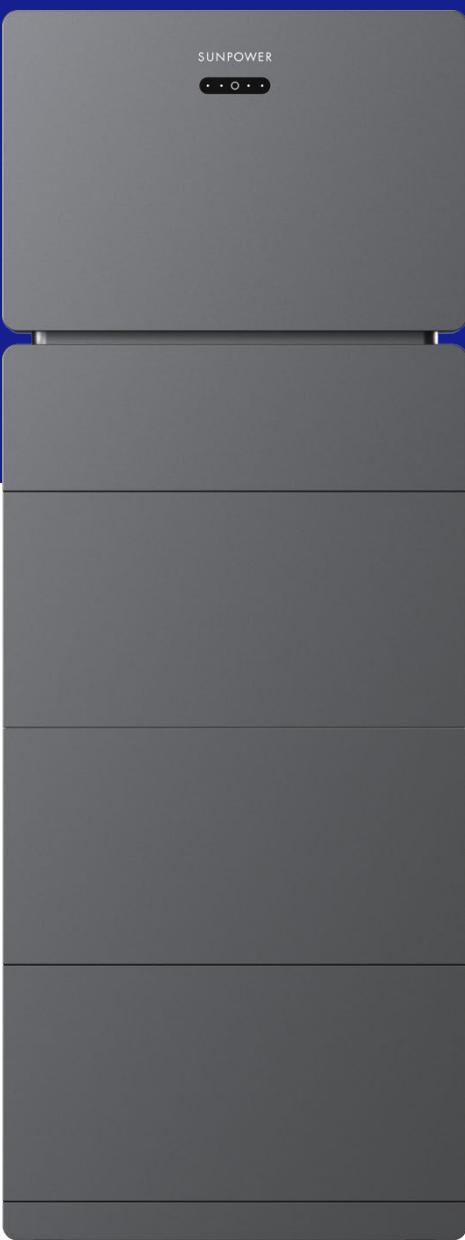


# SunPower Single Phase All-in-one Energy Storage System

## Safety & Installation Manual



## Published September 2025

This user manual is valid for installing the SunPower 1-phase hybrid all-in-one energy storage system:

|                  |   |
|------------------|---|
| SP-ARSH-6kW-G1   | 6kW 1-Phase Hybrid Inverter   |
| SP-ARSH-8kW-G1   | 8kW 1-Phase Hybrid Inverter   |
| SP-ARSH-10kW-G1  | 10kW 1-Phase Hybrid Inverter  |
| SP-RAH-HVB471-G1 | High Voltage Box (data/instruction transmission between battery and inverter) |
| SP-RH-B5K-G1     | 4.992kWh Battery Box  |

This document contains important instructions for the high-voltage energy storage system that should be followed during installation and maintenance. It describes the information, installation, electrical connection, commissioning, and maintenance and troubleshooting of the product. Please read it carefully before operating.

Illustrations in this document are reduced to the essential information and may deviate from the real product.

For the latest version and additional product documentation please refer to our resources on [www.sunpowerglobal.com](http://www.sunpowerglobal.com)

Contents are subject to change without notice.

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# 1 GENERAL INTRODUCTION

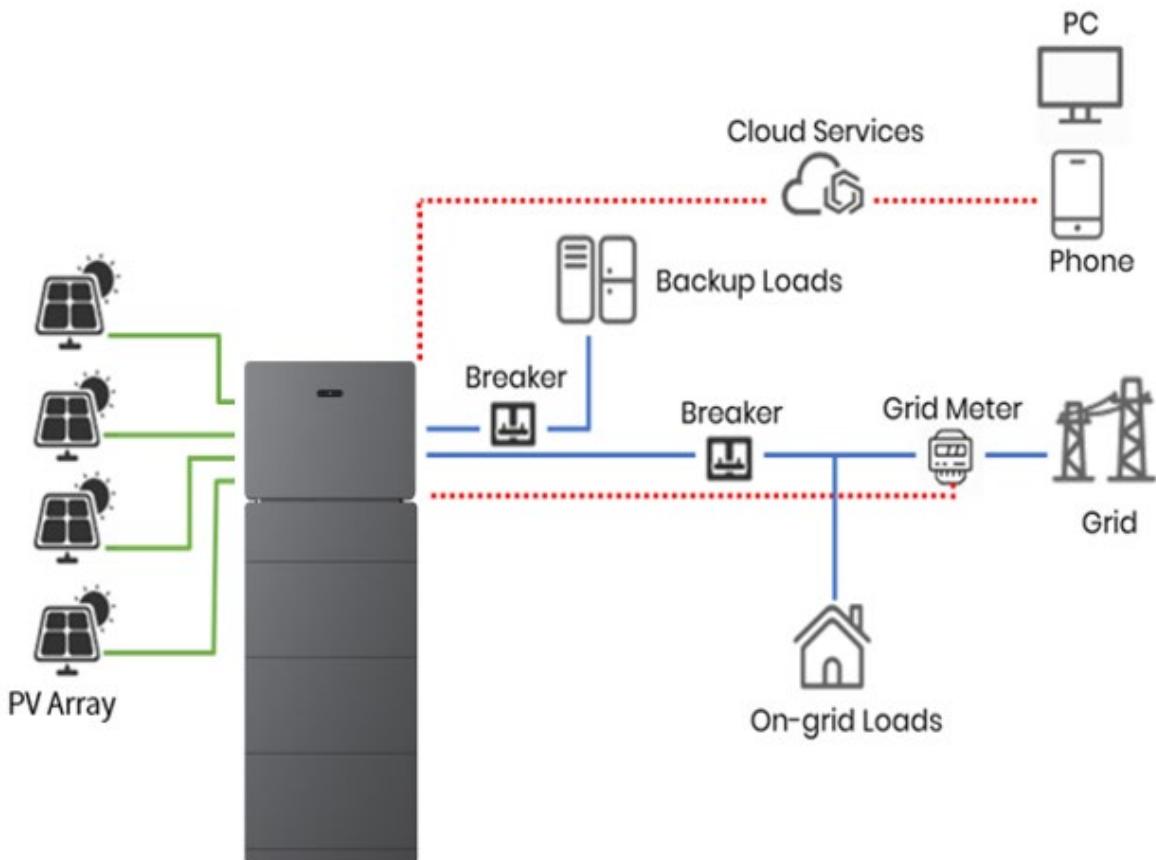
## 1.1 System Application

The system can be applied in a DC coupled system, AC coupled system, hybrid coupled system and off-grid system. It can store and release the energy from solar or grid according to the requirements of the built-in EMS. The backup function can supply power to critical loads in case of power outage.

## 1.2 Features

- Max 32/32A DC input current per string (8/10kW model)
- IP65 indoor or outdoor application
- <25dB, no noise pollution
- Support 1.5 times @10s peak output power on EPS side
- Remote updates & self-diagnosis.

## 1.3 Application Scenarios



NOTE: AC and hybrid coupled systems require additional PV meter to monitor the existing inverter.

## 1.4 Safety Introduction

### 1.4.1 Import Safety Instructions

Important instructions contained in this manual should be followed during installation, operation and maintenance.

- The SunPower hybrid all-in-one system must only be installed by a qualified electrician familiar with the product, local standards and electricity systems. The tasks described in this manual should only be performed by qualified electricians. End users can also use this manual to understand the product and functions.
- Disconnect all batteries and AC power sources from the product for at least 5 minutes before connecting any wires or conducting any electrical work to ensure the product is completely isolated and to avoid electric shocks.
- The surface of the product may exceed temperatures of 60°C during operation. Please make sure it has cooled down before touching it, and make sure that the product is out of the reach of children.
- The product must be used and operated as described in this user manual, or safety features may not work as intended, and the warranty for the product will be voided.
- The warranty will be voided if you open the product cover or change any component without authorization from TCL SunPower.
- Care must be taken to protect the product from static damage. The SunPower Limited Warranty does not cover any damage caused by static.
- Neutral continuity is NOT maintained internally and must be achieved through external connections.
- The product features a built-in residual current monitoring unit (RCMU).
- Only use type B external residual current device (RCD) rated for a tripping current of 30 mA or higher (France 30mA to 300mA).
- This product features active anti-islanding protection, and inverter frequency is shifted away from nominal conditions in the absence of a reference frequency (frequency shift).
- This product is a multimode inverter designed to be used in unconditioned outdoor shaded environments. The maximum operating ambient temperature is 55°C.
- An error message will be sent to the SunPower app in the event of a ground fault, and the status indicator on the product will turn red.

## 1.4.2 Warning and Safety Symbols

The following warning and safety symbols should be noted on the product:

### DANGER

Indicates a hazard with a high level of risk that, if not avoided, will result in death or serious injury.

### WARNING

Indicates a hazard with a medium level of risk that, if not avoided, could result in death or serious injury.

### CAUTION

Indicates a hazard with a low level of risk that, if not avoided, could result in minor or moderate injury.

### NOTICE

Indicates a situation that, if not avoided, could result in equipment or property damage.



Potential risks exist.

Wear proper PPE before any operations.



Danger to life due to electric shock

The product operates at high voltages. All work on the product must be carried out by qualified persons only.



Risk of burns due to hot surfaces

The product can get hot during operation. Avoid contact during operation. Allow the product to cool down sufficiently before carrying out any work.



Heavy objects. Lift with care.



Keep the battery from open fire or ignition sources.



Wait at least 5 minutes after turning off the inverter before touching or using it - to prevent electrical shocks or injuries.



Recyclable product components.



This side up. The package must always be transported, handled, and stored upright, with the arrows pointing upwards.



Ensure that no more than five packages, whether identical or varied, are stacked on top of one another.

---

#### WEEE designation



Do not dispose of the product together with the household waste but in accordance with the locally applicable disposal regulations for electronic waste.



Handle the package/product with care, and do not turn on its side or toss.



Observe all documentation supplied with the product.



Keep dry.

Store the package or product under cover and away from excess humidity.



CE marking

The product complies with the requirements of the applicable EU directives.

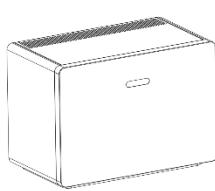
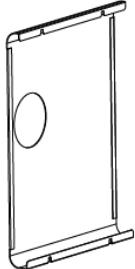
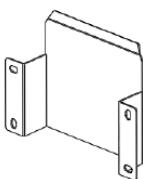
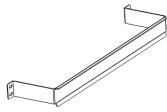
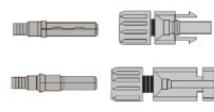
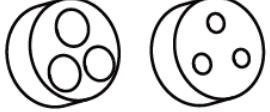
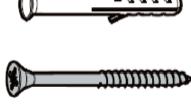
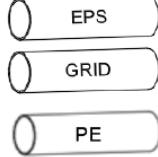
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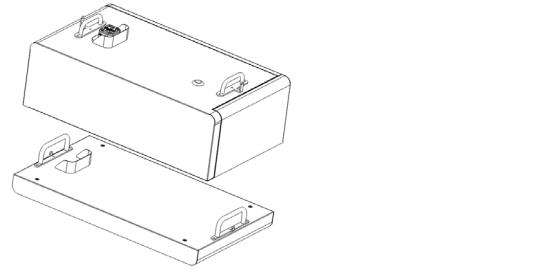
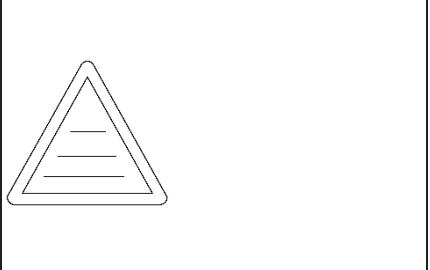
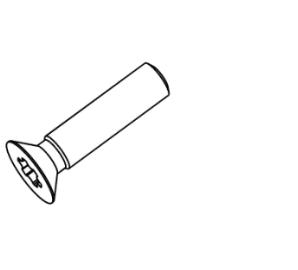
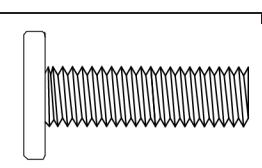
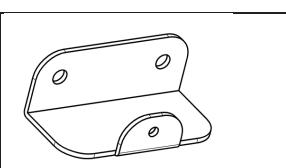
## 1.5 Limitation of Liability

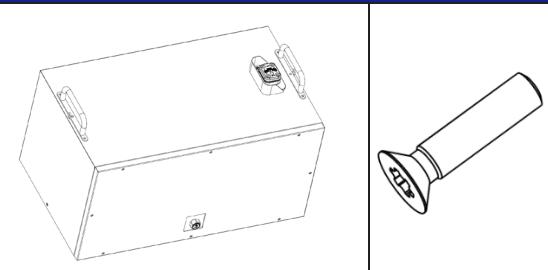
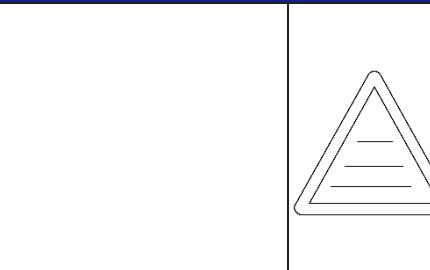
TCL SunPower assumes no direct or indirect liability for any product damage or property losses caused by the following.

- Product modifications, design changes, or parts replaced without SunPower's authorization;
- Modifications or attempted repairs or removal of serial numbers or seals
- System designs and installations not in compliance with common or local standards or regulations;
- Failure to comply with the local safety regulations
- Damage caused during customer transportation. Any claims for damage during shipping should be made directly with the shipping or insurance company as the container/packaging is unloaded and damage is identified;
- Failure to follow any/all of this installation manual or maintenance guidelines;
- Improper use or misuse of the device;
- Insufficient ventilation around the device;
- Product maintenance not done to acceptable standards;
- Force majeure (including severe or stormy weather, lightning, and fires).

## 1.6 Packing List

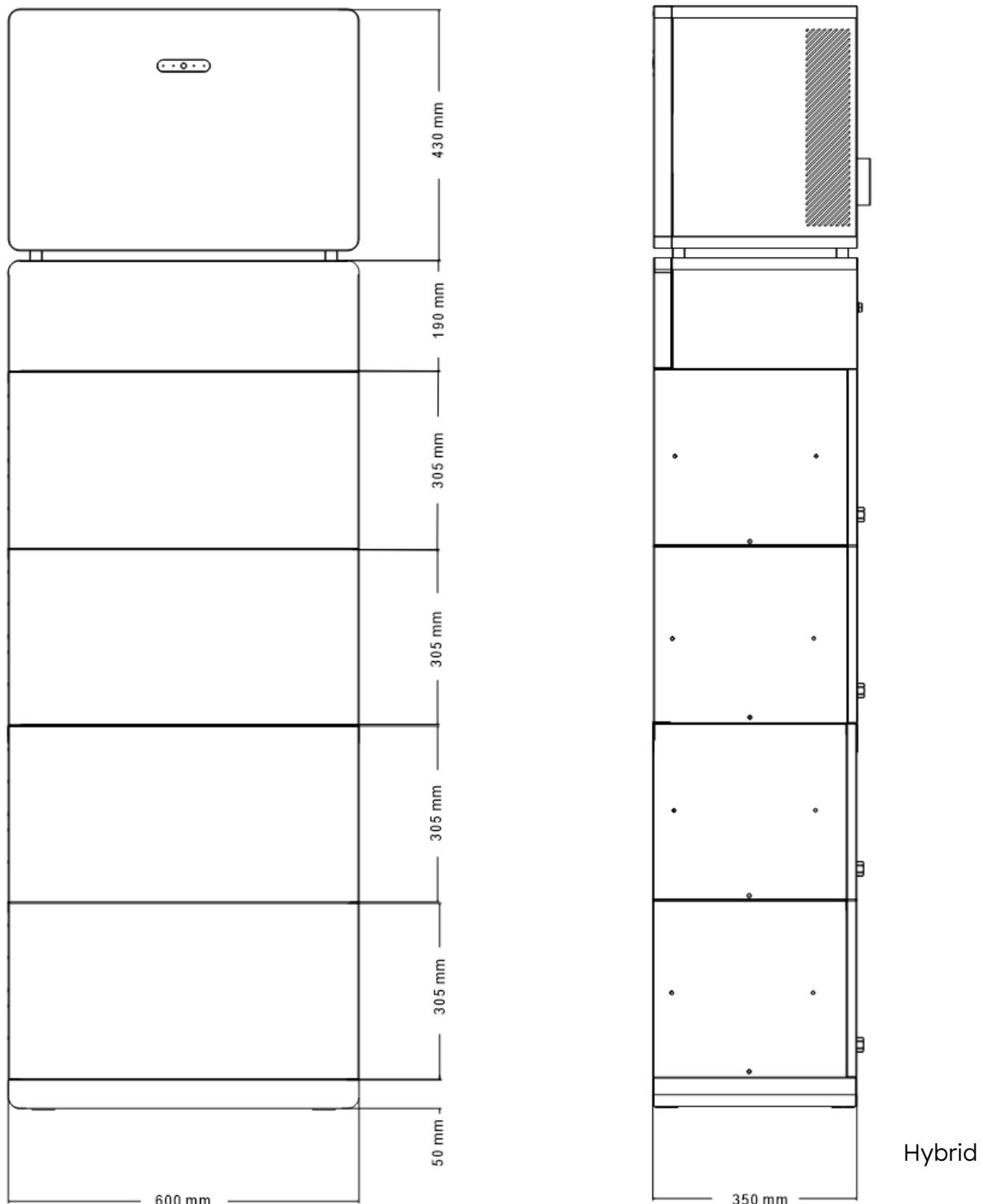
| Hybrid Inverter   |   |  |   |
|---|---|--|---|
|    |    |    |    |
| 1 x Inverter  | 1 x Right side plate  | 1 x Left side plate  | 1 x Locking bracket   |
|    |    |    |    |
| 1 x Sheet metal bracket   | 3.6/4.6/5/6kW:<br>2 x Positive DC connectors<br>2 x Negative DC connectors<br>8/10kW:<br>4 x Positive DC connectors<br>4 x Negative DC connectors | 1 x WiFi module  | 4 x M4*10 nuts 1 x M5*10 screws   |
|  |    |  |  |
| 6 x Spade terminals<br>1 x OT5-5 Terminal   | 3.6/4.6/5/6kW:<br>1 x 3*Φ10 Silicone seal ring<br>1 x 3*Φ6.4 Silicone seal ring<br>8/10kW:<br>2 x 3*Φ10 Silicone seal ring                        | 4 x Φ10*60 Expansion bolts   | Heat shrink tubing<br>3 x EPS<br>3 x GRID<br>1 x PE                                   |
|  |    |  |   |
| 1 x Single phase meter<br>1 x RJ45  | 1 x Quick installation guide  | 1 x Quality certificate  |   |
| High Voltage Box + Base   |   |  |   |

|   |  |   |
|---|--|---|
|  |  |  |
| 1 x High Voltage Box   1 x Base   | 1 x Quality Certificate  | 3 x M4*6 Screws   |
|  |   |   |
| 1 x M3*14 Screws  | 1 x bracket  |   |

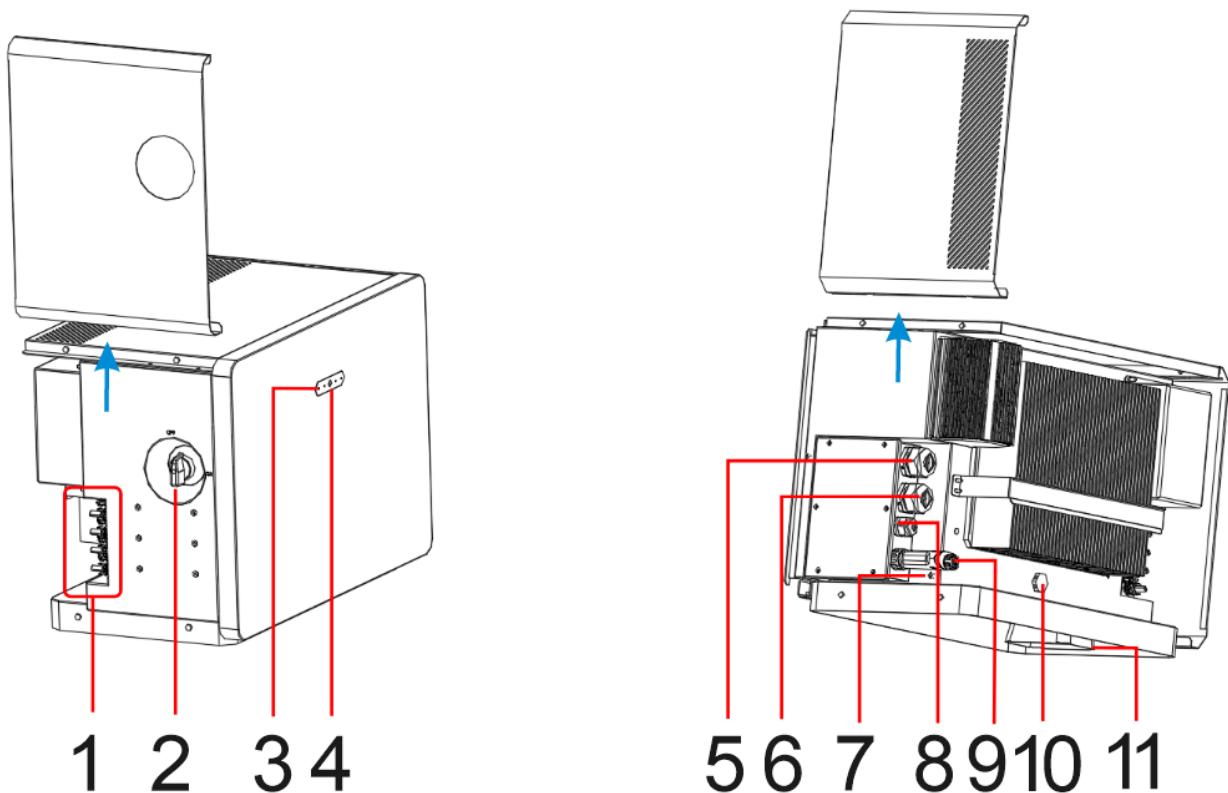
| Battery Box  |   |  |
|--|---|--|
|  |  |  |
| 1 x Battery Box  | 2 x M5*12 Screws  | 1 x Quality Certificate  |

## 1.7 System Overview

### Dimensions

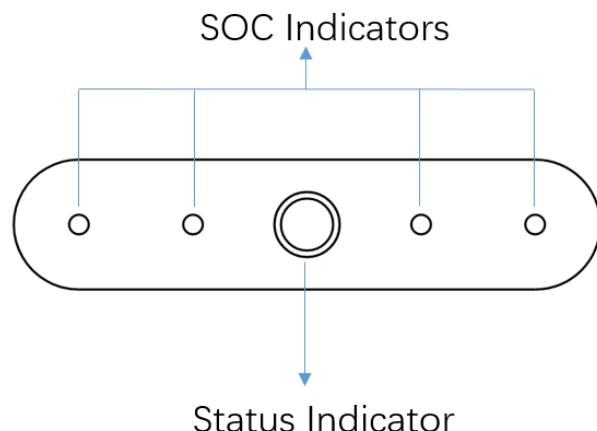


## Inverter - connections



| NO. | Parts            | NO. | Parts              |
|-----|------------------|-----|--------------------|
| 1   | PV connectors    | 7   | PE port            |
| 2   | PV isolator      | 8   | Communication port |
| 3   | SOC indicator    | 9   | Wi-Fi dongle       |
| 4   | Status indicator | 10  | Safety valve       |
| 5   | EPS port         | 11  | Battery port       |
| 6   | Grid port        |     |                    |

## Led indicator



## Status Indicator:

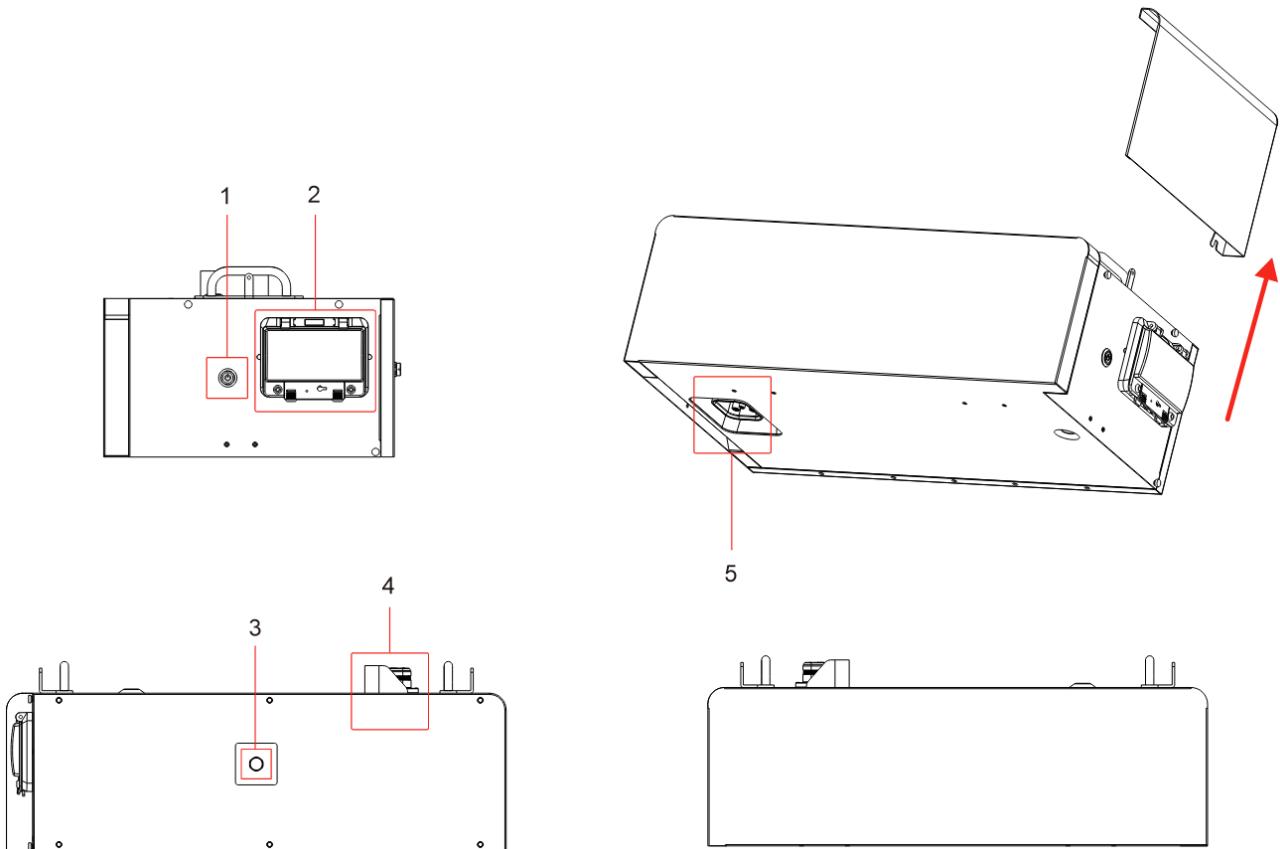
| STATUS             | LED INDICATOR                            |
|--------------------|--|
| Standby            | Flashing white LED, 2-second intervals   |
| Checking           | Flashing white LED, 0.5-second intervals |
| Normal             | Solid white LED                          |
| DSP fault          | Solid red LED                            |
| Battery com. fault | Flashing red LED, 2-second intervals     |
| Meter com. fault   | Flashing red LED, 0.5-second intervals   |

The Status indicator will be solid white when the system is ready for commissioning.

## SOC Indicator:

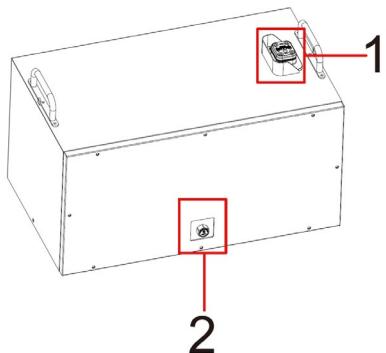
| STATUS                 | LED INDICATOR |     |     |     |
|------------------------|---------------|-----|-----|-----|
| Capacity Indicator LED | L1            | L2  | L3  | L4  |
| <30%                   | On            | Off | Off | Off |
| 30%~60%                | On            | On  | Off | Off |
| 60%~90%                | On            | On  | On  | Off |
| >90%                   | On            | On  | On  | On  |

## High voltage box



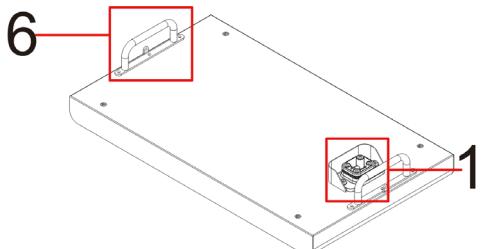
| No. | Name                             | Definition  |
|-----|----------------------------------|---|
| 1   | Black Start and Power Off button | Black start mode: When there is no PV and no grid, press and hold for 5 seconds to restart the inverter.<br>Power off mode: Press and hold for 5 seconds to turn the system off – indicated by a click. Press and hold the button for 5 seconds to restart.<br>NOTE: At first install and during maintenance, this button should not be used. Please refer to Chapter 4.2 to turn the system on via the DC breaker. |
| 2   | DC breaker                       | System master switch - must be switched on before powering on the system to prevent short circuit   |
| 3   | Safety valve                     | High voltage box pressure release safety protection device  |
| 4&5 | Guided quick connectors          | Integrated power and communication terminals  |

Battery box



| No. | Parts                  |
|-----|------------------------|
| 1   | Guided quick connector |
| 2   | Safety valve           |

Base



| No. | Parts                  |
|-----|------------------------|
| 1   | Guided quick connector |
| 6   | Lifting/moving handle  |

## 1.8 Emergency Power Supply / Backup Function

The backup functionality of the hybrid inverter allows the system to provide power to selective appliances/loads during a grid outage / black out event, allowing system owners to power essential appliances.

### ATTENTION

The product is not designed to backup the loads of entire households and only critical loads should be connected to the backup line.

The backup function has a limited capacity so installers must advise the system owner to choose only the most important home circuits for backup, and remove any unnecessary loads. If the backed-up loads exceed the inverter's output limit, the system will shut down to protect itself, impacting power supply during normal grid operation and grid outage.

### **Power Rating and the Backed-up Loads**

SunPower energy storage EPS output is determined by the inverter power rating and the battery capacity.

NOTE: Installing batteries in parallel does not boost backup power.

### **Backup power thresholds**

A single battery pack is 96V, with a charge and discharge current of 25A.

Two conditions define the upper and lower backup power (EPS) thresholds:

1. During a grid outage when PV production is unavailable, the backup output will correspond to the battery capacity. This is the lower limit of EPS discharge, which depends on two factors: the inverter rated power and the battery capacity. The actual output power of the EPS port depends on the smaller of these two factors.
2. During a daytime grid outage with sufficient sunshine, the backup output will be equivalent to the battery power + PV power – in-between the lower limit (no PV and grid) and the upper limit (connected to the grid).

### **Changeover or bypass switch**

It is recommended to install a changeover switch. A changeover switch provides the ability to bypass the inverter to supply the backup loads directly from the grid. This bypass may be required during maintenance visits and ensures an option for the customer to restore supply in the case of any technical issue, or in case the system owner accidentally adds unplanned loads on the backup line, causing tripping.

## **1-PHASE BACKUP POWER BY INVERTER RATING AND BATTERY CAPACITY**

| Backup output power    | 6 kW   | 8 kW   | 10 kW   |
|------------------------|--------|--------|---------|
| Maximum current        | 26.1 A | 34.8 A | 43.5 A  |
| <b>Current - Amps</b>  |        |        |         |
| 5 kWh                  | 20.8 A | 20.8 A | 20.8 A  |
| 10 kWh                 | 26.1 A | 34.8 A | 41.7 A  |
| 15 kWh                 | 26.1 A | 34.8 A | 43.5 A  |
| 20 kWh                 | 26.1 A | 34.8 A | 43.5 A  |
| <b>Current - Watts</b> |        |        |         |
| 5 kWh                  | 4800 W | 4800 W | 4800 W  |
| 10 kWh                 | 6000 W | 8000 W | 9600 W  |
| 15 kWh                 | 6000 W | 8000 W | 10000 W |
| 20 kWh                 | 6000 W | 8000 W | 10000 W |

NOTE: Maximum charge/discharge current: 50A | 1C discharge rate.

When selecting backup loads, installers should consider both the continuous and surge/peak output power rating, measured in kW or kVA.

| <b>Surge/peak output for the 1-phase inverter</b> |                         |                 |
|---|-------------------------|-----------------|
| <b>Rated power</b>                                | <b>Surge/peak power</b> | <b>Duration</b> |
| 6kW   | 9kW                     | 10 seconds      |
| 8kW   | 12kW                    | 10 seconds      |
| 10kW  | 14.49kW                 | 10 seconds      |

## 2 INSTALLATION

### 2.1 Installation Location and Environment

#### 2.1.1 General

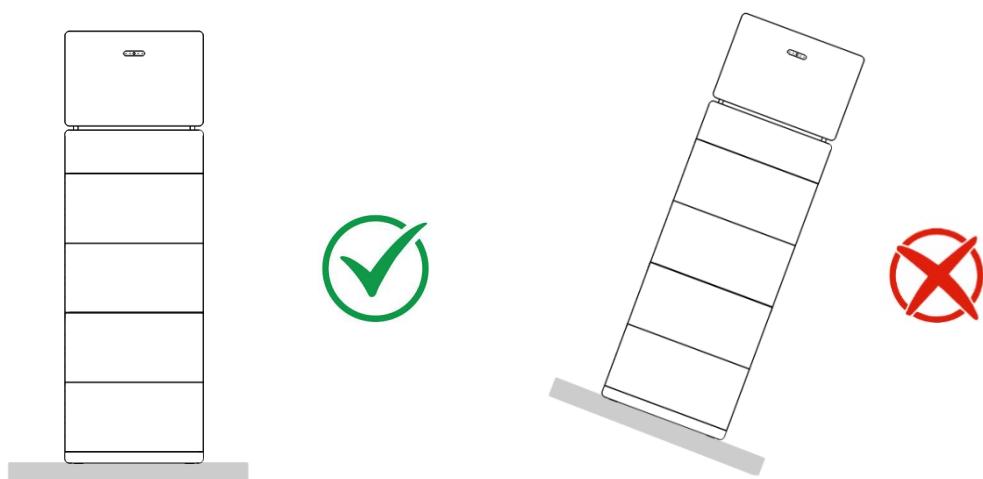
Install the equipment on a surface that is solid enough to bear the product weight. Batteries should only be installed on concrete or other non-combustible surfaces. Please evaluate the load-bearing capacity. The installation location should be well-ventilated and away from flammable or explosive materials.

The energy storage system is rated for outdoor installation and can be installed both indoors and outdoors. The battery box is naturally ventilated. The installation location must be clean, dry, and adequately ventilated. Enough space should be left for unrestricted access to the unit for installation and maintenance purposes, and the system panels should not be obstructed.



Carefully select an appropriate installation location based on the following rules to protect the system and facilitate maintenance.

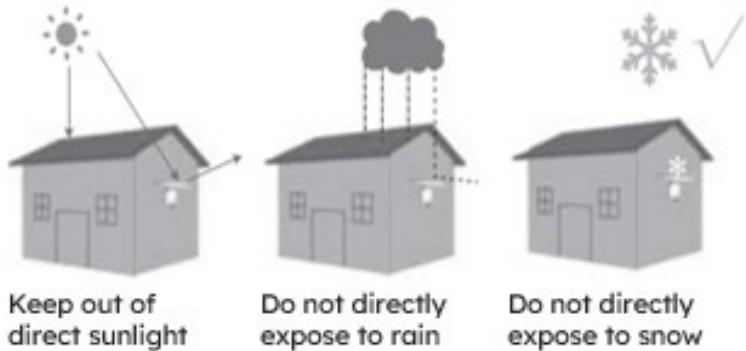
**Rule 1.** Do not install the system at forward tilted, back tilted, side tilted, horizontal, or upside-down positions.



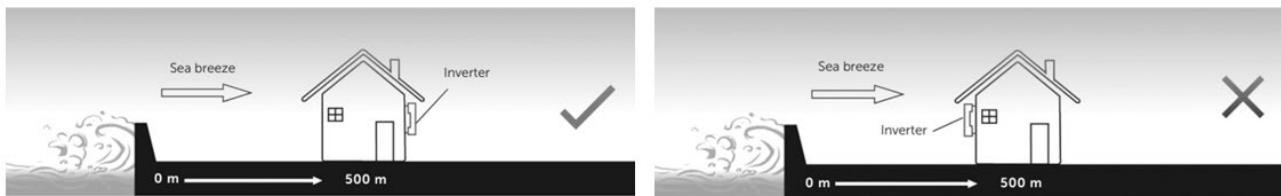
**Rule 2.** During installation, ensure that there is no other equipment (except related SunPower equipment) or flammable or explosive materials around the ESS. Reserve sufficient clearances for heat dissipation and safety isolation.

**Rule 3.** Fixing the inverter to the wall through the locking bracket serves as a securing function only. The inverter is installed together with the SunPower battery system, and the load is borne by the battery boxes and base.

**Rule 4.** The system location should be protected from direct sunlight or bad weather like snow, rain, or lightning.



**Rule 5.** Install the system at least 500 meters away from the coast and protect from coastal winds.



**Rule 6.** The system product label should be clearly visible after installation.

**Rule 7.** Do not install the system in the snow or rain. If installation in the snow or rain is unavoidable, ensure the system is protected and kept dry.

**⚠️ WARNING**

The system must not be installed near flammable or explosive materials or near equipment with strong electromagnetic fields.

**Rule 8.** Install the system away from strong magnetic fields to avoid electromagnetic interference.

When installing the system next to radio or wireless communication equipment operating below 30 MHz:

1. Install the system at least 30m away from the wireless equipment.
2. Attach a low-pass EMI filter or a multi-winding ferrite core to the system DC input cable or AC output cable.

## 2.1.2 Choosing an Installation Location

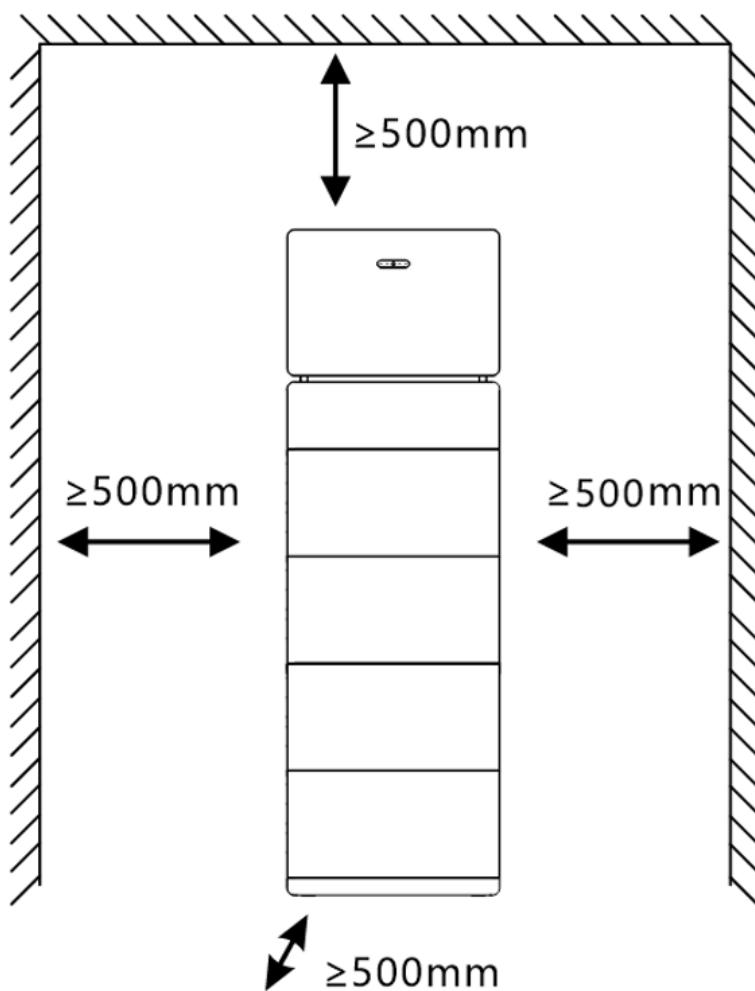
Allow the following minimum clearance around the installed system:

Top 500 mm - Bottom 500 mm - Front 500 mm - Left and right sides 500 mm

Leave at least 1 meter of clearance between the system and any emergency exits when installed in corridors, lobbies, or hallways, to ensure a safe exit.

### **2.1.3 Barriers to Habitable Rooms**

Ensure a suitable non-combustible barrier is set up between the system and any installation walls or structures when installing the system on a wall or structure connected to a living space to protect against the spread of fire to living spaces.

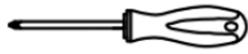


A non-combustible barrier should be installed between the system and the surface of the wall or structure it is being mounted to if the surface itself is not made out of a suitable non-combustible material.

Increase the distance between the system and any other nearby structures or objects if there is less than 30 mm between the system and the wall or structure separating it from living spaces.

## 2.2 Installation Steps

Installation Tools:



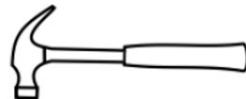
Screwdriver



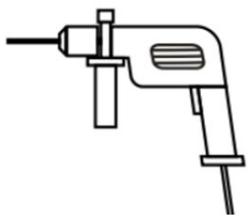
Multimeter



Wire stripper



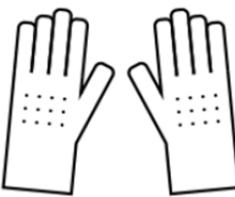
Claw hammer



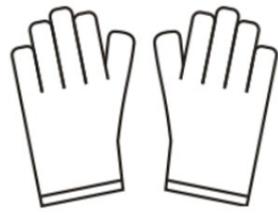
Hammer drill



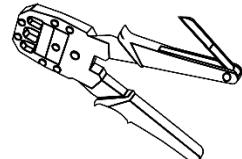
Diagonal plier



Insulating gloves



Protective gloves



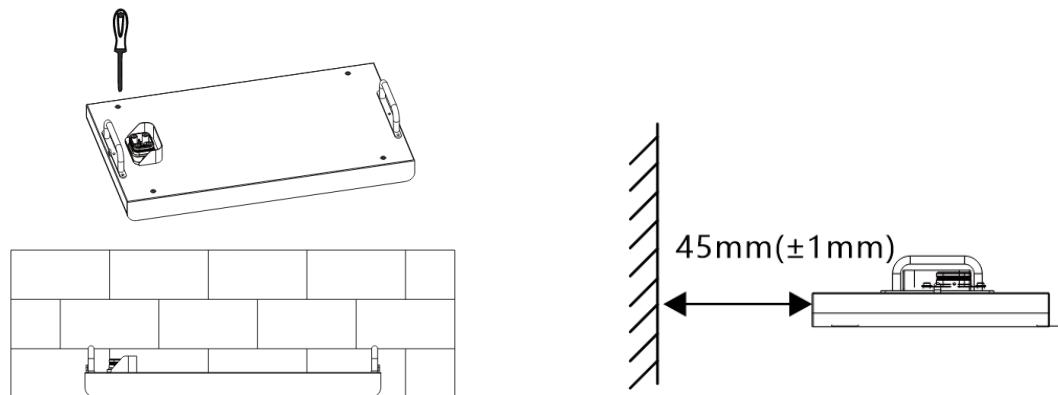
Crimping pliers

### ⚠ CAUTION

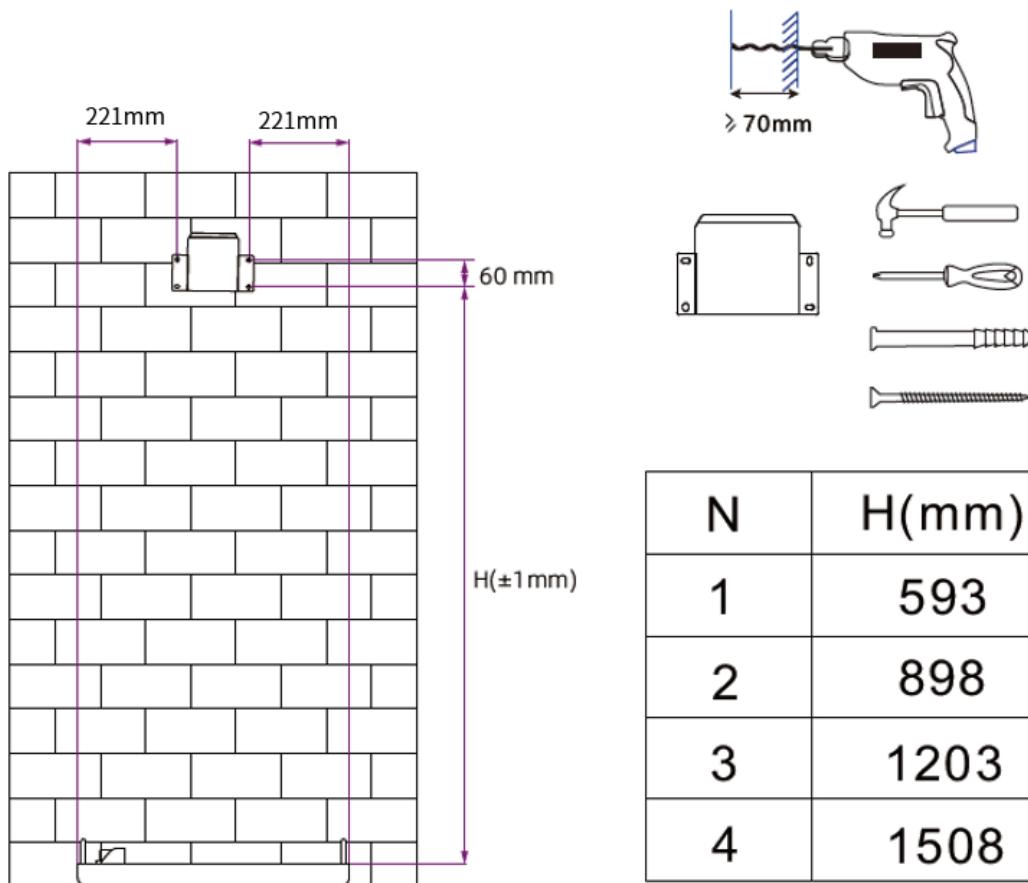
- Follow local electric safety and installation policy, a suitable breaker between battery system and inverter is required.
- All installation and operation must follow local electric standard and requirements.
- When battery modules are paralleled, the system should be powered off before installation operation.

**Step1:** Remove the high voltage box and base from the packaging.

**Step2:** Place the base on the ground and adjust the height of the legs with a screwdriver to ensure the base is level.



**Step3:** Install the plate that secures the high voltage box to the wall. Drill a hole with a diameter of 10mm at the center of the slotted hole in the back plate and insert the plastic expansion tube, then secure the self-tapping screw with a screwdriver.



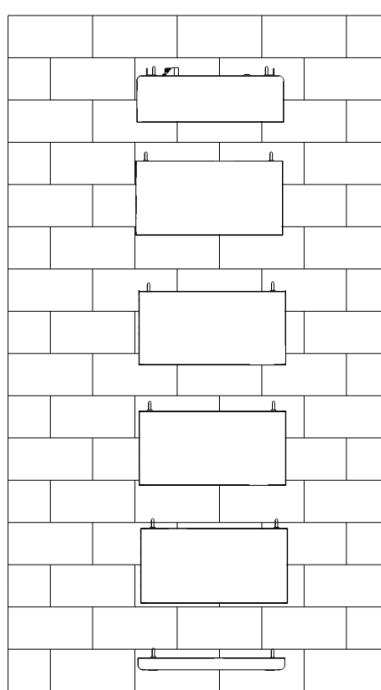
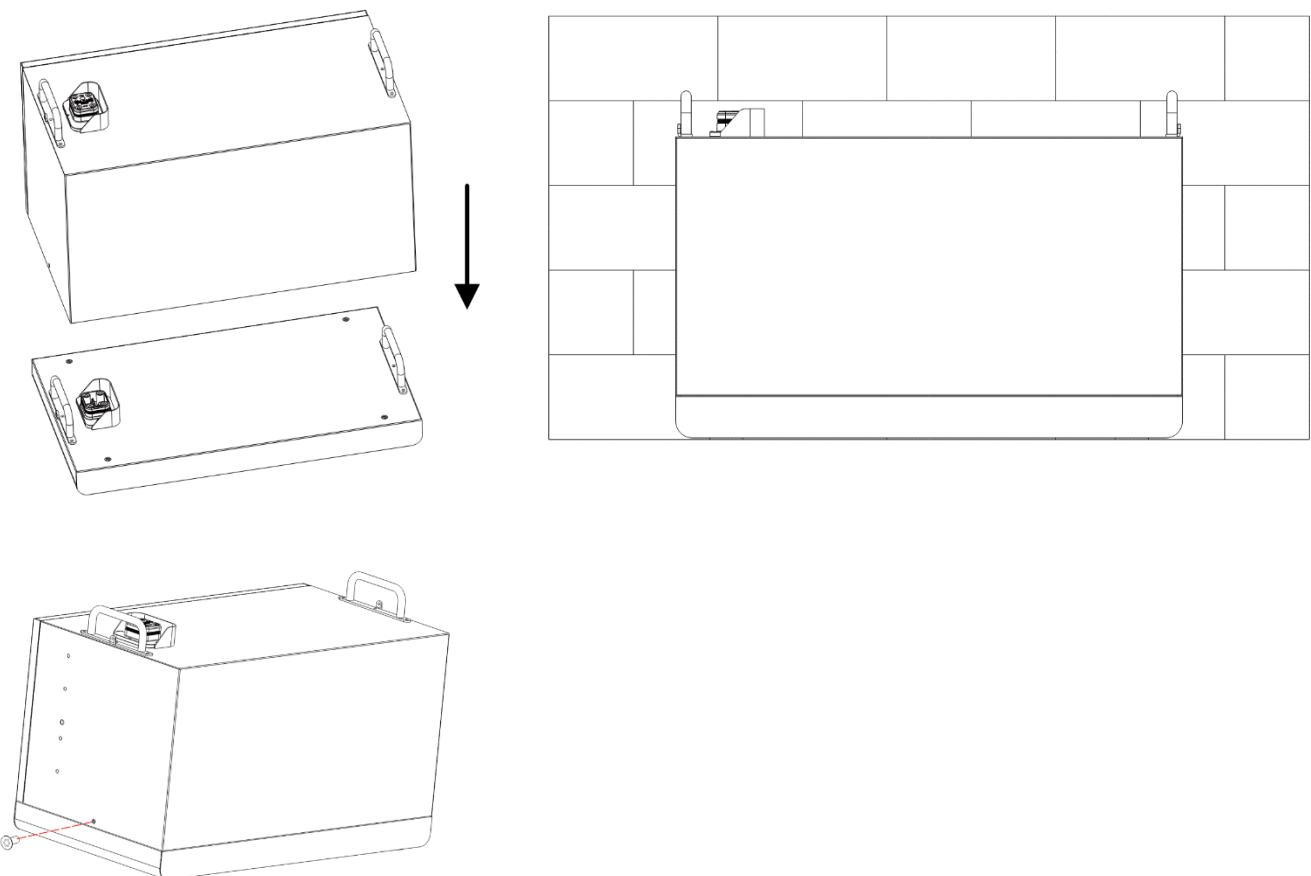
| N | H(mm) |
|---|-------|
| 1 | 593   |
| 2 | 898   |
| 3 | 1203  |
| 4 | 1508  |

**Step4:** Remove the first battery pack from the packaging

**CAUTION**

- Be mindful of injury prevention when moving heavy objects. The weight of each battery pack is 65 kg.
- Use lifting handles to move the battery packs.

**Step5:** Install the first battery box. Stack the battery pack on the base, then fix the sheet metal brackets on both sides with the screws.

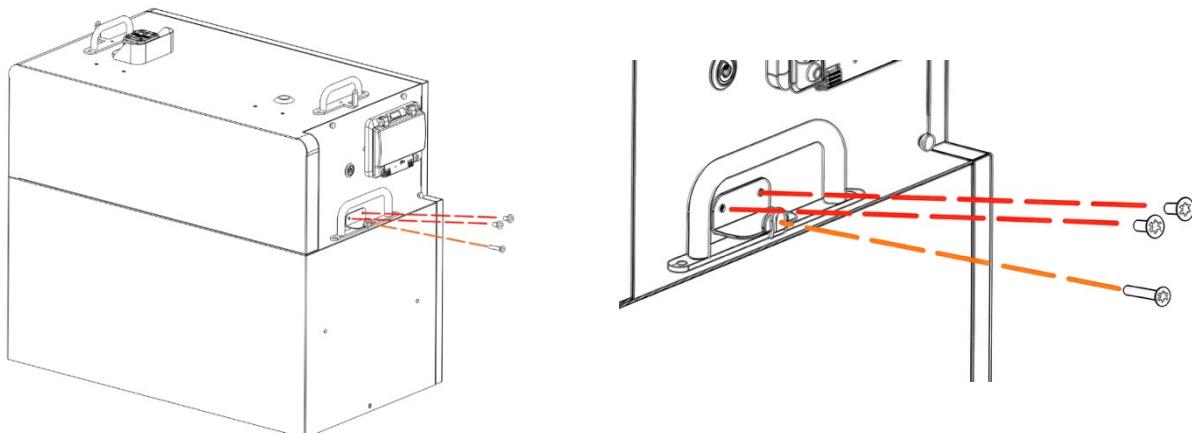


**Step 6:** Install all the battery packs in turn. Fix the sheet metal brackets on both sides, and finally put the back plate of the high voltage box into the locking bracket and fix the sheet metal brackets on both sides.

### ⚠ CAUTION

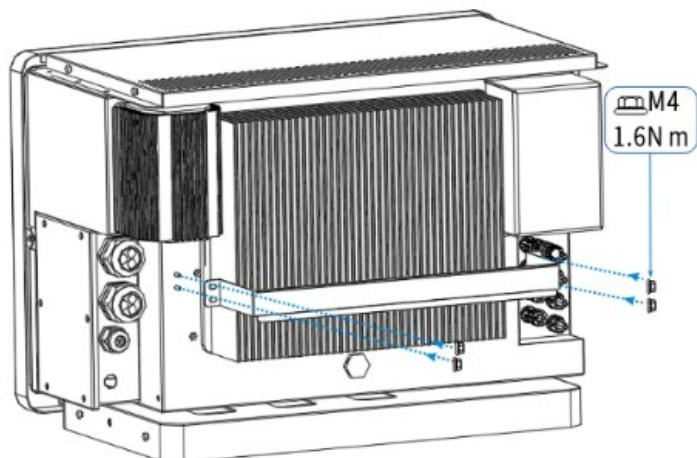
- Wear personal protective gear such as protective gloves and shoes when moving the equipment.
- If two or more people move a battery pack together, consider the manpower, height and other conditions to ensure the weight is evenly distributed, and move the battery pack at an even pace under the direction of one person.
- To lift a battery pack, approach it, squat down, then lift it gently and stably by the force of the legs, not the back. Do not lift it suddenly or twist your body around while lifting - move your feet instead of turning from the waist and ensure that your feet point towards the direction of movement
- Do not lift the battery pack quickly above your waist. Place it on a waist-high workbench or other appropriate place, adjust the positions of your palms, and then continue to lift. Place it down stably and slowly to prevent damaging or scratching to the surface or components and cables.
- When moving the battery pack, be aware of the environment - other equipment, slopes or stairways and slippery surfaces. Ensure doorways are wide enough to accommodate the battery pack without bumping or injury.

**Step7:** Stack the high voltage box to the top battery pack and fix the sheet metal brackets on both sides with the screws.

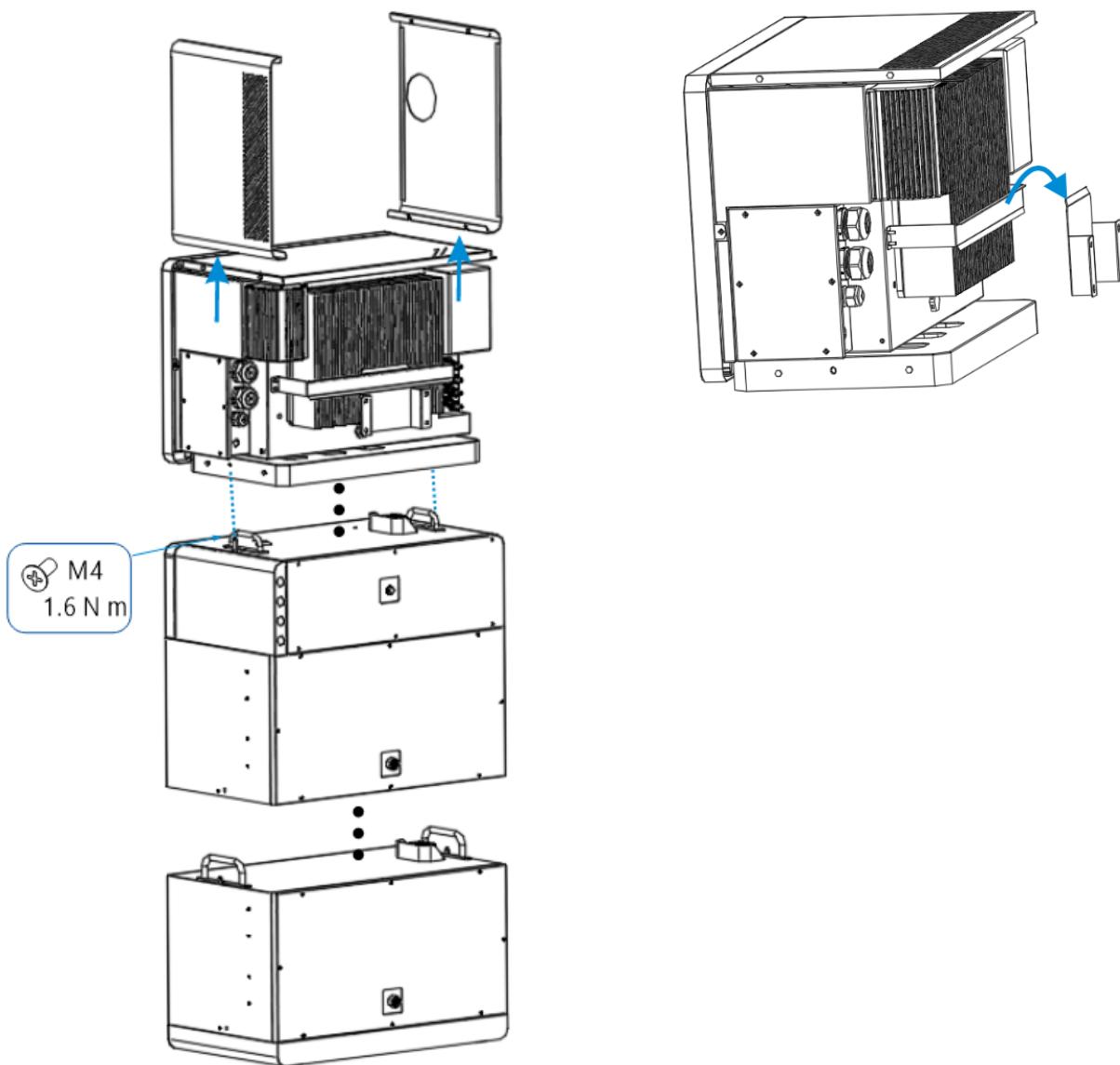


**Step8:** Remove the inverter from the packaging.

**Step9:** Install the metal bracket onto the inverter.

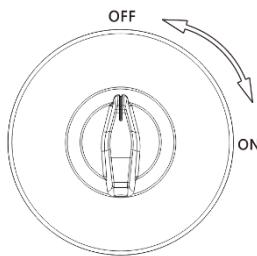


**Step 10:** Stack the inverter on the battery system and put the metal bracket of the inverter into the wallplate. Secure the components.



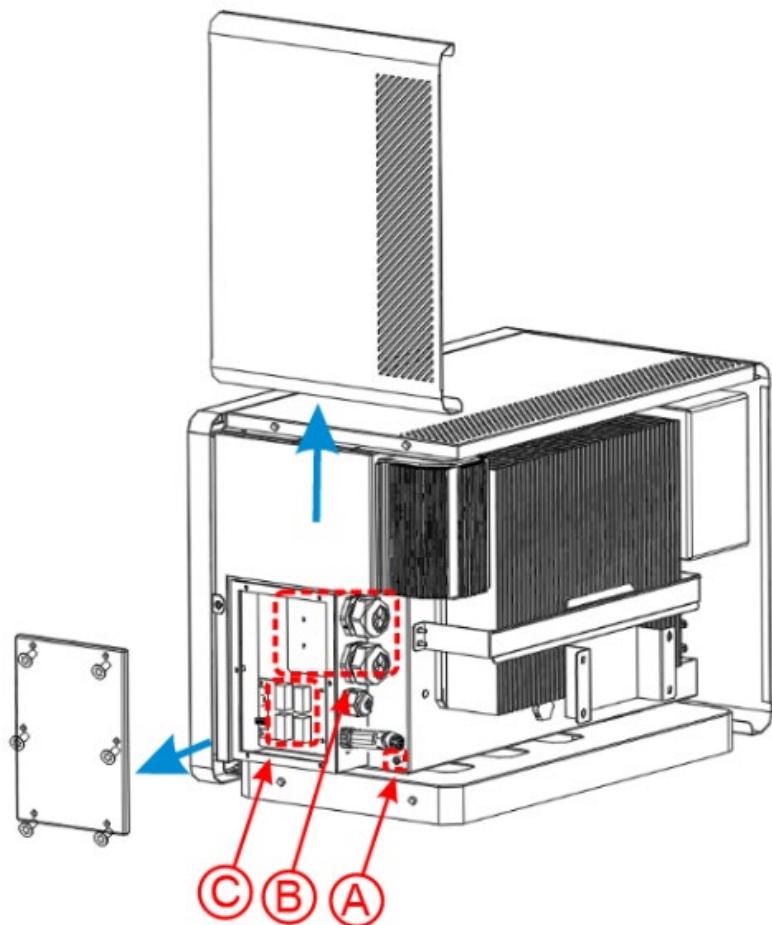
## 2.3 Cable Connections

### 2.3.1 Make sure the inverter switch is OFF



PV SWITCH

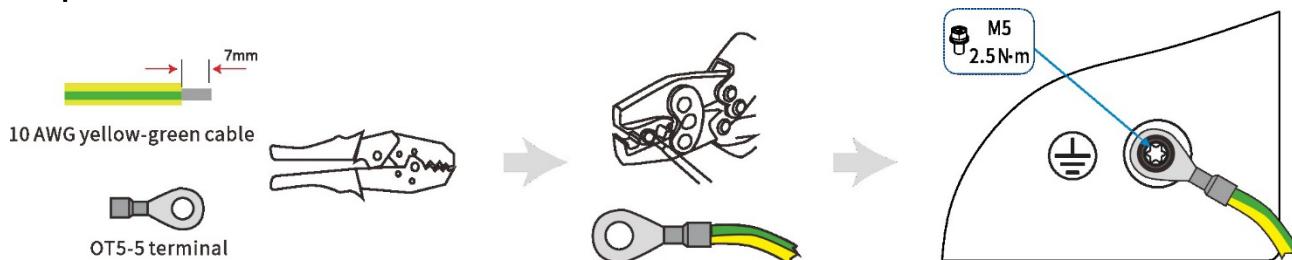
### 2.3.2 Connect the ground cable, power cables and communication cable



Recommended cables and connectors:

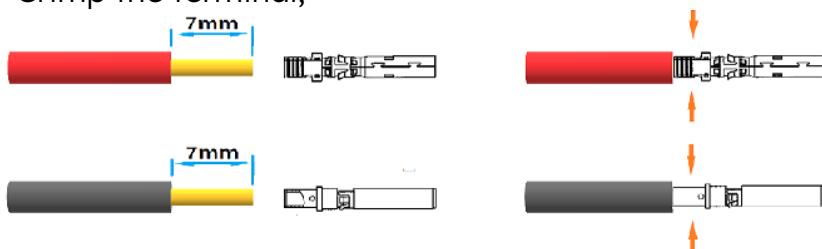
| Cable Type          | Cable Specification         | Terminal Model  |
|---------------------|-----------------------------|---|
| PE Cable            | 5-6 mm <sup>2</sup>         | OT5-5<br>- Included in accessory packet                 |
| PV+ Cable           | 5-6 mm <sup>2</sup> (RED)   | Positive DC Connector<br>- Included in accessory packet |
| PV- Cable           | 5-6 mm <sup>2</sup> (BLACK) | - Negative DC Connector<br>Included in accessory packet |
| Grid Cable          | 16 mm <sup>2</sup>          | SV5-5.5<br>- Included in accessory packet               |
| EPS Cable           | 16 mm <sup>2</sup>          | SV5-5.5<br>- Included in accessory packet               |
| Communication Cable | 1 mm <sup>2</sup>           |   |

**Step 1:** Connect the PE cable Ⓐ



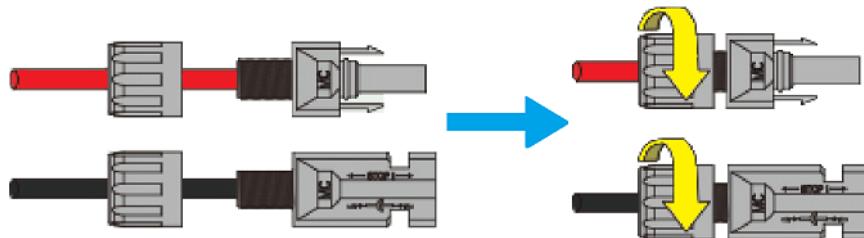
**Step 2:** Connect the PV cables.

1. Crimp the terminal;

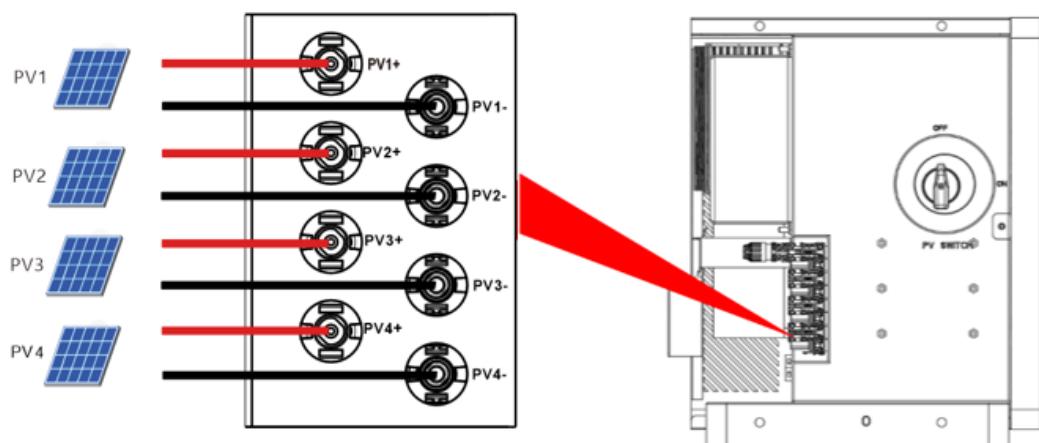


| Legend | Description            | Value               |
|--------|------------------------|---------------------|
| A      | Outer Diameter         | 5.5-8.0 mm          |
| B      | Insulated Cable Length | 7 mm                |
| C      | Conductor Core         | 5-6 mm <sup>2</sup> |

2. Insert the terminal into the connector and lock the nut;



3. Complete the connection.

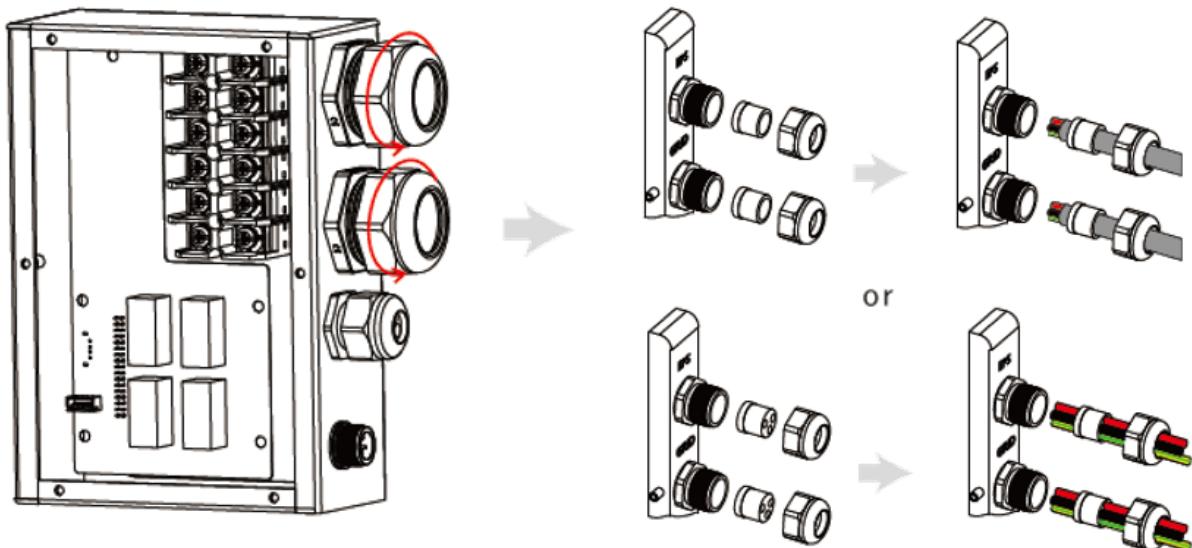


**⚠ CAUTION**

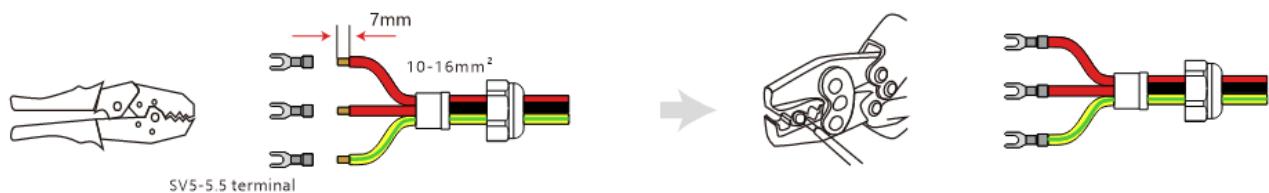
- For the best use of PV power, PV strings with the same MPPT should be the same in PV string structure, including the type, number, tilt, and orientation of the PV modules.
- Pay attention to PV string polarity, and ensure they are not connected in reverse order to avoid damage to the inverter.

### Step 3: Connect GRID and EPS cables (B)

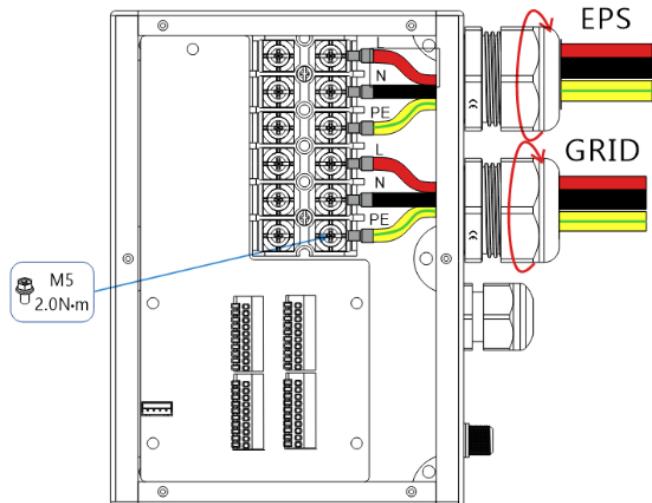
1. Loosen the waterproof connector press nut and remove the seal. Then, insert the cable into the hole.



2. Peel 7 mm off the L/N/PE cable end. Place the SV5-5.5 terminal onto the cable and crimp it tightly using pressure line clamps.



3. Insert the terminal into the wiring seat, use a Phillips head screwdriver to tighten the screws (2.5 N.m), and tighten the nut.



4. (FRANCE ONLY) Lors de l'installation d'un système photovoltaïque avec batteries, la norme XP C 15-712-3 impose la mise en œuvre d'un *conjoncteur de neutre* pour relier le neutre au conducteur de protection (terre) après le dispositif différentiel (RCD). Cette

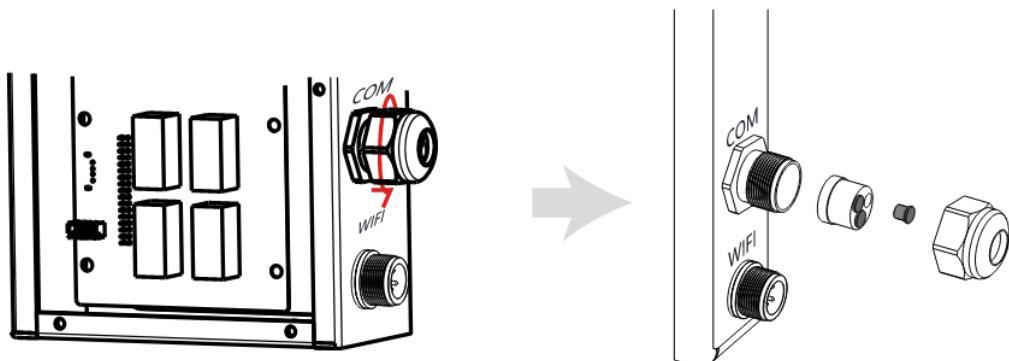
liaison crée une référence neutre indispensable pour le bon fonctionnement des protections contre les contacts indirects en schéma TN. Concrètement, après le RCD, raccordez le neutre sortant au conjoncteur, puis reliez ce point à la barrette de terre. De plus, le système doit intégrer une fonction permettant de détecter la présence ou l'absence du réseau afin d'activer ou désactiver la mise à la terre du neutre. Cette fonction garantit que la liaison neutre-terre n'est présente que lorsque le réseau n'est pas disponible, conformément aux exigences de la norme.

Choose the correct breaker:

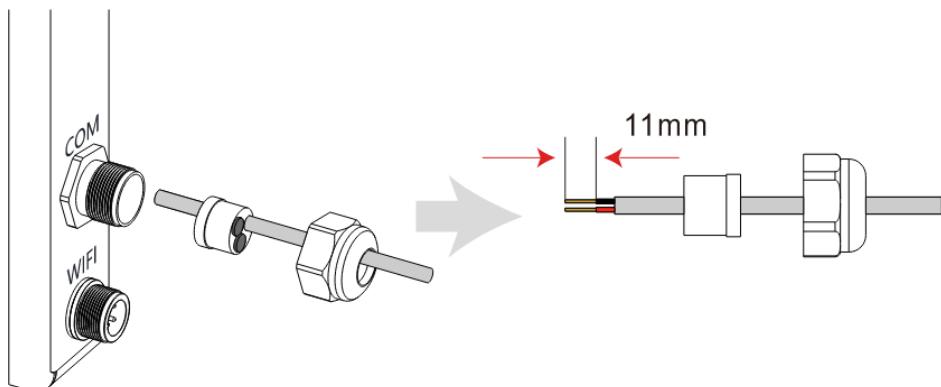
| Model                   | ①                     | ②                     | ③ ④  |
|-------------------------|-----------------------|-----------------------|--|
| SP-ARSH-3.6kW-G1 Series | 32 A/230 V AC breaker | 20 A/230 V AC breaker |  |
| SP-ARSH-4.6kW-G1 Series | 40 A/230 V AC breaker | 20 A/230 V AC breaker |  |
| SP-ARSH-5kW-G1 Series   | 50 A/230 V AC breaker | 25 A/230 V AC breaker |  |
| SP-ARSH-6kW-G1 Series   | 63 A/230 V AC breaker | 32 A/230 V AC breaker | According to residential load (generally already installed in the grid distribution box) |
| SP-ARSH-8kW-G1 Series   | 63 A/230 V AC breaker | 40 A/230 V AC breaker |  |
| SP-ARSH-10kW-G1 Series  | 63 A/230 V AC breaker | 50 A/230 V AC breaker |  |

#### Step 4: Connecting the communication cables

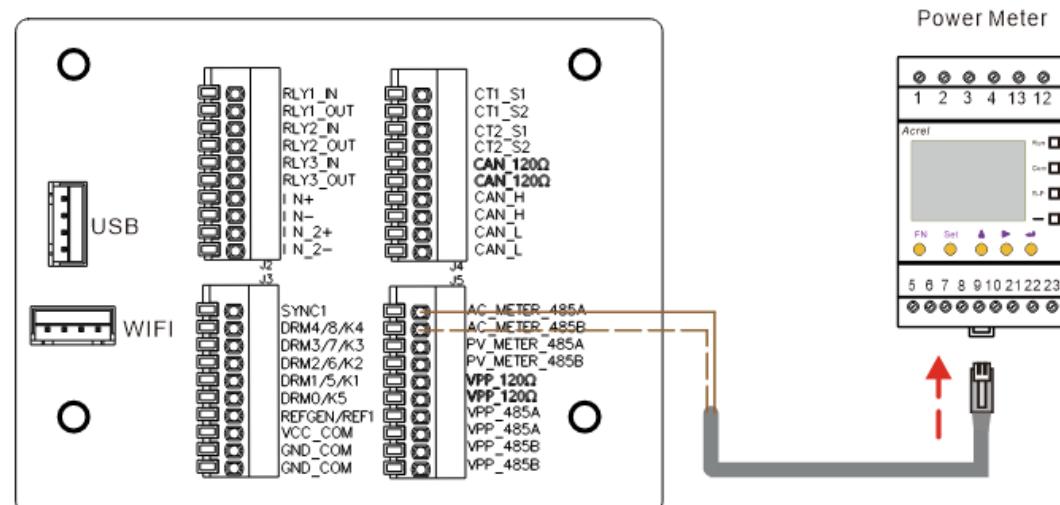
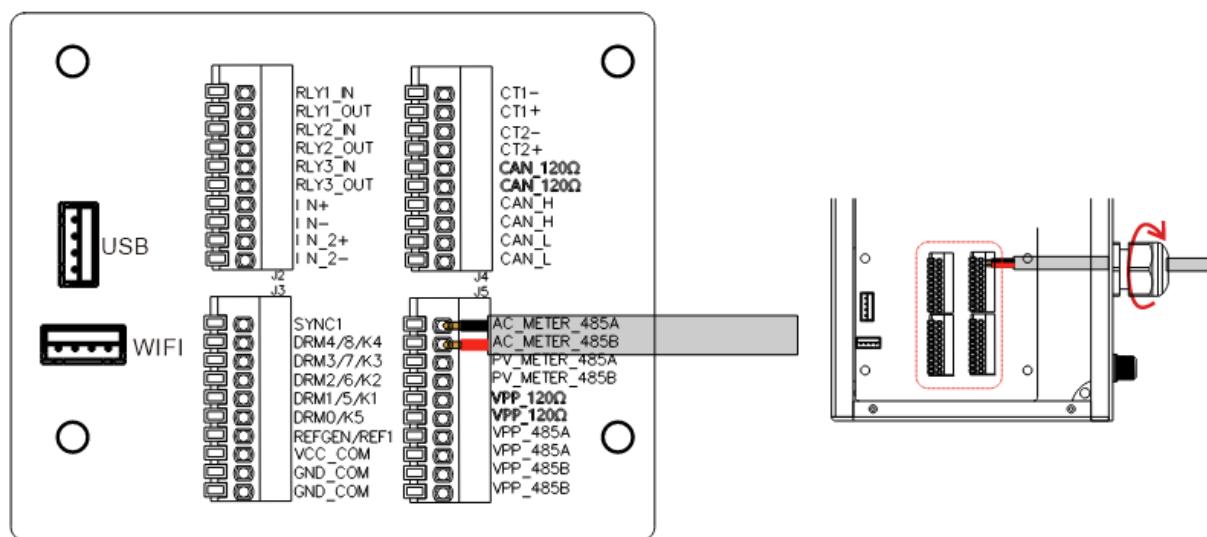
1. Loosen the waterproof connector's press nut and remove the seal. Then, insert the cable into the hole.



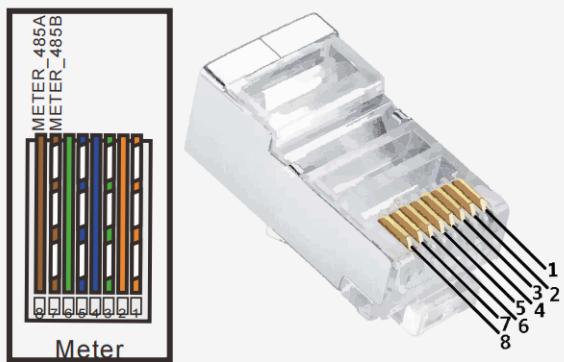
2、insert the cable into the hole. Peel 11 mm off the Communication cable end.



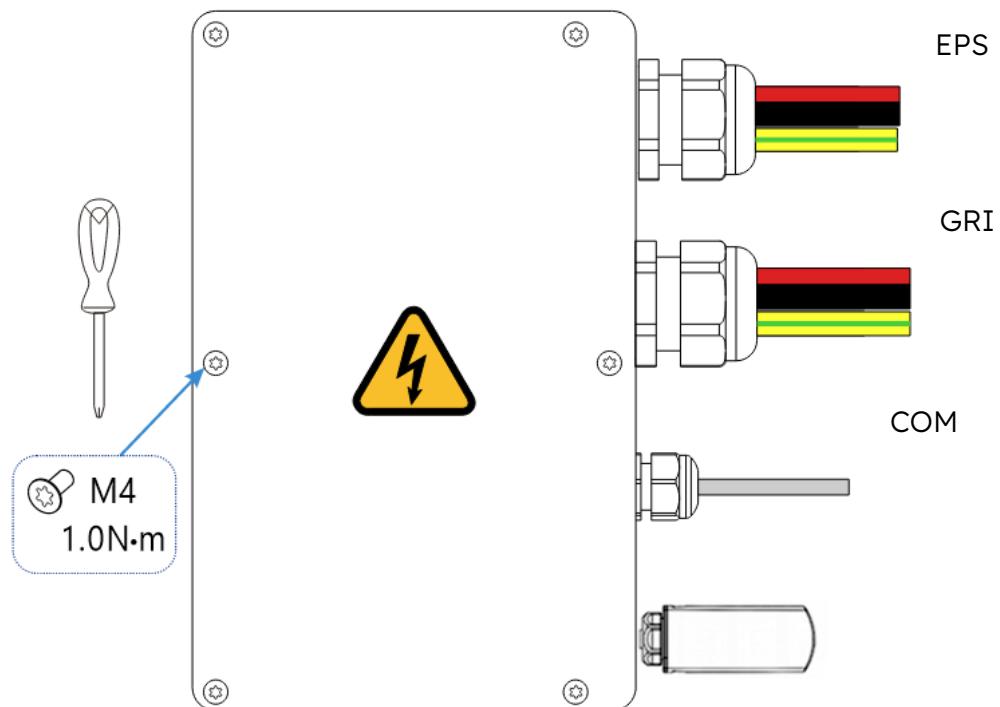
3、Insert the terminal into the wiring seat, and tighten the nut.



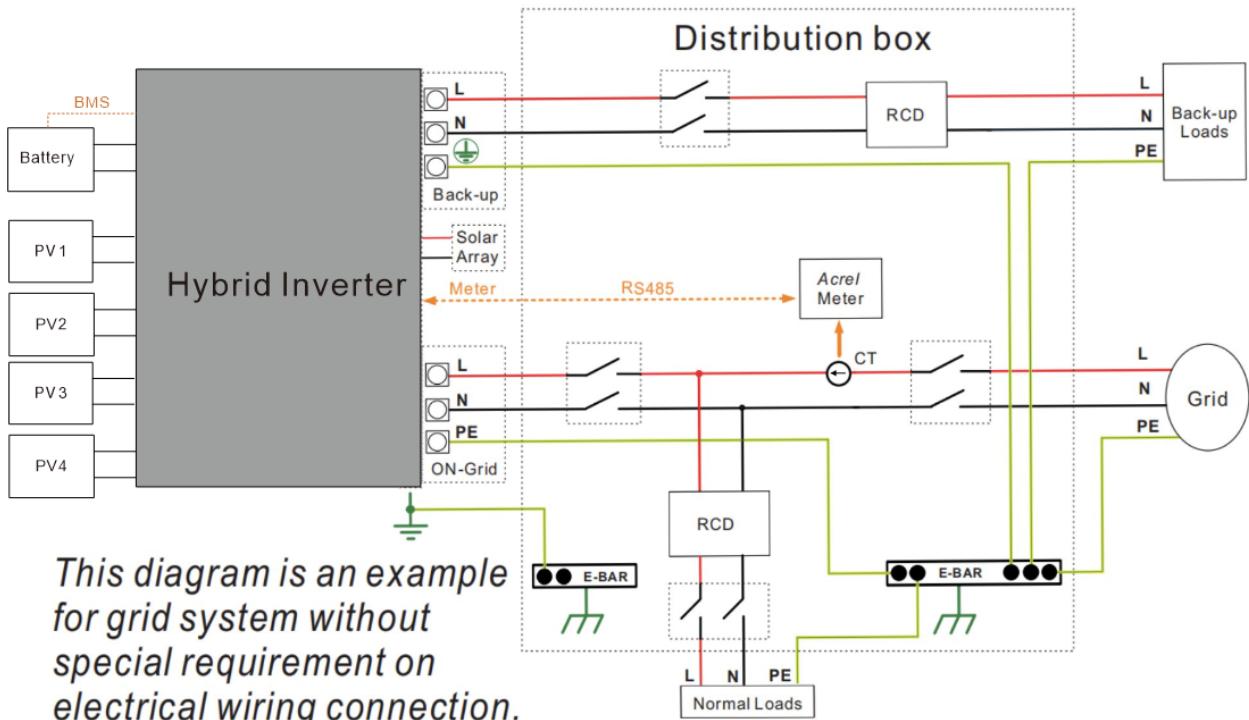
Pin Function of Meter Communication Connector on Inverter Side and Meter Side



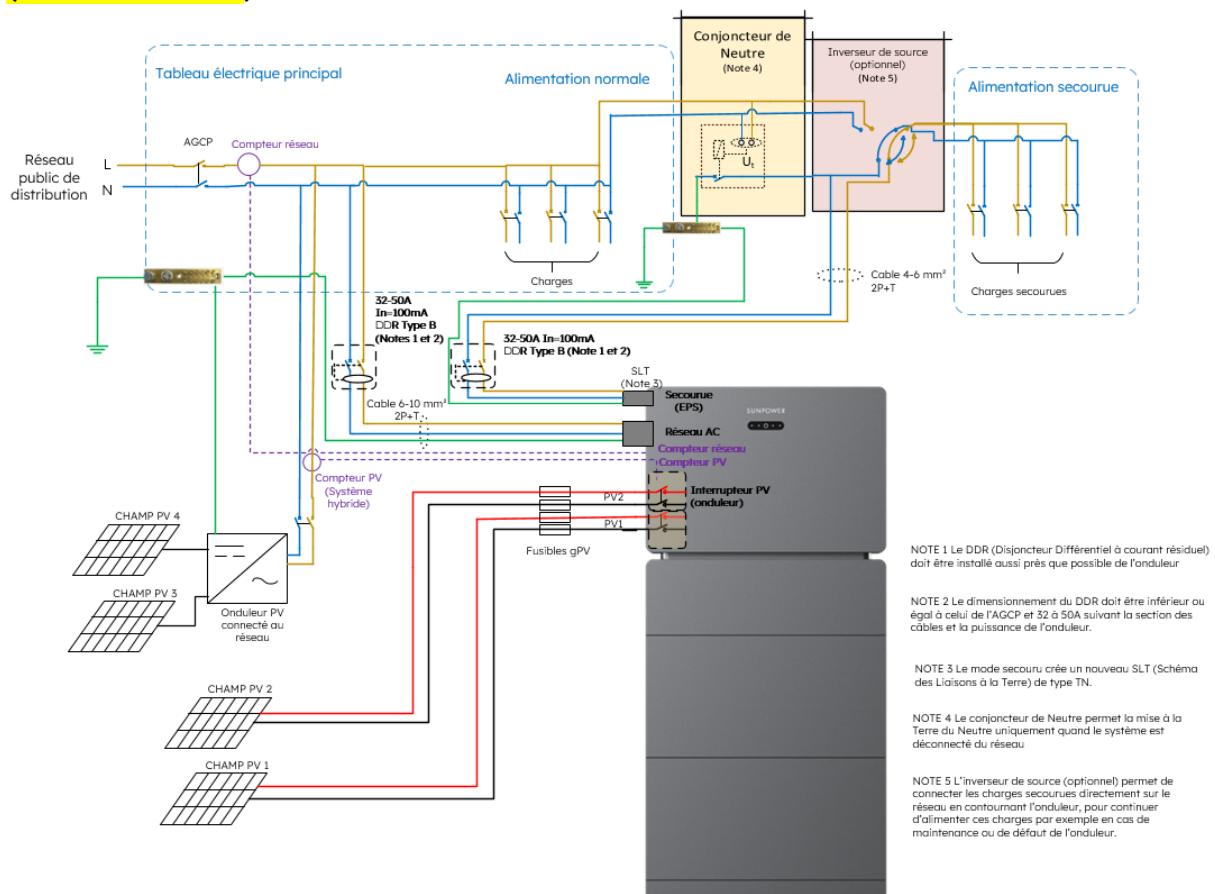
**Step 5:** Insert the Wi-Fi Module, and tighten the nut. Attach the waterproof cover and lock it in place.



## System Connection Diagram

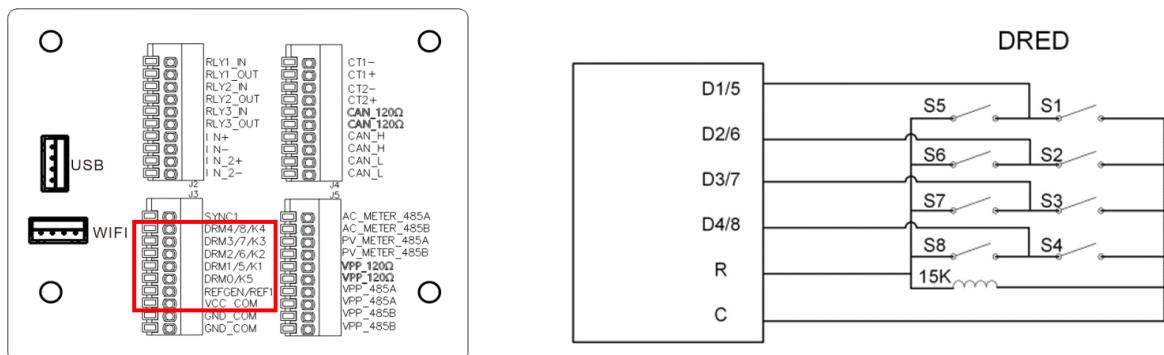


(FRANCE ONLY)



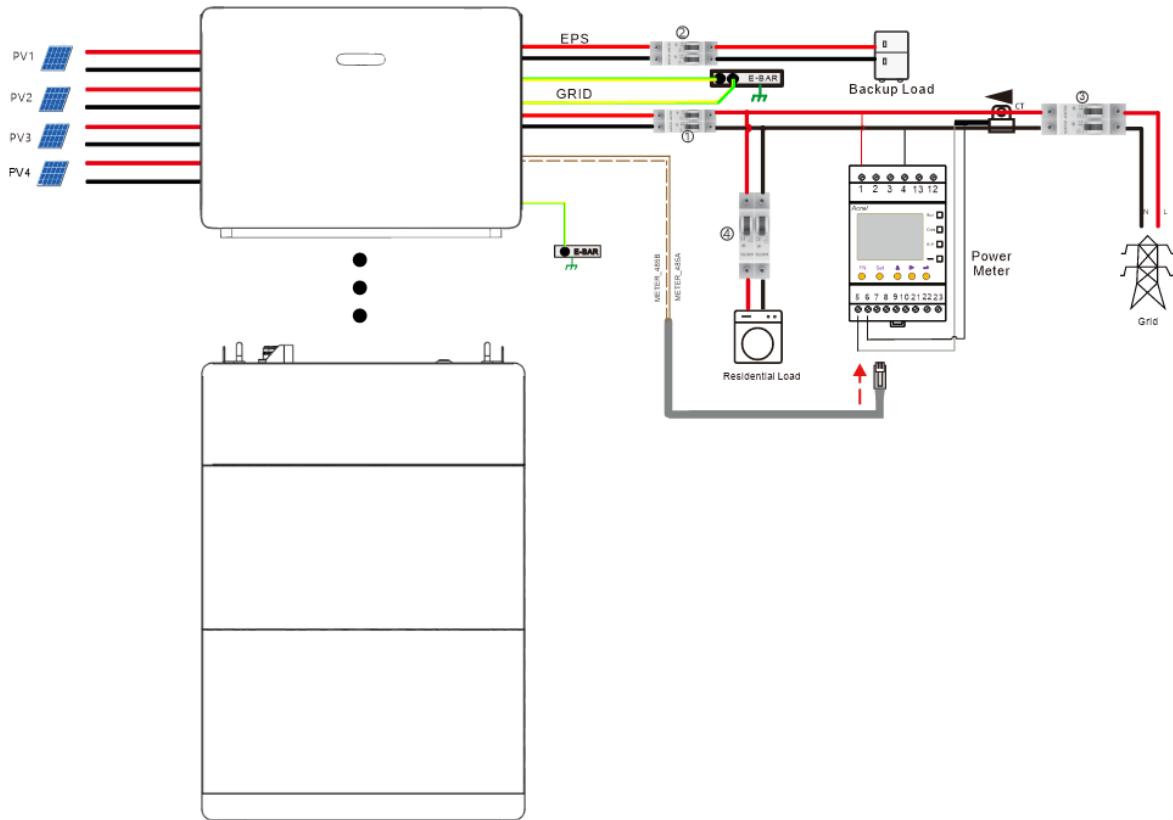
## Demand Response Mode (DRM) connection

### Wiring between the inverter and the external DRED



Currently supports DRMO (Demand Response Mode for zero export), other functions under development.

## 2.4 System Wiring Diagrams



## 3 SYSTEM OPERATION

### 3.1 Turning on the energy storage system

Warning: Please double-check the installation before turning on the system.

| No . | Check Item  |
|------|---|
| 1    | Power cable, communication cable and PE cable are correctly and securely connected. |
| 2    | Inverter/PCS voltage is the same level as the battery system.                       |
| 3    | Unused ports and terminals are sealed.  |

#### 3.2 Turn the system ON

**Step 1:** Open the battery breaker cover and turn the battery breaker ON.

**Step 2:** Turn on the PV switch.

**Step 3:** Turn on the grid breaker.

**Step 4:** Turn on the backup breaker if a backup load is being used.

**Step 5:** Close the battery breaker cover.

**Step 6:** Configure the Wi-Fi dongle (when turning system on for the first time).

#### 3.3 Turning the system off

**Step 1:** When applicable, disconnect the backup load, then turn off the backup breaker.

**Step 2:** Turn off the grid breaker.

**Step 3:** Turn off the PV switch.

**Step 4:** Open the battery breaker cover and turn the battery breaker to the OFF position.

**Step 5:** Close the battery breaker cover.

## 4 SYSTEM CONFIGURATION & SETUP

### 4.1 Preparation

1. To use the SunPower installer application, your Android or iOS smartphone must be connected to the internet - either through a 2.4GHz Wi-Fi connection to the router or a wired LAN connection to the router.
2. To perform system configuration and commissioning, an installer account is required.
3. Once hardware commissioning is done, please check the SunPower Installer app user manual.

#### 4.1.1 Installer account

4. A Service Provider account is created by SunPower with an e-mail address provided by the installation company. Please ask your SunPower representative for an account if you don't already have one. The initial password will be sent to the e-mail address provided.
5. The company representative logs into the monitoring platform using the e-mail address & initial password. Multiple installer accounts can be created in the platform by adding the e-mail address of each installer. The installers will receive an email with the initial password.

Scan the QR code to go to the monitoring platform:



6. Installers can log into the SunPower Installer app or service provider portal with their e-mail address and the password received when the account was created.
7. If you forget your password
  - a) Select “Forgot password” at login in the installer portal or installer app
  - b) Enter your email address and select “Send verification code”
  - c) You will receive a verification code in your inbox
  - d) Copy and paste the code into the verification field
  - e) After verifying the code, you will be taken to a page where you can create a new password. Your new password must contain 8-16 letters and numbers.
8. Deleting an account  
Only a Service Provider can delete installer accounts. Please ensure the installer belongs to your sub-accounts.  
To delete the account, log in to the Service Provider portal. Select the *Service Provider Management* tab, search for the installer, and click *Delete*.  
NOTE: This action cannot be undone.

## 4.1.2 Add system

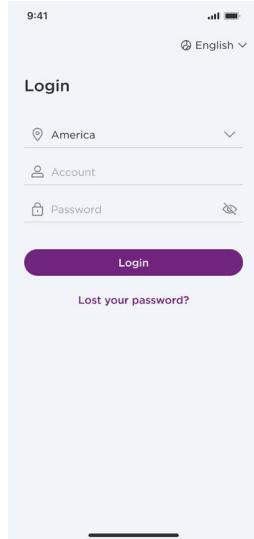
### STEP 1

Scan the QR code here to install the Android or iOS version of the SunPower Installer app.



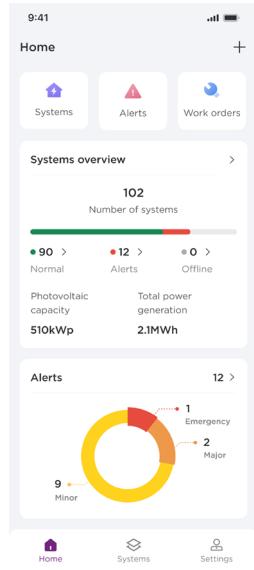
### STEP 2

- Open the SunPower Installer app
- Log in with your installer account



### STEP 3

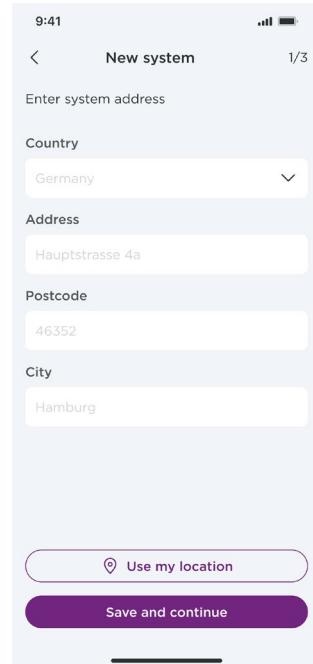
- Tap 'Systems' in the bottom menu to navigate to your systems list
- Tap on '+' in the upper right corner to add a new system



## STEP 4

Enter system address:

- Country
- Address: you can use your location to locate the installation location
- Postcode
- City



9:41 < New system 1/3

Enter system address

Country: Germany

Address: Hauptstrasse 4a

Postcode: 46352

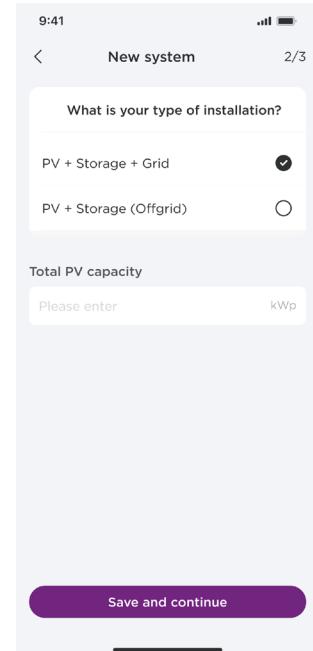
City: Hamburg

Use my location

Save and continue

Enter system type:

- Select PV+Storage+Grid unless you are installing an offgrid system
- Total photovoltaic capacity (kWp)



9:41 < New system 2/3

What is your type of installation?

PV + Storage + Grid

PV + Storage (Offgrid)

Total PV capacity

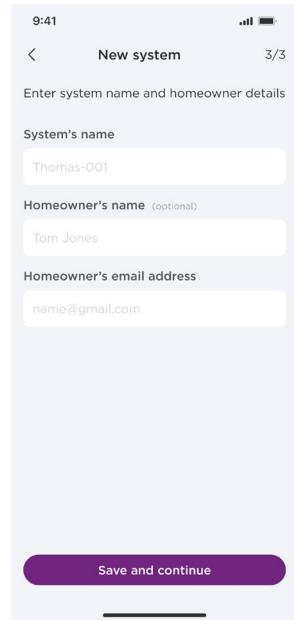
Please enter kWp

Save and continue

## Enter system contact details

- System name
- Homeowner name
- Homeowner email address

Note: it does not matter if homeowners email address is different later when trying to login. This is only for creating the system and having customer contact information.



9:41 New system 3/3

Enter system name and homeowner details

System's name

Thomas-001

Homeowner's name (optional)

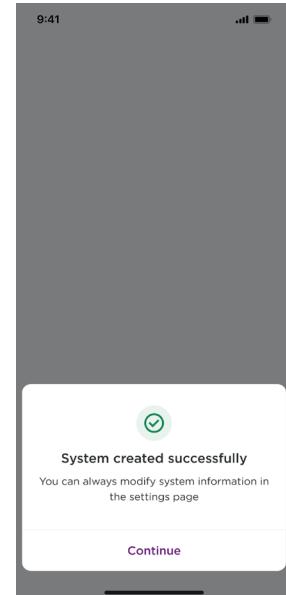
Tom Jones

Homeowner's email address

name@gmail.com

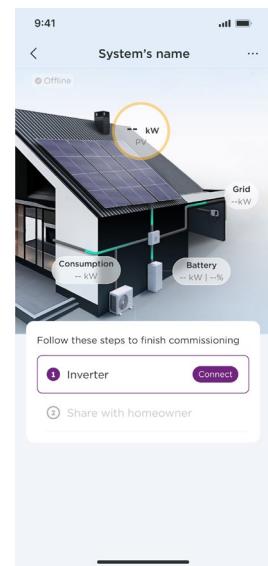
Save and continue

You will see a screen with a green icon indicating the system is successfully created.



## STEP 4

- You will automatically enter the System details page
- Tap the purple button “Connect” to finish commissioning

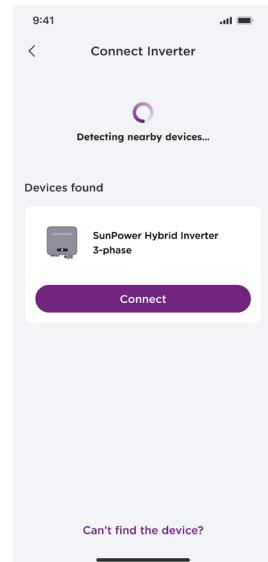
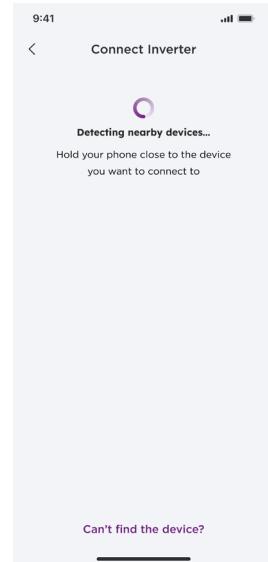


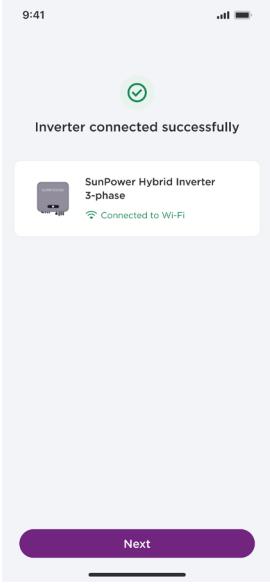
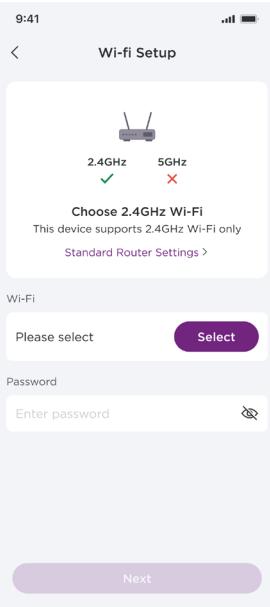
## STEP 5

Make sure your phone is close to the inverter to allow bluetooth connection.

Can't find the device?

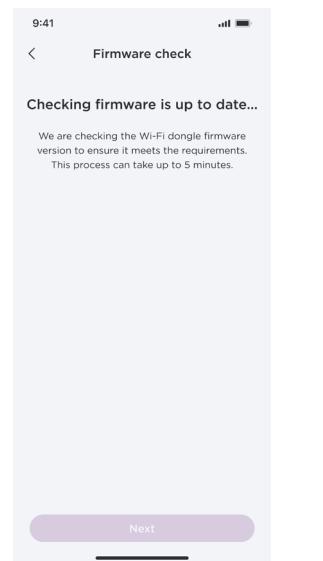
1. Check power: Make sure the device is turned on. Make sure the inverter and dongle are powered on. Both LEDs on the dongle should flash once per second when first powered.
2. Move closer: Hold your phone close to the inverter and dongle. If using Wi-Fi, place the router nearer to the inverter to avoid weak signal issues. For LAN setup, make sure the Ethernet cable is securely connected and the router has internet access.
3. Check Dongle Indicators:  
Green Light: Network/Cloud Connection.  
Indicates the dongle's connection to the router and cloud.
  - a. Blinking (1 s): Not connected to the router → check Wi-Fi or LAN cable
  - b. Blinking (2 s): Connected to router, no internet → check router network
  - c. Blinking (4 s): Server error → contact support



|   |  |
|---|--|
| <p>d. Solid: Connected to the cloud</p> <p><b>Red Light (Inverter Connection)</b></p> <ol style="list-style-type: none"> <li>a. Blinking (1 s): No communication with inverter<br/>→ check connection</li> <li>b. Solid: Connected to inverter</li> </ol> <p>Still not detected?</p> <ol style="list-style-type: none"> <li>1. Reset the dongle: Unplug it, wait 5 seconds, and plug it back in</li> <li>2. Return to the Search Device page and tap Retry Search</li> <li>3. Watch the LED indicators again to confirm progress</li> </ol> |   |
| <p><b>STEP 6</b></p> <ul style="list-style-type: none"> <li>• The network configuration screen shows the Wi-Fi the phone is currently connected to</li> <li>• After entering the Wi-Fi password, tap "Next" to proceed with the network configuration process</li> </ul> <p><b>NOTE:</b> Please connect to a 2.4GHz Wi-Fi network or LAN connection directly</p>  |  |

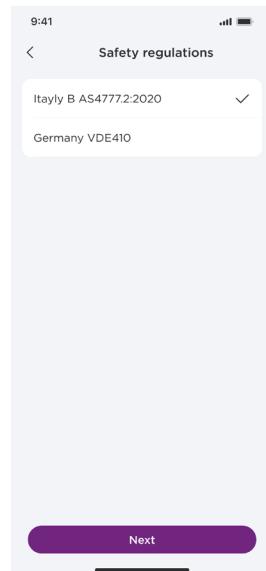
## STEP 7

- During this step, the system automatically checks the Wi-Fi dongle firmware version to ensure it meets the required specifications
- This process can take up to 5 minutes
- No action is needed from the installer — please wait until the check is completed before proceeding to the next step



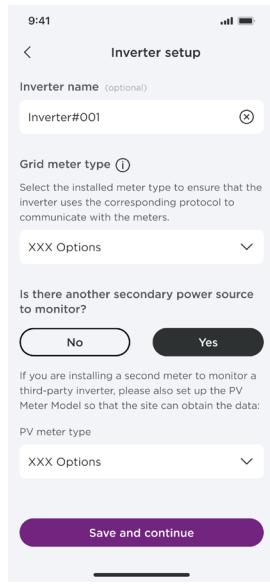
## STEP 8

- In this step, select the safety regulations that apply to the country where the installation is being performed
- Choose the correct country from the list to ensure compliance with local electrical standards
- Tap Next to proceed



## STEP 9

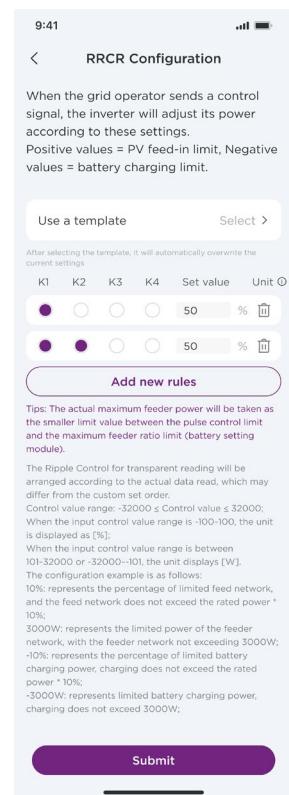
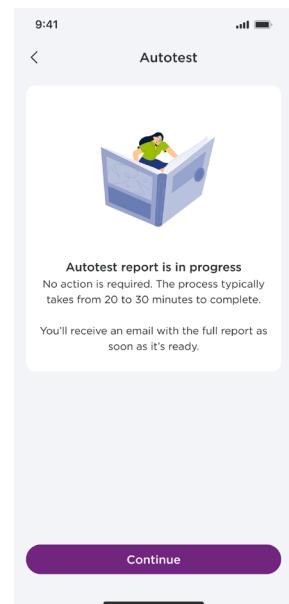
- Select the installed meter type - ACR Three Phase
- If you are installing a second meter to monitor a third party inverter, please also include the PV meter type



## STEP 10

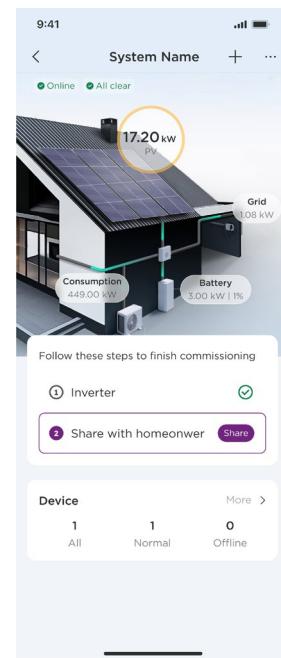
The next step depends on the **installation location**:

- **Italy:** You will receive an email confirming the **Autotest Report** has started - the report will be available within 30 minutes
- **Germany:** You can configure **Enable §14a** Grid Control (Power Reduction) according to local grid requirements
- **Other countries:** You will be directed to the final commissioning screen to complete the process



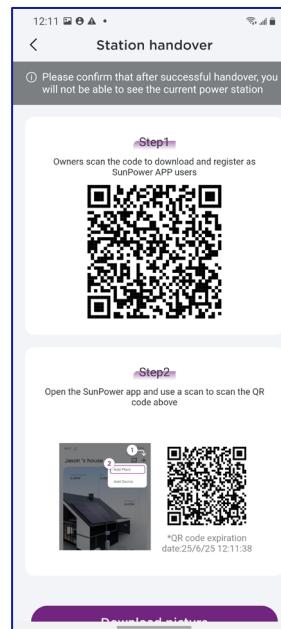
## STEP 11

- To complete the commissioning process, simply tap **Share with homeowner**
- Once shared, you can close this card
- Before finishing, make sure the homeowner can access their system and that everything is working correctly



## STEP 12

- Once in the station transfer screen, ask the homeowner to scan the QR code in Step 2 with their SunPower app to complete the transfer process
- If the homeowner doesn't have the SunPower app yet they should scan the QR code at Step 1 to be taken to the AppStore/GooglePlay to download the app and register their account
- Once inside the SunPower app, the homeowner scans the QR code in Step 2 of the installer's screen to complete the system transfer



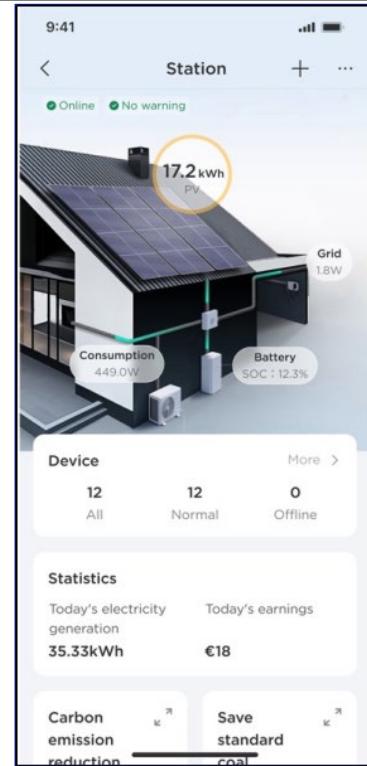
### NOTICE

1. Please ensure the correct router password is entered
2. Make sure the wireless network connection for the Wi-Fi dongle is strong
3. On successful set-up the green LED on the dongle will change from flashing slowly to flashing quickly and then become solid, indicating the system has successfully connected to the Wi-Fi network

## 4.2 Adding More Devices

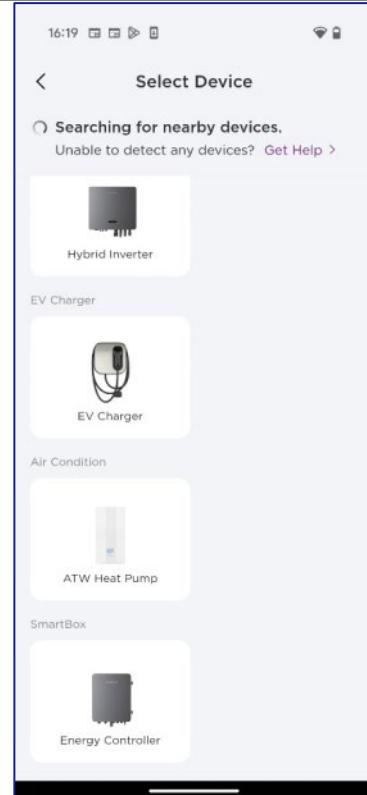
### STEP 1

- Enter the Site interface in the app and tap “Add Device”.
- In the Site details screen, tap the “+” icon at the top left corner next to the Site Setting Button to begin the device setup process.



### STEP 2

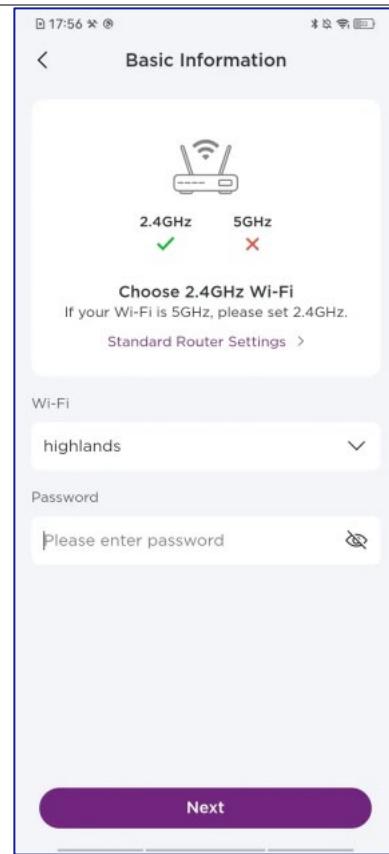
- On the device selection screen, select the desired device.



### STEP 3

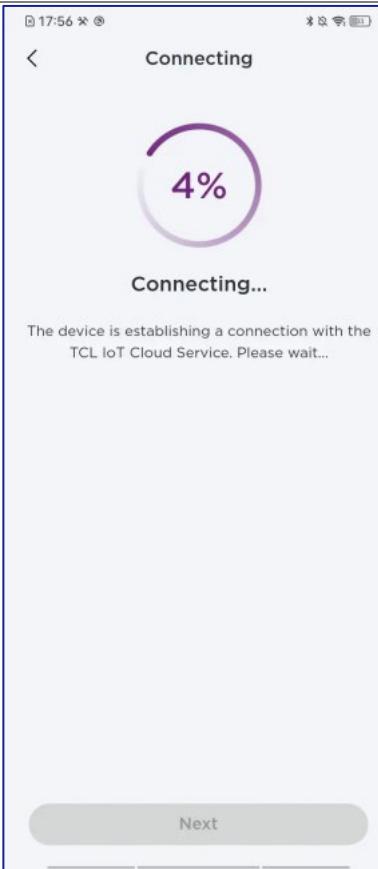
- The network configuration screen displays the Wi-Fi that the phone is currently connected to.
- After entering the Wi-Fi password, tap "Next" to proceed with the network configuration process.

NOTE: Please connect to a 2.4GHz Wi-Fi network or LAN connection directly.



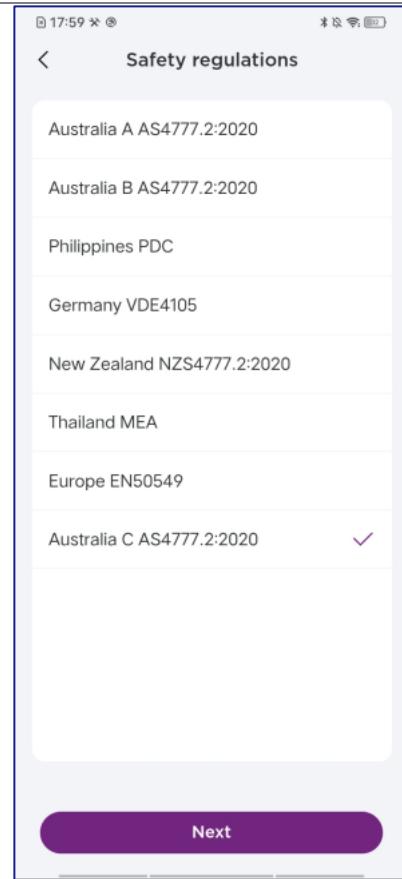
### STEP 4

- Proceed with Online Registration
- Follow the in-app instructions to complete the online registration of the new device.



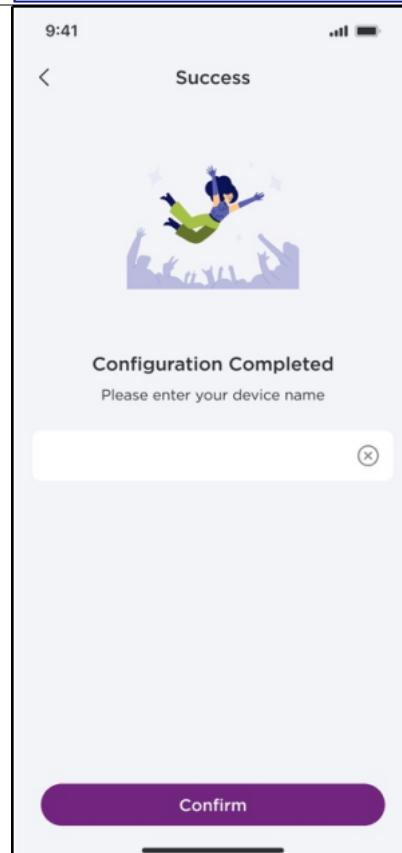
## STEP 5

- After completing the network configuration, you will automatically be redirected to the safety regulation screen.



## STEP 6

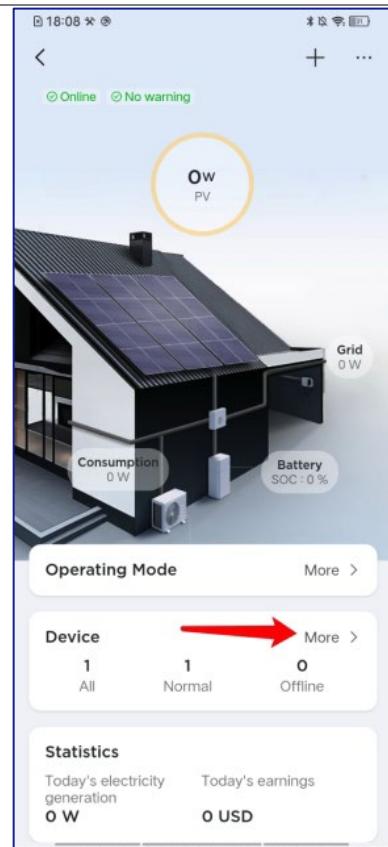
- Once registration is complete, input your desired device name to finish the setup.



## 4.3 Remove a Device

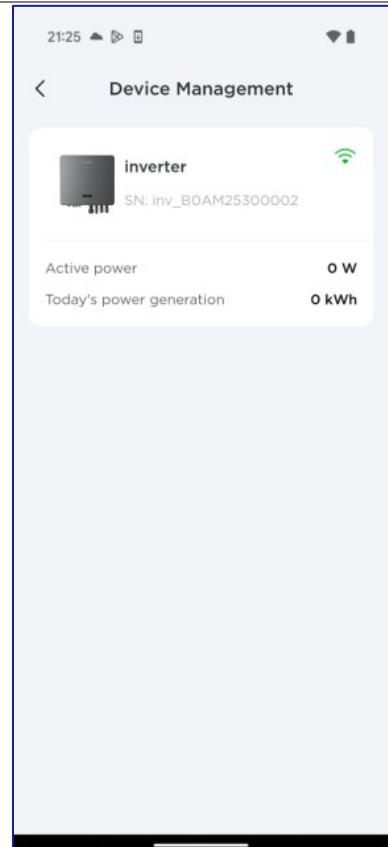
### STEP 1

- Go to the station details section and tap 'More' in the device section to enter the device list screen.



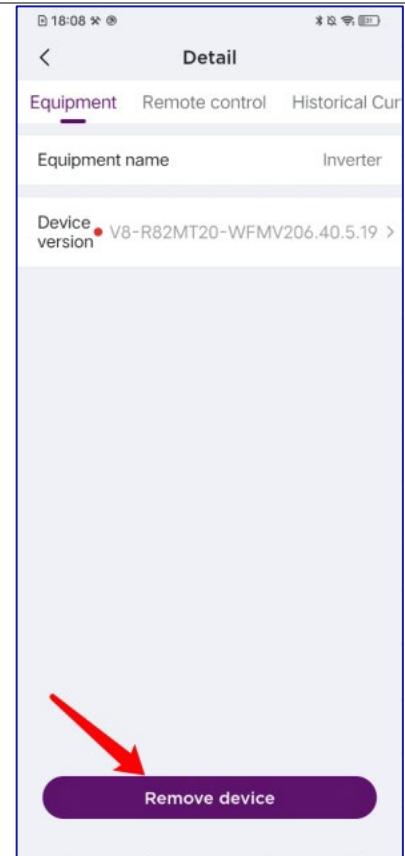
### STEP 2

- On the device list screen, tap the device you want to remove to enter the device details screen.



### STEP 3

- On the device details screen, tap the "Remove Device" button at the bottom to proceed with removal.



## 5 ENERGY MANAGEMENT SYSTEM CONFIGURATIONS

Energy management system (EMS) configurations can be set via the eCactus ECOS app or online website.

Three working modes can be configured:

**1. Self-Powered:**

eCactus will manage residential power to minimize power grid reliance.

**2. Load Shifting:**

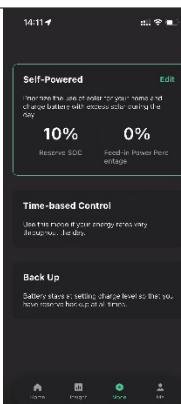
Batteries will be charged and discharged as configured.

**3. Backup:**

eCactus will not discharge the battery unless the power grid is off. When this happens, eCactus will provide residential power through the batteries.

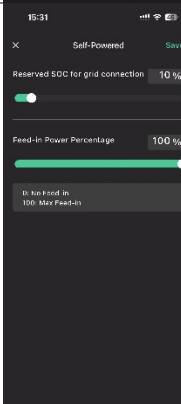
### Working Modes:

Navigate to the Customize tab and select one of the three operation modes via the eCactus ECOS app.



### 0 export Setting

In three working modes, You can set the feed-in power percentage to 0% to prevent exports towards the grid.

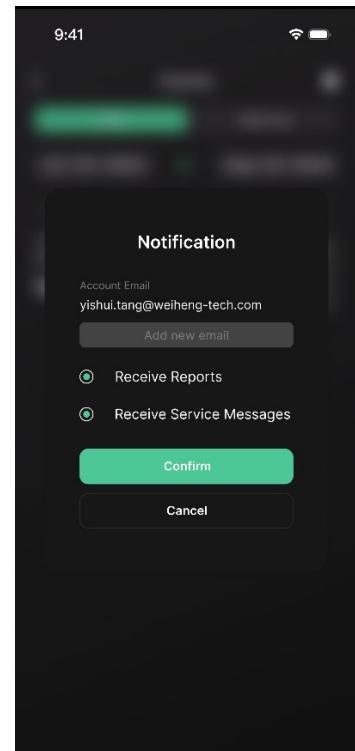
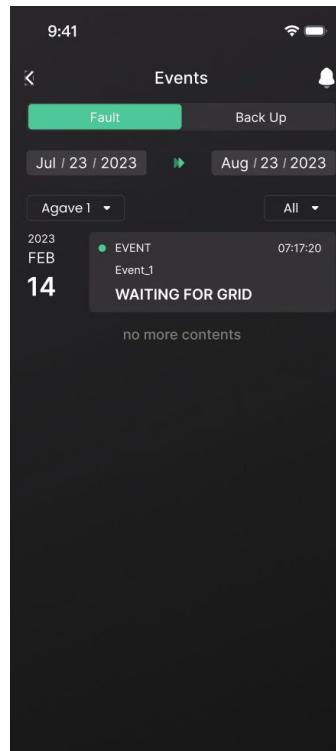
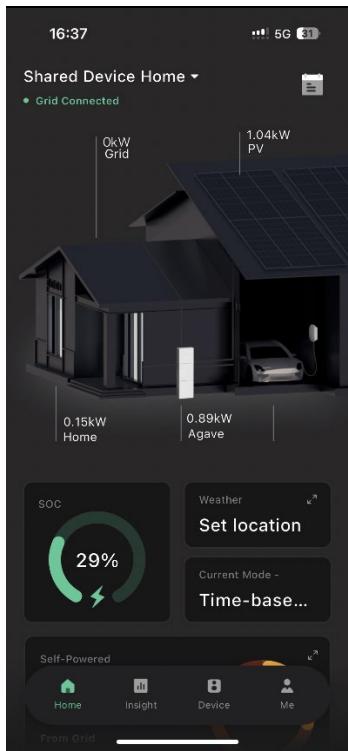


### Service Messages Notice

Under “Home” click “”

Historical alarms including Earth Fault Alarms will be shown in the window marked in red below. An Earth Fault Alarm will be shown with the status Code DSP\_41, with the description “Isolation value too low”.

You can click “”, enter the email address you want to receive notifications in the “E-mail” field, tick “Receive Service Messages”, and click “Confirm”. Once alarms occur the system will automatically send email messages to the contact nominated.



## 6 TROUBLESHOOTING

|    | Issue   | Solution  |
|----|---|---|
| 1  | Red LED flashing every 0.5 seconds                          | Meter Communication Fault. Please check whether the power supply & communication cables are properly connected in accordance with local standards.  |
| 2  | Red LED flashing every 2 second                             | Battery Communication Fault. Please check whether the inverter is properly connected to the battery box, and make sure that the battery switch and breaker are both in the ON position.   |
| 3  | Abnormal Energy Flow Monitoring                             | Please check whether the power supply and CT have been properly installed according to the installation manual.   |
| 4  | All the LEDs are off  | Please check whether the voltage at each port is within the normal range.   |
| 5  | SOC mis-indicates and fluctuates after initial installation | Do nothing, and the device will self-correct itself as soon as the battery is fully charged or discharged.  |
| 6  | Battery completely depleted                                 | We highly recommend disconnecting the battery ASAP during installation or when the device is on standby to avoid serious depletion and damage caused by extreme power consumption over a long period of time. Please contact after-sale services for technical support in the event of serious battery depletion. |
| 7  | Code DSP_1  | PV1 overvoltage. Please check whether the open circuit voltage is within the normal voltage range.  |
| 8  | Code DSP_2  | PV1 overcurrent. Please check whether PV1 is correctly connected.   |
| 9  | Code DSP_3  | PV2 overvoltage. Please check whether PV2 is within the rated voltage range.  |
| 10 | Code DSP_4  | PV2 overcurrent. Please check whether PV1 is correctly connected.   |
| 11 | Code DSP_9  | Please check whether PV is within the normal voltage range.   |
| 12 | Code DSP_10   | No grid power. Please check whether the grid voltage is normal.   |
| 13 | Code DSP_11   | Grid voltage fault. Please check whether the grid voltage is within the normal range.   |
| 14 | Code DSP_12   | Grid current fault. Please check whether the EPS load power is within the normal range.   |
| 15 | Code DSP_13   | Grid frequency fault. Please check whether the grid frequency is within the normal range.   |
| 16 | Code DSP_14   | Overheat fault. Please check whether the cooling system is working properly.  |
| 17 | Code DSP_16   | Current over-leak fault. Please check the solar panel and device wiring.  |

|    | Issue  | Solution   |
|----|--|--|
| 18 | Code DSP_17  | Isolation resistance fault. Please check the solar panels and wiring system.   |
| 19 | Code DSP_26  | Battery voltage fault. Please check whether the battery voltage is within the normal range.  |
| 20 | Code DSP_37  | EPS voltage fault. Please check whether the EPS load power is within the normal range.   |
| 21 | Code DSP_38  | EPS current fault. Please check whether the EPS load power is within the normal range.   |
| 22 | Code DSP_39  | EPS overload fault. Please check whether the EPS load power is within the normal range.  |
| 23 | Code DSP_40  | EPS short circuit fault. Please check whether the EPS load power is within the normal range.   |
| 24 | Code DSP_41  | Earth & Neutral wire fault. Please check whether the earth and neutral wires are properly wired in line with standard requirements.  |
| 25 | What should I do if I forget my SunPower password? | Open the SunPower app and tap “Lost your Password,” >> get a verification code >> check email for verification code >> reset password.   |
| 26 | How can I change my SunPower password?             | Log into the SUNPOWER app and navigate to “Me” >> “Account” >> “Change Password”. In this screen, enter your current password, then enter your new password and type it again for confirmation, then click on the “Confirm” button.  |
| 27 | How can I delete my device account?                | Log into SUNPOWER app, then navigate to “Me” >> “Account” >> “Account cancellation.” Read carefully the information on the screen before pressing “Continue”. All account data will be deleted and will not be recoverable. Please think twice before deleting your account.   |
| 28 | How can I share my account with my family members? | Log into the SUNPOWER app, navigate to your site’s page and tap on the “Settings” button in the upper right corner of the screen. Pick the option “Share plant” to allow other people – like family members – to view your system. You can share your account by adding the e-mail of the person you want to share it with, or their SunPower Account ID. Note: they need to first download the SUNPOWER app and register their account.<br><br>The invited user receives a message in the Messages section of the SunPower app, informing that a friend invited them. After confirming, a card of the energy solution will appear on the home page of their SUNPOWER app. |
| 29 | Why is there no data on the home page?             | The device may be offline.<br>1- Check that your Wi-Fi is working<br>2- Check that the inverter LED light is on<br>3- Check that the Wi-Fi dongle is properly  |

|    | Issue   | Solution   |
|----|---|--|
|    |   | <p>connected</p> <p>4- Check mobile phone reception</p> <p>5- Check that the internet is working properly and try to restart SUNPOWER app.</p> <p>Data can take a while to upload (up to 5 mins), after which the SUNPOWER app will be bound to the device.</p>          |
| 30 | Adding multiple devices to SUNPOWER   | Log in to the SUNPOWER app and tap the “+” on the top left of the home page. Scan the QR code on the Wi-Fi dongle to add new devices. Or navigate to “Setting” >> “Devices” and tap the “+” to add more devices.   |
| 31 | How can I delete my device account?   | Log in to SUNPOWER and navigate to “Setting” >> “My Devices,” select the device account, and tap the top right of the screen to delete the device.   |
| 32 | Why is the device offline   | <p>Possible reasons for the device to be offline.</p> <ol style="list-style-type: none"> <li>1. Check that the Wi-Fi network is working properly</li> <li>2. Check that the inverter LED light is on</li> <li>3. Check that the LED on the Wi-Fi dongle is on</li> </ol> |
| 33 | Why can't I search for and find the Wi-Fi dongle hotspot?   | <ol style="list-style-type: none"> <li>1. Check that the inverter LED light is on</li> <li>2. Check that the LED on the Wi-Fi dongle is on</li> <li>3. Restart or reconnect the Wi-Fi dongle</li> </ol>  |
| 34 | Why is no internet connection found when returning to other interfaces after configuring SunPower app via WLAN? | Disconnect your mobile phone from the WLAN, and reconnect it to your home Wi-Fi or your mobile network after successfully configuring WLAN.  |

## 7 EMERGENCY PROCEDURES

### 7.1 Inverter malfunction

If the SP-ARTH Series inverter malfunctions, turn off the main grid breaker directly feeding the inverter and turn off all inverter switches. Please immediately contact SunPower technical support for detailed instructions.

**WARNING:** Do not open the inverter upper cover plate by yourself.

### 7.2 Battery leakage

If the battery pack leaks electrolyte, avoid contact with the leaking liquid or gas. If someone is exposed to the leaked substance, immediately take the following actions:

**Inhalation:** Evacuate contaminated area and seek medical aid.

**Contact with eyes:** Rinse eyes with running water for 15 mins and seek medical aid.

**Contact with skin:** Wash affected area thoroughly with soap and water and seek medical aid.

**Ingestion:** Induce vomiting and seek medical aid.

### 7.3 In case of fire

#### DANGER

DO NOT USE WATER. Only dry powder fire or carbon dioxide extinguisher can be used; if possible, move the battery module to a safe area before it catches fire.

### 7.4 Fire precautions and protective measures

**Extinguishing media:** Dry powder, sand, carbon dioxide (CO<sub>2</sub>).

**Flammable properties:** Lithium-ion batteries contain a flammable liquid electrolyte that may vent, ignite, or produce sparks when subjected to high temperatures (> 150°C) or when damaged or improperly used (e.g., mechanical damage or overcharging). Burning cells can ignite other batteries close by.

**Explosion data:** Severe mechanical abuse may rupture batteries. Batteries may explode when exposed to fire.

**Special protective equipment for firefighters:** Wear full protective gear and self-contained breathing apparatus with a full face mask in a pressure-demand or other positive pressure mode.

### 7.5 Water Damage

If the module becomes wet or is submerged in water, do not approach it. Contact SunPower or an authorized dealer for technical support. Switch off all power on the inverter side.

## 7.6 Damaged Batteries

### **DANGER**

Damaged batteries may leak electrolyte or produce flammable gas. Never try to repair the damaged batteries even if you are a qualified electrician.

Damaged batteries are dangerous and must be handled with great care. They are not fit for use and may pose a danger to people or property. If the module seems to be damaged, please contact SunPower technical support xc.

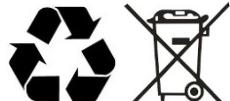
## 8 MAINTENANCE AND RECYCLING

### 8.1 Maintenance

- 1) It is required to charge the battery at least once every 6 months, for this charge maintenance make sure the SOC is charged to higher than 85%.
- 2) Check installation environment such as dust, water, insect etc. Make sure it is suitable for IP65 battery system. Connection of power connector, grounding point, power cable and screw are suggested to be checked every year

### 8.2 Recycle and Disposal

In case a battery (normal condition or damaged) needs disposal or needs recycling, it shall follow the local recycling regulation (i.e. Regulation (EC) N° 1013/2006 among European Union) to process, and using the best available techniques to achieve a relevant recycling efficiency.

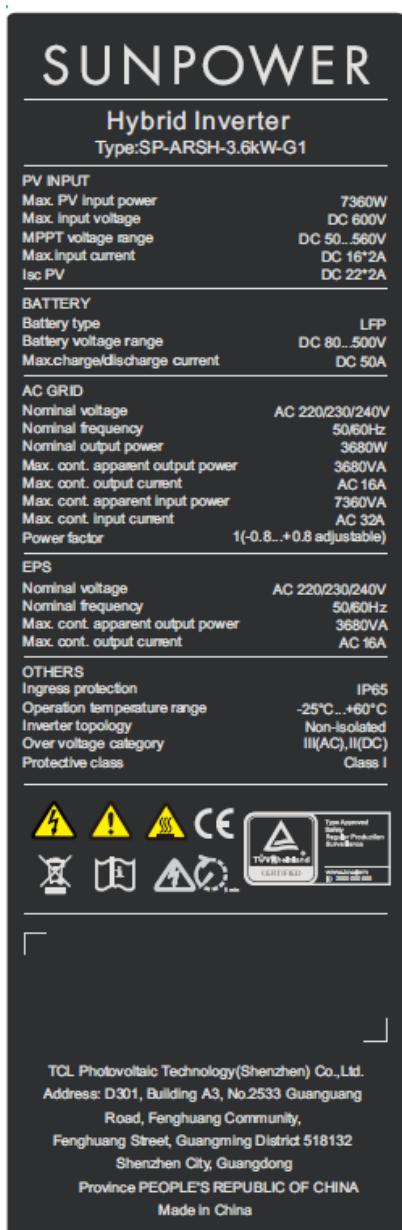


### 8.3 Declaration of conformity

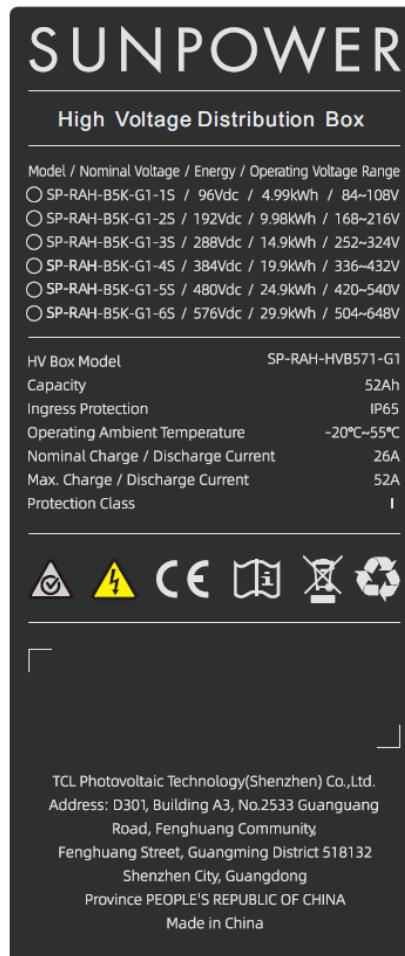
The battery system described in this document complies with the applicable European directives. The certificate is available in the resources area of the SunPower website

## 9 LABELS

PCS Nameplate:



High voltage box nameplate:



Battery box nameplate:

