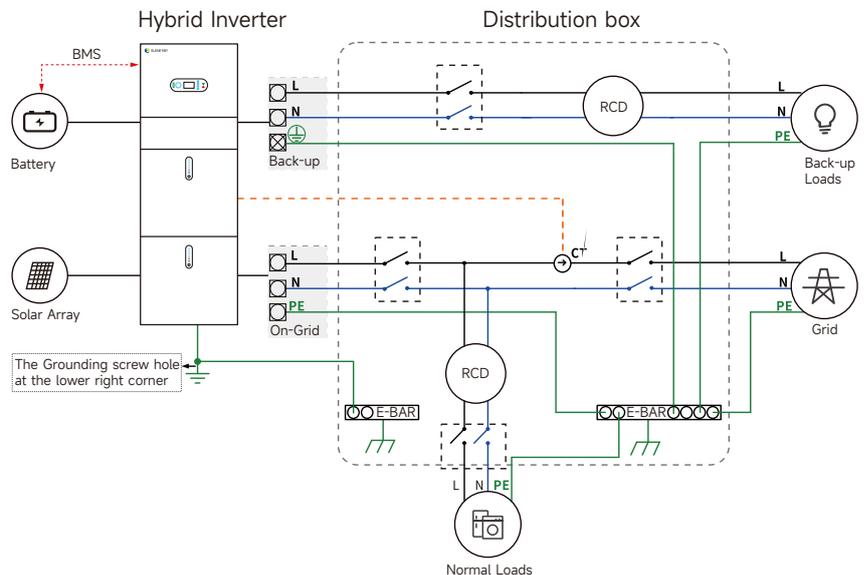
N and PE cables are connected together in the Main Panel for wiring.

NOTICE Below wirings are applicable to areas in Australia, New Zealand, South Africa, and etc.



N and PE cables in the Main Panel shall be wired separately.

NOTICE Ensure that the grounding of BACK-UP is correctly and tightened. Otherwise, the BACK-UP function may be abnormal in case of grid failure. Other areas except Australia, New Zealand, South Africa, etc., are applicable to the following wirings:



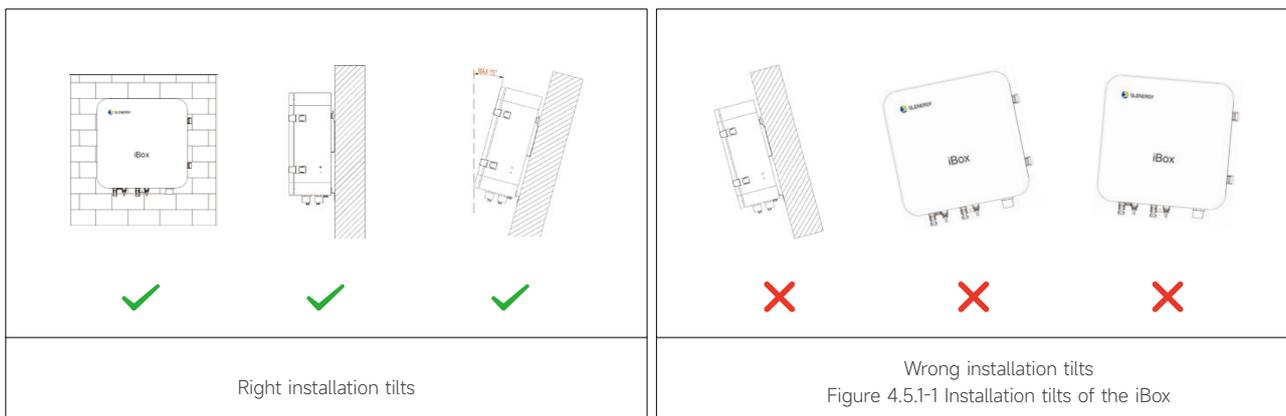
4.5 iBox installation

4.5.1 iBox installation

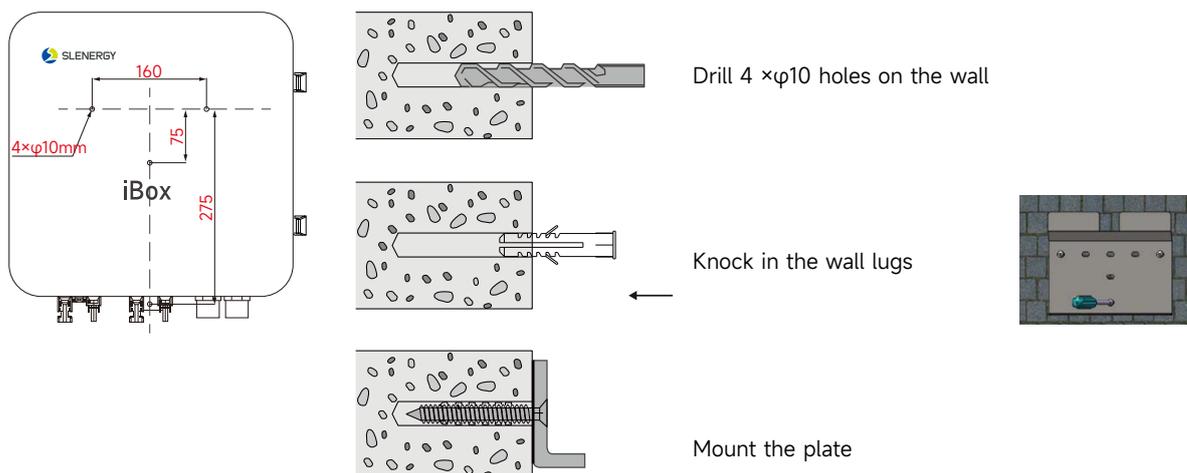


The iBox can only be installed indoor, far from heat sources.

The iBox should be bolted on the wall with a right angel like bellow.
The iBox should be installed under the following Installation tilts



Step 1 Determine the installation positions for drilling holes, and mark the positions using a marker. Drill installation holes on the wall, knock in the wall lugs, mount the Mounting Plate-A. Four installation holes are need, the distance between holes is like bellow:



Mark the position of 4 holes with Mounting Plate-A
Figure 4.5.1-2 Drill holes on the wall and mount the Mounting Plate-A

Step 2 Install the Mounting Plate B&C onto the iBox enclosure.



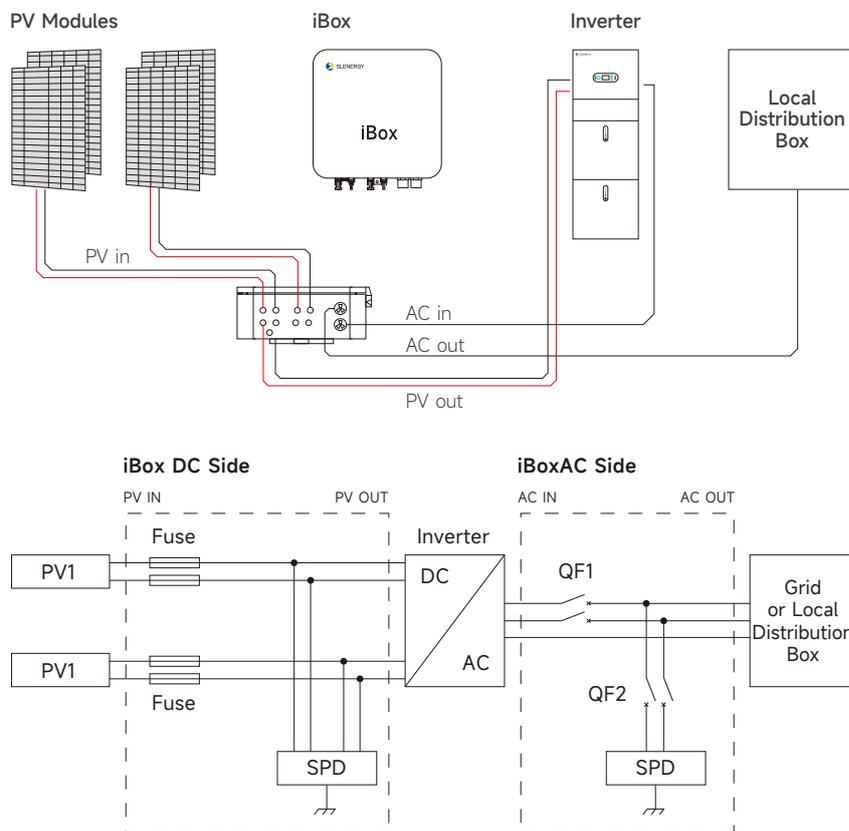
Figure 4.5.1-3 Install mounting plate on the iBox

Step 3 Hung the iBox onto the back plate, and fasten the plate on the bottom.



Figure 4.5.1-4 Installed iBox, fasten the bottom ears

4.5.2 iBox Wiring



4.5.3 Check Before Power-On



Please check the installation again before turning on the system.

No.	Check Item	Acceptance Criteria
1	Cable layout	Cables are routed properly as required by the customer.
2	Cable tie	Cable ties are secured evenly, and no burr exists.
3	Grounding	The grounding cable is connected correctly, securely, and reliably.
4	Turn off the switches	The DC SWITCH and all the switches connected to the inverter are set to OFF.
5	Cable connections	The AC output power cable and DC input power cable are connected correctly, securely, and reliably.
6	Unused terminals and ports	Unused terminals and ports are locked by watertight caps.
7	Installation environment	The installation space is proper, and the installation environment is clean and tidy, without foreign matter.

5

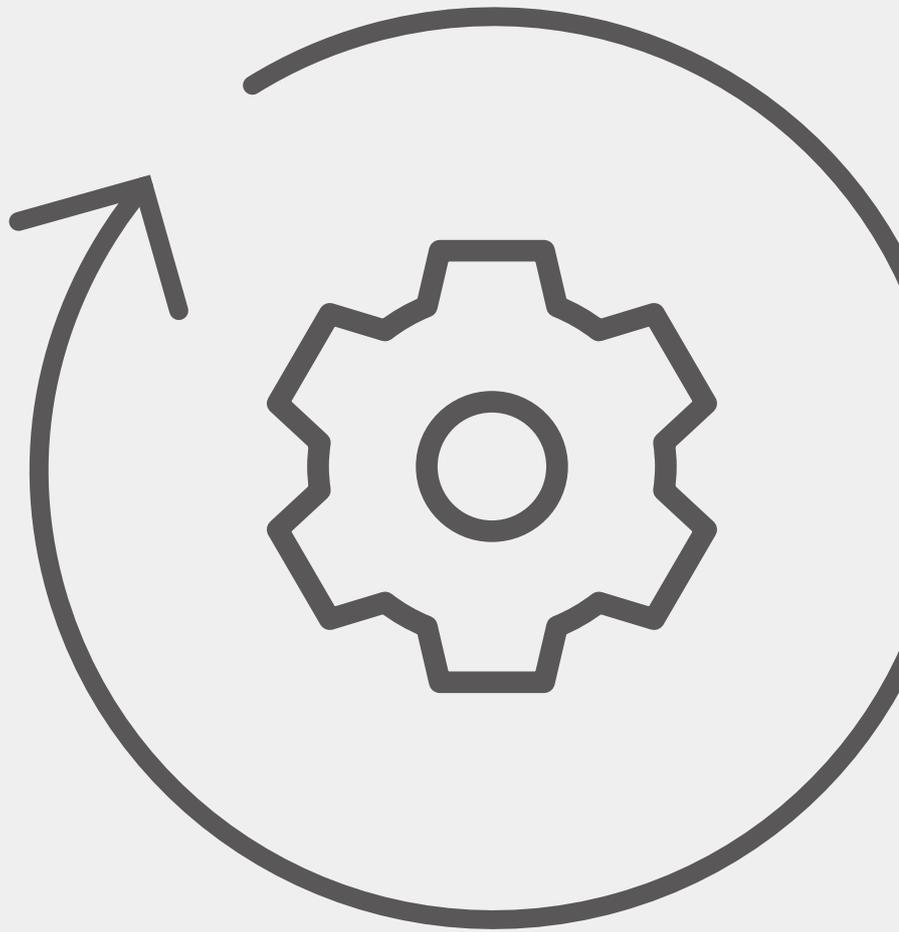
System Operation



6

EMS

Introduction and Set Up



6.1 Function Description

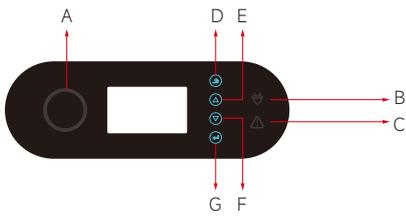


Figure 6.1-1 SL-D5 EMS Interface

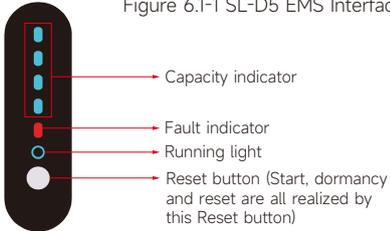


Figure 6.1-2 PACK Interface

Object	Name	Description
A		Grid connection
B	Indicator LED	Off-grid
C		Red: The inverter is in fault.
D		Return Button: Escape from current interface or function.
E	Button Function	Up button: Move cursor to upside or increase value.
F		Down Button: Move cursor to downside or decrease value.
G		ENT Button: Confirm the selection.

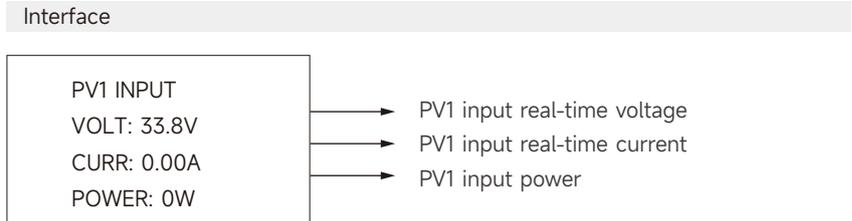
LED indicator description

Table 6.1-1 LED working status indication

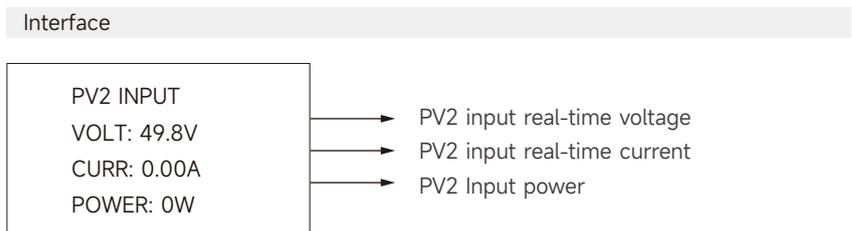
status	Normal/Alarm/Protection	RUN		ALM		Power indicator LED				Instruction
		●	●	●	●	●	●	●	●	
Shut down	dormancy	off	off	off	off	off	off	off	off	ALL OFF
	Normal	Flash one time	off							standby mode
Standby	Alarm	Flash one time	Flash three times							Module low voltage
	Normal	light	off							The maximum power LED flashes twice, and the ALM does not flash when an overcharge alarm occurs
charge	Alarm	light	Flash three times							
	Overcharge protection	light	off	light	light	light	light	light	light	If there is no mains electricity, the indicator light turns to standby
	Temperature, overcurrent, failure, protection	off	light	off	off	off	off	off	off	Stop charging
Discharge	Normal	light	Flash three times	off						According to battery indicator
	Alarm	light	Flash three times	Flash three times						
	Under voltage protectio	light	off	off	off	off	off	off	off	Stop discharging
Failure	Temperature, overcurrent, short circuit, reverse connection, failure protection	light	off	light	off	off	off	off	off	Stop discharging
		off	off	light	off	off	off	off	off	Stop charging and discharging

6.2 Display and Setting

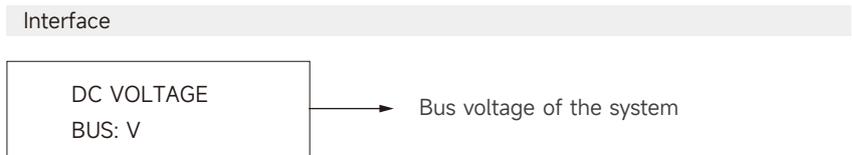
6.2.1 PV1 input display interface



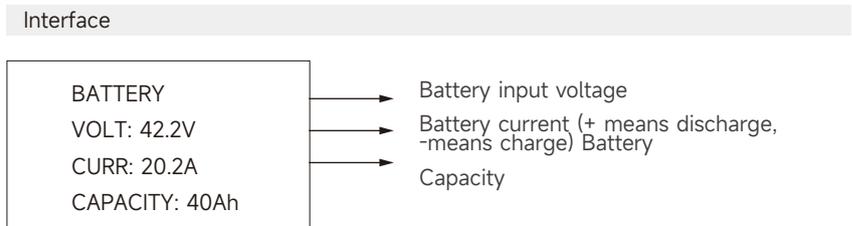
6.2.2 PV2 input display interface



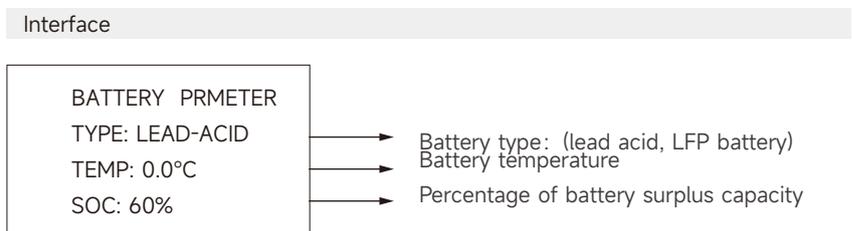
6.2.3 Bus voltage



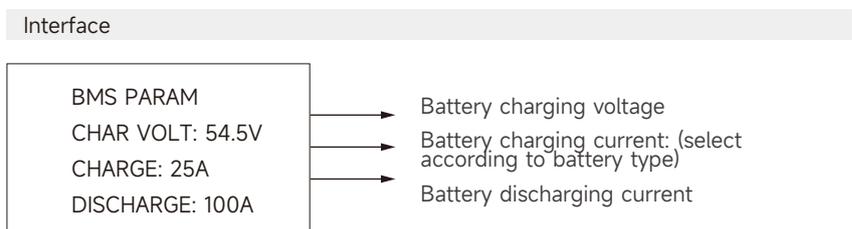
6.2.4 Battery



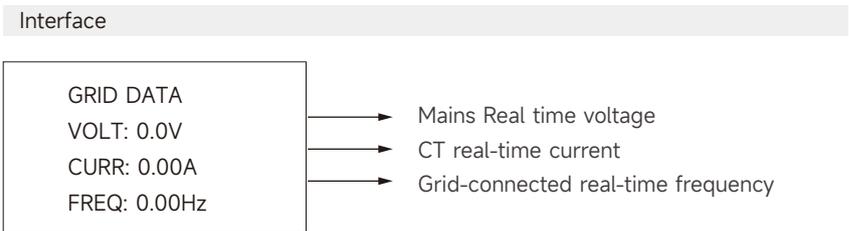
6.2.5 Battery Parameter



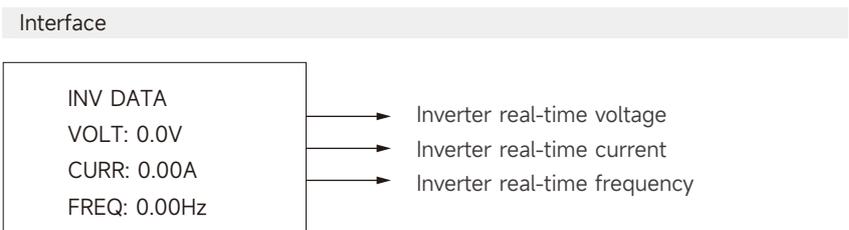
6.2.6 BMS parameters



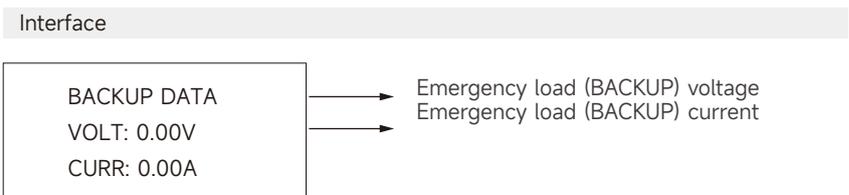
6.2.7 Grid-connected output



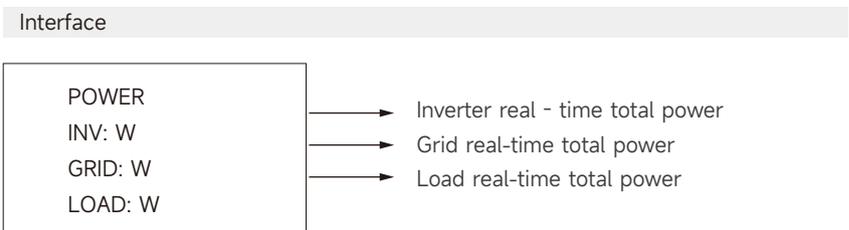
6.2.8 Inverter output



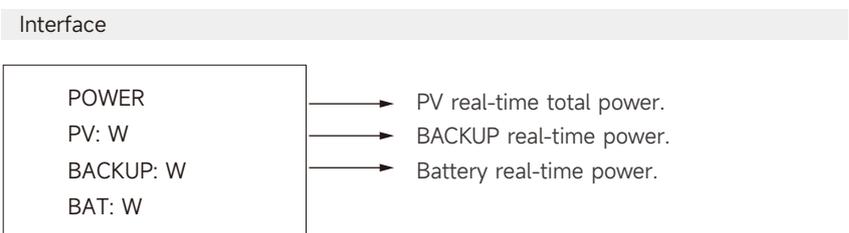
6.2.9 Load



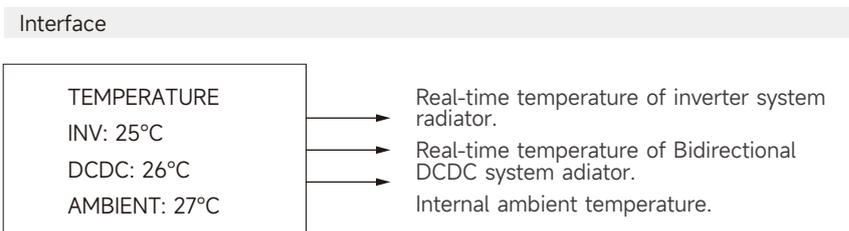
6.2.10 Power



6.2.11 Power



6.2.12 Temperature



6.2.13 Status information

Interface	Explanation
STATE SYS: ERROR INV: STANDBY DCDC: STANDBY UNIT: SEC	<p>System information: Power-up mode, standby mode, hybrid grid-connection, off-grid operation, mains charging mode, PV charging mode, bypass mode, fault mode, DSP programming, ARM programming.</p> <p>INV: standby mode, off-grid inverter mode, grid-connected mode, and transition of grid-connection to off-grid, transition of off-grid to grid mode.</p> <p>DCDC: standby mode, soft start mode, charging mode, discharging mode.</p>

6.2.14 Error information

Interface	Explanation
ERROR NO. WARNING: W11-1 FAULT: F101	<p>Alarm code</p> <p>Error code</p>

6.2.15 System setting

Interface	Explanation
SYSTEM STATE: PEAK SHIFT GRID: CHN PV I/P: INDEPEN	<p>Status mode: Self-generation and self-consumption, Peak load shifting, and Battery priority.</p> <p>Grid-connection standards: China, Germany, Australia, Italy, Spain, UK, Hungary, Belgium, Western Australia, Greece, France, Bangkok, Thailand, local and 60Hz.</p> <p>PV input mode: independent connection, parallel connection, constant voltage.</p>

6.2.16 User setting

Interface	Explanation
- USER - → 1: SETUP 2: INQUIRE 3: STATISTIC 4: FCTRY RESET	<p>Press ESC on the Main Display Interface to enter the user interface. See chapter 8.2 for more setting details.</p>

Enter the password before setting up the user.

Interface	Explanation
- PASSWORD - INPUT: XXXXX	<p>After entering the setup interface, the system will prompt to input password;</p> <p>The default password is "00000", which can be altered in Password setting menu;</p> <p>Press UP/DOWN button to increase or decrease the figure that is input;</p> <p>Press ENTER button to move the cursor backwards or confirm the setting;</p> <p>Press ESC button to move the cursor forward.</p>

6.3 Setting

Interface	Explanation
<pre>-- SETUP -- → 1: SYS SETTING 2: BAT SETTING 3: GRID STD 4: RUN SETTING 5: 485 ADDRESS 6: BAUD RATE 7: LANGUAGE 8: BACKLIGHT 9: DATE/TIME 10: CLEAR REC 11: PASSWORD 12: MAINTENANCE 13: AUTO TEST</pre>	<p>This interface is used for various information inquiry options.</p> <p>Press UP/DOWN button to move the corresponding options.</p> <p>Press ENTER to enter the selected menu.</p> <p>Press ESC button to return to the user interface.</p> <p>There are 13 options in total, including system mode, battery parameters, grid standard, operation parameters, 485 address, 485 baud rate, language display, LCD backlight, date/time, clear history, password setting and maintenance, and auto test.</p>

6.3.1 System setting

Interface	Explanation
<pre>-- SYS SETTING -- → 1: WORK MODE 2: PV INPUT 3: ZERO EXPORT 4: DRM ENABLE 5: EPS ENABLE 6: REMOTE CTRL 7: START DELAY 8: CEI SPI CTRL 9: GFCCHK ENB 10: DISC MODE 11: DOD ENABLE 12: GENERATOR 13: CT OR METER 14: AC COUPLE 15: CT DIRECTIO 16: RS485 Pctrl</pre>	<p>This interface is used to access system information.</p> <p>Press UP/DOWN button to move corresponding options.</p> <p>Press ENTER to enter the selected menu.</p> <p>Press ESC button to return to the setting interface.</p> <p>There are 16 options in total, including working mode, PV input type, zero export enable, DRM enable, EPS enable, remote controlled enable, start delay. (see from 1 to 16)</p>

6.3.1.1 Working mode

Interface	Explanation
<pre>-- WORKE MODE -- 1: SELF CONSUME → 2: PEAK SHIFT 3: BAT PRIORITY</pre>	<p>This interface is used to opt for the working mode.</p> <p>After selecting the three modes, the restart interface will be entered.</p> <p>Press ESC button to return to setting interface.</p>

After completing the setup of peak load shifting mode, the time for charging and discharging also needs to be set.

Interface	Explanation
<pre>-- CHARGE FROM GRID -- 1: DISABLE → 2: ENABLE</pre>	<p>1.DISABLE 2.ENABLE</p> <p>After selecting self-consume mode, the setting of charge from grid can be disabled or enabled. If enabled, the charging time setting page will be displayed.</p>

Interface	Explanation
<pre>-- CHARGE TIME -- 00:00-23:59 MAX SOC: 100%</pre>	<p>1. Self-consumption mode disables grid charging: Battery pack can only be charged by PV.</p> <p>2. Self-consumption mode enables grid charging: Grid charges battery pack until MAX SOC during set time.</p>

Time setup

Interface	Description
<pre>CHA STAR1: 00:00 CHAR END1: 00:00 DIS START1: 00:00 DISC END1: 00:00</pre>	<p>This interface is used to set the time-1 of peak load shifting.</p> <p>Press UP/DOWN button to change the value. Press ENTER to confirm.</p> <p>Press ESC button to return.</p>
<pre>CHA STAR2: 00:00 CHAR END2: 00:00 DIS START2: 00:00 DISC END2: 00:00</pre>	<p>This interface is used to set the time-2 of peak load shifting.</p> <p>Press UP/DOWN button to change the value.</p> <p>Press ENTER to confirm. Press ESC button to return.</p>

6.3.1.2 Input mode

Interface	Description
<pre>--INPUT MODE-- → 1: INDEPENDENT 2: PARALLEL 3: CV</pre>	<p>Setup of PV Input mode.</p> <p>The factory setting by default is independent mode. When parallel input is set to be independent mode, PV power will be imbalanced.</p>

6.3.1.3 ZERO EXPORT

Interface	Description
<pre>-- ZERO EXPORT -- 1: ENABLE → 2: POWER</pre>	<p>Limiting inverter power to be injected into the grid, disable by default</p>
<pre>-- ZERO EXPORT -- → 1: DISABLE 2: ENABLE</pre>	

6.3.1.4 DRM enable

Interface	Description
<pre>-- DRM ENABLE -- → 1: DISABLE 2: ENABLE</pre>	<p>Only applicable in Australia and New Zealand. Default option is disabling.</p>

6.3.1.5 Backup enable

Interface	Description
-- EPS ENABLE -- → 1: DISABLE 2: ENABLE	It should be enabled if BACKUP load needs power supply after grid black out.

6.3.1.6 Remote Control enable

Interface	Description
-- REMOTE CTRL -- → 1: DISABLE 2: ENABLE	The power switch of the machine can be realized through remote control. Default option is Enabling.

6.3.1.7 START-UP delay

Interface	Description
START-UP DELAY INPUT: 30 UNIT: SEC	The input value ranges from 20 to 300, Which varies with different standards.

6.3.1.8 CEI SPI CTRL

Interface	Description
-- CEI SPI CTRL -- → 1: DISABLE 2: ENABLE	CEI SPI CTRL: (1. Disable 2. Enable) When the DRM signal is enabled, this is used as a local signal. When the DRM signal is enabled, when the CEI SPI Ctrl is enabled, the frequency range is 50.2Hz ~ 49.8Hz. When the CEI SPI Ctrl is disabled, the frequency range is 51.5Hz ~ 49.8Hz

6.3.1.9 GFCICLK ENB

Interface	Description
-- GFCICLK ENB -- 1: DISABLE → 2: ENABLE	GFCICLK ENB (1. Disable 2. Enable) PV leakage protection enable

6.3.1.10 DISC MODE

Interface	Description
-- DISC MODE -- → 1. RATED POWER 2. LOAD PRIO	DISC MODE (1. Rated Power, 2. Load Prio) This is only for test.

6.3.1.11 DOD ENABLE

Interface	Description
-- DISCHGDEPTH -- 1: DISABLE → 2: ENABLE	Discharge depth (1. Disable 2. Enable). When the battery SOC reaches (100 minus the set discharge depth), the battery will stop discharging if it is enabled. If it is disabled, the battery will discharge to 0%. Enable by default.

6.3.1.12 GENERATOR

Interface	Description
-- GENERATOR -- 1. DISABLE → 2. ENABLE	Generator mode enabling (1. Disable 2. Enable) when the generator needs to be connected for AC measurement, the enabling generator mode is prohibited, and the generator mode is prohibited in other times. In the mode of enabling generator, the frequency protection range measured by AC will be relaxed to + -10%, the frequency protection range at 50Hz is 45Hz-55Hz, and that of 60Hz is 54Hz-66Hz.

6.3.1.13 CT OR METER

Interface	Description
-- CT OR METER -- 1. CT → 2. METER	CT or meter (1. CT 2. meter): the energy storage inverter supports the connection of three-phase ammeter. Replace CT with three-phase ammeter to detect the utility power. When connecting three-phase ammeter, select "ammeter" option, and when connecting CT, select "CT" option

6.3.1.14 AC COUPLE

Interface	Explanation
-- AC COUPLE -- 1. DISABLE → 2. ENABLE	When ESS connects to other inverter by AC side, with other inverter charging PACK, please enable AC couple.

6.3.1.15 CT DIRECTION

Interface	Explanation
-- CT DIRECTION -- 1. POSITIVE → 2. NEGATIVE	If the CT connection is reversed, there is no need to change the direction actually but only set the direction on the interface by changing 1. POSITIVE to 2. NEGATIVE or 2. NEGATIVE to 1. POSITIVE, which is equivalent to changing the direction of the CT wiring. For example, when the battery is being charged and the grid power is positive "+", it means the CT connection is reversed. If the CT direction is 1. POSITIVE on the LCD, set it to 2. NEGATIVE, then the grid power will become negative "-".

6.3.1.16 RS485 P ctrl

Interface	Explanation
-- RS485 P ctrl -- 1. DISABLE → 2. ENABLE	1. Enable for enabling the function that allows adjusting the active power by RS485 commands. 2. Disable by default.

6.3.2 Battery parameters

Interface	Description
<pre>-- BAT SETTING -- → 1: BAT TYPE 2: DISC-DEPTH 3: OFF GRID DOD 4: CHG CURR 5: DISC POWER 6: CHG POWER 7: BAT END VOLT 8: BAT WAKE-UP 9: HEATING FLIM 10: BMS DOD 11: MAINTAIN SOC 12: FORCE WAKE</pre>	<p>This interface is used to select battery parameters. Press UP/DOWN button to move corresponding options;</p> <p>Press ENTER button to enter the selected menu; Press ESC button to return to setting interface.</p>

6.3.2.1 Battery type

Interface	Description
<pre>-- BAT TYPE -- 1: LEAD-ACID → 2: LFP</pre>	<p>This interface is used to select battery type. Press UP/DOWN button to move corresponding options;</p> <p>Press ENTER button to enter the selected menu;</p> <p>Select the LEAD-ACID enter button to enter the LEAD-ACID interface;</p> <p>Select the OTHER_Li enter button to enter the OTHER_Li interface;</p>

Other Li battery parameter

Interface	Description
<pre>-- OTHER LI BAT-- 1: FLOAT VOLT → 2: EQUALT VOLT 3: BAT CAP 4: BAT OVP</pre>	<p>This interface is used to select other Li battery parameter.</p> <p>Press UP/DOWN button to move corresponding options;</p> <p>Press ENTER button to enter the selected menu; Options include battery charge voltage, battery discharge end voltage and battery over voltage protection.</p>

Lead-acid battery parameter

Interface	Description
<pre>-- LEAD-ACID -- → 1: FLOAT VOLT 2: EQUALT VOLT 3: BAT CAP 4: BAT OVP</pre>	<p>This interface is used to select other lead-acid battery parameter.</p> <p>Press UP/DOWN button to move corresponding options;</p> <p>Press ENTER button to enter the selected menu; Options include battery charge voltage, battery capacity, battery discharge end voltage, battery over voltage protection.</p>

6.3.2.2 Discharge depth

Interface	Description
<pre>-- DISC DEPTH -- → INPUT: 60 UNIT: %</pre>	<p>Grid connected discharge depth: the maximum allowable discharge depth of the machine with normal grid connection.</p> <p>If the grid connected discharge depth is set to 80%, when the SOC of the battery is lower than or equal to 20% with normal grid connection, the battery will stop discharging. Press UP/DOWN to increase or decrease the input figure;</p> <p>Press Enter to move cursor backward, confirm input and return to battery parameters interface;</p> <p>Press ESC to move cursor forward and return to battery parameters interface;</p> <p>The value ranges between 10% and 95%.</p>

6.3.2.3 OFF GRID DOD

Interface	Explanation
<p>-- OFF GRID DOD -- INPUT: 0-100% Default: 90%</p>	<p>Off grid discharge depth: the maximum allowable discharge depth of the machine in off-grid mode in case of grid power failure. The settable range is 0~100%.</p> <p>If the off-grid discharge depth is set to 90%, when the SOC of the battery is less than or equal to 10% with grid power failure, the battery will stop discharging.</p> <p>Relationship between off grid discharge depth and grid connected discharge depth.</p> <p>Grid connected discharge depth < off grid discharge depth. Off grid discharge depth - grid connected discharge depth = off grid standby SOC. For example, if the grid connected discharge depth is set to 80%, and the off-grid discharge depth is set to 90%, the battery will stop discharging if the SOC is equal to or lower than 20% with normal grid connection. When the grid power is off, the inverter will run in off-grid mode. At this time, 10% SOC of the battery can supply power to important loads.</p>

6.3.2.4 Charge current

Interface	Description
<p>-- CHARGE CURR -- INPUT: 25 UNIT: A</p>	<p>Press UP/DOWN button to increase or decrease the input figure;</p> <p>Press Enter to move cursor backward, confirm input and return to battery parameters interface; Press ESC button to move cursor forward and return to battery parameters interface.</p>

6.3.2.5 Discharge Power

Interface	Description
<p>-- DISC PERCENT -- INPUT: 080%</p>	<p>Press UP/DOWN button to increase or decrease the input figure;</p> <p>Press Enter button to move cursor backward, confirm input and return to battery parameters interface;</p> <p>Press ESC button to move cursor forward and return to battery parameters interface.</p>

6.3.2.6 Charge Power

Interface	Description
<p>-- CHAR PERCENT -- INPUT: 020%</p>	<p>Press UP/DOWN button to increase or decrease the input figure;</p> <p>Press Enter to move cursor backward, confirm input and return to battery parameters interface; Press ESC button to move cursor forward and return to battery parameters interface.</p>

6.3.2.7 BAT END VOLT

Interface	Description
<pre>-- BAT END VOLT -- INPUT: 43.2 UNIT: V</pre>	<p>This function is used to set the discharge cut-off voltage. When select the battery type as LFP, the default value is 43.2 V and the setting range is between 40.0 V to 48.0 V.</p>

6.3.2.8 BAT WAKE-UP

Interface	Description
<pre>-- BAT WAKE-UP -- → 1: ENABLE 2: TIME</pre>	<p>Enter the option 1 to enable or disable the Function. Enter the option 2 to adjust the value of the time.</p>

Battery wake up enable

Interface	Description
<pre>-- WAKE-UP ENB -- → 1: DISABLE 2: ENABLE</pre>	<p>Battery wake-up enable setting. The default option is ENABLE.</p>

Bat Wake Time

Interface	Description
<pre>-- WAKE-UP TIME -- INPUT: 060min</pre>	<p>Press UP/DOWN button to increase or decrease the input figure; Press Enter button to move cursor backward, confirm input and return to battery parameters interface;</p>

6.3.2.9 HEATING FILM

Interface	Explanation
<pre>-- HEATING FILM -- → 1: AUTOMATIC 2: ON 3: OFF</pre>	<p>This setting is only applicable for battery packs with heating film.</p> <ol style="list-style-type: none"> "Automatic" means that the system detects the external temperature and opens the heating film as required. "On" means that the heating film will be turned on immediately after selecting "On". "Off" means that the heating film will be turned off immediately after selecting "Off". It is Automatic by default.

6.3.2.10 BMS DOD

Interface	Explanation
<pre>-- BMS DOD -- → 1: DISABLE 2: ENABLE</pre>	<ol style="list-style-type: none"> Disable BMS DOD: It will not close the discharge circuit when BMS discharging to the set SOC. Enable BMS DOD: It will close the discharge circuit when BMS discharge to the set SOC. <p>Note that don not enable BMS DOD unless there's a special reason.</p>

6.3.2.11 MAINTAIN SOC

Interface	Explanation
<pre>-- MAINTAIN SOC -- 1: DISABLE → 2: ENABLE</pre>	<p>1. Disable: The minimum SOC will not be maintained.</p> <p>2. Enable: The minimum SOC 2% is maintained. When the battery SOC is less than 2%, the grid charges the battery pack to 5% through the inverter.</p>

6.3.2.12 FORCE WAKE

Interface	Explanation
<pre>-- FORCE WAKE -- → 1: DISABLE 2: ENABLE</pre>	<p>1. Disable: Do not force to wake up battery packs.</p> <p>2. Enable: Force to wake up the battery pack immediately if the battery is not connected.</p>

6.3.3 Grid standard

Interface	Description
<pre>-- GRID STD -- → 1: China 2: Germany 3: Australia 4: Italy 5: Spain 6: U.K. 22: Local 23: 60Hz 24: Denmark</pre>	<p>Press UP/DOWN button to move corresponding options. Here are 24 countries for selection, including China, Germany, Australia, Italy, Spain and U.K.;</p> <p>Press ENTER button to confirm the selection and enter restart interface;</p> <p>Press ESC button to cancel the selection and return to setting interface.</p>

6.3.4 Operation parameters

Interface	Description
<pre>-- RUN SETTING -- → 1: REACT MODE 2: GRID POWER 3: VOLT MAX 4: VOLT MIN 5: FREQ MAX 6: FREQ MIN 7: OVER VOLT 8: UNDER VOLT 9: OVER FREQ 10: UNDER FREQ 11: REACT RESP 12: VRT ENABLE 13: POW SI RATE</pre>	<p>Press UP/DOWN button to move corresponding options;</p> <p>Press Enter to enter the selected menu;</p> <p>Press ESC button to return to setting interface.</p> <p>Options include reactive power compensation mode, grid power, low/high grid voltage, low/high grid frequency, Grid over/under voltage derating and Grid over/under frequency derating, etc.</p>

6.3.4.1 Reactive mode

Interface	Description
<div style="border: 1px solid black; padding: 5px;"> <p>- REACT MODE - → 1: POWER FACTOR 2: REACT POWER 3: QU CURVE 4: QP CURVE</p> </div>	<p>Press UP/DOWN button to move corresponding options;</p> <p>Press Enter to confirm the input and enter power factor setting interface;</p> <p>(Select 2, press Enter to confirm input and enter reactive power interface; Select 3, 4, the corresponding mode will be selected and return to the parameter setting interface.)</p> <p>Press ESC button to cancel the input and return to operation parameters interface.</p>

Power factor setting

Interface	Description
<div style="border: 1px solid black; padding: 5px;"> <p>- POWER FACTOR - INPUT: C1.00</p> </div>	<p>Press UP/DOWN to increase or decrease the input figure;</p> <p>Press ENTER button to confirm or ESC button to cancel the input and return to working interface; The input value should range between L0.80 and L1.00 or C0.80 and C1.00.</p>
<div style="border: 1px solid black; padding: 5px;"> <p>Value range (L1.00~C1.00)</p> </div>	

Reactive Power

Interface	Description
<div style="border: 1px solid black; padding: 5px;"> <p>- REACT POWER - INPUT: +60%</p> </div>	<p>Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to working interface; The input value should range between -60% and +60%, which varies with the standard.</p>
<div style="border: 1px solid black; padding: 5px;"> <p>Value range (-60%~+60%)</p> </div>	

6.3.4.2 Grid Power

Interface	Description
<div style="border: 1px solid black; padding: 5px;"> <p>- GRID PERCENT - INPUT: 100%</p> </div>	<p>Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to operation parameters interface;</p> <p>The input value should range between 0 and 100.</p>
<div style="border: 1px solid black; padding: 5px;"> <p>Value range (0~100)</p> </div>	

6.3.4.3 Volt Max

Interface	Description
- VOLT MAX - → 1: INV MAX 2: GRID MAX	<p>Enter option 1 to adjust the maximum volt of the INV.</p> <p>Enter option 2 to adjust the maximum volt of the grid.</p>

High INV voltage

Interface	Description
- INV VOLT HIGH - INPUT: V	<p>INV Over Voltage Protection Point</p> <p>Press UP/DOWN to adjust the input figure; Press Enter to confirm the input and enter restart interface; Press ESC to cancel the input and return to operation parameters interface; The value should range between 240V and 280V, which varies with different standards.</p>
Value range (240~280V)	

GRID VOLT MAX

Interface	Description
- GRID MAX - INPUT: 270V	<p>GRID Over Voltage Protection Point</p> <p>Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.</p>

Volt Min

Interface	Description
- VOLT MIN - → 1: INV-MIN 2: GRID MIN	<p>Enter option 1 to adjust the minimum volt of the INV. Enter option 2 to adjust the minimum volt of the grid.</p>

Low INV voltage

Interface	Description
- INV VOLT LOW - INPUT: V	<p>INV Low Voltage Protection Point</p> <p>Press UP/DOWN button to adjust the input figure; Press Enter to confirm the input and enter restart interface; Press ESC button to cancel the input and return to operation parameters interface; The value should range between 150V and 220V, which varies with different standards.</p>
Value range (150~200V)	

Grid Volt Min

Interface	Description
- GRID MIN - INPUT: 170V	<p>GRID Low Voltage Protection Point</p> <p>Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.</p>

Freq Max

Interface	Description
- FREQ MAX - → 1: INV-MAX 2: MGRID AX	Enter option 1 to adjust the maximum frequency of the INV. Enter option 2 to adjust the maximum frequency of the grid.

High INV frequency

Interface	Description
- INV FREQ HIGH - INPUT: 52.0Hz	INV Over Frequency Protection Point Press UP/DOWN to adjust the input number; Press ENTER to confirm the input and enter restart interface; Press ESC to cancel the input and return to Operational parameters interface; The value ranges between 50.5 and 55, which varies with different standards.
Value range (50.5~55)	

GRID Freq Max

Interface	Description
- GRID MAX - INPUT: 53.5Hz	GRID Over Frequency Protection Point Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

Freq Min

Interface	Description
- FREQ MIN - → 1: INV MIN 2: GRID MIN	Enter option 1 to adjust the minimum frequency of the INV. Enter option 2 to adjust the minimum frequency of the grid.

Low INV frequency

Interface	Description
- INV FREQ LOW - INPUT: Hz	INV Low Frequency Protection Point Press UP/DOWN to adjust the input figure; Press Enter to confirm the input and enter restart interface; Press ESC to cancel the input and return to operation parameters interface; The value ranges between 45 and 49.8, which varies with different standards.
Value range (45~49.8)	

GRID Freq Min

Interface	Description
- GRID MIN - INPUT: 50.5Hz	GRID Low Frequency Protection Point Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

OVER VOLT

Interface	Description
- OVER VOLT - → 1: ENABLE 2: VOLT	Enter the option 1 to enable or disable the function that the power of inverter derates when voltage is too high. Enter the option 2 to adjust the exact value of the voltage when power starts to derate.

OVER VOLT ENABLE

Interface	Description
- OVER VOLT - → 1: DISABLE 2: ENABLE	Derate power when Voltage over. The default option is enable.

OVER VOLT START

Interface	Description
- OVER VOLT - INPUT: 264V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

UNDER VOLT

Interface	Description
- UNDER VOLT - → 1: ENABLE 2: VOLT	Enter the option 1 to enable or disable the function that the power of inverter derates when voltage is too low. Enter the option 2 to adjust the exact value of the voltage when power start to derate.

UNDER VOLT ENABLE

Interface	Description
- UNDER VOLT - → 1: DISABLE 2: ENABLE	Enable or disable the function that the power of inverter derates when voltage is too low.

UNDER VOLT START

Interface	Description
- UNDER VOLT - INPUT: 200V	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

OVER FREQ

Interface	Description
- OVER FREQ - → 1: ENABLE 2: FREQ	Enter the option 1 to enable or disable the function that the power of inverter derates when frequency is too high. Enter the option 2 to adjust the exact value of the frequency when power start to derate.

OVER FREQE ENABL

Interface	Description
- OVER FREQ - → 1: DISABLE 2: ENABLE	Derate power when Frequency over. The default option is enable.

OVER FERQ START

Interface	Description
- OVER FREQ - INPUT: 50.50Hz	Press UP/DOWN to adjust the input figure; Press Enter to confirm the input.

UNDER FREQ

Interface	Description
- UNDER FREQ - → 1: ENABLE 2: FREQ	Enter the option 1 to enable or disable the function that the power of inverter derates when frequency is too low. Enter the option 2 to adjust the exact value of the frequency when power start to derate.

UNDER FREQ ENABLE

Interface	Description
- UNDER FREQ - → 1: DISABLE 2: ENABLE	Derate power when Frequency is too low. The default option is enable.

UNDER FREQ START

Interface	Description
- UNDER FREQ - INPUT: 50.50Hz	The function that the power of inverter derates when frequency is too low. Press UP/DOWN to adjust the exact value of the frequency when power start to derate.

REACT RESP

Interface	Description
- REACT RESP - INPUT: 10s	The input value of Reactive response time. The value ranges from 6s to 60s and default value is 10s.
Value Range (6s ~ 60s)	

VRT_ENABLE

Interface	Description
- VRT_ENABLE - → 1: DISABLE 2: ENABLE	Enable or disable the High/Low voltage ride through capability.

POW SI RATE

Interface	Description
- POW SI RATE - INPUT: 250%	The input value of power rising rate. Default value is 250%.

6.3.5 485 Address

Interface	Description
- 485 ADDRESS - INPUT: 1	Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to setup interface; the input value should range between 1 and 32.
Value range (1~32)	

6.3.6 485 Baud rate

Interface	Description
- SELECT - 1: 2400 bps 2: 4800 bps → 3: 9600 bps	Press UP/DOWN button to move corresponding options; Press ENTER button to confirm or ESC button to cancel the selection and return to setup interface; there are three alternative options: 2400/4800/9600.

6.3.7 Language

Interface	Description
<pre> - LANGUAGE - → 1: 中文 2: ENGLISH 3: ITALIA </pre>	<p>Press UP/DOWN button to move corresponding options;</p> <p>Press ENTER button to confirm or ESC button to cancel the selection and return to setup interface;</p>

6.3.8 LCD backlight

Interface	Description
<pre> - LIGHT TIME - INPUT: 20 UNIT: S (seconds) </pre>	<p>Press UP/DOWN button to adjust the input figure; Press ENTER button to confirm or ESC button to cancel the input and return to setup interface;</p> <p>The input value should range between 20 and 120.</p>

6.3.9 Date/time

Interface	Description
<pre> -- DATE/TIME -- DATE: 2007-19 20- TIME: 10: 01: 12 WEEK: Monday </pre>	<p>Press UP/DOWN button to adjust the input figure; Press Enter button to move cursor backward, confirm input and return to setup interface; Press ESC button to move cursor forward and return to setup interface;</p> <p>The input value should range between 2000 and 2099.</p>

6.3.10 Clear history

Interface	Description
<pre> -- DEL RE- C -- → 1: CANCEL 2: CONFIRM </pre>	<p>Clear all the previous history in Inquiry/Record menu.</p> <p>Press UP/DOWN button to move corresponding options;</p> <p>Press ENTER button to confirm or ESC button to cancel the selection and return to setup interface.</p>

6.3.11 Password Setting

Interface	Description
<pre> -- PASSWORD -- OLD: XXXXX NEW: XXXXX CONFIRM: XXXXX </pre>	<p>This interface will be used to change password for entry into the setup interface;</p> <p>Press UP/DOWN to adjust the input figure;</p> <p>Press Enter to move cursor backward, confirm input and return to setup interface;</p> <p>Press ESC to move cursor forward and return to setup interface;</p>

6.3.12 Maintenance

Interface	Description
<pre> →12: MAINTENA NCE </pre>	<p>Maintainer use only.</p> <p>Press Enter to enter the selected item.</p>

6.3.13 Auto Test

Interface	Description
<pre>-- PASSWORD -- INPUT: XXXXX</pre>	<p>The Auto test function works only in the Italy grid standard. After entering the Auto test interface, the system will prompt to input password;</p> <p>The password is"00000".</p>
Interface	Description
<pre>Auto test . . . 603 s</pre>	<p>The self-test countdown interface. This interface will show up at the beginning of the self-test. The countdown will last for 603 seconds. You can press the ESC Key to exit the self-test.</p>
Interface	Description
<pre>-- TEST LIST -- 1: VOLT MAX → 2: VOLT MIN 3: FREQ MAX 4: FREQ MIN</pre>	<p>After the countdown there is a test list interface which is used to select the parameter for Auto test. There are four kinds of test results including Volt Max , Volt Min ,Freq Max and Freq Min. After entering the submenu items, you can press the UP and Down key to scan the result.</p>
Interface	Description
<pre>OVER VOLT Set: 253.0V 603s Tes: 253.0V 603s</pre>	<ul style="list-style-type: none"> • Threshold setting value: The value set by upper computer software. • Threshold setting trip time: The trip time set by upper computer software. • Threshold auto test value: The value of threshold during coincidence between the threshold and current measured value. • Threshold auto test trip time: The time from the coincidence between the threshold and current to the trip signal of disconnection switch. • Current measured voltage or frequency value: The measurement value of grid voltage or frequency during the coincidence.
<pre>VACMAX(S2) Set: 264.0V 190ms Tes: 264.0V 188ms Cur: 230.0V Pass!</pre>	
Interface	Description
<pre>VACMIN Set: 195.0V 1.52s Tes: 195.0V 1.50s Cur: 230.0V Pass!</pre>	<ul style="list-style-type: none"> • Threshold setting value: The value set by upper computer software. • Threshold setting trip time: The trip time set by upper computer software. • Threshold auto test value: The value of threshold during coincidence between the threshold and current measured value. • Threshold auto test trip time: The time from the coincidence between the threshold and current to the trip signal of disconnection switch. • Current measured voltage or frequency value: The measurement value of grid voltage or frequency during the coincidence.

Interface	Description
<p>OVER VOLT Set: 50.2Hz 100ms Tes: 50.2Hz 94ms Cur: 49.9Hz Pass!</p>	<ul style="list-style-type: none"> • Threshold setting value: The value set by upper computer software. • Threshold setting trip time: The trip time set by upper computer software. • Threshold auto test value: The value of threshold during coincidence between the threshold and current measured value. • Threshold auto test trip time: The time from the coincidence between the threshold and current to the trip signal of disconnection switch. Current measured voltage or frequency value: The measurement value of grid voltage or frequency during the coincidence.
<p>FACMAX(S2) Set: 51.5Hz 100ms Tes: 51.5Hz 94ms Cur: 49.9Hz Pass!</p>	

Interface	Description
<p>FACMIN(S1) Set: 49.8Hz 100ms Tes: 49.8Hz 97ms Cur: 49.9Hz Pass!</p>	<p>Threshold setting value:</p> <ul style="list-style-type: none"> • The value set by upper computer software. <p>Threshold setting trip time:</p> <ul style="list-style-type: none"> • The trip time set by upper computer software. • Threshold auto test value: The value of threshold during coincidence between the threshold and current measured value. <p>Threshold auto test trip time:</p> <ul style="list-style-type: none"> • The time from the coincidence between the threshold and current to the trip signal of disconnection switch. <p>Current measured voltage or frequency value:</p> <ul style="list-style-type: none"> • The measurement value of grid voltage or frequency during the coincidence.
<p>FACMIN(S2) Set: 47.5Hz 100ms Tes: 47.5Hz 94ms Cur: 49.9Hz Pass!</p>	

6.4 Inquiry

Interface	Description
<pre>-- INUIREQ -- → 1: INV MODEL 2: MODEL SN 3: FIRMWARE 4: REGION 5: RUN SETTING 6: RECORD 7: BMS INFO</pre>	<p>Press UP/DOWN button to move corresponding options;</p> <p>Press Enter button to jump to the selected menu; Press ESC button to return to user interface; There are four alternative options: machine model, serial number, firmware version region, running setting, running records and BMS information. (Refer to 1 to 7).</p>

① Machine model

Interface	Description
<pre>-- INVERTER -- SL-D5</pre>	<p>This interface displays machine model of the inverter;</p> <p>Press ESC button to return to inquiry interface.</p>

② Serial number

Interface	Description
<pre>-- SERIAL NUMBER -- SN: 123456789532625</pre>	<p>This interface displays serial number of the inverter;</p> <p>Press ESC button to return to inquiry interface.</p>

③ Firmware Version

Interface	Description
<pre>-- FIRMWARE -- ARM VER: 1.0.0 DSP VER: 1.0.0</pre>	<p>This interface displays firmware version for ARM and DSP of the inverter;</p> <p>Press ESC button to return to inquiry interface.</p>

④ Region

Interface	Description
<pre>-- REGION -- Aus-A</pre>	<p>This interface displays the current selection of region.</p> <p>Press ESC button to return to inquiry interface.</p>

⑤ Run Setting

Interface	Description
<pre> -- RUN SETTING -- INV VOLT MAX: 200 V INV VOLT MIN: 170 V INV FREQ HIGH: 52.0 Hz INV FREQ LOW: 48.0 Hz OVER VOLT: 264 V UNDER VOLT: 200 V OVER FREQ: 50.5 Hz UNDER FREQ: 49.5 Hz GRID POWER: 100%</pre>	<p>This interface displays the current settings for grid protection and power quality response modes.</p> <p>Note that the parameters here are only available for view.</p> <p>Press ESC button to return to inquiry interface.</p>

⑥ Running Records

Interface	Description
<pre> -- REC(500) -- 1: F10-1 ATE: 2018-12-01 TIME: 00: 01: 02</pre>	<p>SN of the fault: Fault warning codes (500 at utmost) (the latest fault or alarm marked as No.1) Time of the fault:</p> <p>Press UP/DOWN button to view the record; Press ENTER button to enter the description interface for corresponding records;</p> <p>Press ESC button to return to Inquiry interface.</p>

⑦ Bms Info

Interface	Description
<pre> -- PACK INFO -- → 1: PACK 1 2: PACK 2 3: PACK 3 4: PACK 4 5: PACK 5</pre>	
<pre> -- PACK 1 -- 1: INFO 2: WARN 3: FAULT 4: PROTECT</pre>	<p>Battery information, warning records, fault records and protect information of the five battery packs can be queried in this interface.</p>

6.5 Statistics

Interface	Explanation
<pre>-- STAT. -- → 1: TIME STAT. 2: CONNE.TIMES 3: PEAK POWER 4: E-TODAY 5: E-MONTH 6: E-YEAR 7: E-TOTAL</pre>	<p>This interface is used to select statistics items;</p> <p>Press UP/DOWN button to move corresponding options;</p> <p>Press Enter to enter the selected menu;</p> <p>Press ESC button to return to user interface;</p> <p>There are eight alternative options in total: time accounting, grid-connection frequency/ peak power/ power generation for the day / power generation for the month/ power generation for the year/gross power generation (refer to 1 to 7).</p>

① Time accounting

Interface	Description
<pre>- TIME - RUN: 5 GRID: 0 UNIT: HOUR</pre>	<p>Operation length of inverter (hours) Grid-connection length (hours)</p> <p>Press ESC button to return to statistics interface.</p>

② Grid-connection frequency

Interface	Description
<pre>-- CONNE.TIMES -- TIMES: 0</pre>	<p>This interface displays grid-connection frequency of the inverter;</p> <p>Press ESC button to return to statistics interface.</p>

③ Peak power

Interface	Description
<pre>-- PEAK POWER -- HISTORY: 5000 TODAY: 0 UNIT: W</pre>	<p>This interface displays power peak in history and for the day.</p> <p>Press ESC button to return to statistics interface.</p>

④ The day

Interface	Description
<pre>-- E-TODAY -- PV: 0.0KW HMMETER: 0.0KWH GRID: 0.0KWH LOAD: 0.0KWH CHARG: 0.0KWH DISCH: 0.0KWH</pre>	<p>This interface displays power generation for the day (kWh) ;</p> <p>PV power generation;</p> <p>Electric energy selling to grid; Electric energy buying from grid; Power consumption of load.</p>

⑤ The month

Interface	Description
<pre>-- E-MONTH -- PV: 0.0KWH METER: 0.0KWH GRID: 0.0KWH LOAD: 0.0KWH</pre>	<p>This interface displays power generation for the month (kWh); PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load.</p>

⑥ The year

Interface	Description
<pre>-- E-YEAR -- PV: 0.0KWH METER: 0.0KWH GRID: 0.0KWH LOAD: 0.0KWH</pre>	<p>This interface displays power generation for the year (kWh); PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load.</p>

⑦ Gross generation

Interface	Description
<pre>-- E-TOTAL -- PV: 0.0KWH METER: 0.0KWH GRID: 0.0KWH LOAD: 0.0KWH CHARG: 0.0KWH DISCH: 0.0KWH</pre>	<p>This interface displays gross power generation; PV power generation; Electric energy selling to grid; Electric energy buying from grid; Power consumption of load;</p>

6.6 Factory default setting

Interface	Description
<pre>- FACTORY RESET - → 1: CANVEL 2: CONFIRM</pre>	<p>Press UP/DOWN button to move corresponding options;</p>

7

Battery storage and recharging



7.1 Battery storage requirements ——

Storage environment requirements:

- Ambient temperature: -10°C~45°C; recommended storage temperature: 20°C~30°C;
- Relative humidity: 0%RH~95%RH (No condensation);
- In a dry, ventilated and clean place;
- No contact with corrosive organic solvents, gases and other substances;
- No direct sunlight;
- Less than 2 meters from any heat source.

7.2 Storage expiration ——

In principle, it is not recommended to store the battery for a long time. Be sure to use it in time. The stored batteries should be disposed according to the following requirements.

Table 5.2 Stored lithium battery recharging interval

1. If a battery is deformed, broken or leaking, discard it immediately regardless of its storage time.
2. The allowable maximum stored battery recharging period is 3 years and the allowable maximum stored battery recharging times is 3. For example, if recharging is performed once every 8 months, the allowable maximum recharging times is 3 times; if recharging is performed once every 12 months, the allowable maximum recharging times is 3 times; if the allowable maximum stored battery recharging period or times is exceeded, it is recommended to discard the battery.
3. A lithium battery will have its capacity decreasing after being stored for a long time, and typically will have its capacity irreversibly decreasing by 3%-10% after being stored at the recommended storage temperature for 12 months. If the customer conducts the discharge test and acceptance according to the specification, there is a risk that the battery with a capacity less than 100% after being stored will fail the test.

Required Storage Temperature	Actual Storage Temperature	Recharge Interval
-10°C ~ +45°C	-10°C ≤ T ≤ 30°C	12 months
	30°C < T ≤ 45°C	8 months

7.3 Inspection before battery recharging

Before recharging a battery, check its appearance: Deformation/Shell damage/Leakage.

7.4 Recharge Operation Steps

Step 1 Connect power cables to the battery charger correctly. The maximum number of battery PACK connected parallel is 5.

Step 2 Turn on the battery PACK DC breaker to ON; Press the battery “start key” for 3 second to start the battery PACK. Check the LED on the battery PACK is on.

Step 3 Turn on the battery charger.

Step 4 Set charging parameter on the battery charger.

Case #1, one battery PACK is charged. Set the charge limited voltage 56.5V; Set the charge limited current 50A;

Case #2, Two ~ Five battery PACKs are charged. Set the charge limited voltage 56.5V; Set the charge limited current 100A;

Step 5 after the battery is charged, switch off the battery charger and then the battery DC breaker. Disconnect the DC cables and then press the battery “start key” for 3 second to switch off the battery PACK.

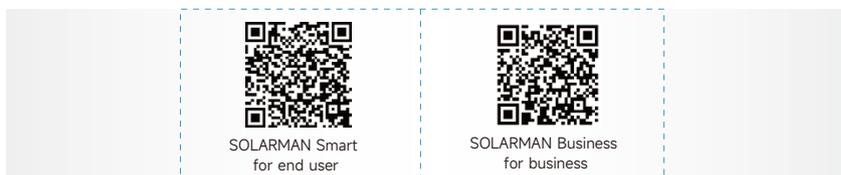
8

Stick Logger Quick Guide



8.1 Download APP

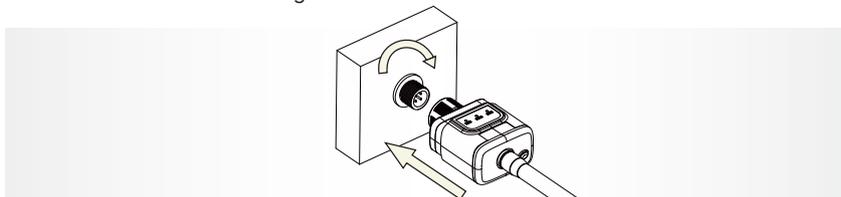
Step 1 Scan the QR Code on the right side and download the APP.



IPhone: Search "SOLARMAN Smart" in Apple Store.
Android: Search "SOLARMAN Smart" in Google Play.

8.2 Stick Logger Installation

Step 1 Assemble logger to the inverter communication interface as shown in the diagram.



Please do not hold the logger body to rotate while install or remove the logger.



8.3 Logger Status

8.3.1 Check Indicator Light

Lights	Implication	Status Description (All lights are single green lights.)
	Communicate with router	Light off: Fail to connect to the router. On 1s/Off 1s (Slow flash): Successful connection to the router. Light keeps on: Successful connection to the server. On 100ms/Off 100ms (Fast flash): Distributing network fast.
	Communicate with inverter	Light keeps on: Logger connected to the inverter. Light off: Fail to connect to the inverter. On 1s/Off 1s (Slow flash): Communicating with inverter.
	Logger running status	Light off: Running abnormally. On 1s/Off 1s (Slow flash): Running normally. On 100ms/Off 100ms (Fast flash): Restore factory settings.

The normal operation status of the stick logger, when router connected to the network

normally:

1. Successful connection status with serve: NET light keeps on after the logger powered on.
2. Logger running normally: READY light flashes.
3. Successful connection status with inverter : COM light keeps on.

8.4 Abnormal State Processing

If the data on platform is abnormal when the stick logger is running, please check the table below and according to the status of indicator lights to complete a simple troubleshooting. If it still can't be resolved or indicator lights status do not show in the table below, please contact our Customer Service. (Note: Please using the following table query after power-on for 2mins at least.)

NET 	COM 	READY 	Fault Description	Fault Cause	Solution
Any state	OFF	Slow flash	Communicate with inverter abnormally	<ol style="list-style-type: none"> 1. Connection between stick logger and inverter loosen. 2. Inverter does not match with stick logger's communication rate. 	<ol style="list-style-type: none"> 1. Check the connection between stick logger and inverter. Remove the stick logger and install again. 2. Check inverter's communication rate to see if it matches with stick logger's. 3. Long press Reset button for 5s, reboot stick logger.
OFF	ON	Slow flash	Connection between logger and router abnormal	<ol style="list-style-type: none"> 1. Stick logger does not have a network. 2. Antenna abnormal 3. Router WiFi signal strength weak. 	<ol style="list-style-type: none"> 1. Check if the wireless network configured. 2. Check the antenna, if there is any damage or loose. 3. Enhance router Wi-Fi signal strength. Long press Reset button for 10s, reboot stick logger and networking again.
Slow flash	ON	Slow flash	Connection between logger and router normal, connection between logger and remote server abnormal.	<ol style="list-style-type: none"> 1. Router networking abnormal. 2. The server point of logger is modified. 3. Network limitation, server cannot be connected. 	<ol style="list-style-type: none"> 1. Check if the router has access to the network. 2. Check the router's setting, if the connection is limited.
OFF	OFF	OFF	Power supply abnormal	<ol style="list-style-type: none"> 1. Connection between stick logger and inverter loosen or abnormal. 2. Inverter power is insufficient. 3. Stick Logger abnormal. 	<ol style="list-style-type: none"> 1. Connection between logger and router normal, connection between logger and remote server abnormal.
Fast flash	Any state	Any state	SMARTLINK networking status	Normal	<ol style="list-style-type: none"> 1. Exit automatically after 5mins. 2. Long press Reset button for 5s, reboot stick logger. 3. Long press Reset button for 10s, restore factory settings.
Any state	Any state	Fast flash	Restore factory settings	Normal	<ol style="list-style-type: none"> 1. Exit automatically after 1mins. 2. Long press Reset button for 5s, reboot stick logger. 3. Long press Reset button for 10s, restore factory settings.

9

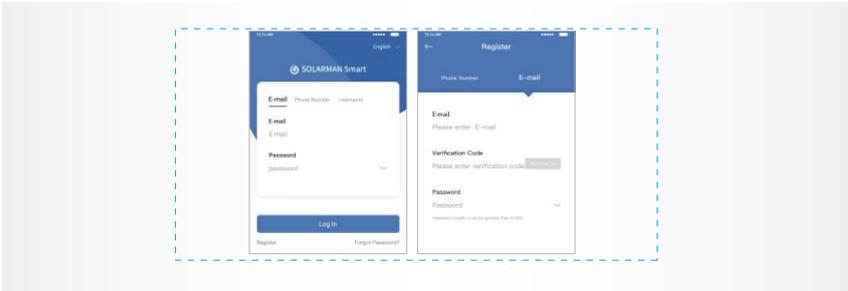
SOLARMAN
Smart APP



APP

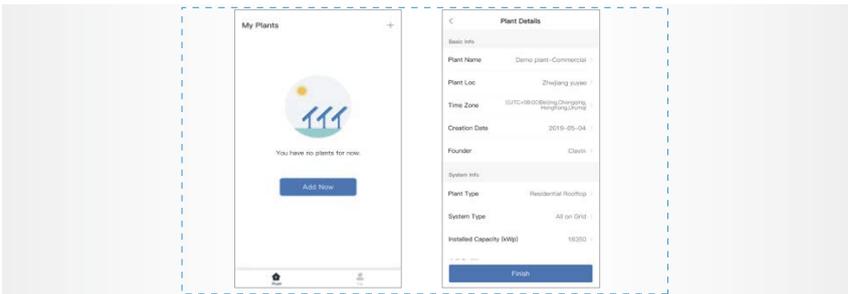
9.1 Registration

Go to SOLARMAN Smart and register. Click "Register" and create your account here.



9.2 Create a Plant

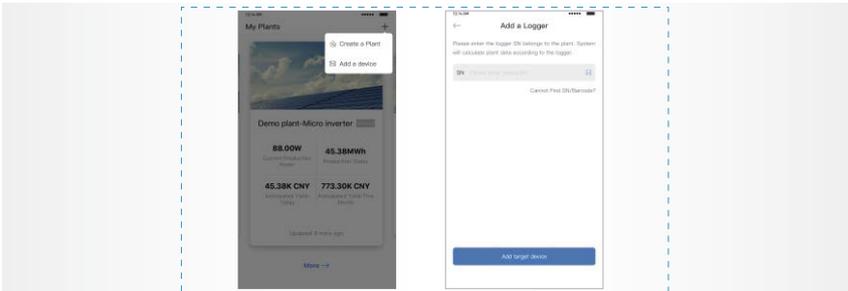
Click "Add Now " to create your plant. Please fill in plant basic info and other info here.



9.3 Add a Logger

Method 1: Enter logger SN manually.

Method 2: Click the icon in the right and scan to enter logger SN You can find logger SN in the external packaging or on the logger body.



10

Maintenance & Troubleshooting



10.2 Troubleshooting and Maintenance of All-in-one energy storage system

10.2.1 Alarm Code and Error Code

10.2.1.1 Alarm Code

Codes	English description
W00	Grid Volt Low
W01	Grid Volt High
W02	Grid Frequency Low
W03	Grid Frequency High
W04	Solar Loss
W05	Bat Loss
W06	Bat Under Volt
W07	Bat Volt Low
W08	Bat Volt High
W09	Over Load
W10	GFCI Over
W11	LN Reverse
W12	Fan Fault
W13	BAT Power Down
W14	BMS Discharge Over Current
W15	BMS charge Over Current
W16	BMS Over Volt
W17	BMS Over Temp
W18	BMS Discharge Low Temp
W19	BMS Volt Imbalance
W20	BMS Communicate Fault
W21	BMS Under Volt
W22	BMS Chg Temp Low
W23	BMS Severe Over Volt
W24	BMS Severe Over Temp
W25	BMS Updating
W26	BMS Program Version Err
W27	BMS Program Update Fail
W28	CT Reverse
W29	Clock Initiate Fail

10.2.1.2 Error Code

Codes	English description
F00	Soft Time Out
F01	INV Volt Short
F02	GFCI Sensor Fault
F04	Bus Volt Low
F05	Bus Volt High
F06	Bus Short Circuit
F07	PV ISO Under Fault
F08	PV Input Short Circuit
F09	Bypass Relay Fault
F10	INV Curr Over
F11	INV DC Over
F12	Ambient Over Temp
F13	Sink Over Temp
F14	Grid Relay Fault
F15	DisChg Curr Over
F16	Chg Curr Over
F17	Current Sensor Fault
F18	INV Abnormal
F19	EPS Relay Fault
F20	Always Over Load
F32	SCI Fault

10.2.2 Routine Maintenance of All-in-one energy storage system

10.2.2.1 Maintenance Plan

- Check if wire connections are loose.
- Check if cables are aged/damaged.
- Check if cable insulating ribbon drops.
- Check if cable terminal is loose, any overheat sign.
- Check if ground connection is good.

10.2.2.2 Operating Environment

(Every six months)

Carefully observe whether the battery system equipment is ineffective or damaged;

When the system is running, listen to any part of the system for abnormal noise;

Check whether the voltage, temperature and other parameters of the battery and other equipment parameters are normal during system operation.

10.2.2.3 Equipment Cleaning

(Every six months to one year, depending on the site environment and dust content, etc.) Ensure that the ground is clean and tidy, keep the maintenance access route unblocked, and ensure that the warning and guiding signs are clear and intact.

Monitor the temperature of the battery module and clean the battery module if necessary.

10.2.2.4 Cable, Terminal and Equipment Inspection

(Every six months to one year)

Check if the cable connections are loose. Check whether the cables are aged / damaged.

Check whether the cable tie of the cable has fallen off.

Check if the cable terminal screws are loose and the terminal position has any signs of overheating.

Check whether the management system of the system equipment, monitoring system and other related equipment are invalid or damaged.

Check that the grounding of the equipment is good and the grounding resistance is less than 10 ohms.

10.2.2.5 Notes

After the equipment is out of operation, please pay attention to following notes while maintaining:

Related safety standards and specifications should be followed in operation and maintenance.

Disconnect all the electrical connections so that the equipment would not be powered on.

Wait at least 5 minutes after disconnection, so that the residual voltage of the capacitors drops to a safe voltage. Use a multimeter to make sure that the equipment is completely discharged.

The equipment should be repaired by professional staff only and it is strictly forbidden for maintenance staff to open equipment modules on their own.

Appropriate protective measures should be taken while maintaining, such as insulated gloves, shoes, and anti-noise ear plugs.

Life is priceless. Make sure no one would get hurt first.

In case of a deep discharge, the battery must be charged to a SOC rate of 30% to 50%, If the entire system is static (i.e. the battery has not been charged for two weeks or more).

Please contact us in time if there are any conditions that could not be explained in the manual.

10.4 Maintenance and trouble shooting of Mounting structure

In order to ensure the reliable operation of the solar mounting structure and improve the safety of the equipment, a daily patrolling inspection system should be established in the daily operation and maintenance work. Patrolling inspection should be conducted at least once every month. The purpose of inspection work is to discover hidden troubles in time, prevent them before occurrence, and effectively improve the reliability of solar mounting structure.

Please take note that after severe conditions such as strong winds above level 6, tropical storms, heavy snow weather and earthquakes etc., maintenance and repair personnel should be organized to conduct a thorough inspection of the solar mounting structure and write down corresponding inspection records. If the solar mounting structure is found to be damaged, it should be reported immediately for the handling of issues.

Check whether there is rubbish or debris on the surface; check whether the entire structure of the solar mounting system is corroded, or any part is missing or falling off; pay attention to the sealing tightness of places where they have been sealed, and repair if necessary.

When the height of solar mounting structure exceeds 2.5m, the dressing of the climber shall meet the climbing requirements. They should be equipped with safety belts before installation. All on-site maintenance and inspection personnel must wear safety helmets and other protective equipment. Maintenance and inspection work are prohibited when there are strong winds above grade 4, there is rain and snow weather or there are no night-time construction lighting facilities in the evening. Maintenance and inspection personnel are strictly prohibited from smoking and drinking during installation time.



**Easy Energy
Easy Life**

