



User Manual

## **Solar Inverter SAN 6k-10k**

Three-phase Hybrid Inverter

## HISTORY

VERSION	RELEASED	DESCRIPTION
1.0	Dec. 20, 2023	First release

# PREFACE

## About This Manual

This manual describes the mounting, installation, electrical connection, commissioning, operation, maintenance, and APP operation of the PowerWalker Solar Inverter SAN Series. Please read this manual and the accompanying documents carefully before using the product and keep them in a place where they can be easily accessed by installation, operation and maintenance personnel. The illustrations in this manual are made as accurate as possible for essential information, but deviation is inevitable. This manual is subject to change without notice. Please visit the official website for the latest update: <https://www.powerwalker.com>.

## Target Group

The hybrid inverters described in this manual must be installed by qualified, professional who have obtained knowledge and training of how a solar inverter is installed and commissioned. The personnel should be familiar with local laws, grid standards and safety regulations.






## Scope

This manual is valid for the following hybrid inverters:

PowerWalker Solar Inverter SAN 6k  
PowerWalker Solar Inverter SAN 10k

## Convention

The following safety signs are used in this manual:

 <b>DANGER</b>	Indicates an imminently hazardous situation which, if not avoided, may result in death or serious injury.
 <b>WARNING</b>	Indicates a potentially hazardous situation which, if not avoided, may result in death or serious injury.
 <b>CAUTION</b>	Indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
 <b>NOTICE</b>	Indicates a situation which, if not avoided, may result in equipment failure or property damage.
 <b>NOTE</b>	Additional instructions and tips highlighting important information and best practices.



This hybrid inverter and its accessories must not be treated as household waste. To ensure that the products are handled properly at the end of their life, dispose of them at a collection point for the recycling of electronic equipment and waste batteries.

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# 1. SAFETY

Read all instructions and warnings on the unit and in the manual before using the inverter. Keep the instructions in a place where they are easily accessible.

The three-phase PowerWalker Solar Inverter 6k/10k SAN OGV 3/3 has been designed and tested in strict compliance with relevant safety regulations. Local safety and grid regulations must be observed during installation, operation, and maintenance. Failure to do so may result in personal injury or death to the user or third parties, and damage to the inverter and other property belonging to the user or third parties.

## 1.1 Symbols on the product

Safety Symbol	Description
	Danger of high voltage! Only qualified personnel may perform work on the inverter.
	Residual voltage exists when the inverter is switched off. It takes 5 minutes for the system to discharge to a safe voltage.
	Danger of hot surface.
 Do not disconnect under load!	DO NOT disconnect the DC connectors under load, as there is a risk of fire.
	Environment Friendly Protection Use Period (up to 20 years)
	Refer to the operating instructions.
	Do not dispose of the inverter with the household waste.
	Grounding terminal

## 1.2 Important Safety Precaution Instructions

### DANGER

- Installation, maintenance, and connection of inverters must be carried out by qualified personnel in compliance with local regulations and the requirements of local authority and/or electricity company.
- The temperature of some parts of the inverter may exceed 60°C during operation. DO NOT touch the inverter during operation to avoid burns.
- Keep children away from the inverter.
- DO NOT open the inverter. Except for work on the wiring terminal (as described in this manual), unauthorized touching or changing of components may result in personal injury, damage to the inverter, and void the warranty.

### DANGER

- Ensure that the maximum open-circuit voltage of the PV modules connected together (string) must not exceed the maximum rated input voltage of the inverter, otherwise the inverter may be damaged, and the warranty may be invalidated.

### DANGER

- The PV array generates a dangerously high DC voltage when exposed to sunlight. Please operate in accordance with our instructions, otherwise there is a danger to life.
- Connect and ground the frame of PV modules and the electrically conductive surface according to local regulations. DO NOT connect PV strings with ground faults to the inverter.

### DANGER

- The inverter must be completely isolated before maintenance. Completely isolate the inverter by: turning off the PV switch and disconnecting the PV terminal, battery terminal and AC terminal.

### DANGER

- After the inverter has been disconnected, the residual electricity and heat can still cause electric shock and burns. Do not touch any part of the inverter for 10 minutes after disconnecting it from the power source.

### DANGER

- DO NOT plug or unplug the AC and DC terminals while the inverter is running.

### DANGER

- DO NOT connect the inverter in the following ways:
  - The BACKUP port should not be connected to the grid.
  - A single PV panel string should not be connected to two or more inverters.

### WARNING

- Static electricity can damage electronic components. Appropriate methods must be used to prevent such damage to the inverter, otherwise the inverter can be damaged, and the warranty may be invalidated.

### CAUTION

- If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

### CAUTION

- Due to heavy weight of the product, please transport and lift the product carefully with two persons.
- Incorrectly transport or lift of the product may cause injury or product damage.

### NOTICE

- PV modules should comply with IEC61730 Class A.

## 2. PRODUCT INTRODUCTION

### 2.1 Product Overview

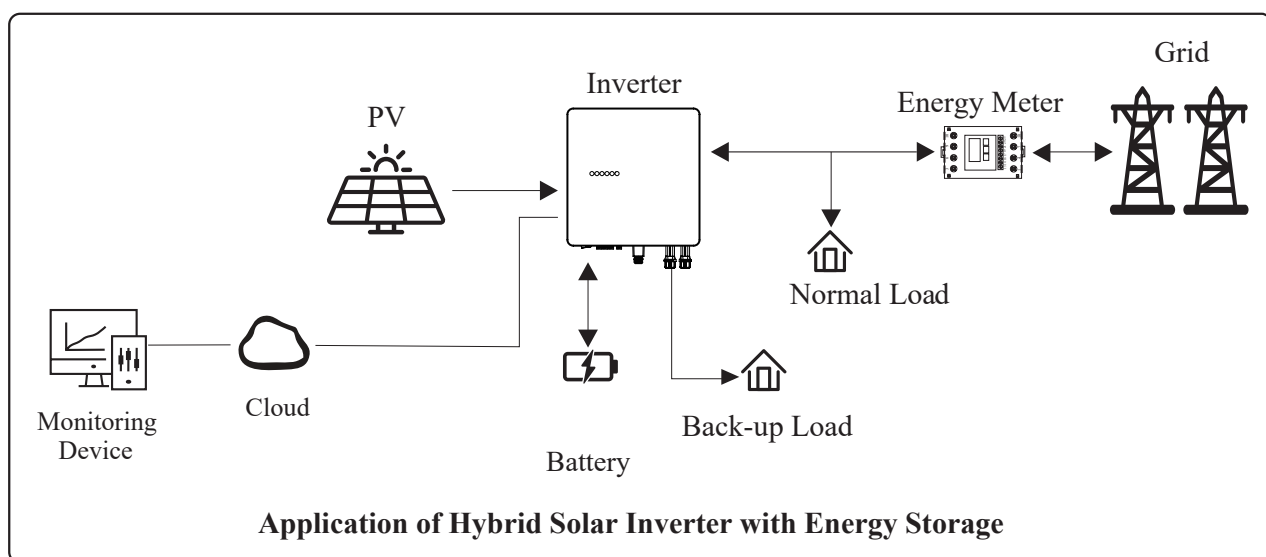
#### Intended Use

The PowerWalker Solar Inverter SAN series are transformerless hybrid inverters with IP65 protection level for both indoor and outdoor use. They are equipped with 2 MPP trackers and a battery connection that can

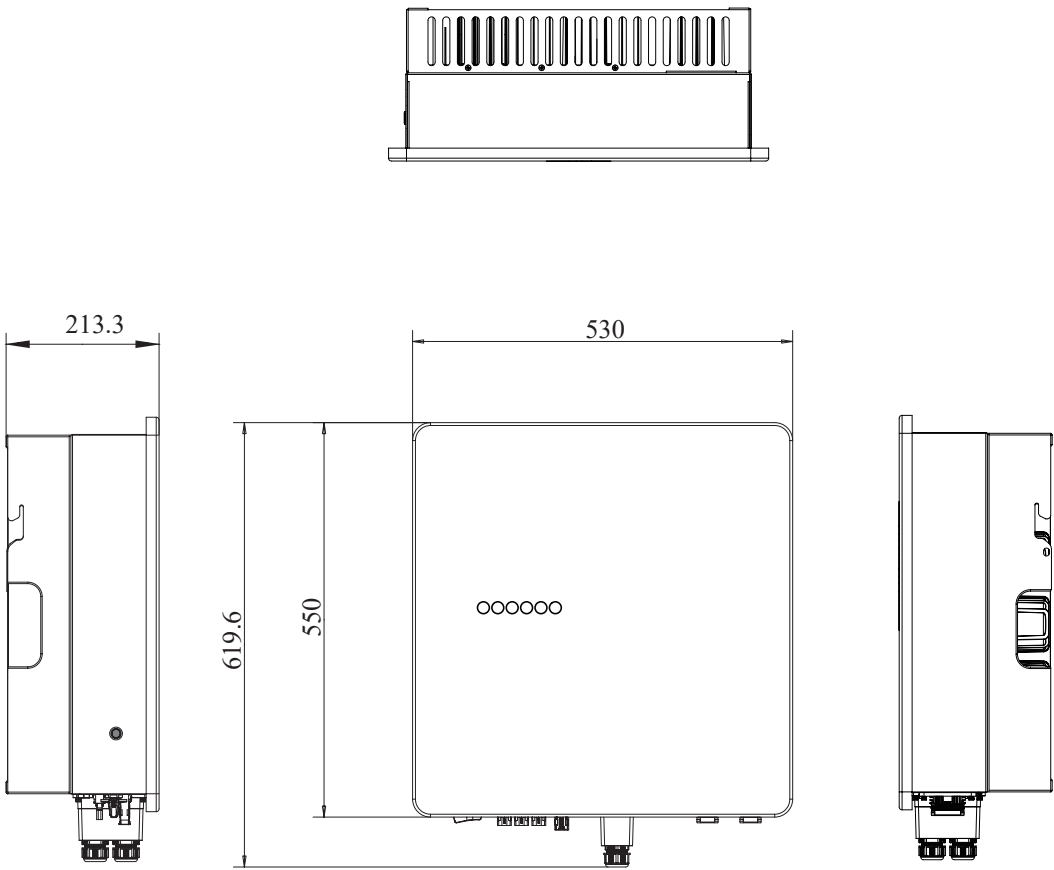
- 1) increase the PV energy yield where the roof has varying orientations or is subject to shading;
- 2) increase the self-consumption of solar energy by directly charging the high-voltage energy storage battery, in particular lithium iron phosphate (LiFePO<sub>4</sub>) batteries compatible with the SAN series or lead-acid batteries from the direct current (DC) generated by the PV array for later use when the sun is not available;
- 3) convert the direct current (DC) to alternating current (AC) for use at homes, commercial buildings or for charging EVs;
- 4) feed in the excess PV power into the grid to earn extra income;
- 5) discharge the unused battery power and feed it into the grid;
- 6) charge the battery also from the grid in the case when the PV power is insufficient;
- 7) provide backup power from the battery to the preset load in case of power outage;
- 8) monitor and configure settings via Bluetooth or Wi-Fi connection from smartphones, tablets or PCs. The app allows users to prioritise the distribution of PV power and set the priority of the power source when PV power is insufficient.

#### Compatible lithium iron phosphate (LiFePO<sub>4</sub>) batteries

Battery Type: High Voltage	
Manufacturer	Battery Model
PowerWalker	LiFe Battery System 102-37/HV1
Pylontech	Force-H1
Dyness	Tower T-T7/T10/T14/T17/T21
WECO	WECO 5K3-XP-EMEA



2.2 Product Appearance

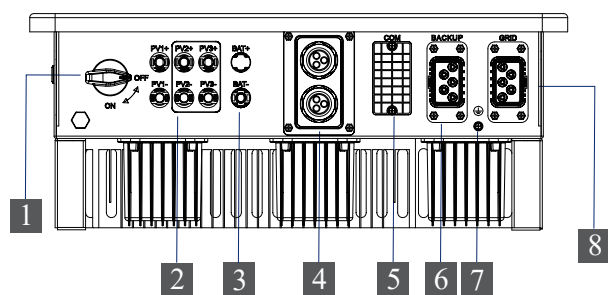


PV    BAT    GRID    BACKUP    COM    ALARM

LED Details

Width(mm)	Height(mm)	Depth(mm)
530.0	550.0	213.3

The External View of Solar Inverter



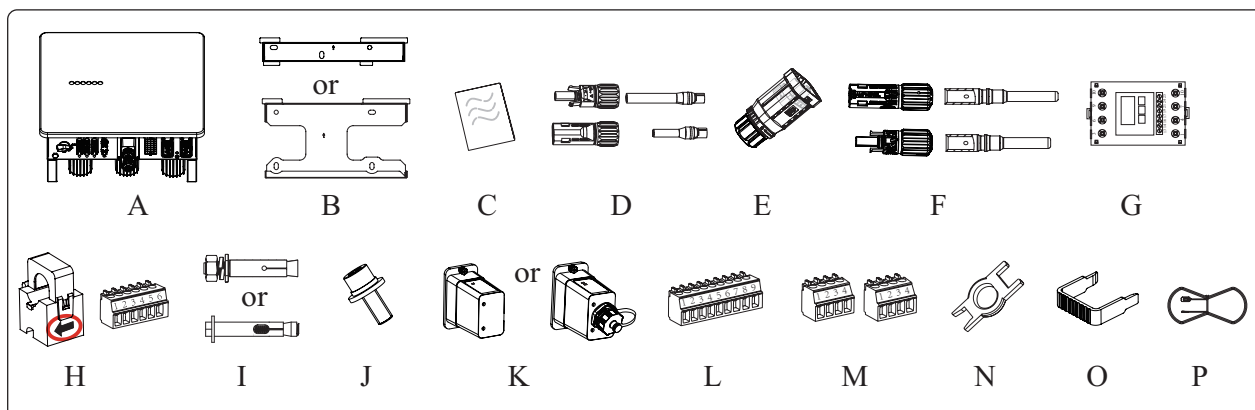
The bottom view of Solar inverter

1. PV Switch
2. PV Input Terminals
3. Battery Connect Terminals
4. COM1 Ports  
(RS485, BMS, DRMs/RCR, CT,  
NTC/DI/DO, RSD/RMO, PARAL)
5. COM Port  
(WIFI/LAN)
6. BACKUP Output Terminal
7. Grounding Terminal
8. GRID Output Terminal

## 3. INSTALLATION

### 3.1 Packing List

After unpacking, please check the following packing list carefully for any damage or missing parts. If any damage or missing parts occurs, please contact the dealer or supplier for help immediately.



Number	Quantity	Description
A	1	Inverter
B	1	Mounting bracket
C	1	Quick start guide, Warranty leaflet
D	2/2 for 6k; 3/3 for 10k	PV terminal connectors (PV+/PV-)
E	2	Grid / BACKUP connector
F	1/1	Battery terminal connectors (BAT+/BAT-)
G	1	Meter (Optional, not included)
H	1	CT pack (3 pcs CT + 1 pc 6-Pin terminal)
I	3	M10 Expansion screws
J	1	M6 Security screw
K	1	WIFI module
L	1	9-Pin terminal
M	2	4-Pin terminal
N	1	Removal tool for PV / BAT connector
O	1	Removal tool for Grid / BACKUP connector
P	1	Battery Temperature sensor (Optional, not included)

## 3.2 Selecting the Mounting Location

### 3.2.1 Installation Environment Requirements

#### ⚠ NOCTICE

The protection class of the inverter is IP65 for indoors and outdoors. However, please ensure that the mounting location meets the following requirements:

- The inverter must be protected from direct sunlight, rain exposure, and snow cover when it is installed in outdoor areas.
- Select a location that is as cool as possible, since high operating temperatures shorten the service life. To ensure optimum operation and long service life, the ambient temperature must be between  $-25^{\circ}\text{C}$  and  $50^{\circ}\text{C}$ .
- Select an installation site that is preferably dry and dust-free, protected from vapors and aggressive ambient air to avoid corrosion and the formation of creep currents and the associated damage.
- Due to the possible fire hazard in the event of a fault, the inverter must be mounted on a non-combustible base. Do not mount the inverter on flammable building materials.
- The installation in areas with special fire risks according to DIN VDE 0100-420, e.g. fire-hazardous operating areas like hay or straw stores, fodder storage areas, paint stores, timber stores, and sawmills is not permitted (see VdS 2033) .
- The mounting location must be suitable for the weight and the dimensions of the inverter.
- The PV power supply system and the inverter should be installed above a possible flooding area (e.g. due to high water).
- Product labels and warning symbols must be clearly legible after installation.
- The installation height should be reasonable and sure easy operation and viewing of the display.



No direct sunlight



No rain exposure



No snow cover



Direct sunlight



Rain exposure



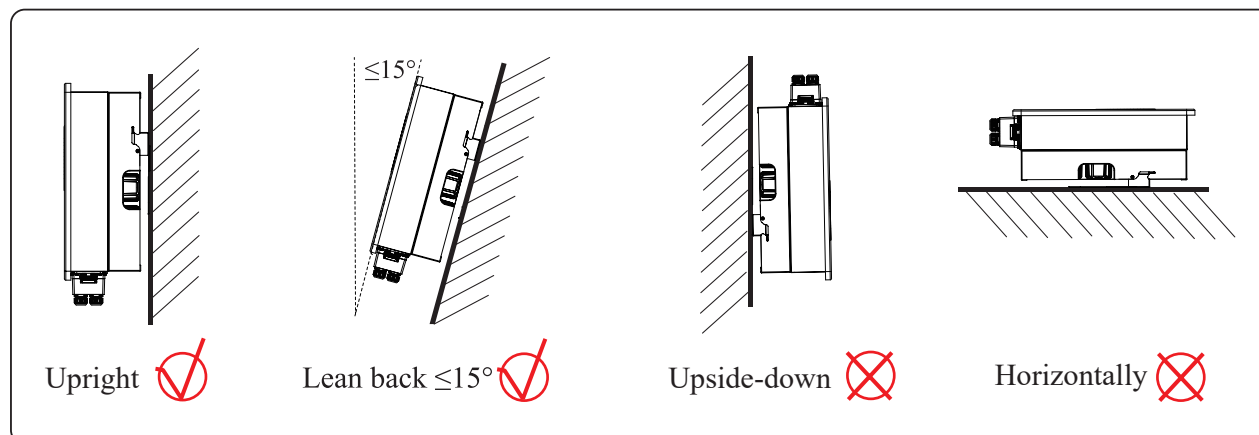
Snow cover



### 3.2.2 Mounting Requirements

#### ⚠ WARNING

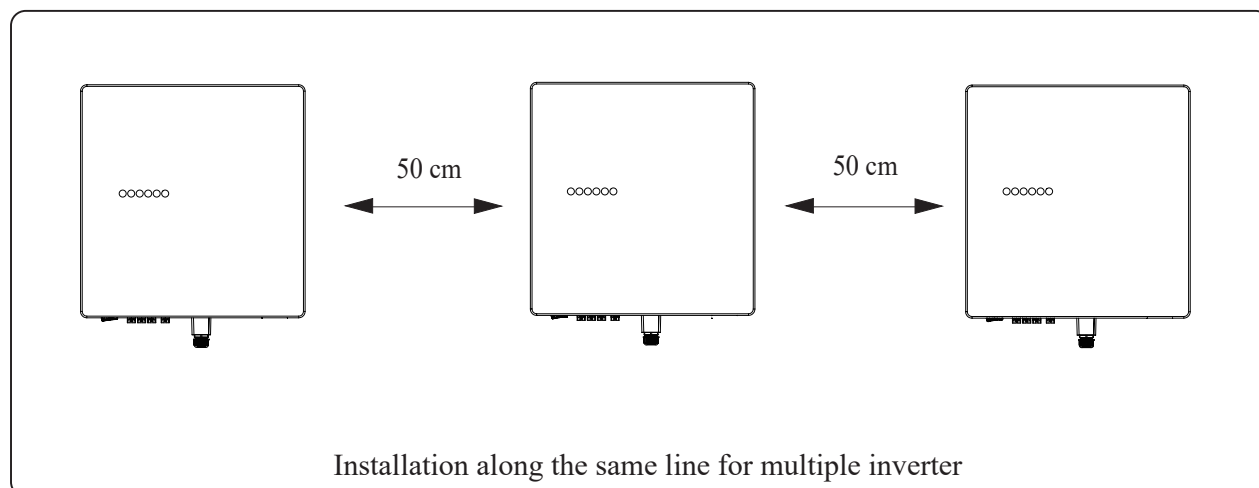
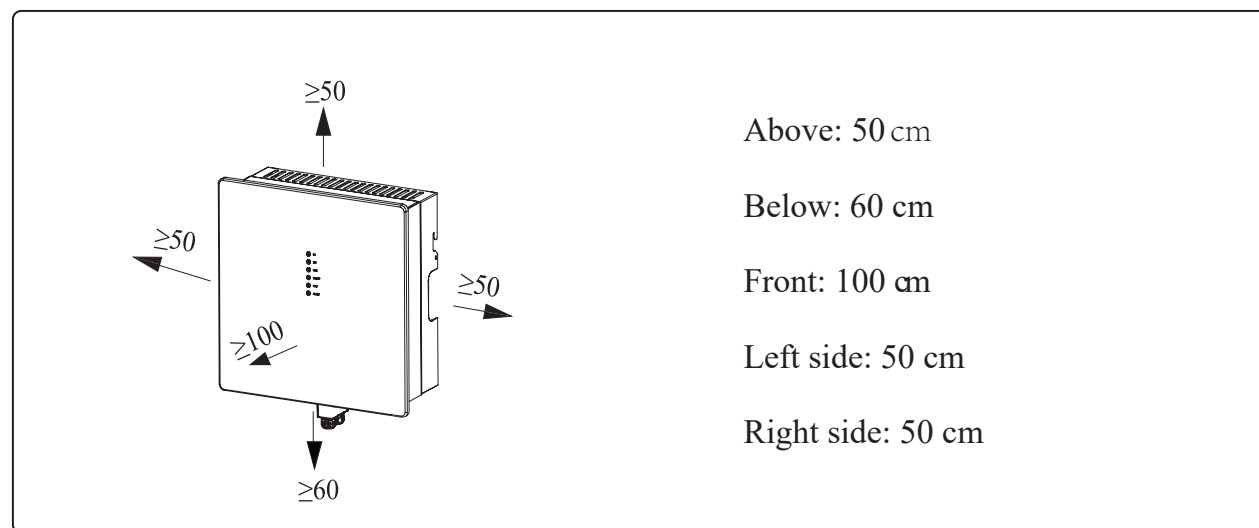
Mount the inverter vertically or tilted backwards by max 15°. The inverter must not be installed in a wrong direction and the connection area must face downwards.



### 3.2.3 Installation Space Requirements

#### ⚠ WARNING

To ensure safe operation of the inverter, the inverters must be mounted and kept sufficient clearance and distances from the surrounding objects.



### 3.3 Mounting

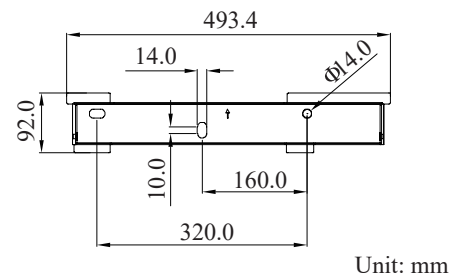
#### NOTE

- Depending on the mounting bracket included in the packaging, please follow the correct instructions for Type I or Type II.
- Before mounting the inverter, you have to prepare expansion screws and security screw.

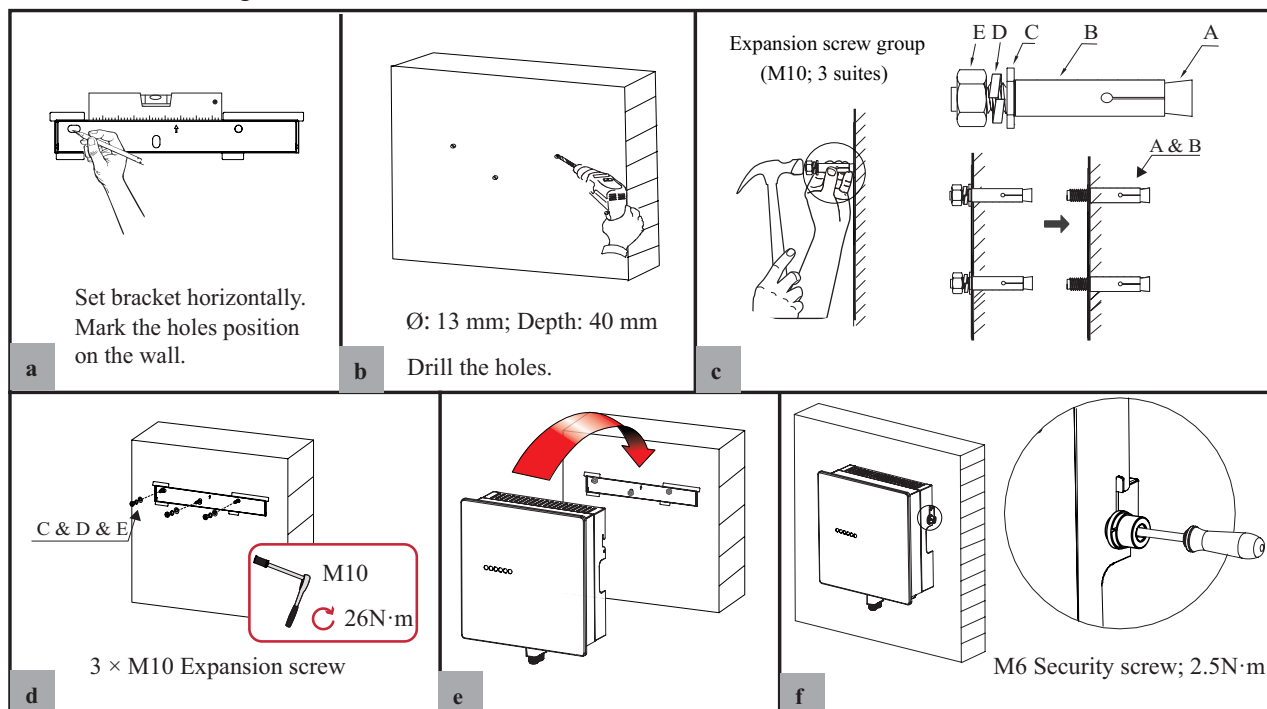
#### 3.3.1 Mounting bracket Type I

##### Step 1. Install the mounting bracket

- Use a level ruler to mark the position of the 3 holes on the wall. Refer to Figure a. And drill 3 holes, 13mm in diameter and 40mm in deep. Refer to Figure b.
- Knock the expansion screw kit into the hole together with a hammer. Refer to Figure c.
- Note: Do not remove the nut unit in this step.
- After tightening 2-3 buckles, the expansion bolts are tight and not loose, and then unscrew the bolts, spring washer, gasket. Refer to Figure c.
- Install and fix the mounting bracket on the wall. Refer to Figure d.



##### Step 2. Install the inverter on the mounting bracket. Then lock the inverter using the security screw. Refer to Figure e and f.



#### ⚠ DANGER

Before drilling the hole on the wall, ensure no damage on the electric wire and/or water pipe inside the wall.

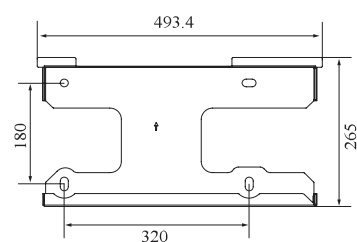
#### ⚠ CAUTION

To prevent potential damages and injuries from inverter falling down, please hang the inverter on the bracket, do not loosen grip unless confirm the inverter is well mounted.

### 3.3.2 Mounting bracket Type II

#### Step 1. Install the mounting bracket

- 1) Use a level ruler to mark the position of the 4 holes on the wall. Refer to Figure a. And drill 4 holes, 12 mm in diameter and 60 mm in depth. Refer to Figure b.
- 2) Knock the expansion screw kit into the hole with a hammer. Refer to Figure c.



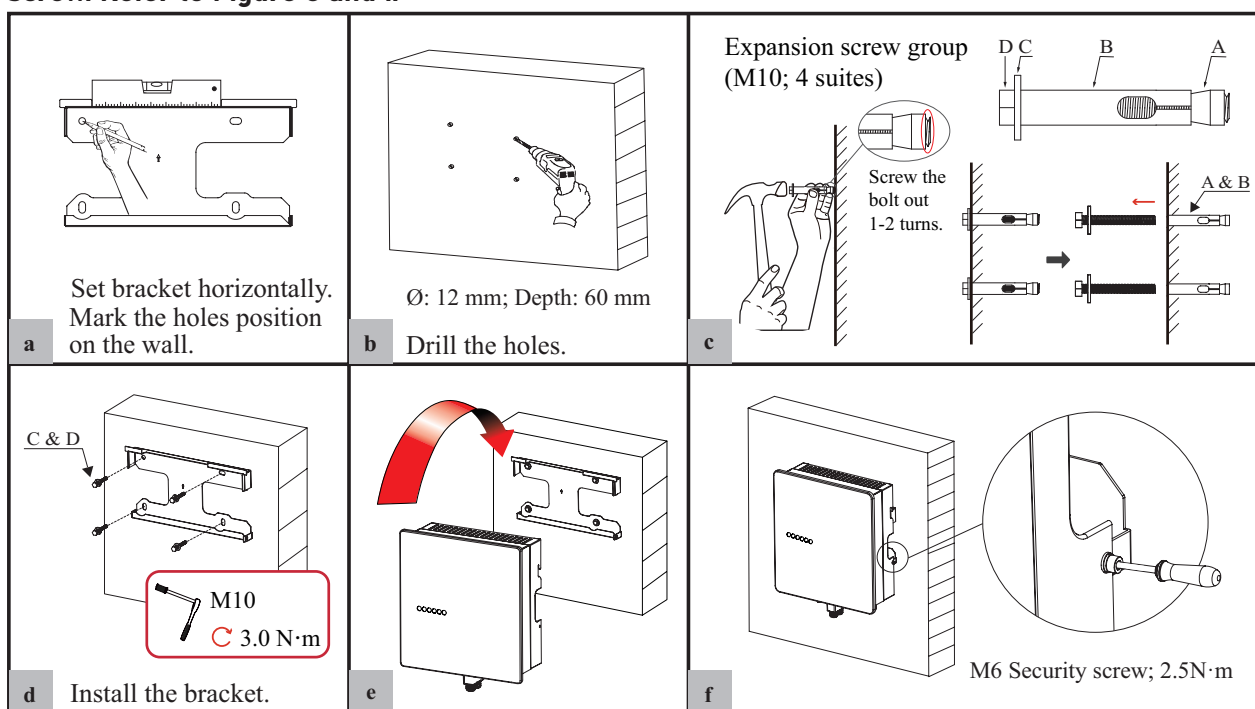
Unit: mm

#### NOTE

- Do not remove the nut unit in this step.
- Before taping the expansion screw kit into the hole, you have to unscrew the bolt 1-2 turns.

- 3) After tightening the 4 bolts, check that they are tight and not loose. Then unscrew the threaded bolts and gaskets. Refer to Figure c.
- 4) Install and fix the mounting bracket on the wall. Refer to Figure d.

#### Step 2. Install the inverter on the mounting bracket. Then lock the inverter using the security screw. Refer to Figure e and f.



#### ⚠ DANGER

Before drilling the hole on the wall, ensure no damage on the electric wire and/or water pipe inside the wall.

#### ⚠ CAUTION

To prevent potential damages and injuries from inverter falling down, please hang the inverter on the bracket, do not loosen grip unless confirm the inverter is well mounted.

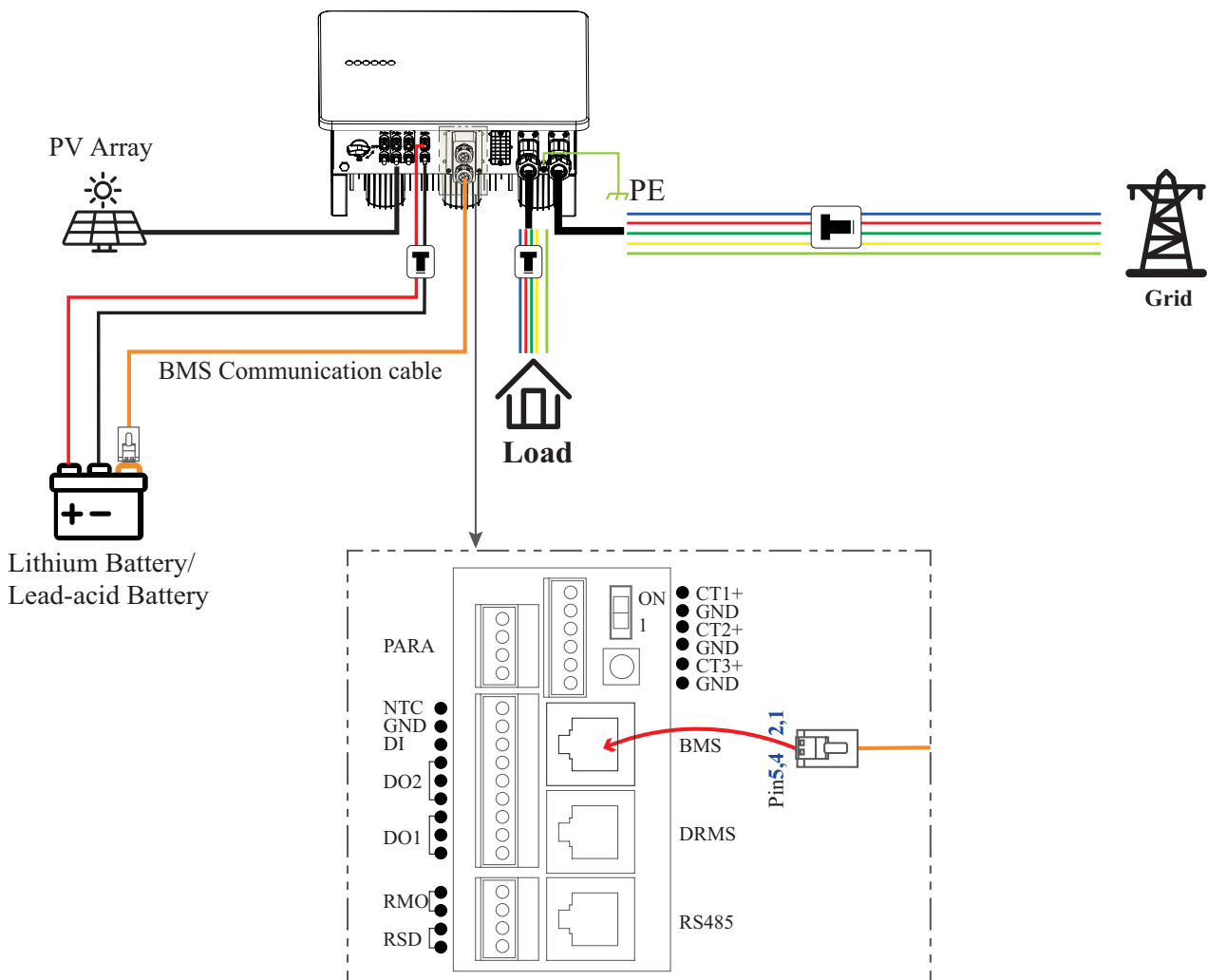
## 4. ELECTRICAL CONNECTION

This chapter shows the details connection of the three phase hybrid inverter.

### **⚠ DANGER**

Ensure that the inverter and all cables to be installed are completely powered off during all installation and connection work. Failure to do so may result in fatal injury due to the high voltage.

**Connection Diagram 1: Connection Mode for the Whole-House Load**

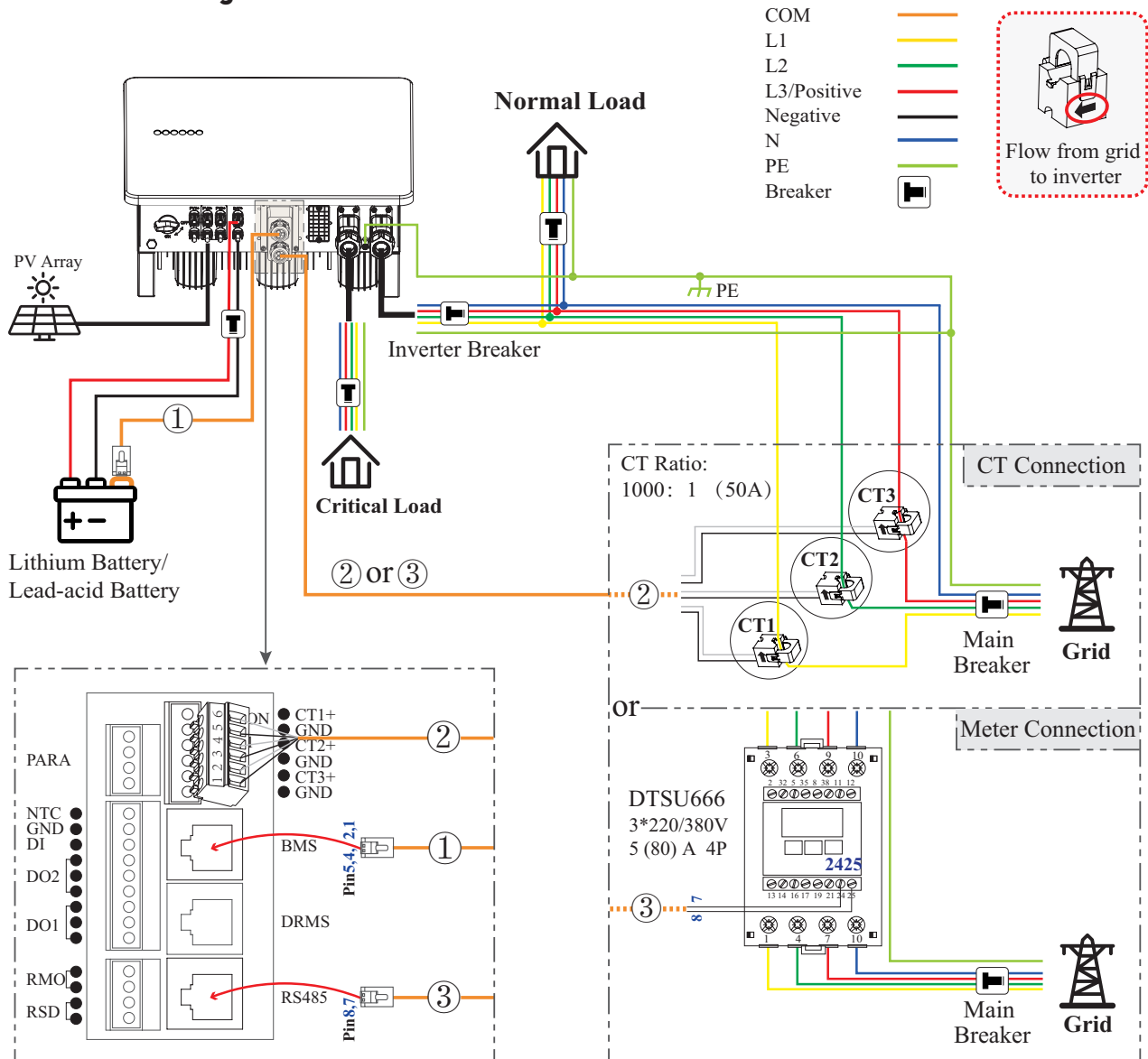


Note:

1. Connection for BMS communication is only for lithium battery.
2. About breakers:  
DC breaker on battery side  $\geq 80A$   
AC breaker on load side  $\geq 40A$   
AC breaker on grid side  $\geq 40A$   
The specifications of main breaker and normal load breaker depend on household loads.

COM	—
L1	—
L2	—
L3/Positive	—
Negative	—
N	—
PE	—
Breaker	—

## Connection Diagram 2: Non-Parallel Connection Mode



- ① Connection for BMS communication
- ② Connection for CT communication
- ③ Connection for Meter communication

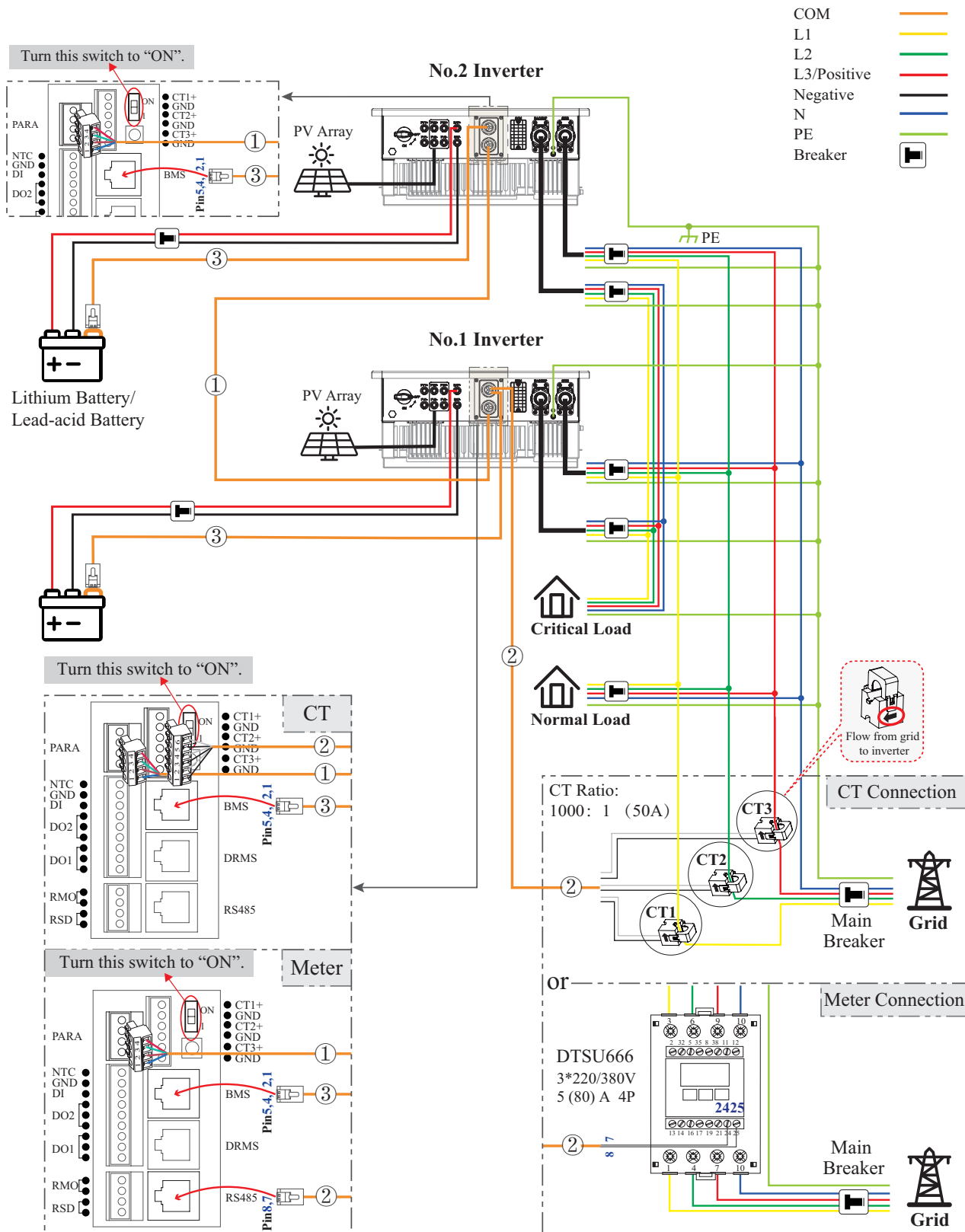
### Note:

1. BMS communication connection is only for lithium battery.
2. Meter is optional.
3. About breakers: DC breaker on battery side  $\geq 80\text{A}$ ; AC breaker on critical load side  $\geq 40\text{A}$ ; AC breaker on inverter side  $\geq 40\text{A}$ . The specifications of main breaker and normal load breaker depend on household loads.

### **⚠ DANGER**

Ensure that the inverter and all cables to be installed are completely powered off during all installation and connection work. Failure to do so may result in fatal injury due to the high voltage.

### Connection Diagram 3: Parallel Connection Mode - Scheme A (N=2)



\* These communication cables can be connected to any inverter, but they must be inserted into the same inverter and we call this inverter No. 1 inverter.

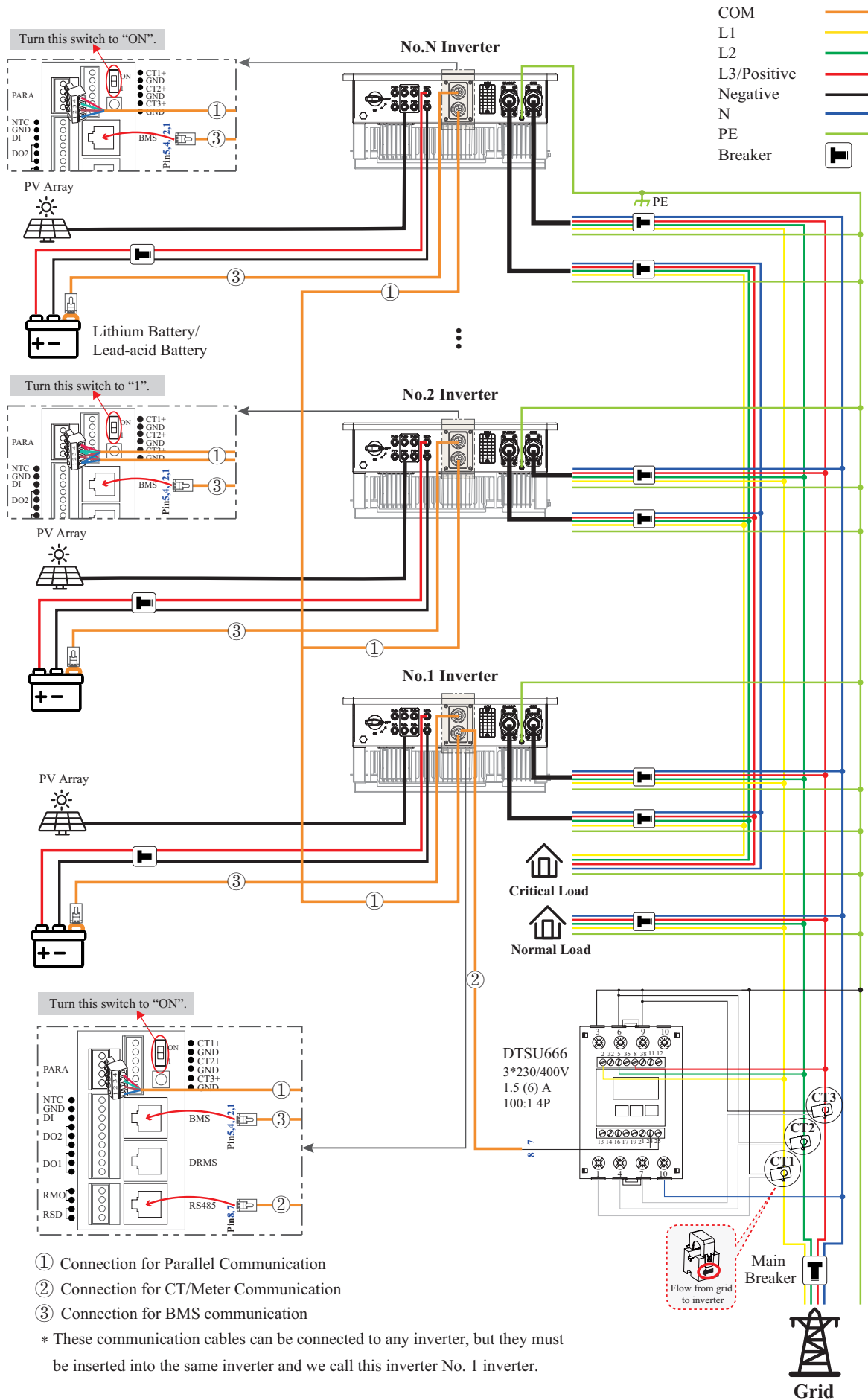
**Note for Scheme A:**

- 1) BMS communication connection is only for lithium battery.
- 2) With parallel connection mode, it is necessary to connect APP to one of inverters and then go to [Console > Other Setting](#) page to enable [Parallel mode](#) on APP.
- 3) About breakers:
  - DC breaker on BATTERY side  $\geq 80A$
  - AC breaker on critical load side  $\geq 40A$
  - AC breaker on Inverter side  $\geq 40A$

 **DANGER**

Ensure that the inverter and all cables to be installed are completely powered off during all installation and connection work. Failure to do so may result in fatal injury due to the high voltage.

## Connection Diagram 4: Parallel Connection Mode - Scheme B (N>2)



**Note for Scheme B:**

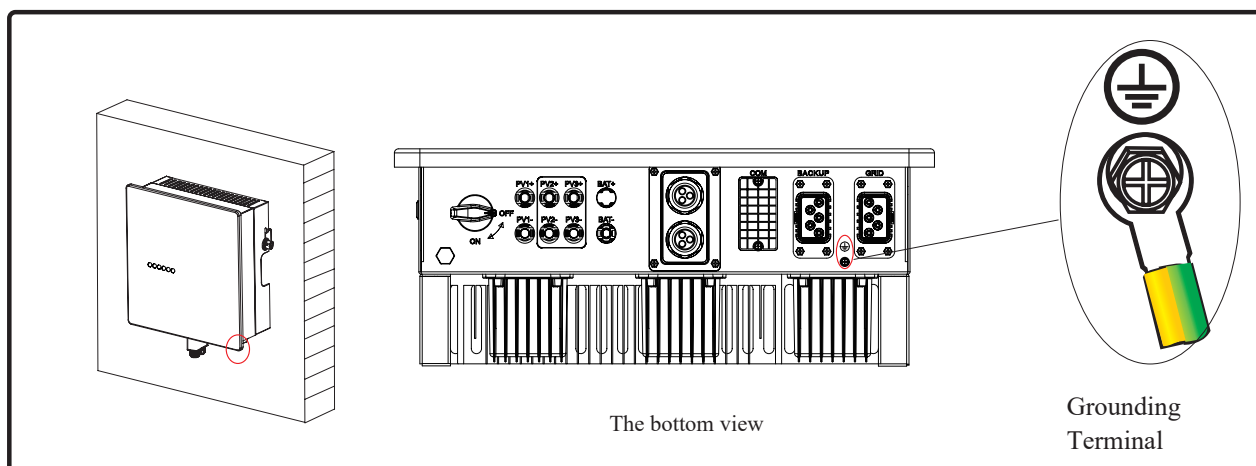
- 1) BMS communication connection is only for lithium battery.
- 2) It is necessary to turn the matched resistance switch of No. 1 inverter and No. N inverter to "ON" and turn others to "1" in parallel connection mode.
- 3) With parallel connection mode, it is necessary to connect APP to one of inverters and then go to [Console > Other Setting](#) page to enable [Parallel mode](#) on APP.
- 4) About breakers:  
 DC breaker on BATTERY side  $\geq 80A$   
 AC breaker on critical load side  $\geq 40A$   
 AC breaker on Inverter side  $\geq 40A$

**⚠ DANGER**

Ensure that the inverter and all cables to be installed have been completely powered off during the whole process of installation and connection. Otherwise, fatal injury could be caused by the high voltage.

**4.1 Grounding**

A protective earth (PE) terminal is equipped at the side of the inverter. Please be sure to connect this PE terminal to the PE bar for reliable grounding. AWG 10 yellow green lines are recommended.

**⚠ WARNING**

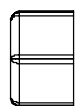
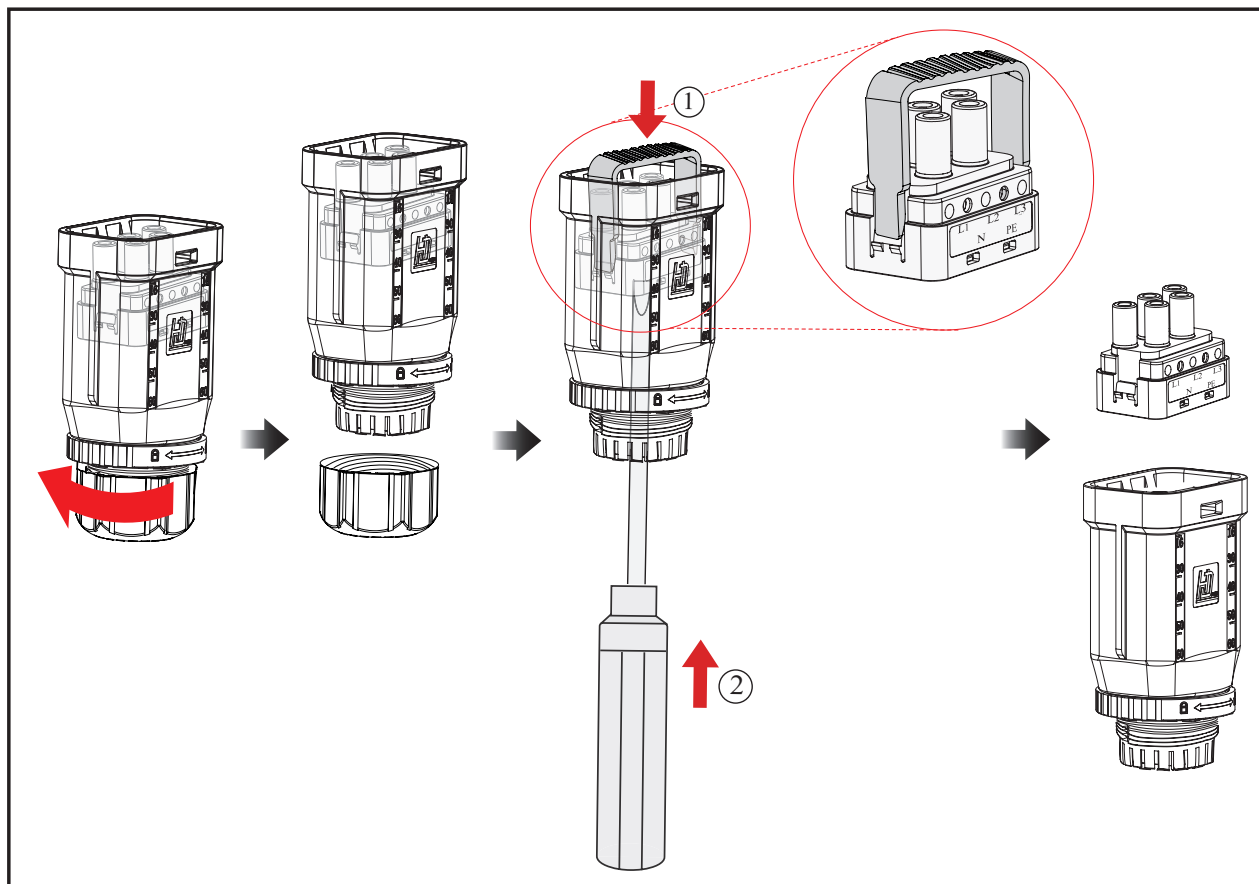
The inverter must be grounded; otherwise, there may be electric shock risk.

**⚠ CAUTION**

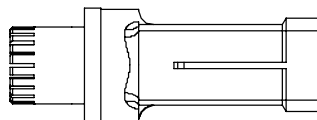
If the positive pole or negative pole of the PV array is required to be grounded, then the inverter output (to AC grid) must be isolated by transformer in accordance with IEC62109-1, -2 standards.

## 4.2 GRID/BACKUP Connection

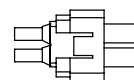
If necessary, please refer to below to disassemble the GRID/BACKUP terminal.



Cable Gland



Threaded Sleeve



Connection Terminal

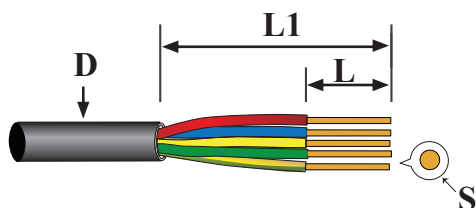
### GRID/BACKUP Connector Structure

#### **⚠ DANGER**

Before connecting the GRID/BACKUP terminal, ensure that both the AC terminal and the DC terminal are powered OFF and the PV switch is OFF. Otherwise there is a risk of high voltage shock.

### Step 1: Assemble the AC connector.

It is recommended to use outdoor dedicated cables with multiple copper cores.



1

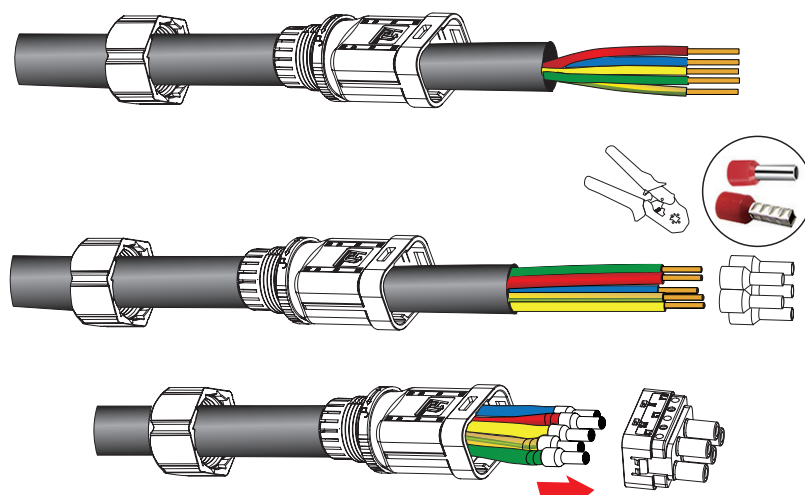
Wire stripping.

D (Diameter): 18 ~ 24 mm

S (Cross-sectional area):  $\geq 5 \text{ mm}^2$

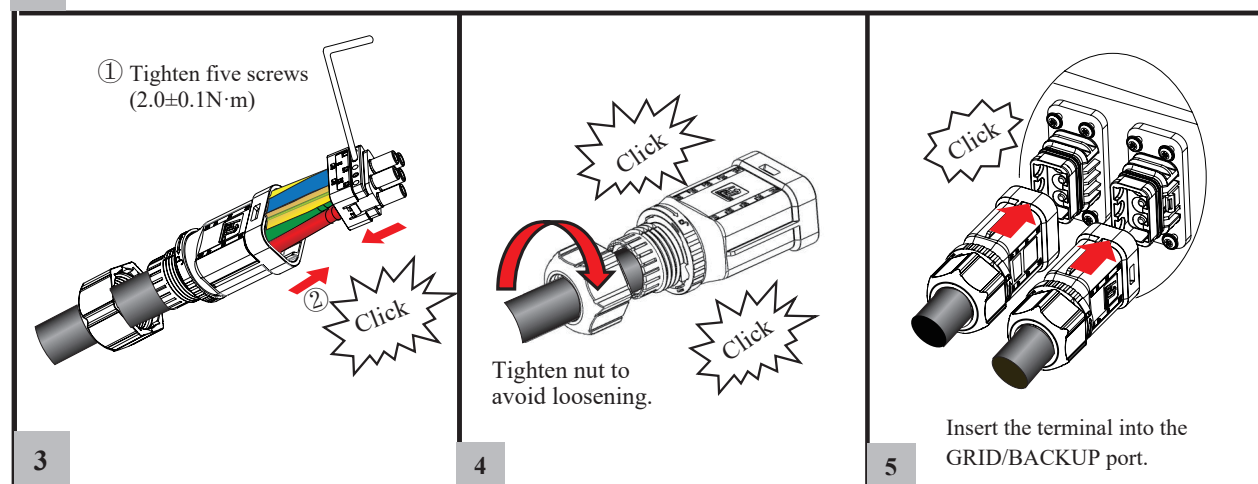
L (Length):  $16 \pm 1 \text{ mm}$

L1:  $60 \pm 2 \text{ mm}$



Please use standard four-sided tubular terminal crimping pliers.  
The recommended crimping pliers brands are as follows: GeeLii, ELECALL, SATA.

## 2 Wire threading and crimping.



### Step 2: Connect the AC connector.

An AC breaker( $\geq 40A$ ) should be installed between inverter and the GRID/BACKUP.

- Before connecting the AC cable from inverter to AC breaker, you should confirm the AC breaker is working normally. Turn off the AC breaker and keep the status.
- Connect the PE conductor to grounding electrode, and connect the N and L conductors to AC breaker.
- Connect the AC breakers to the GRID/BACKUP.

### ⚠ NOTICE

- Multiple inverters are not allowed to share a circuit breaker.
- Load must not be connected between the grid and AC breaker.

### 4.3 Battery Connection

The three-phase hybrid inverter only supports the lithium / lead-acid battery. The recommended lithium battery brands and models are as follows:

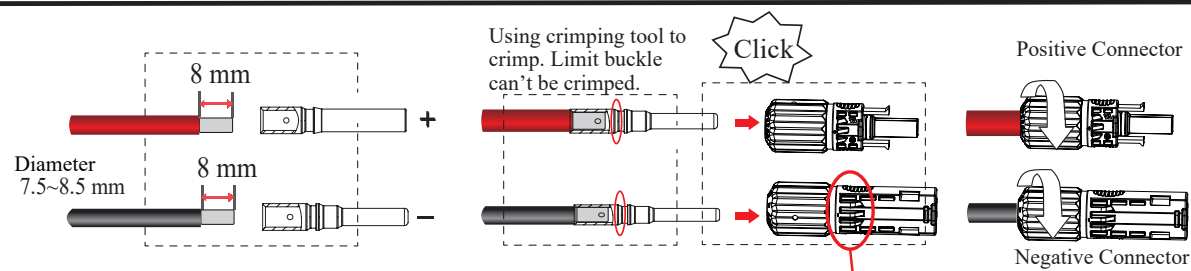
#### Compatible lithium iron phosphate (LiFePO<sub>4</sub>) batteries

Battery Type: High Voltage	
Manufacturer	Battery Model
PowerWalker	LiFe Battery System 102-37/HV1
Pylontech	Force-H1
Dyness	Tower T-T7/T10/T14/T17/T21
WECO	WECO 5K3-XP-EMEA

This part of the manual only describes the battery connection on the inverter side. If you need more detailed connection information on the battery side, please refer to the manual of the battery you are using.

#### ⚠ NOTICE

Before connecting to the battery, please install a separate DC breaker between the inverter and the battery. This ensures that the inverter can be safely disconnected during maintenance.



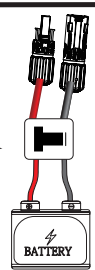
Positive Connector

Negative Connector

**a** Cross sectional area of the battery cable: 10mm<sup>2</sup> (recommended)  
Length of the battery cable should be less than or equal to 3 m

*Pay attention to the difference between the battery terminal and the PV terminal to avoid confusion.*

**b** DC Breaker 80A



It is recommended that the battery cable is less than or equal to 3 m.

This product is not equipped with DC breakers.

**c**

Positive Connector

Negative Connector

Click

BAT+

BAT-

Warning!  
Polarity reverse will damage the inverter!

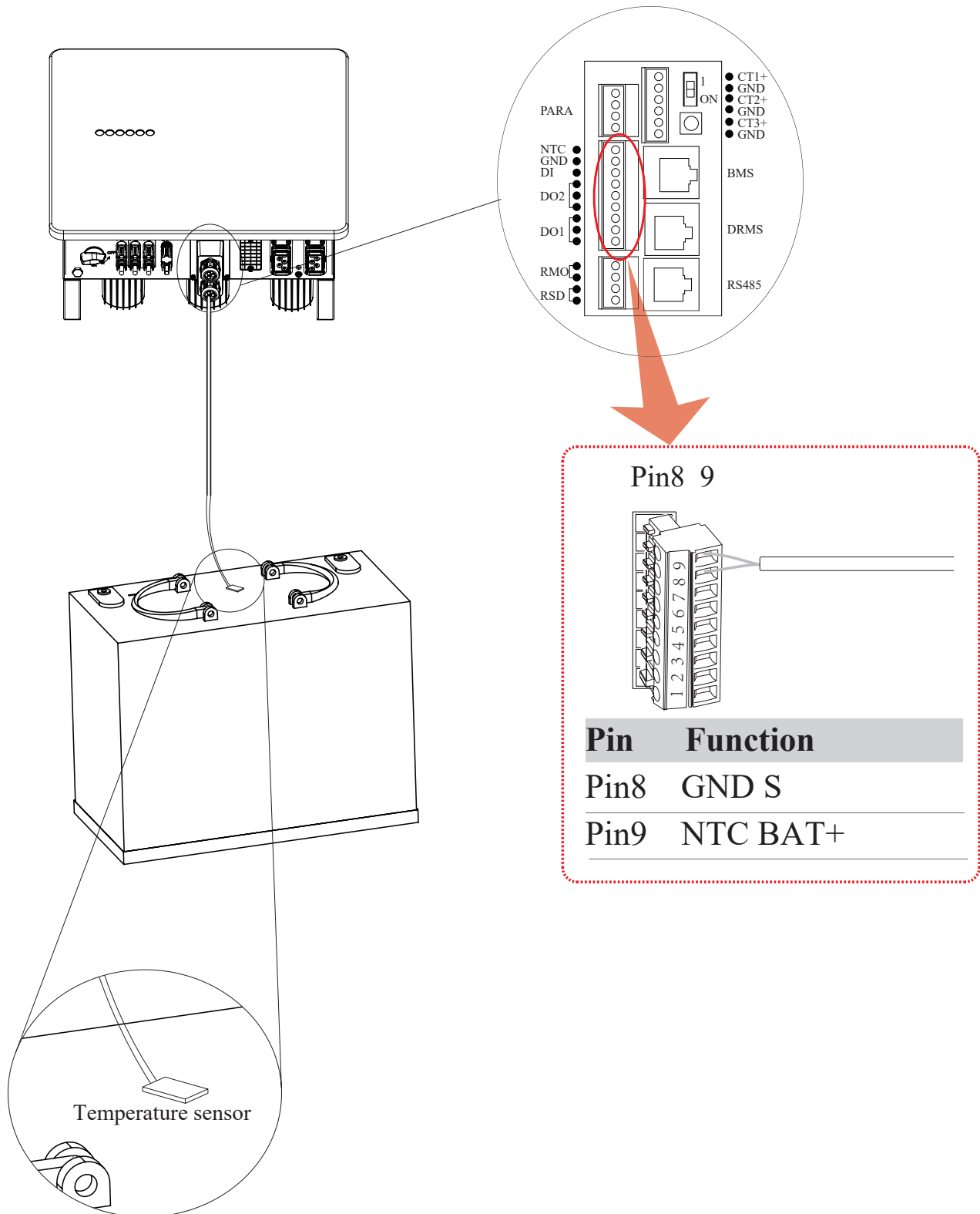
#### ⚠ WARNING

- Polarity reverse will damage the inverter!
- Be careful of electric shock and chemical hazards!
- To reduce risk of injury, please use the suitable recommended cable size.

### Battery Management System (BMS) Connection

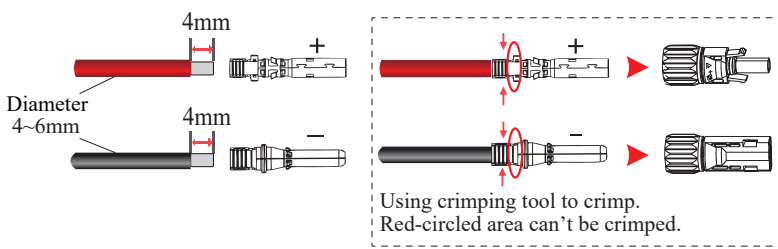
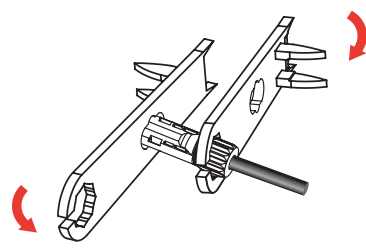
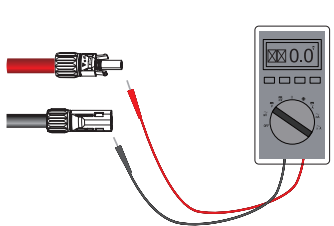
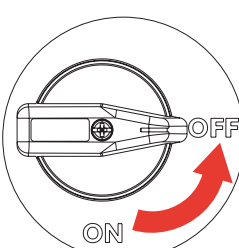
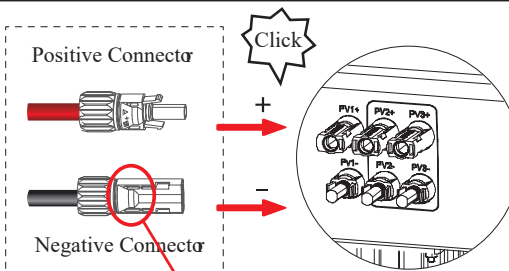
When using a lithium battery, installing a communication cable between the inverter and the battery management system (BMS) is required. Please refer to section 4.6.1 for details.

## Connection Diagram 5: NTC Connection for Lead-Acid Battery



#### 4.4 PV Connection

PV connection see below.

 <p>4mm Diameter 4~6mm 4mm</p> <p>Using crimping tool to crimp. Red-circled area can't be crimped.</p> <p>Note: DC cable should be dedicated PV cable (suggest using 4~6mm<sup>2</sup> PV1-F cable).</p> <p><b>1</b> Wires making and crimping.</p>	 <p>Tighten the waterproof nuts on each connector with a tool to avoid loosening.</p> <p><b>2</b></p>	
 <p>Test string voltage and confirm string polarity.</p> <p><b>3</b></p>	 <p>Ensure that the PV switch is OFF.</p> <p><b>4</b></p>	 <p>Positive Connector</p> <p>Negative Connector</p> <p>Click</p> <p>PV1+, PV2+, PV3+, PV1-, PV2-, PV3-</p> <p>Pay attention to the difference between the PV terminal and the battery terminal to avoid confusion.</p> <p>Insert the positive and negative connectors into the PV+/PV- ports until a "click" sound is heard.</p> <p><b>5</b></p>

#### ⚠ WARNING

- Before connecting the PV panels, ensure that the connectors have the correct polarity. Incorrect polarity can cause permanent damage to the inverter.
- Connect and ground the frame of PV modules and the electrically conductive surface according to local regulations. DO NOT connect PV strings with ground faults to the inverter.
- The minimum insulation resistance to ground the PV panels must exceed 33.3kΩ. There is a risk of electric shock hazard if the requirement of minimum resistance is not met.

#### ⚠ WARNING

- Please check polarity of PV connectors!
- If polarity reversed, do not try to disconnect any PV connector until the irradiance declines and the DC currents fall below 0.5 A! Only then disconnect the PV plugs and correct the polarity before reconnecting.

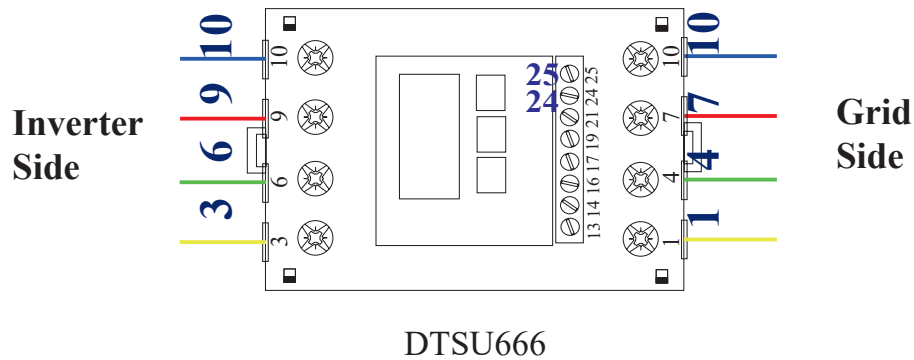
## 4.5 Meter/CT Connection (Direct connected)

You can monitor the energy usage with a meter or CTs (current transformers).

### 4.5.1 Meter Connection (Not included)

This section is applicable to non-parallel connection mode only.

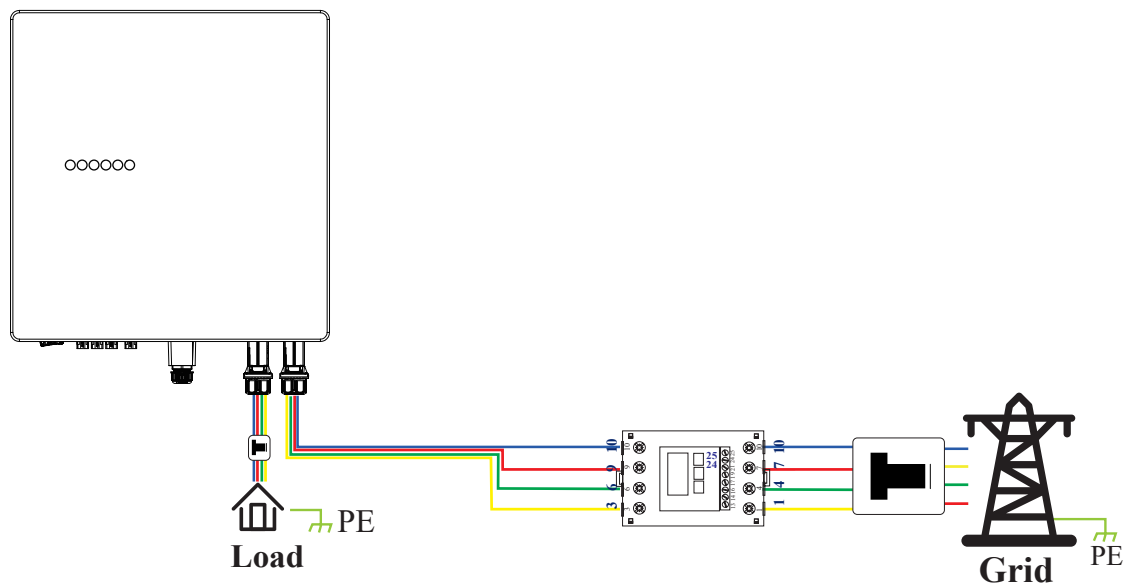
Three phase ESS inverter supports the meter CHINT-DTSU666 meter by default. The meter is optional.



#### NOTICE

Before connecting to Grid, please install a separate AC breaker ( $\geq 40A$ ; not equipped) between meter and Grid. This ensure the inverter can be security disconnected during maintenance.

### Connection Diagram 6: Meter Connection



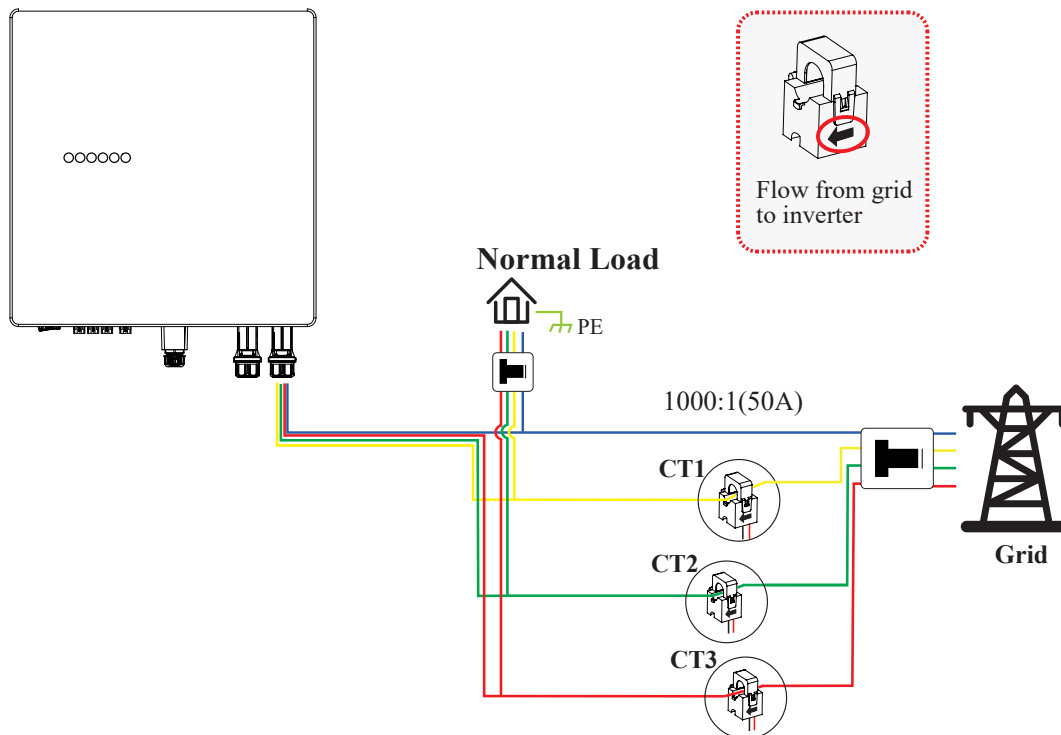
Please refer to the meter instruction manual for details.

#### 4.5.2 CT Connection

##### NOTICE

Before connecting to the grid, please install a separate AC breaker ( $\geq 40\text{A}$ ; not supplied) between the CT and the grid. This ensures that the inverter can be safely disconnected during maintenance.

#### Connection Diagram 7: CT Connection



Please pay attention to the installation of current transformers (CT). The arrow on the CT indicates the current flow from the grid to the inverter. Feed the cable through the detection hole of the CT.

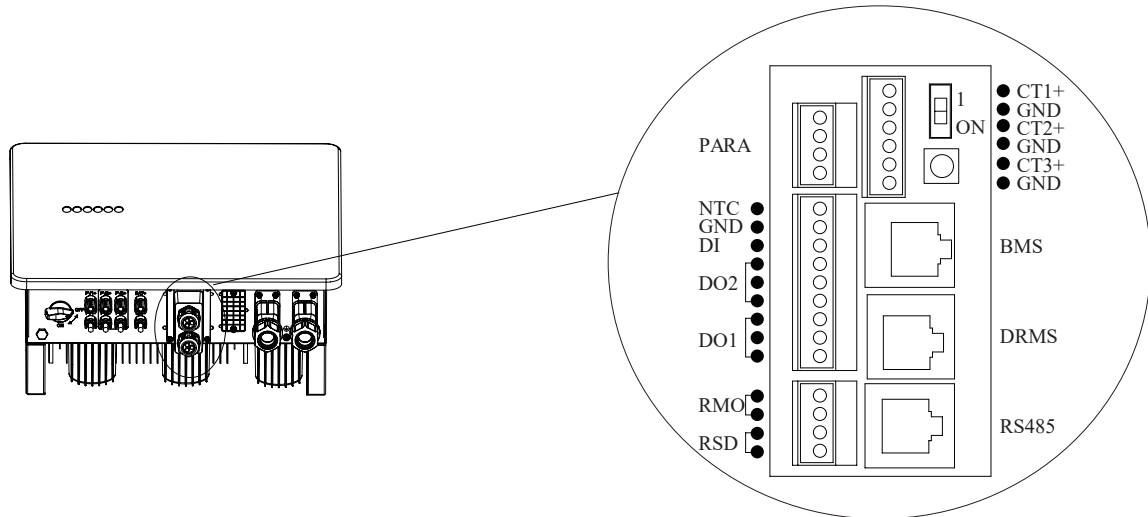
##### NOTICE

The current direction from grid to inverter is defined as positive and current direction from inverter to grid is defined as negative.

## 4.6 Communication Connection

The communication port on the bottom of the inverter contains communication interfaces as shown below:

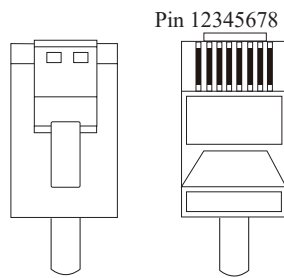
**Connection Diagram 8: Communication Interfaces**



Interface		Descriptions
PARA		4-Pin interface for parallel communication
		A matched resistance switch for parallel communication
RS485		RS485 communication
DRMs		Demand response mode for Australia application
CT		6-Pin interface for grid/load current sensor.
BMS		Lithium battery communication interface
9-Pin	NTC	Temperature sensor terminal of lead-acid battery
	DRY	DI/DO control
RSD/RMO		Rapid Shutdown / Remote power off
COM		For WIFI/LAN communication.

#### 4.6.1 BMS Connection (Only for Lithium Battery)

##### RJ45 Terminal Configuration of Battery Communication (BMS)



Pin	1	2	3	4
Function Description	RS485_A	RS485_B	GND	CAN_H

PIN	5	6	7	8
Function Description	CAN_L	/	/	/

This manual describes the cable sequence of the inverter. For details about the cable sequence of the battery, see the manual of the battery you use.

Refer to the following steps:

**a** Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.

**c**

- ① Insert RJ45 terminals into corresponding ports.
- ② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N·m).
- ③ Install the seal into the threaded sleeve, fasten the rubber nut.

**b** Make the RJ45 terminal according to above function description of each Pin definition. Lead the BMS cable through the rubber nut, seal and waterproof cover in turn.

Don't cut off any communication cables.

Press the BMS cable in the seal via the side incisions.

## 4.6.2 DRMs Connection

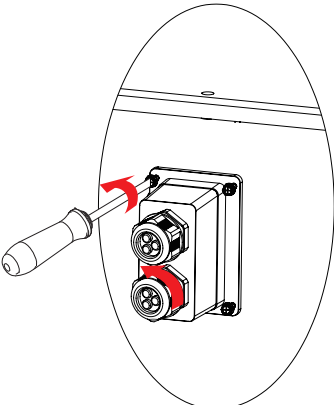
DRMs is a shortened form for “inverter demand response modes”. It is a compulsory requirements for inverters in Australia.

Note: With DRMs connection, it is necessary to connect APP to inverter and then go to Console > Other Setting page to enable DRM function on APP. Please refer to section 7.2.3.

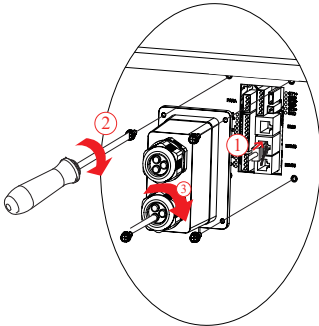
### RJ45 Terminal Configuration of DRMs

Pin 12345678								
Pin	1	2	3	4	5	6	7	8
Function Description	DRMs1/5	DRMs2/6	DRMs3/7	DRMs4/8	REF	GND	/	/

Refer to the following steps:



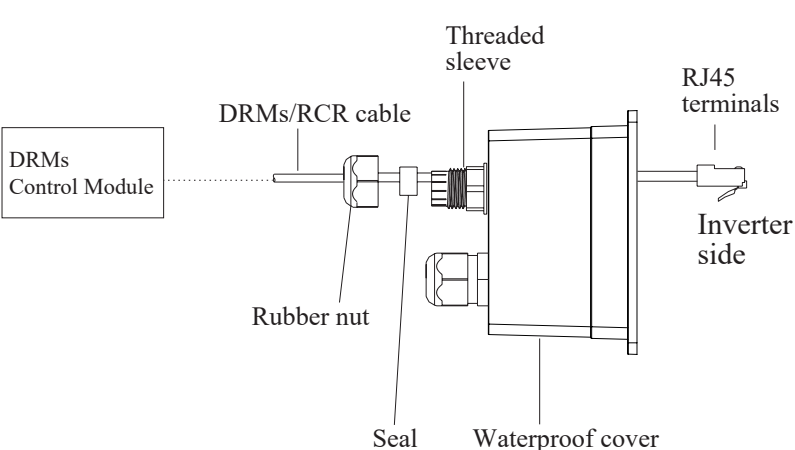
**a** Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.




**c**

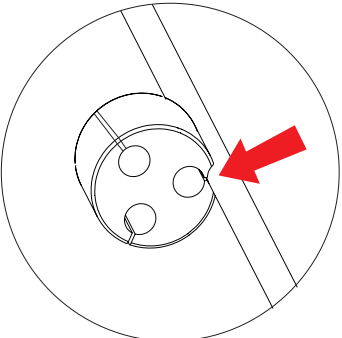
- ① Insert RJ45 terminals into corresponding ports.
- ② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N·m).
- ③ Install the seal into the threaded sleeve, fasten the rubber nut.

**b** Make the RJ45 terminal according to above function description of each Pin definition. Lead the DRMs/RCR cable through the rubber nut, seal and waterproof cover in turn.





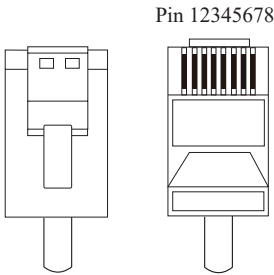
Don't cut off any communication cables.



Press the DRMs cable in the seal via the side incisions.

4.6.3 Meter Connection

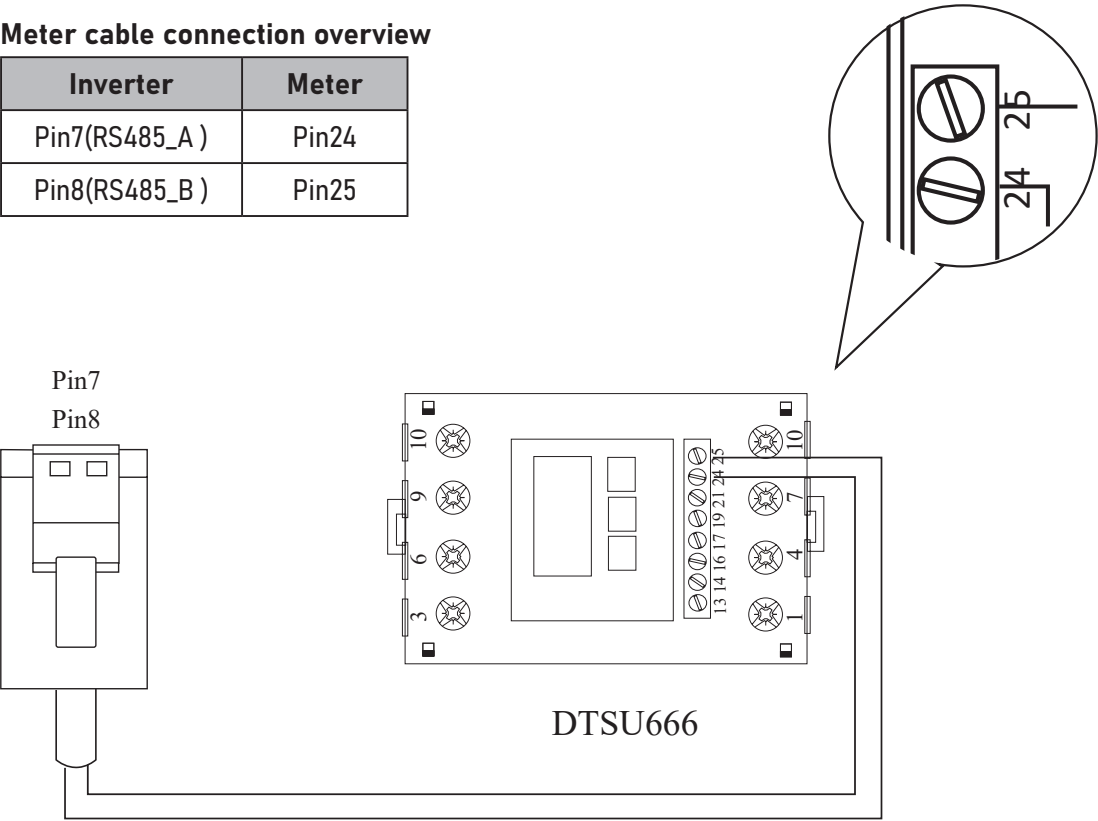
RJ45 Terminal Configuration of Meter Communication



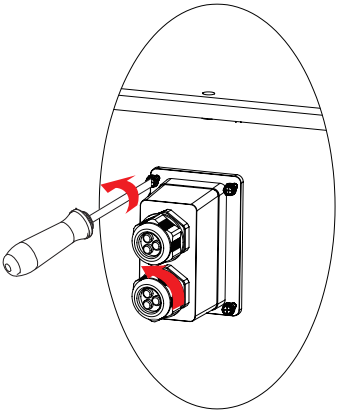
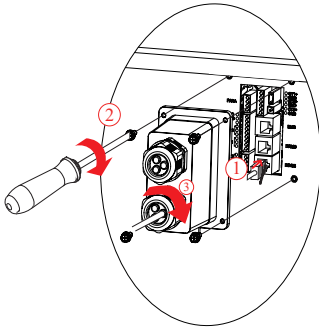
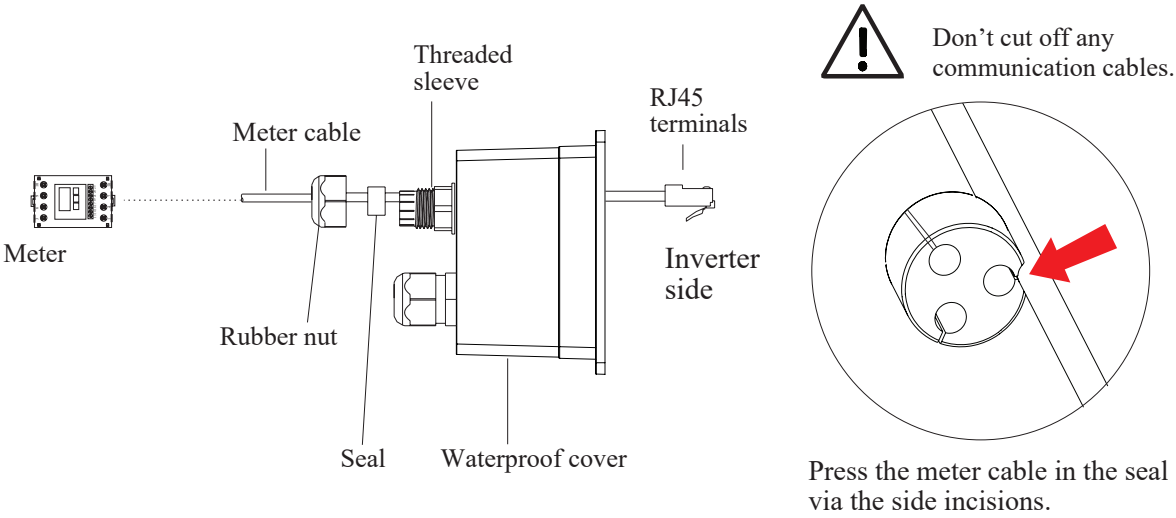
PIN	1	2	3	4	5	6	7	8
Function Description	RS485_A	RS485_B	/	/	/	/	RS485_A	RS485_B

Meter cable connection overview

Inverter	Meter
Pin7(RS485_A )	Pin24
Pin8(RS485_B )	Pin25

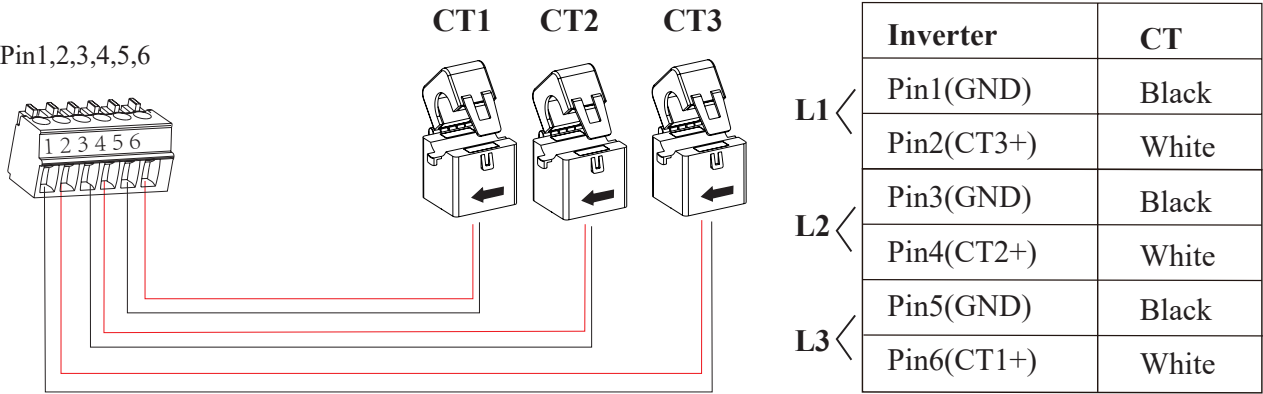


## Refer to the following steps:

<p><b>a</b></p>  <p>Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.</p>	<p><b>c</b></p>  <ol style="list-style-type: none"> <li>① Insert RJ45 terminals into corresponding ports.</li> <li>② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N·m).</li> <li>③ Install the seal into the threaded sleeve, fasten the rubber nut.</li> </ol>
<p><b>b</b></p> <p>Make the RJ45 terminal according to above function description of each Pin definition. Lead the meter communication cable through the rubber nut, seal and waterproof cover in turn.</p>  <p>Don't cut off any communication cables.</p> <p>Press the meter cable in the seal via the side incisions.</p>	

4.6.4 CT Connection

CT cable connection overview

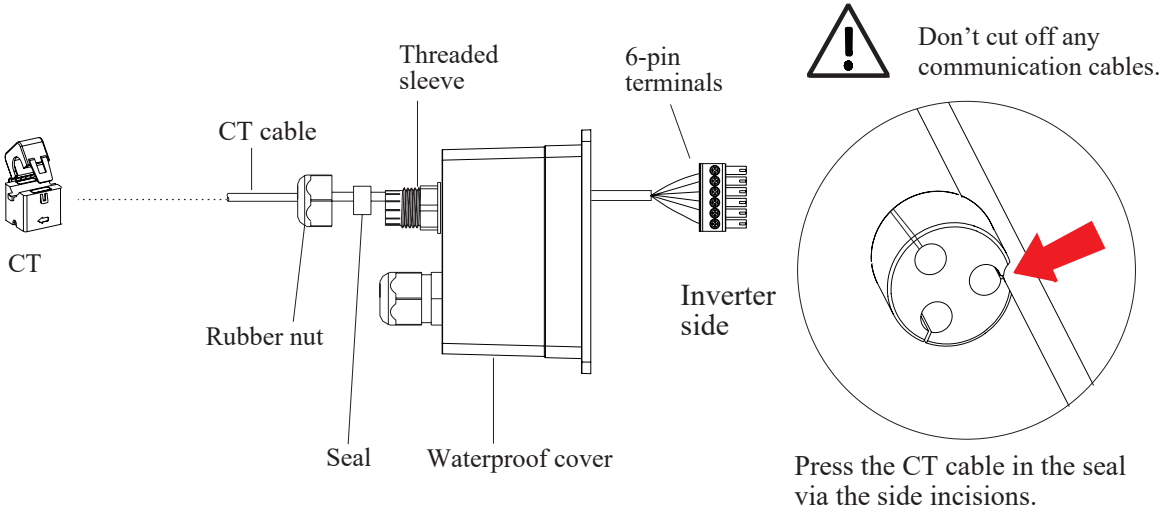


Refer to the following steps:

**a** Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.

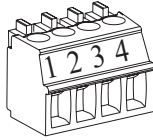
**b** Make the 6-pin terminal according to above function description of each Pin definition.  
Lead the CT cable through the rubber nut, seal and waterproof cover in turn.

**c** ① Insert 6-pin terminals into corresponding ports.  
② Screw the waterproof cover back to inverter firmly with 4 x M4 screws (1.2N·m).  
③ Install the seal into the threaded sleeve, fasten the rubber nut.



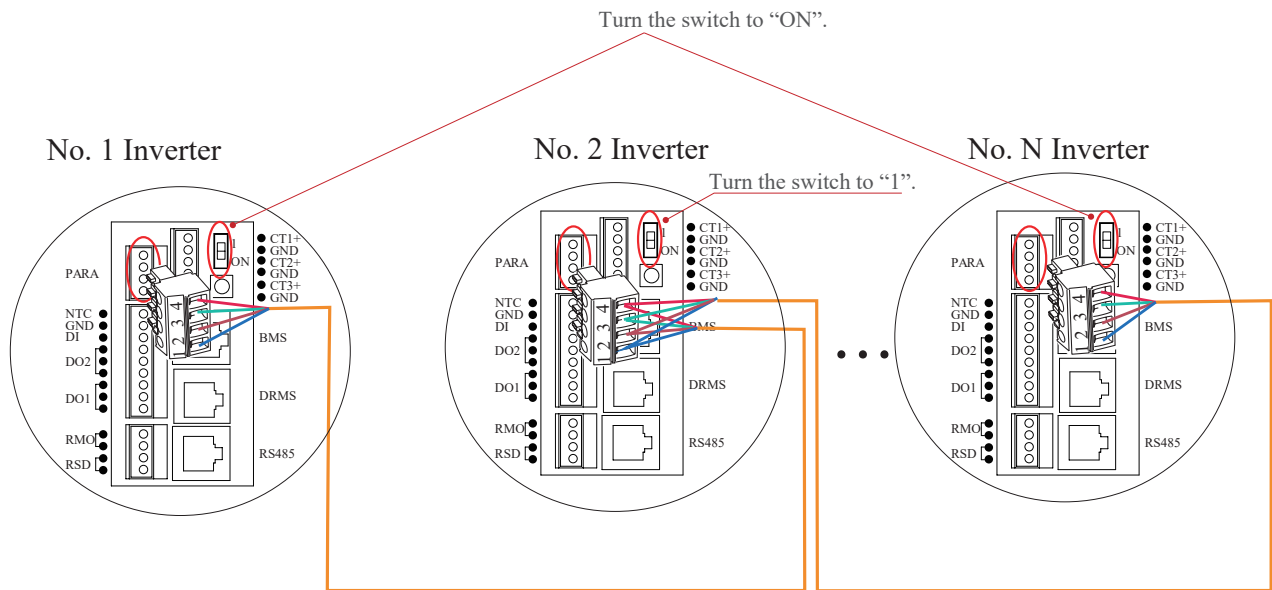
## 4.6.5 Parallel Communication Connection

### 4-Pins Terminal Configuration of parallel Communication



Pin	1	2	3	4
Function Description	GND_S	PARA_SYNC	CAN_L	CAN_H

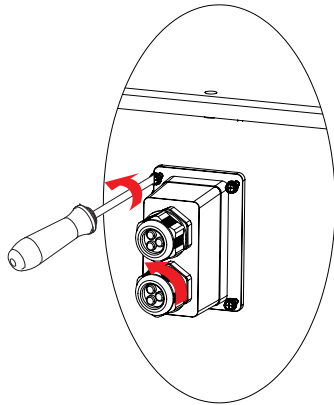
### Parallel communication cable connection overview



It is necessary to turn the matched resistance switch of No. 1 inverter and No. N inverter to "ON" and turn the matched resistance switch of others to "1" in parallel connection mode.

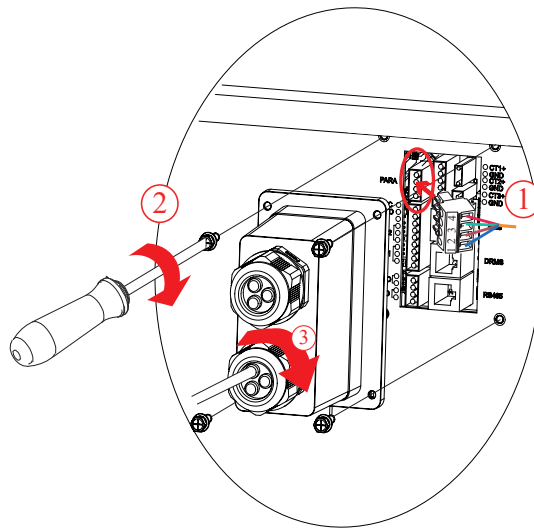
No. 1 Inverter	No. 2 Inverter	No. N Inverter
Pin4(CAN_H)	Pin4(CAN_H)	Pin4(CAN_H)
Pin3(CAN_L)	Pin3(CAN_L)	Pin3(CAN_L)
Pin2(PARA_SYNC)	Pin2(PARA_SYNC)	Pin2(PARA_SYNC)
Pin1(GND_S)	Pin1(GND_S)	Pin1(GND_S)

Refer to the following steps:



Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.

**a**

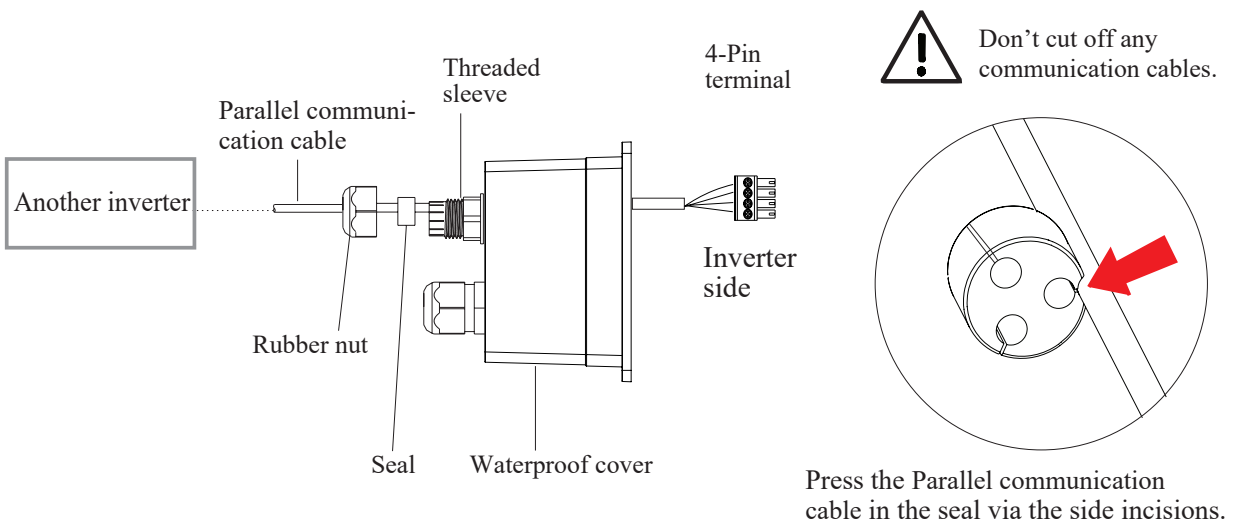


- ① Insert 4-Pin terminal into corresponding ports.
- ② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N·m).
- ③ Install the seal into the threaded sleeve, fasten the rubber nut.

**c**

**b**

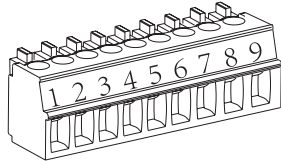
Make the 4-Pin terminal according to above function description of each Pin definition.  
Lead the Parallel cable through the rubber nut, seal and waterproof cover in turn.



#### 4.6.6 NTC/DI/DO Connection(s)

##### 9-Pins Terminal Configuration of Auxiliary Communication

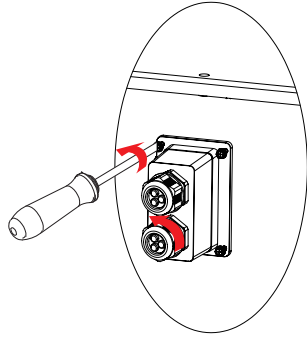
Pin 123456789



Pin	Function Description
1	NO (Normal Open)
2	COM
3	NC (Normal Close)
4	NO (Normal Open)
5	COM
6	NC (Normal Close)
7	DI
8	GND S
9	NTC BAT+

Refer to the following steps:

**a**

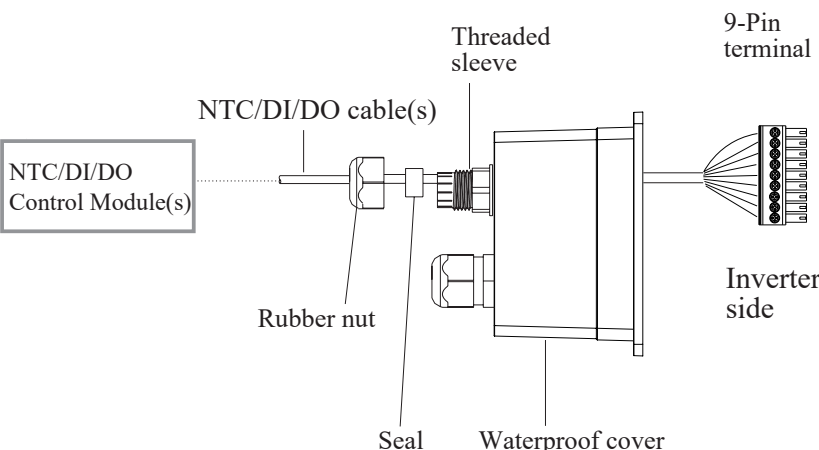



Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.

**b**

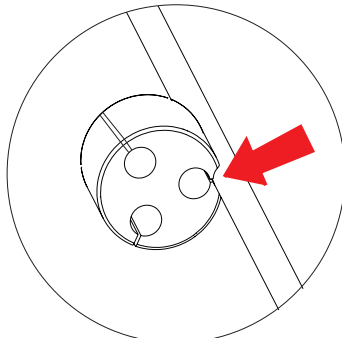
Make the 9-Pin terminal according to above function description of each Pin definition for the auxiliary port you want to use.

Lead the NTC/DI/DO cable(s) through the rubber nut, seal and waterproof cover in turn.

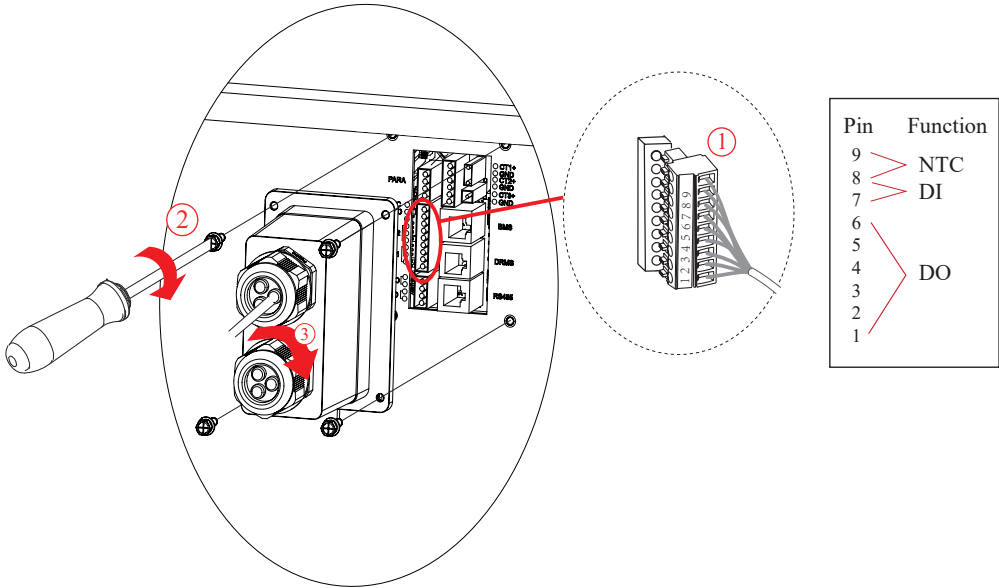




Don't cut off any communication cables.



Press the NTC/DI/DO cable(s) in the seal via the side incisions.



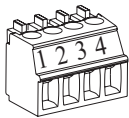
Pin	Function
9	NTC
8	DI
7	DI
6	DO
5	DO
4	DO
3	DO
2	DO
1	DO

Insert its 9-Pin terminal into the corresponding NTC/DI/DO port on the Three phase ESS inverter. Install the seal into the threaded sleeve, fasten the rubber nut and screw the waterproof cover back to inverter firmly with 4 x M4 screws; 1.2N·m.

**c**

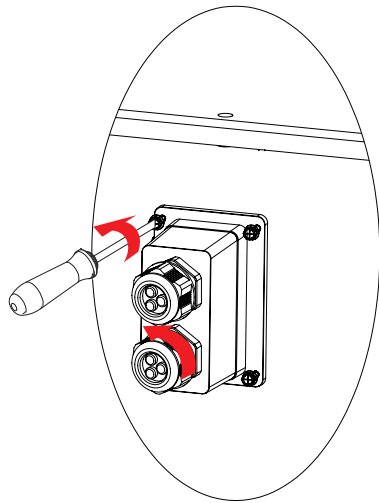
4.6.7 RSD/RMO Connection(s)

4-Pins Terminal Configuration of RSD/RMO Communication



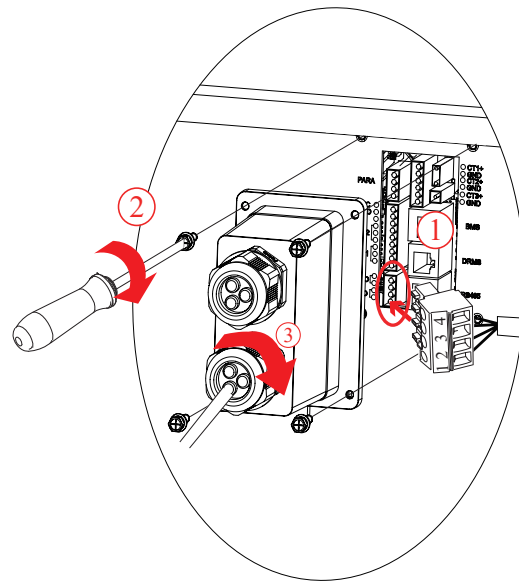
Pin	1	2	3	4
Function Description	+12V	GND	GND	REMOTE OFF

## Refer to the following steps:



Unscrew the waterproof cover and loosen the rubber nut on the waterproof cover.

a

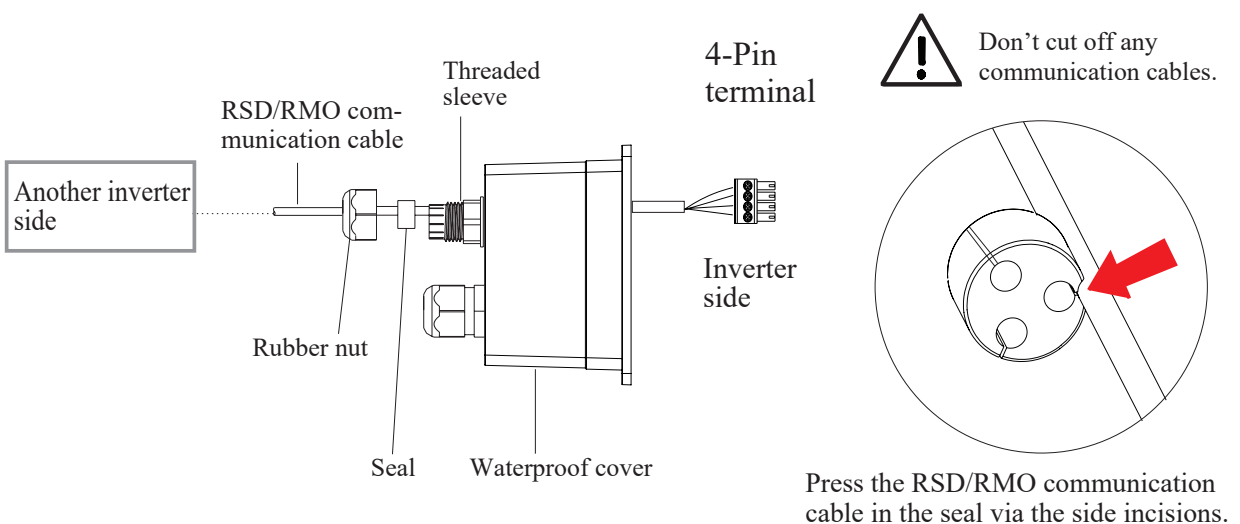


- ① Insert 4-Pins terminal into corresponding ports.
- ② Screw the waterproof cover back to inverter firmly with 4 x M4 screws(1.2N·m).
- ③ Install the seal into the threaded sleeve, fasten the rubber nut.

c

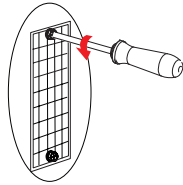
b

Make the 4-Pin terminal according to above function description of each Pin definition.  
Lead the RSD/RMO cable through the rubber nut, seal and waterproof cover in turn.

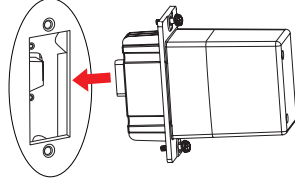


#### 4.6.8 WiFi/LAN Module Connection

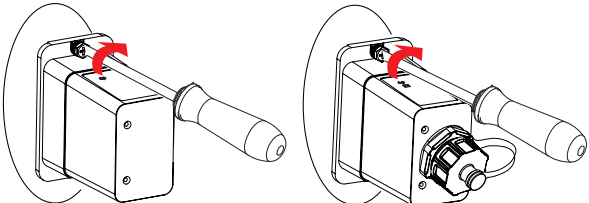
##### WiFi/LAN Module Quick Installation Guide.



**1** Loosen screws and move the cover.



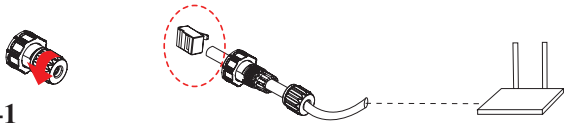
**2** Ensure that it doesn't fall off naturally.



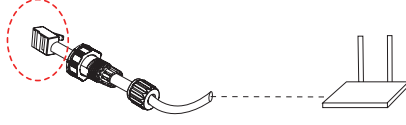
**3** Proper strength to avoid damage to the module with 2 x M4 screws; 0.8N·m.

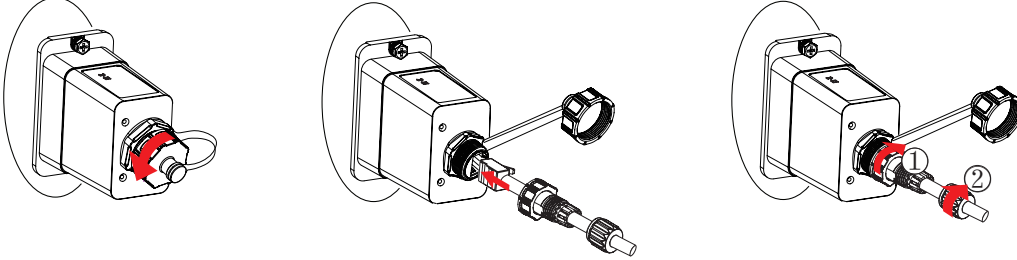
WiFi Module
LAN Module

#### 4 Insert the network cable. (Only for LAN module.)



**4-1**





**4-2**

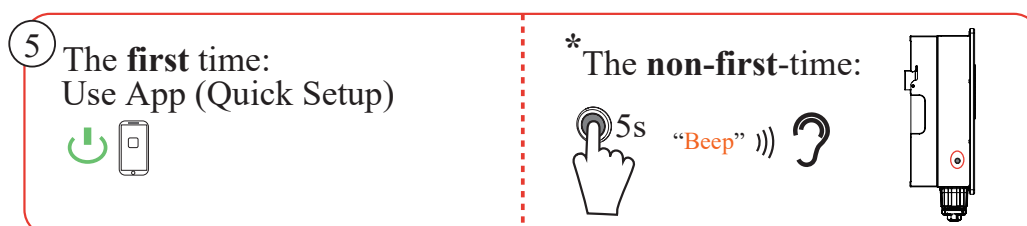
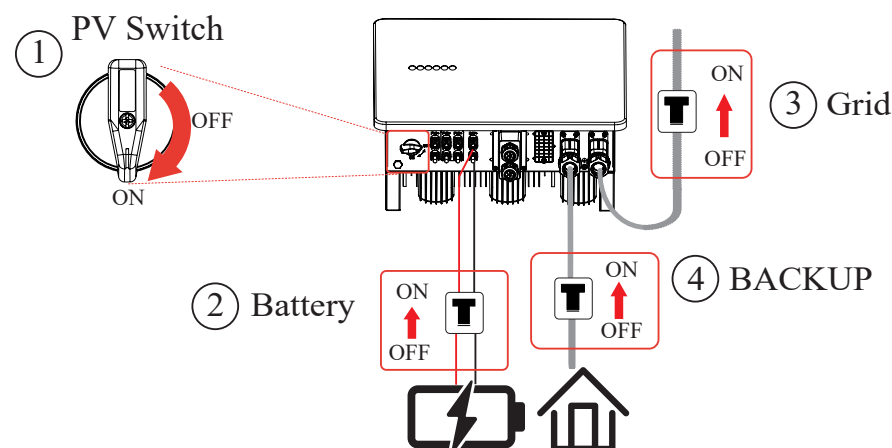
## 5. SYSTEM OPERATION

### 5.1 Startup/Shutdown Procedure

#### 5.1.1 Startup Procedure

Check and confirm that the installation is secure and the system grounding is correct. Then confirm that the connections of PV, AC, battery, WiFi and etc. are correct without mistake.

Refer to the following steps to switch on the PV, the battery, the grid and the back-up load.

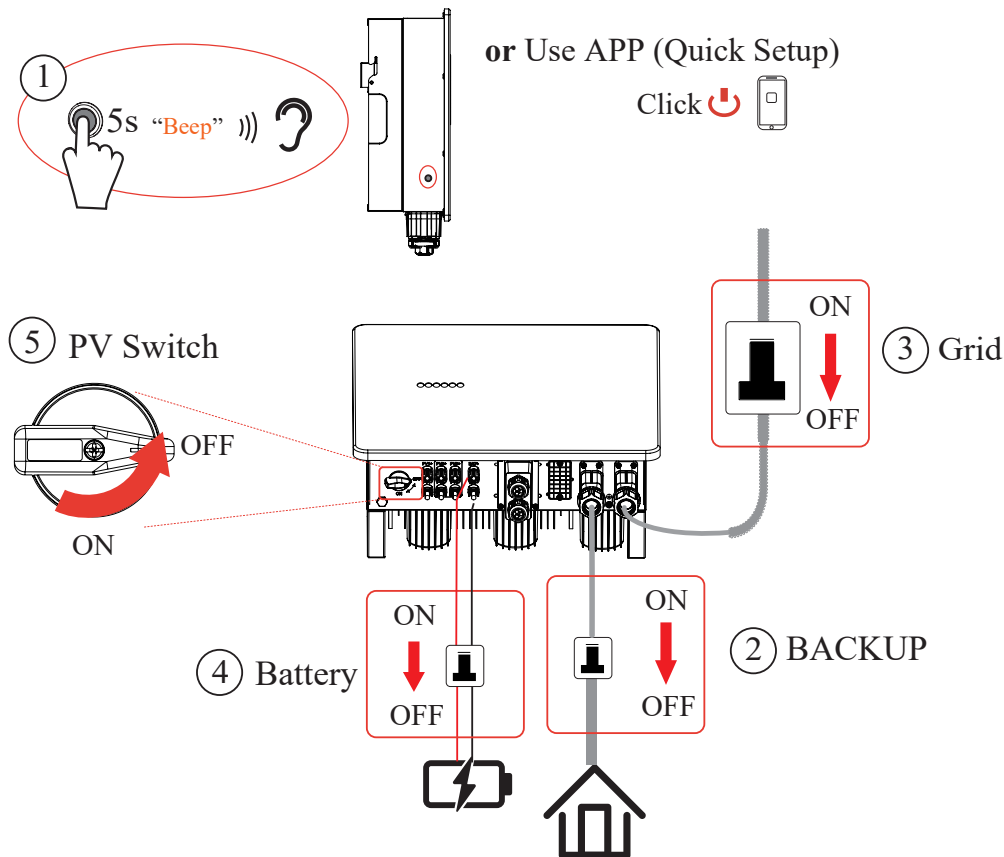


**Follow the Quick Setup instruction in 6.2 App Setting Guide to POWER ON the inverter.**

To act the non-first-time startup, press and hold down the button on the left side of the inverter for about 5 seconds, until you hear the “beep” sound.

### 5.1.2 Shutdown Procedure

Follow the steps below to shut down the inverter. 1. Press the power button on the inverter to turn it off, or use the Quick Setup in the app to POWER OFF. 2. Switch off the power and the breakers of the backup load, the grid and the battery. 3. set the PV switch to OFF.



#### **⚠ DANGER**

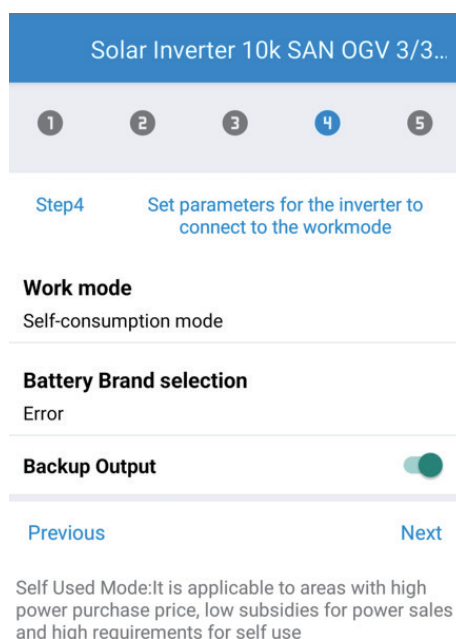
After the inverter is powered off, the remaining electricity and heat may still cause electric shock and body burns. If need to disconnect the inverter cables, please wait at least 10 minutes before touching these parts of inverter.

## 5.2 Inverter Working Mode

The inverter supports several different working modes.

### 5.2.1 Self-Consumption mode

Refer to 6.4 Quick Setup of App Setting Guide, select 'Self-consumption' under Work Mode.

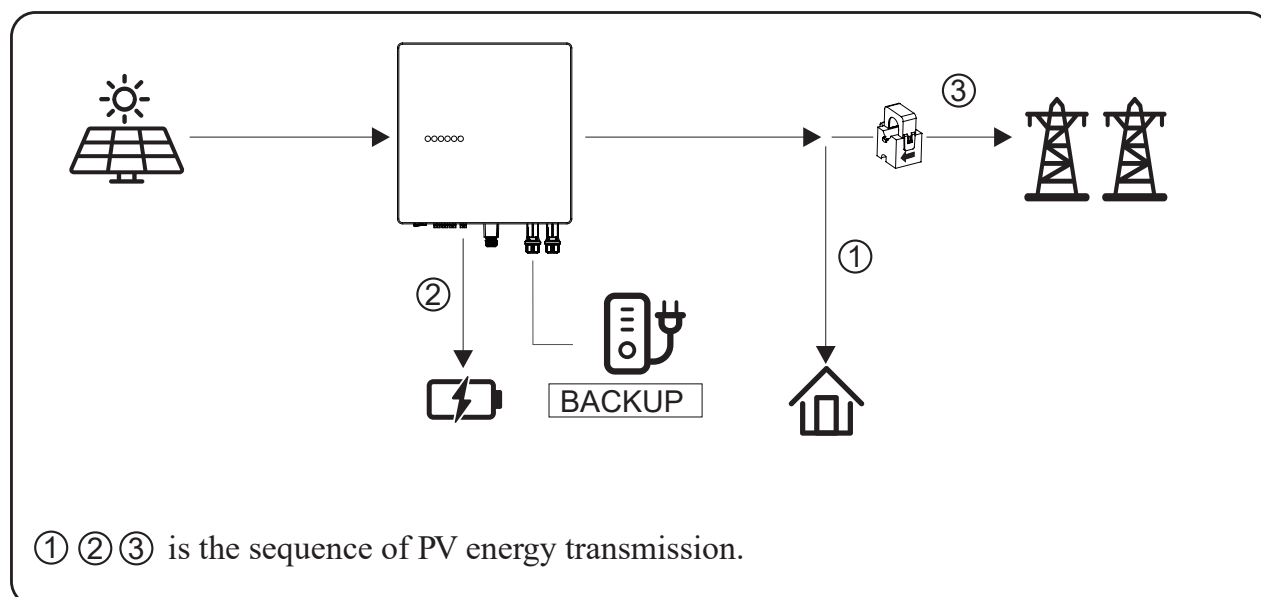


Under self-consumption mode, the priority of PV energy consumption will be Load > Battery > Grid, that means the energy produced by PV gives priority to power local loads, the excess energy is used to charge the battery and the remaining energy is fed into the grid.

This is the default mode to increase self-consumption rate.

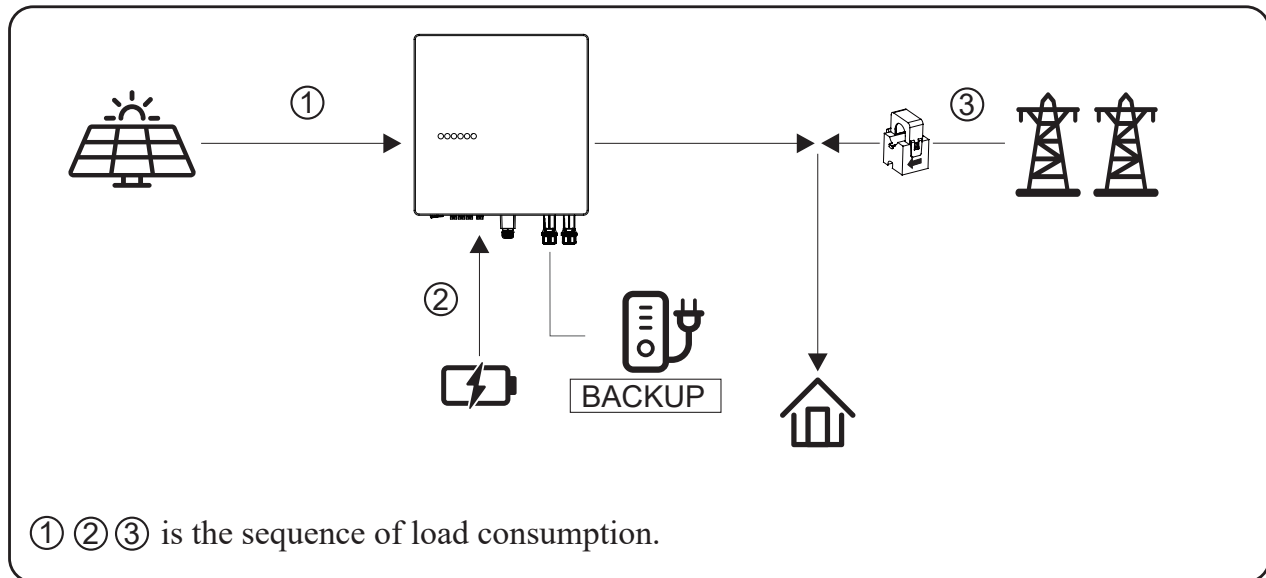
#### a) Wealthy PV Energy

When PV energy is wealthy, the PV energy will be first consumed by loads, the excess energy will be used to charge the battery and then the remaining energy will be fed into the grid.

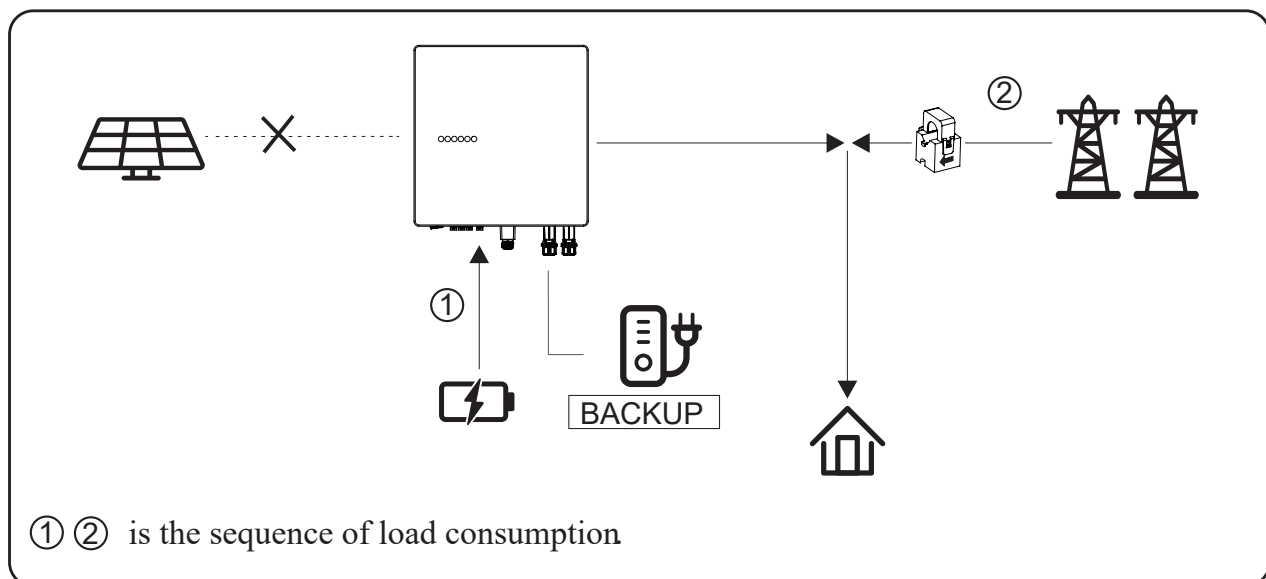


**b) Limited PV power**

If there is not enough PV energy to cover all the consumption, all the PV energy is used by the loads and the insufficient part is supplied by the battery. The remaining part is then supplied by the grid.

**c) No PV Input**

The inverter will first discharge the battery energy for the domestic load when there is no PV input (such as in the evening or on cloudy or rainy days). If the demand is not met, the loads will consume grid energy.



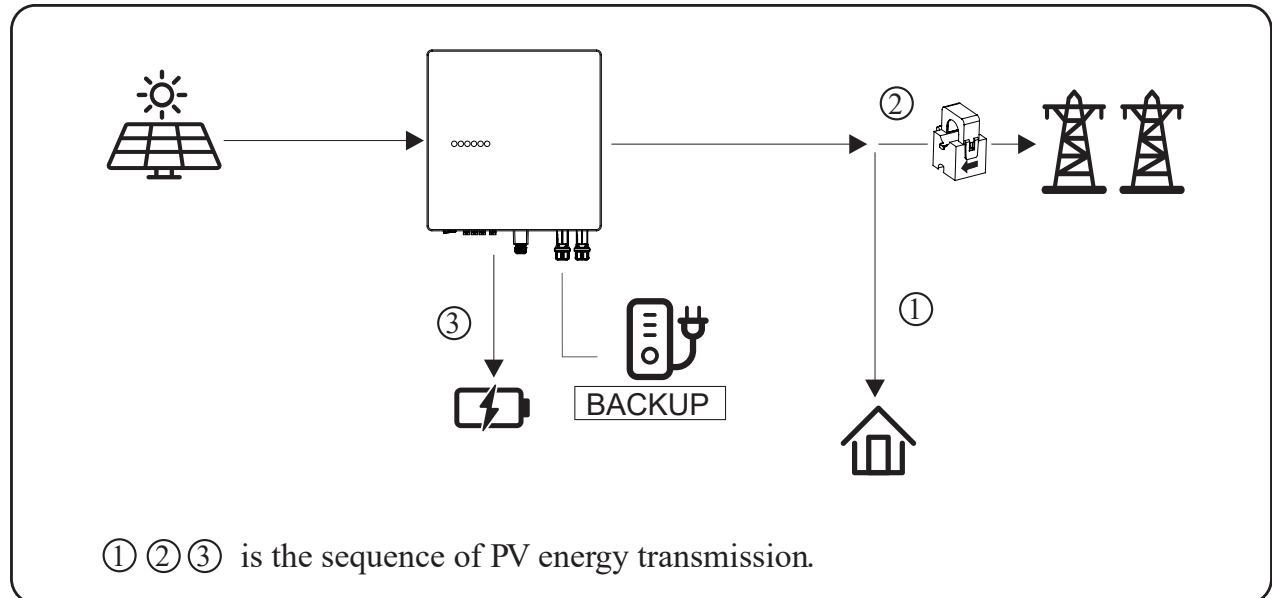
### 5.2.2 Feed-in Priority Mode

Refer to 6.4 Quick Setup of App Setting Guide, select 'Feed-in Priority' under Work Mode.

In this mode, the priority of PV energy consumption is Load > Grid > Battery, i.e. the energy produced by PV is prioritised to supply local loads, excess energy is fed into the grid and the remaining energy is used to charge the battery.

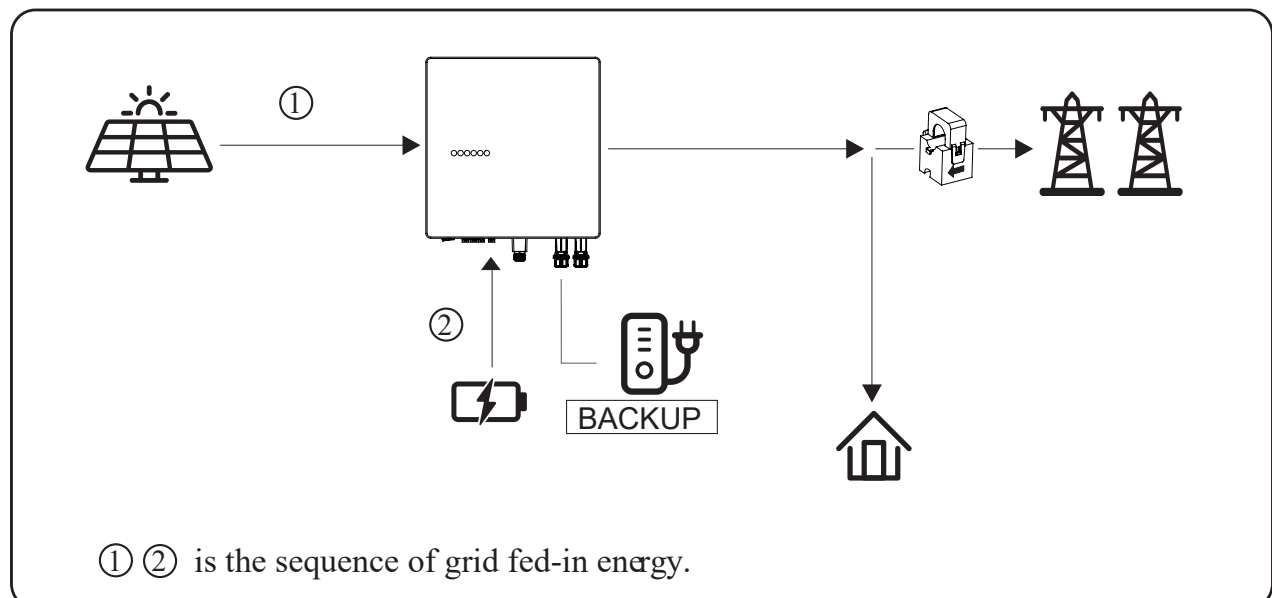
#### a) Wealthy PV Energy

When PV power is abundant, PV power is first consumed by loads. If there is excess PV power, it is fed into the grid. When there is still PV energy available, the remaining PV energy is used to charge the battery.



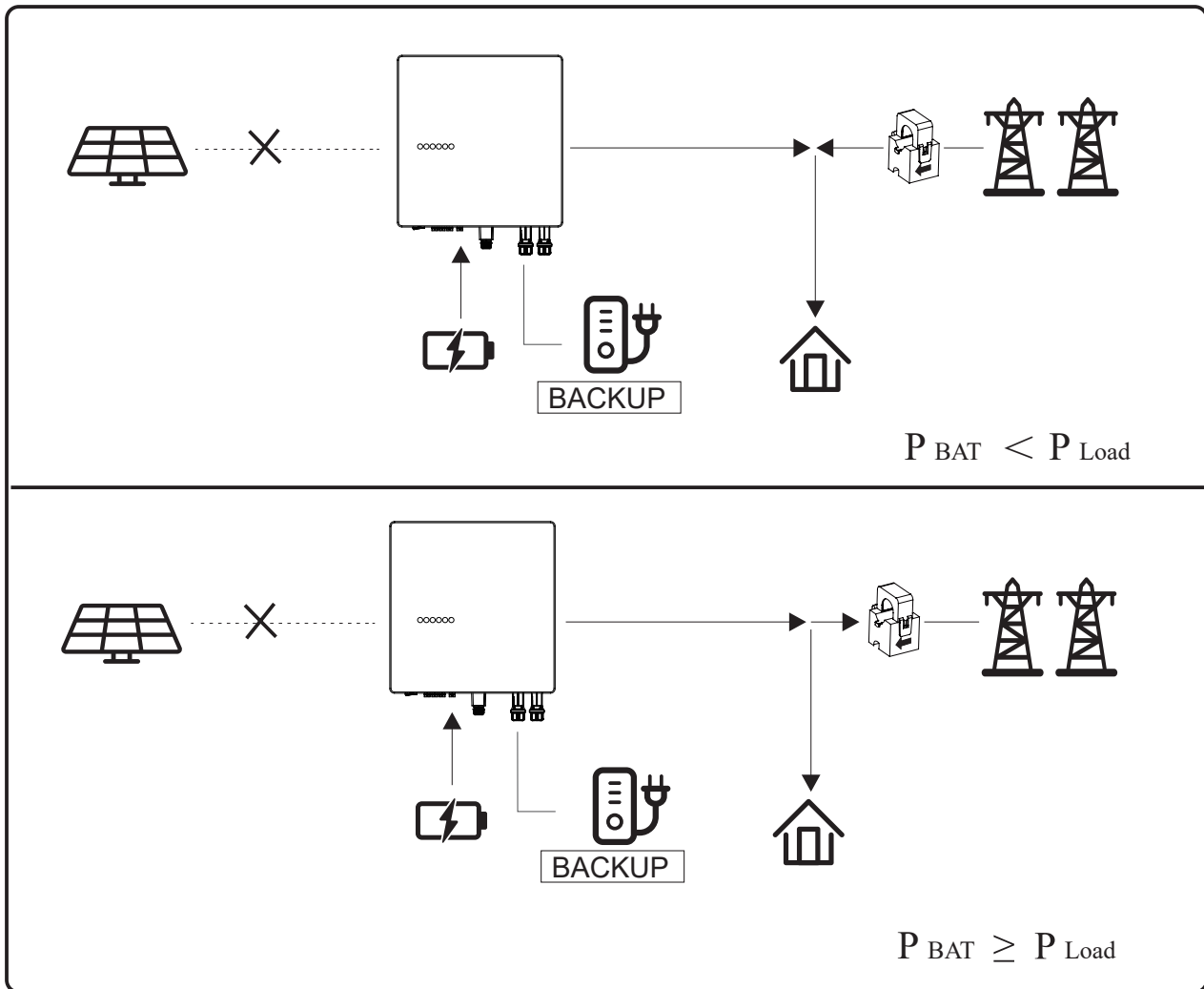
#### b) Limited PV Energy

When PV energy is limited, the battery will be discharged to meet the feed-in grid power.



**c) No PV Input**

The inverter will first discharge the battery energy for the domestic load when there is no PV input (such as in the evening, on cloudy or rainy days). If the demand is not met, the loads will consume grid energy.



### 5.2.3 Back-up Mode

Under this mode, the priority of PV energy consumption will be Battery > Load > Grid.

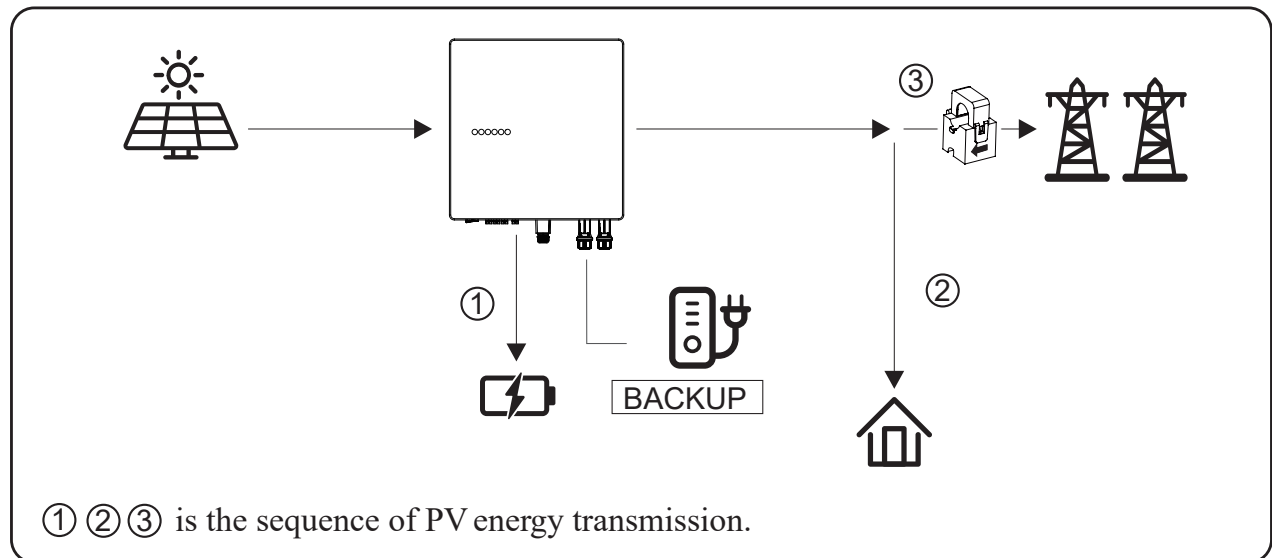
This mode aims at charging the battery quickly, and at the same time, you can choose whether to allow AC to charge the battery.

#### Forbid the grid charging

In this situation, the battery can be charged only with PV, and the charging power varies with PV power. To disable the grid charging, go to Console > Hybrid Setting > Battery.

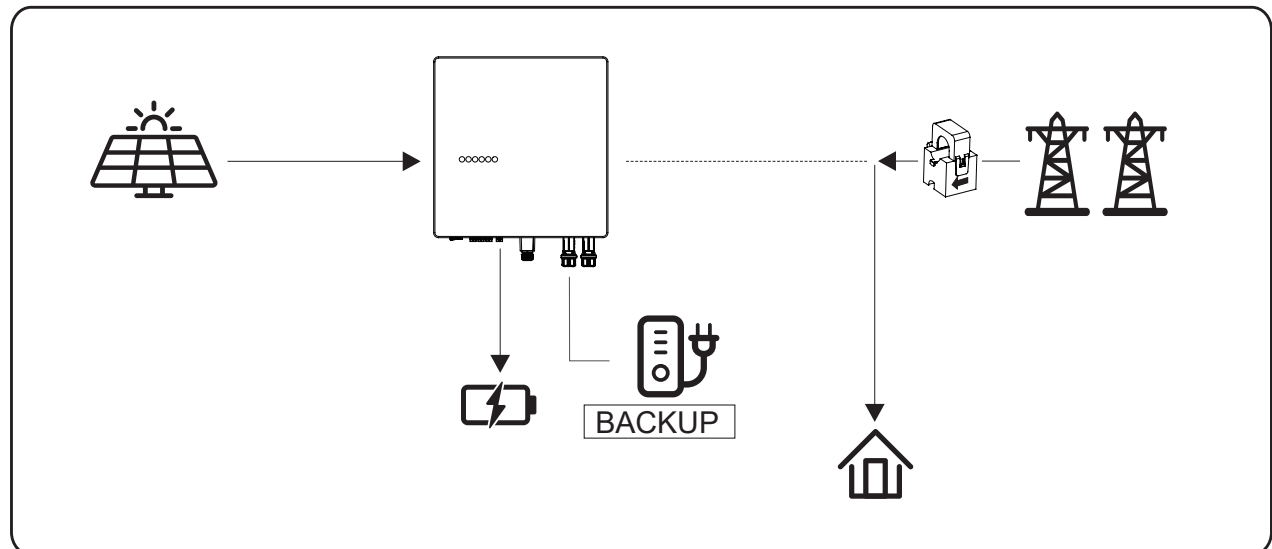
#### a) Wealthy PV power

When PV energy is wealthy, PV charges the battery first, then meets the load, and the rest is fed into the grid.



#### b) Limited PV power

When PV power is limited, PV gives priority to charging the battery and the grid meets the load directly.

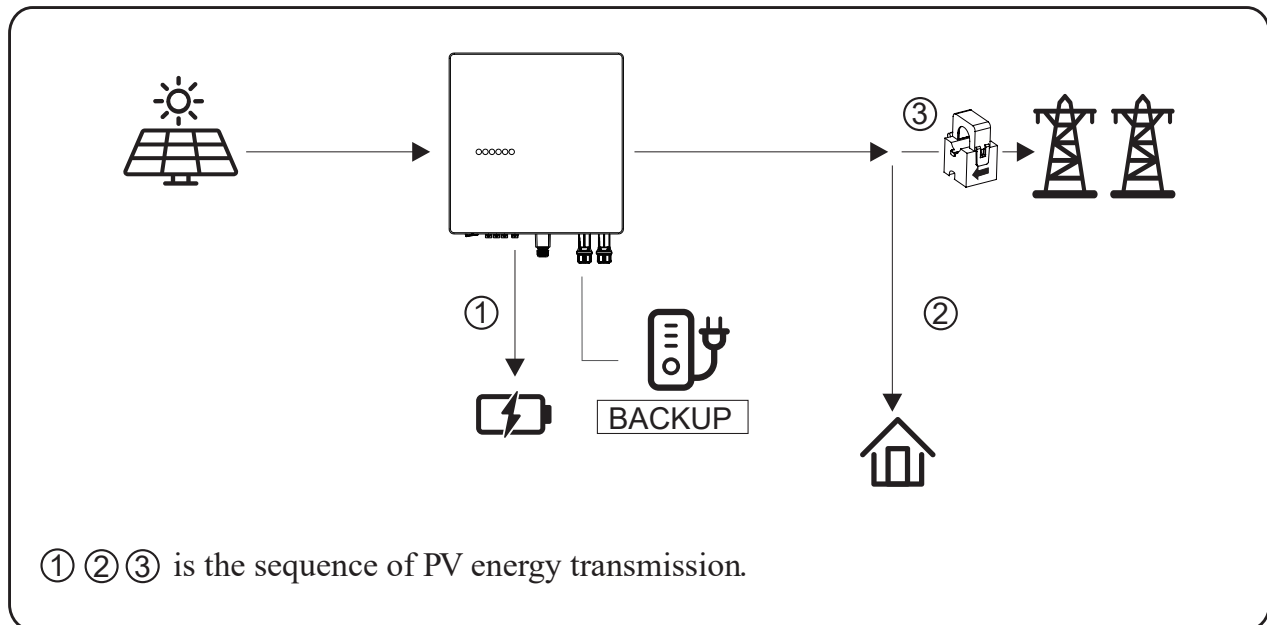


**Allow the grid charging**

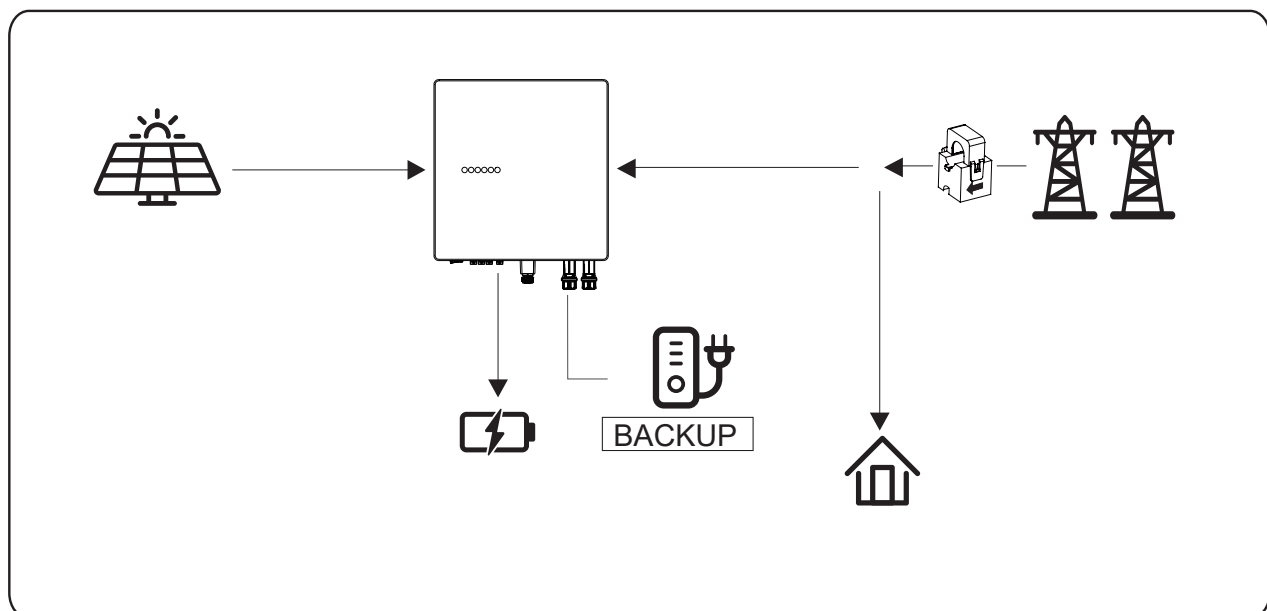
In this situation, the battery can be charged both with PV and the grid.  
To enable the grid charging, go to Console > Hybrid Setting > Battery.

**a) Wealthy PV power**

When PV energy is wealthy, PV charges the battery first, then meets the load, and the rest is fed into the grid.

**b) Limited PV power**

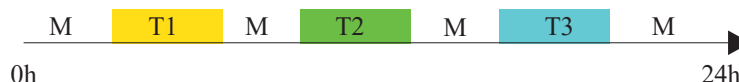
When the PV energy is not enough to charge the battery, the grid energy will charge the battery as supplement. Meanwhile, the grid energy is consumed by loads.



### 5.2.4 Time-based control

In above work modes (Self-Consumption, Feed-in Priority and Backup), they all provide Time-based Control for setting up the battery charge / discharge time, frequency (once or every day), power (watts) and state of charge (SoC, %). The inverter will prioritize charging and discharging of the battery according to the settings of the Time-based Control. For periods outside the Time-based Control, the priority setting for each work mode will determine whether or when to charge and discharge the battery.

To enable Time-based Control, please go to Console > Hybrid Setting > Work mode.



M : Self-Consumption Mode / Feed-in Priority Mode / Backup Mode

T1: Time period 1 for forced charge/discharge parameter setting

T2: Time period 2 for forced charge/discharge parameter setting

T3: Time period 3 for forced charge/discharge parameter setting

T1, T2, and T3 have higher priority than the default setting of work mode.

### 5.2.5 Off Grid Mode

When the power grid is cut off, the system automatically switches to Off Grid mode.

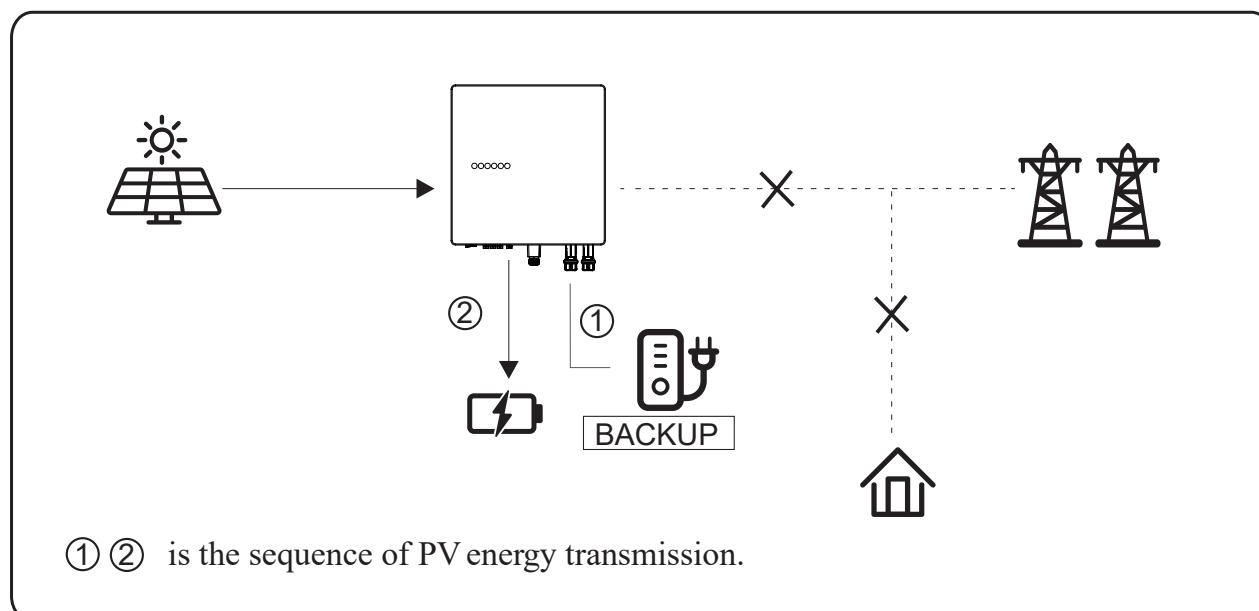
Under off-grid mode, only critical loads are supplied to ensure that important loads continue to work without power failure.

#### NOTICE

- When the power is cut off, the inverter can't work without the battery.

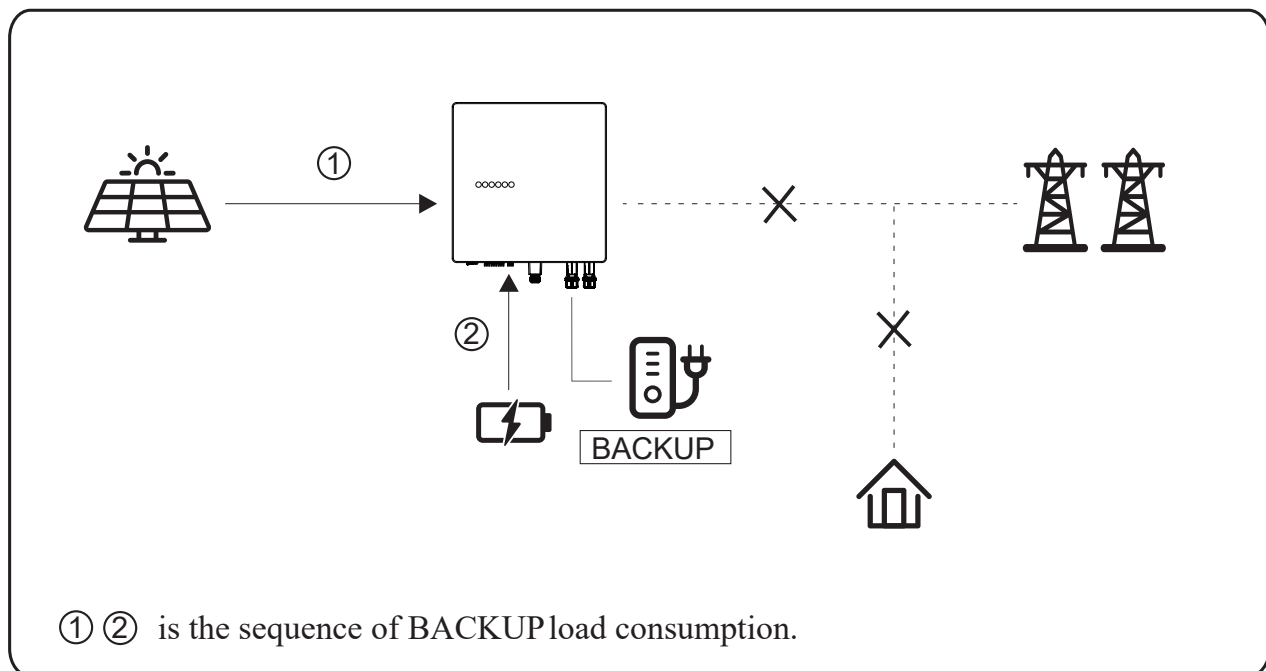
#### a) Wealthy PV power

When PV energy is wealthy, the PV power will be first consumed by critical load, then charge the battery.



**b) Limited PV power**

When PV energy is limited, BACKUP loads are first powered by PV and then supplemented by battery.

**⚠ NOTICE**

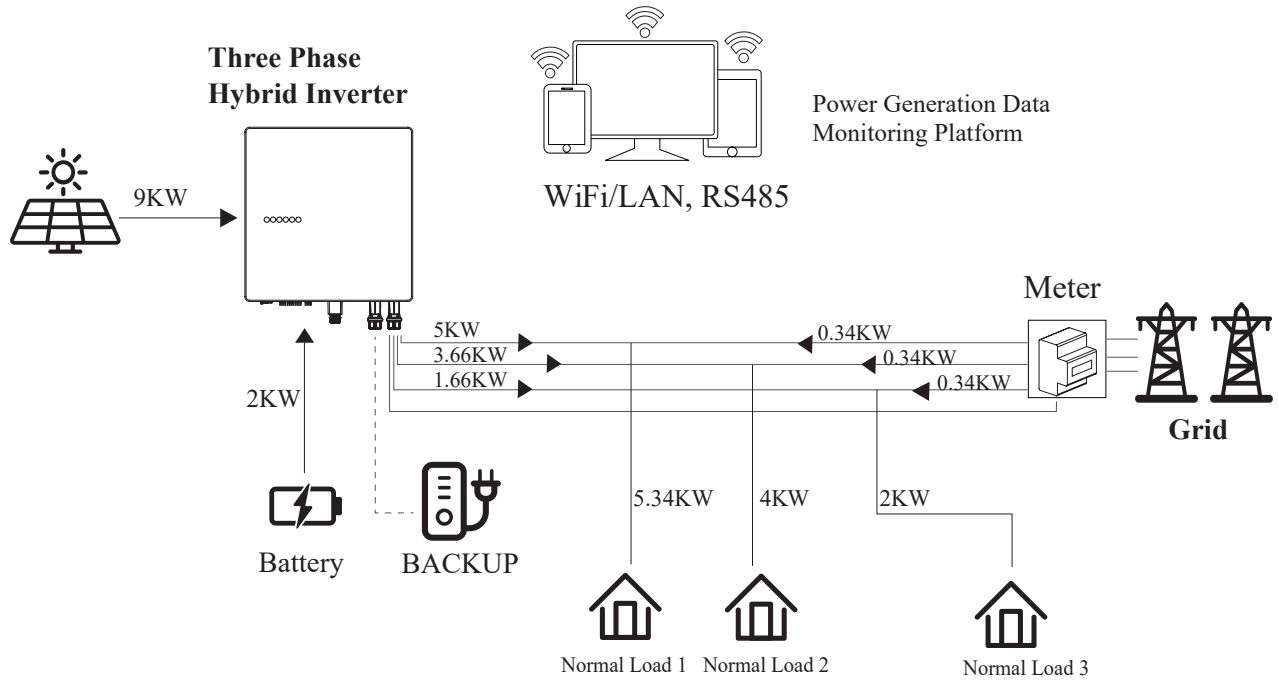
- Under this mode, please complete the output voltage and frequency settings.
- It is better to choose the battery capacity larger than 100Ah to ensure BACKUP function work normally.
- If BACKUP output loads are inductive or capacitive loads, to make sure the stability and reliability of system, it is recommended to configure the power of these loads to be within 50% BACKUP output power range.

## 5.3 Unbalanced Output

### 5.3.1 On-grid Unbalanced Output

The intelligent hybrid inverter can provide unbalanced output to meet your needs when

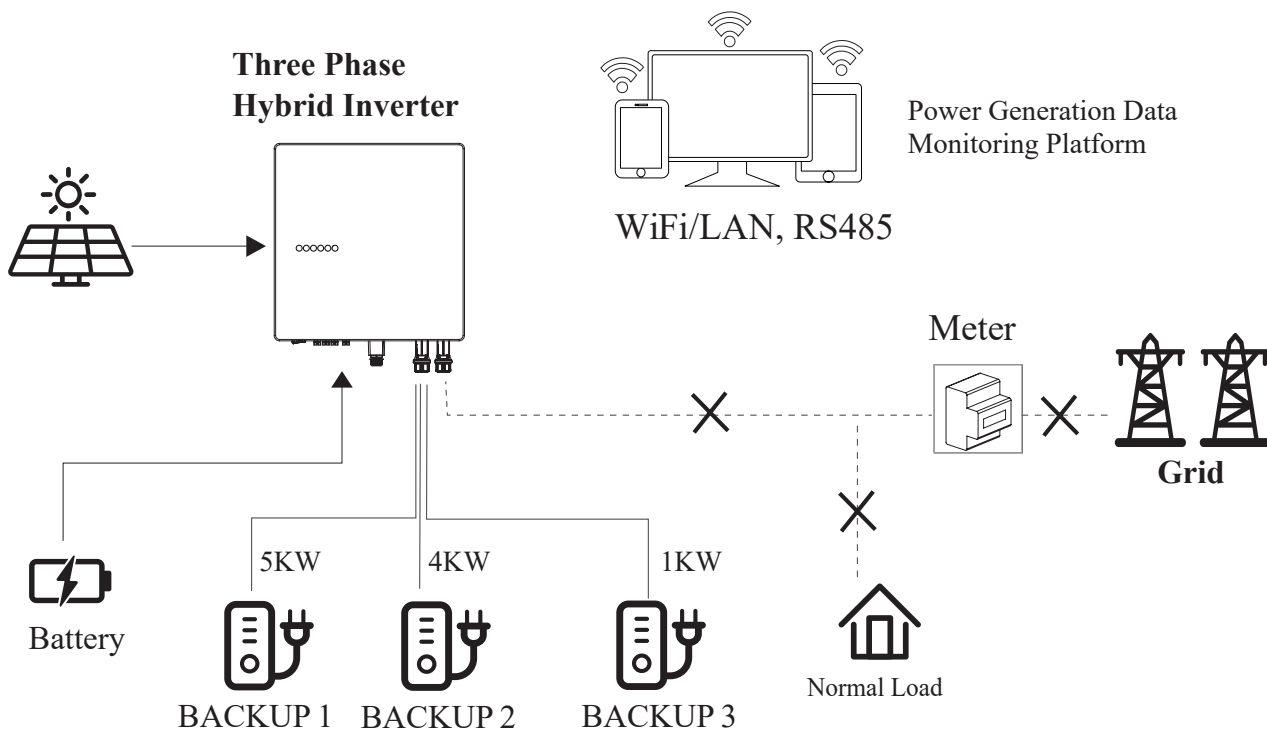
- 1) The normal load is single phase.
- 2) The three phases of the normal load are equal or unbalanced.



### 5.3.2 Back-up Unbalanced Output

The intelligent hybrid inverter can provide unbalanced output to meet the demand of critical load when

- 1) The critical load is single phase.
- 2) The three phases of the critical load are equal or unbalanced.



## 5.4 LED Indicators

This section describes the LED panel. LED indicator includes PV, BAT, GRID, BACKUP, COM, ALARM indicators.

It includes the explanation of indicator states and summary of indicator states under the running state of the machine.



PV



BAT



GRID



BACKUP



COM



ALARM

LED Indicator	Status	Description
PV	On	PV input is normal.
	Blink	PV input is abnormal.
	Off	PV is unavailable.
BAT	On	Battery is charging.
	Blink	Battery is discharging. Battery is abnormal.
	Off	Battery is unavailable.
GRID	On	GRID is available and normal.
	Blink	GRID is available and abnormal.
	Off	GRID is unavailable.
COM	Blink	Data are communicating.
	Off	No data transmission
BACKUP	On	BACKUP power is available.
	Blink	BACKUP output is abnormal.
	Off	BACKUP power is unavailable.
ALARM	On	Fault has occurred and inverter shuts down.
	Blink	Alarms has occurred but inverter doesn't shut down.
	Off	No fault.

Details	Code	PV LED	Grid LED	BAT LED	Backup LED	COM LED	ALARM LED
PV normal		●	⊙	⊙	⊙	⊙	○
No PV		○	⊙	⊙	⊙	⊙	○
PV over voltage	B0						
PV under voltage	B4						
PV irradiation weak	B5	★	⊙	⊙	⊙	⊙	○
PV string reverse	B7						
PV string abnormal	B3						
On grid		⊙	●	⊙	⊙	⊙	○
Bypass output							
Grid over voltage	A0						
Grid under voltage	A1						
Grid absent	A2						
Grid over frequency	A3	⊙	★	⊙	⊙	⊙	○
Grid under frequency	A4						
Grid abnormal	A6						
Grid over mean voltage	A7						
Neutral live wire reversed	A8						
Battery in charger		⊙	⊙	●	⊙	⊙	○
Battery absent	D1	⊙	⊙	○	⊙	⊙	○
Battery in discharge		⊙	⊙	★★	⊙	⊙	○
Battery under voltage	D3						
Battery over voltage	D2						
Battery discharge over current	D4	⊙	⊙	★	⊙	⊙	○
Battery over temperature	D5						
Battery under temperature	D6						
Communication loss (Inverter - BMS)	D8						
BACKUP output active		⊙	⊙	⊙	●	⊙	⊙
BACKUP output inactive		⊙	⊙	⊙	○	⊙	⊙
BACKUP short circuit	DB						
BACKUP over load	DC						
BACKUP output voltage abnormal	D7	⊙	⊙	⊙	★	⊙	○
BACKUP over dc-bias voltage	CP						

Details	Code	PV LED	Grid LED	BAT LED	Backup LED	COM LED	ALARM LED
RS485/DB9/BLE/USB		☉	☉	☉	☉	★	☉
Inverter over temperature	C5						
Fan abnormal	C8						
Inverter in power limit state	CL	☉	☉	☉	☉	☉	★
Data logger lost	CH						
Meter lost	CJ						
Remote off	CN						
PV insulation abnormal	B1						
Leakage current abnormal	B2						
Internal power supply abnormal	C0						
Inverter over dc-bias current	C2						
Inverter relay abnormal	C3						
GFCI abnormal	C6						
System type error	C7						
Unbalance Dc-link voltage	C9						
Dc-link over voltage	CA						
Internal communication error	CB	☉	☉	☉	☉	☉	●
Internal communication loss(E-M)	D9						
Internal communication loss(M-D)	DA						
Software incompatibility	CC						
Internal storage error	CD						
Data inconsistency	CE						
Inverter abnormal	CF						
Boost abnormal	CG						
Dc-dc abnormal	CU						

**Remark:**

● Light on

○ Light off

☉ Keep original status

★ Blink 1s and off 1s

★★ Blink 2s and off 2s

## 6. APP SETTING GUIDE

### 6.1 Download App

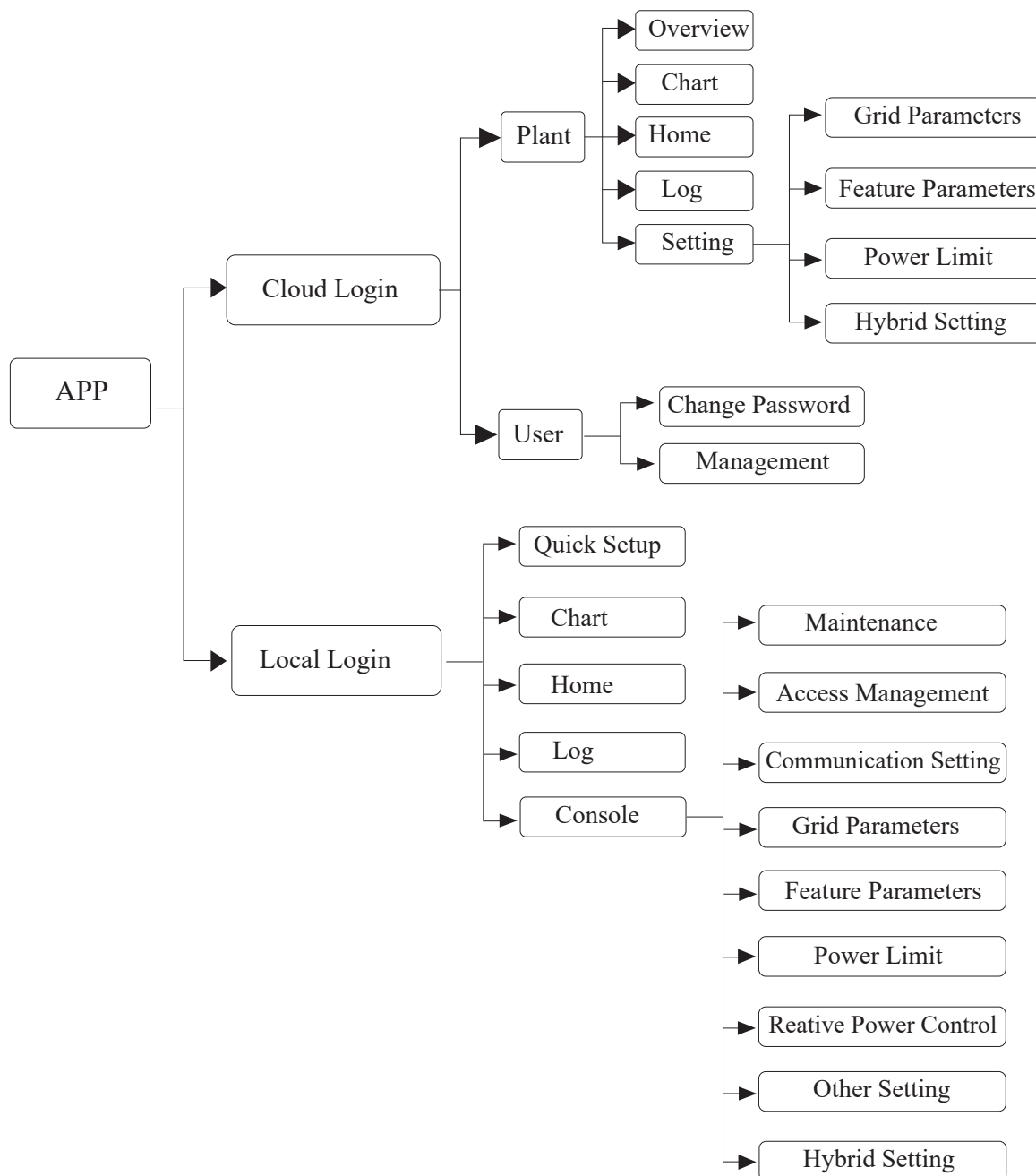
Scan the QR code on the inverter to download the APP App Setting Guide. Download APP from the App Store or Google Play.

The APP should access some permissions such as device's location. You need to grant all access rights in all pop-up windows when installing the APP or setting your phone.

### 6.2 App Architecture

The App provides two options for monitoring and configuring settings from smartphones, tablets or PCs:

- 1) Cloud Login - allows remote connection to the solar inverter via WiFi module, or
- 2) Local connection - connects to the solar inverter via its embedded Bluetooth module.



### 6.3 Local connection

- **Access Permission**

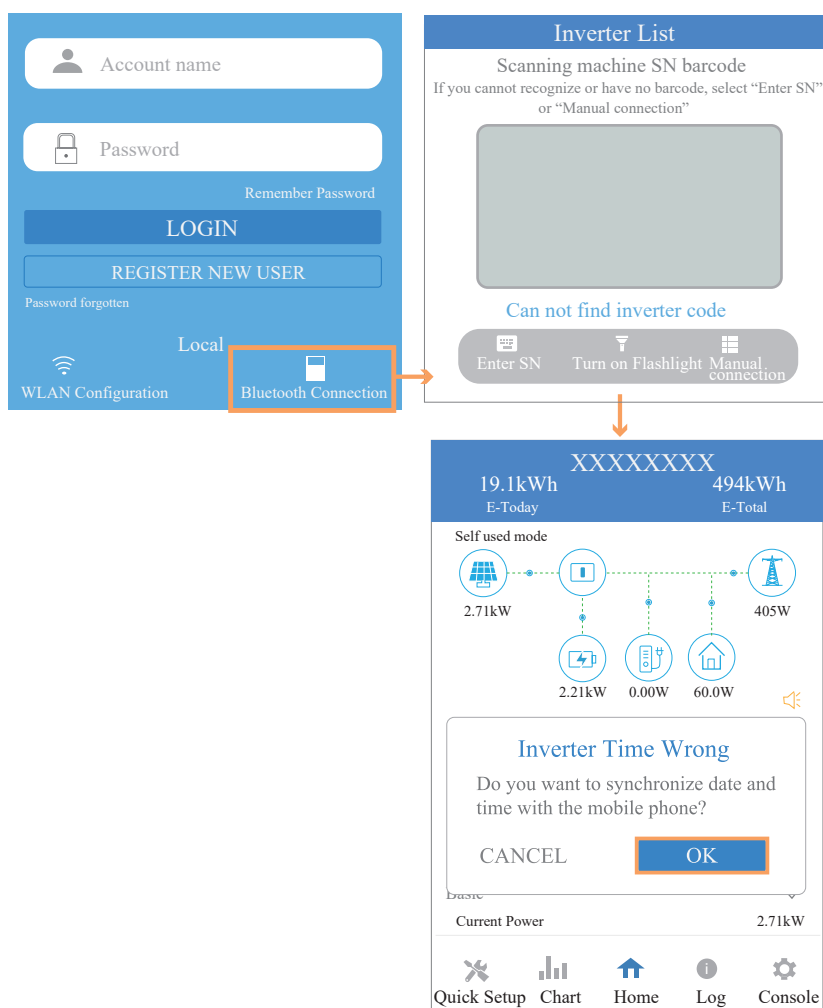
Before using the local setting, the APP should access some permissions. ( You need to grant all access rights in all pop-up windows when installing the APP or setting your phone.) When the APP asks for permission, please click 'Allow'.

- **Connect Inverter**

Firstly, open the Bluetooth on your own phone, then open the APP.

Press Bluetooth Connection to go to the connect page. For the first time, scan or manually key in the Serial Number (S/N) on the bottom of the product label, which is located on the right side of the inverter. If the S/N has been scanned before, simply press 'Manual Connection' and select the S/N of the inverter in the list to connect.

When your are asked 'Do you want to synchronize date and time with the mobile?', press OK to confirm.

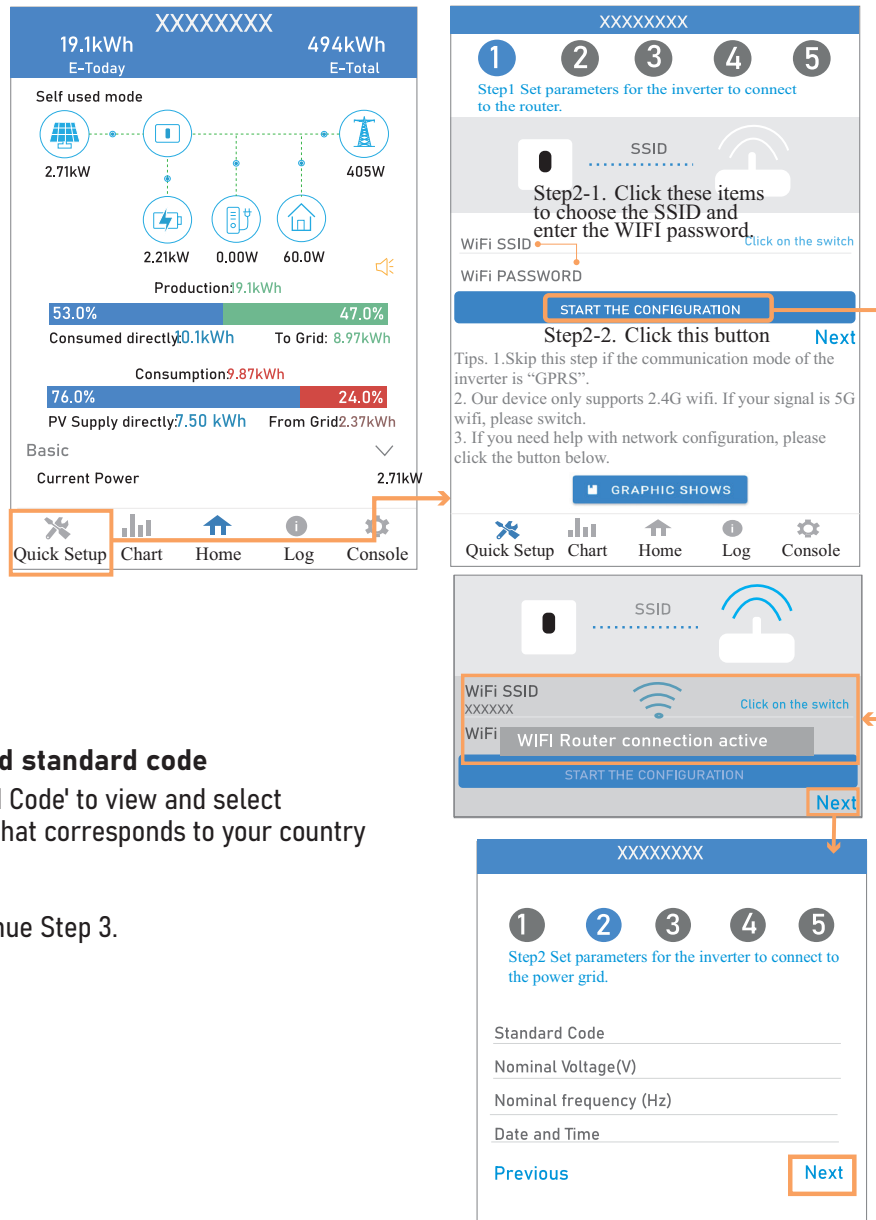


## 6.4 Quick Setup

Click 'Quick Setup' icon on the left corner.

### Step 1: Connect to your WiFi network

- 1) Click WIFI SSID to search for your local network and enter the password.
- 2) Press 'Start the configuration'. It will take about half minute to complete. After it shows the configuration is successful, the symbol of ✕ will be changed to ✓. Click 'Next' to go to Step 2.



### Step 2: Select grid standard code

- 1) Click 'Standard Code' to view and select the grid code that corresponds to your country or region.

Click 'Next' to continue Step 3.

**Step 3: Setup the Power Limit**

- 1) Select Power Control type: CTs or Meter
- 2) Select Meter location
- 3) Select Meter Type
- 4) Select Power Flow Direction
- 5) Digital meter modbus address: (default 1)
- 6) Configure feed in grid power (W)

Click 'Next' to continue Step 4.

**Step 4: Select Work Mode**

- 1) Click 'Work Mode' to select the preferred mode. Refer to 5.2 Inverter Working Mode for more information.
- 2) Battery Brand Selection: Select the brand that matches the brand name of the battery installed.
- 3) Backup output: Enable or disable the backup function. In case of a blackout or insufficient PV, the battery can be discharged to supply the backup load.

**Step 5: Power ON the inverter.****6.5 Console**

Click 'Console' icon on the right corner of the App.

This page shows Maintenance, Access Management, Communicating Setting, Hybrid Setting, and other advanced settings. Access to advanced settings is restricted to professional personnels.

NOTICE
Detail settings please refer to 'User Manual of App for PowerWalker Solar Inverter'.

XXXXXXX

1 2 3 4 5

Step3 Set parameters for the inverter to connect to the power limit.

Power control

Meter location

Meter Type

Power flow direction

Digital meter modbus address

Maximum feed in grid power(W)

Previous Next

Click each item to enter the informations.

XXXXXXX

1 2 3 4 5

Step4 Set parameters for the inverter to connect to the workmode.

Hybrid work mode

Battery type selection

EPS Output

Previous Next

Click each item to enter the informations.

XXXXXXX

1 2 3 4 5

Step5 Please click the button below to start the inverter.

Click it to turn on the inverter.

Previous

XXXXXXX

- Maintenance >
- Access Management >
- Communication Setting >
- Grid Parameters >
- Feature Parameters >
- Power Limit >
- Reactive Power Control >
- Other Setting >
- Hybrid Setting >
- Logout

Quick Setup
 Chart
 Home
 Log
 Console

## 7. MAINTENANCE

### ⚠ CAUTION

Before maintaining and commissioning inverter and its peripheral distribution unit, switch off all the charged terminals of the inverter and wait at least 10 minutes after switching off the inverter.

#### 7.1 Routine Maintenance

Items	Check Content	Maintain Content	Maintenance Interval
Inverter output status	Statistically maintain the status of electrical yield, and remotely monitor its abnormal status.	N/A	Weekly
Inverter cleaning	Check periodically that the heat sink is free from dust and blockage.	Clean periodically the heat sink.	Yearly
Inverter running status	Check that the inverter is not damaged or deformed. Check for normal sound emitted during inverter operation. Check and ensure that all inverter communications is running well.	If there is any abnormal phenomenon, replace the relevant parts.	Monthly
Inverter electrical connections	Check that all AC, DC and communication cables are securely connected; Check that PGND cables are securely connected; Check that all cables are intact and free from aging.	If there is any abnormal phenomenon, replace the cable or re-connect it.	Semiannually

## 7.2 Inverter Troubleshooting

When the inverter has an exception, its warning and handling methods are shown below.

Code	Alarm Information	Suggestions
A0	Grid over voltage	1) If the alarm occurs occasionally, possibly the power grid voltage is abnormal for a short time, and no action is required. 2) If the alarm occurs repeatedly, contact the local power station. After receiving approval of the local power bureau, revise the electrical protection parameters settings on the inverter through the App. 3) If the alarm persists for along time, check whether the AC circuit breaker /AC terminals is disconnected or not, or if the grid has a power outage.
A1	Grid under voltage	
A3	Grid over frequency	
A4	Grid under frequency	
A2	Grid absent	Wait till power is restored.
B0	PV over voltage	Check whether the maximum voltage of a single string of input PV modules is greater than the allowable voltage. If the maximum voltage is higher than the standard voltage, modify the number of pv module connection strings.
B1	PV insulation abnormal	1) Check the insulation resistance against the ground for the PV strings. If a short circuit has occurred, rectify the fault. 2) If the insulation resistance against the ground is less than the default value in a rainy environment, set insulation resistance protection on the App.
B2	Leakage current abnormal	1) If the alarm occurs occasionally, the inverter can be automatically recovered to the normal operating status after the fault is rectified. 2) If the alarm occurs repeatedly, contact your dealer for technical support.
B4	PV under voltage	1) If the alarm occurs occasionally, possibly the external circuits are abnormal accidentally. The inverter automatically recovers to the normal operating status after the fault is rectified. 2) If the alarm occurs repeatedly or last a long time, check whether the insulation resistance against the ground of PV strings is too low.
C0	Internal power supply abnormal	1) If the alarm occurs occasionally, the inverter can be automatically restored, no action required. 2) If the alarm occurs repeatedly, pls. contact the customer service center.
C2	Inverter over dc-bias current	1) If the alarm occurs occasionally, possibly the power grid voltage is abnormal for a short time, and no action is required. 2) If the alarm occurs repeatedly, and the inverter fails to generate power, contact the customer service center.

C3	Inverter relay abnormal	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, possibly the power grid voltage is abnormal for a short time, and no action is required.</li> <li>2) If the alarm occurs repeatedly, pls. refer to the suggestions or measures of Grid over voltage. and the inverter fails to generate power, contact the customer service center. If there is no abnormality on the grid side, the machine fault can be determined. (If you open the cover and find traces of damage to the relay, it can be concluded that the machine is faulty.) And pls. contact the customer service center.</li> </ol>
CN	Remote off	<ol style="list-style-type: none"> <li>1) Local manual shutdown is performed in APP.</li> <li>2) The monitor executed the remote shutdown instruction.</li> <li>3) Remove the communication module and confirm whether the alarm disappears. If it does, replace the communication module. Otherwise, please contact the customer service center.</li> </ol>
C5	Inverter over temperature	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically restored, no action required.</li> <li>2) If the alarm occurs repeatedly, pls. check the installation site for direct sunlight, good ventilation, and high ambient temperature (Such as installed on the parapet). If the ambient temperature is lower than 45°C and the heat dissipation is good, contact the customer service center.</li> </ol>
C6	GFCI abnormal	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, it could have been an occasional exception to the external wiring, the inverter can be automatically recovered, no action required.</li> <li>2) If it occurs repeatedly or cannot be recovered for a long time, pls. contact customer service to report repair.</li> </ol>
B7	PV string reverse	Check and modify the positive and negative polarity of the input of the circuit string.
C8	Fan abnormal	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, pls. restart the inverter.</li> <li>2) If it occurs repeatedly or cannot be recovered for a long time, check whether the external fan is blocked by foreign objects. Otherwise, contact customer service.</li> </ol>
C9	Unbalance Dc-link voltage	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
CA	Dc-link over voltage	
CB	Internal communication error	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
CC	Software incompatibility	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
CD	Internal storage error	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
CE	Data inconsistency	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>

CF	Inverter abnormal	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
CG	Boost abnormal	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
CJ	Meter lost	<ol style="list-style-type: none"> <li>1) Check the meter parameter Settings</li> <li>2) Local APP checks that the communication address of the inverter is consistent with that of the electricity meter</li> <li>3) The communication line is connected incorrectly or in bad contact</li> <li>4) electricity meter failure.</li> <li>5) Exclude the above, if the alarm continues to occur, please contact the customer service center.</li> </ol>
D2	Battery over voltage	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) Check that the battery overvoltage protection value is improperly set.</li> <li>3) The battery is abnormal.</li> <li>4) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>
D3	Battery under voltage	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) Check the communication line connection between BMS and inverter (lithium battery).</li> <li>3) The battery is empty or the battery voltage is lower than the SOC cut- off voltage.</li> <li>4) The battery undervoltage protection value is improperly set.</li> <li>5) The battery is abnormal.</li> <li>6) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>
D4	Battery discharger over current	<ol style="list-style-type: none"> <li>1) Check whether the battery parameters are correctly set.</li> <li>2) Battery undervoltage.</li> <li>3) Check whether a separate battery is loaded and the discharge current exceeds the battery specifications.</li> <li>4) The battery is abnormal.</li> <li>5) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>
D5	Battery over temperature	<ol style="list-style-type: none"> <li>1) If the alarm occurs repeatedly, please check whether the installation site is in direct sunlight and whether the ambient temperature is too high (such as in a closed room).</li> <li>2) If the battery is abnormal, replace it with a new one.</li> <li>3) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>
D6	Battery under temperature	
D7	BACKUP output voltage abnormal	<ol style="list-style-type: none"> <li>1) Check whether the BACKUP voltage and frequency Settings are within the specified range.</li> <li>2) Check whether the BACKUP port is overloaded.</li> <li>3) When not connected to the power grid, check whether output is normal.</li> <li>4) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>

D8	Communication error (Inverter-BMS)	<ol style="list-style-type: none"> <li>1) Check whether the battery is disconnected.</li> <li>2) Check whether the battery is well connected with the inverter.</li> <li>3) Confirm that the battery is compatible with the inverter. It is recommended to use CAN communication.</li> <li>4) Check whether the communication cable or port between the battery and the inverter is faulty.</li> <li>5) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>
D9	Internal communication loss(E-M)	<ol style="list-style-type: none"> <li>1) Check whether the communication cables between BACKUP, electricity meter and inverter are well connected and whether the wiring is correct</li> <li>2) Check whether the communication distance is within the specification range</li> <li>3) Disconnect the external communication and restart the electricity meter and inverter.</li> <li>4) If exclude the above, the alarm continues to occur, please contact the customer service center.</li> </ol>
DA	Internal communication loss(M-D)	
CU	Dcdc abnormal	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, please check: <ul style="list-style-type: none"> <li>• Check whether the MC4 terminal on the PV side is securely connected.</li> <li>• Check whether the voltage at the PV side is open circuit, ground to ground, etc.</li> </ul> </li> </ol> <p>If exclude the above, the alarm continues to occur, please contact the customer service center.</p>
CP	BACKUP over dc-bias voltage	<ol style="list-style-type: none"> <li>1) If the alarm occurs occasionally, the inverter can be automatically recovered and no action is required.</li> <li>2) If the alarm occurs repeatedly, the inverter cannot work properly. Pls. contact the customer service center.</li> </ol>
DB	BACKUP short circuit	<ol style="list-style-type: none"> <li>1) Check whether the live line and null line of BACKUP output are short-circuited.</li> <li>2) If it is confirmed that the output is not short-circuited or an alarm, please contact customer service to report for repair. (After the troubleshooting of alarm problems, BACKUP switch needs to be manually turned on during normal use.)</li> </ol>
DC	BACKUP over load	<ol style="list-style-type: none"> <li>1) Disconnect the BACKUP load and check whether the alarm is cleared</li> <li>2) If the load is disconnected and the alarm is generated, please contact the customer service. (After the alarm is cleared, the BACKUP switch needs to be manually turned on for normal use.)</li> </ol>

### 7.3 Removing the Inverter

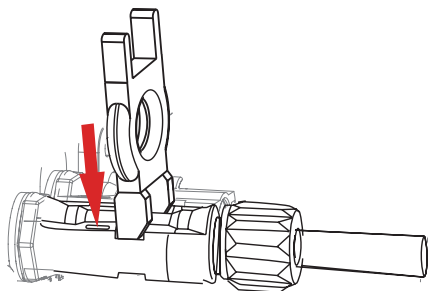
#### ⚠ WARNING

Before removing DC input connector, double check DC input switch is turned to OFF to avoid inverter damage and personal injury.

Perform the following procedures to remove the inverter.

Step 1. Disconnect all cables from the inverter, including communications cables, DC input power cables, AC output power cables, and PGND cable, as shown below.

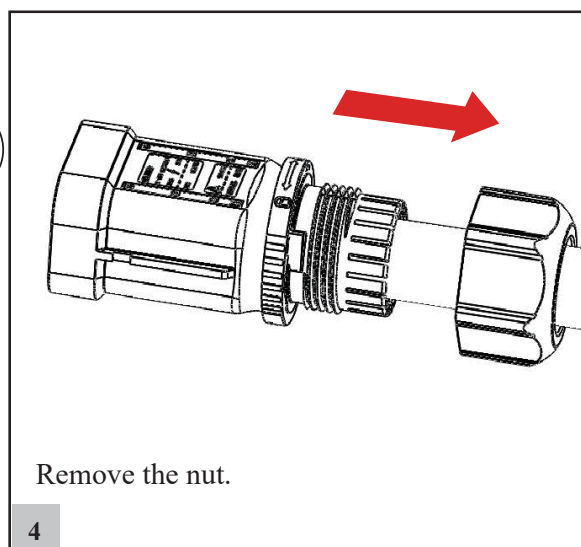
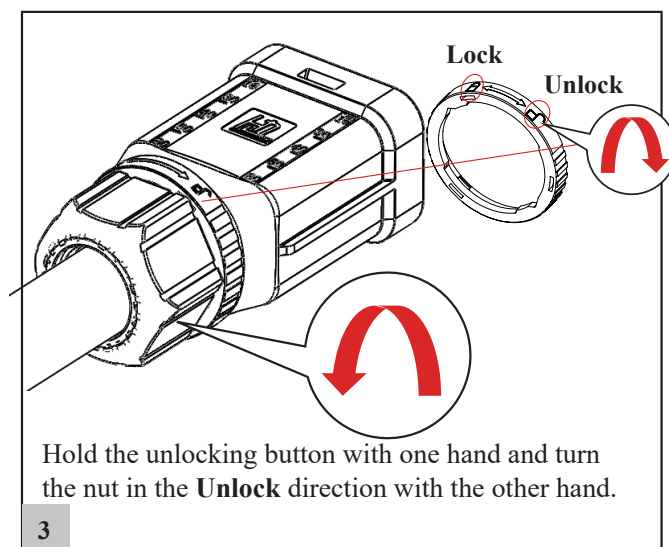
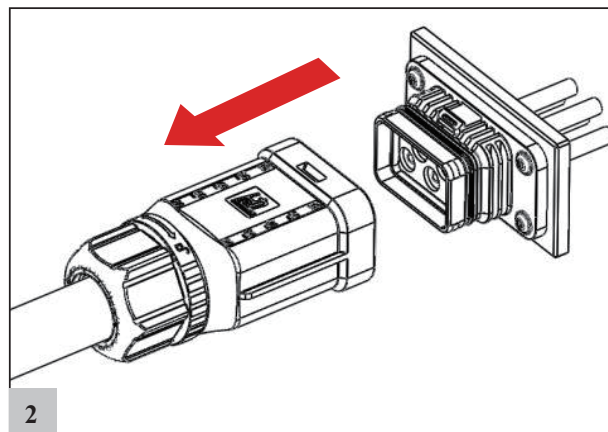
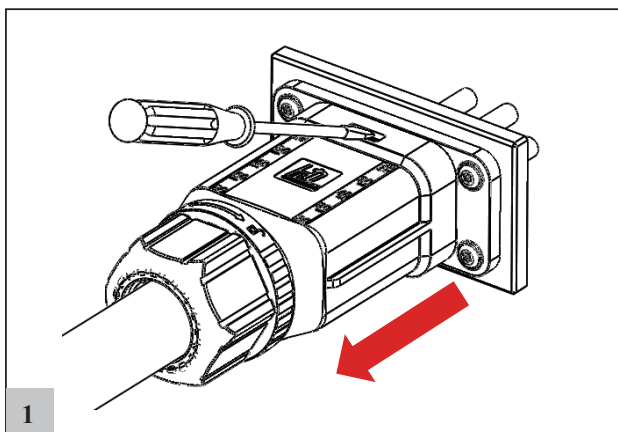
#### PV Connectors Removing Detail

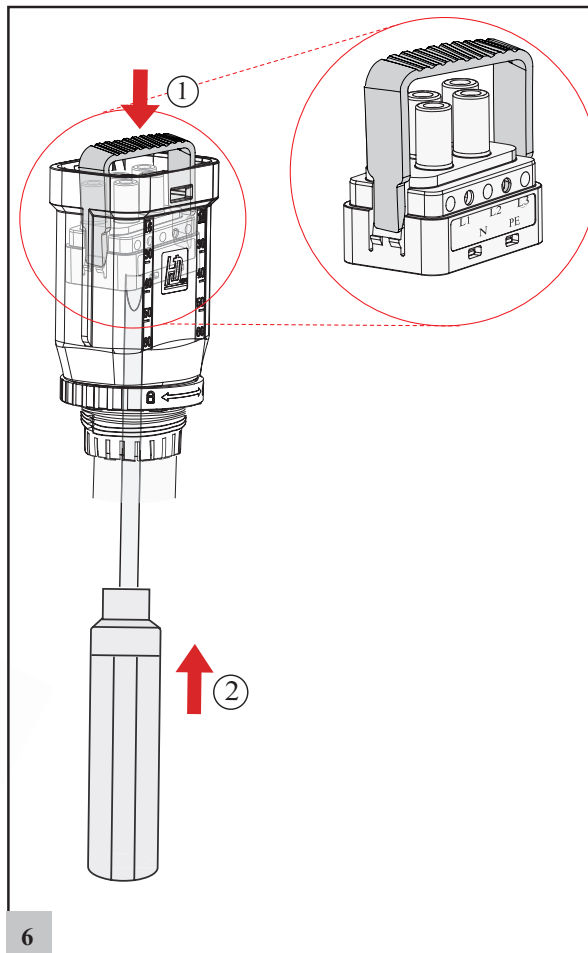
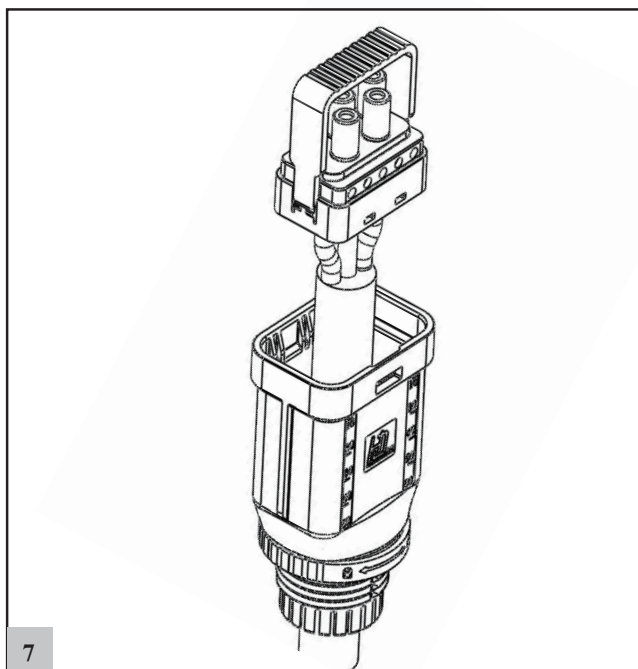
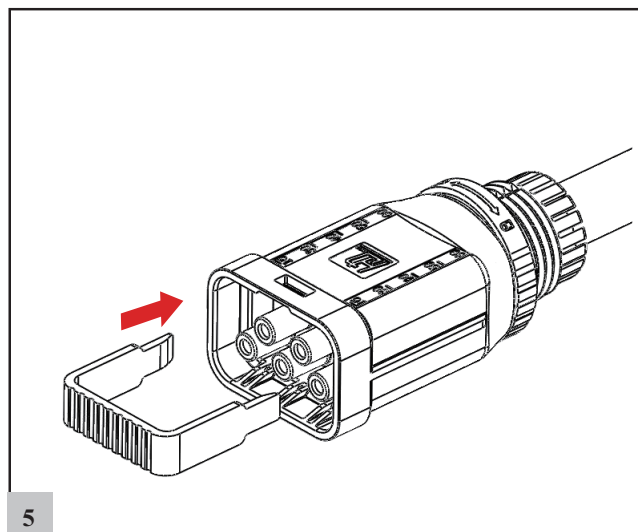


#### NOTE

To remove the PV connectors, insert the removal tool into the bayonet according to the position indicated in the drawing, press inward, and then take out the connector outward.

#### GRID/BACKUP Connectors Removing Detail





Step 2. Remove the inverter from the mounting bracket.

Step 3. Remove the mounting bracket.

## 8. TECHNICAL SPECIFICATION

Model	Solar Inverter SAN 6k	Solar Inverter SAN 10k
Rated Output Power	6 000 W	10 000 W
Parallel Operation	Up to 9 Units	
Compatible Battery Type	Lithium-ion / Lead-acid	
Minimum Requirement of Battery Configuration	2x LiFe Battery 102-37 Module + 1x Control Box	
Recommend Battery Configuration	3x LiFe Battery 102-37 Module + 1x Control Box	4x LiFe Battery 102-37 Module + 1x Control Box
Efficiency		
Maximum Efficiency (PV to AC)	98.2 %	98.4 %
DC Input (PV)		
Maximum PV Power	9 000 Wp	15 000 Wp
Maximum PV Voltage	1 000 V	
Start-Up Voltage	200 V	
PV Input Voltage Range	160 V ~ 1 000 V	
MPPT Voltage Range	160 V ~ 950 V	
Maximum Input Current (PV 1 / PV 2)	15 A / 15 A	20 A / 30 A
Maximum Short-Circuit Current	20 A / 20 A	30 A / 40 A
No. of MPP Trackers	2	
String per MPP Tracker (PV 1 / PV 2)	1 / 1	1 / 2
AC Input		
Maximum Apparent Power from Grid	15 800 VA	15 800 VA
Rated Voltage from the Grid	230/400 V (3W+N+PE)	
Input Frequency Range	50Hz or 60Hz (45Hz - 55Hz / 55Hz - 65Hz)	
Maximum AC Input Current	3 x 25 A	
AC Output		
No. of Phases	Three Phase	
Nominal AC Output Power	6 000 W	10 000 W
Maximum Output Apparent Power (PF=1)	6 600 VA	11 000 VA
Rated Voltage	230/400 V (3W+N+P)	
Output Frequency	45Hz - 55Hz / 55Hz - 65Hz	
Rated Output Current	8.7 A per Phase	14.5 A per Phase
Maximum AC Output Current	3 x 9.6 A	3 x 16 A
Power Factor / Range	> 0.99 at rated power (adjustable 0.8 LD - 0.8 LG)	

Battery Input (Charging)		
Maximum Charge Power	9 000 W	15 000 W
Maximum Charge Power from Grid to Battery	6 000 W	10 000 W
Nominal DC Voltage	250 V ~ 600 V	
Battery Voltage Range	150 V ~ 600 V	
Maximum Charge Current	25 A	50 A
Battery Output (Discharging)		
Nominal Output Voltage	230/400 V (3W+N+PE)	
Nominal Output Frequency	50 Hz or 60 Hz	
Output Wave Form	Pure Sine Wave	
Nominal Output Power	6 000 VA	10 000 VA
Maximum Discharge Power	7 000 W	11 300 W
Maximum Discharge Current	25 A	50 A
Transfer Times (AC to Battery)	10 ms (typical) ~ 20 ms (max.)	
Transfer Times in Parellel Operation	< 100 ms	
Protection		
Anti-Islanding Protection	Yes	
Insulation Detection	Yes	
DC (PV) Switch	Yes	
DC Surge Protection	Yes	
AC Surge Protection	Yes	
AC Overcurrent Protection	Yes	
AC Short Circuit Protection	Yes	
AC Overvoltage Protection	Yes	
Ground Fault Circuit Interrupter (GFCI)	Yes	
Environment and Logistics		
Maximum Operation Altitude	4000 m	
Ingress Protection Degree	IP65	
Operating Temperature Range	-25°C ~ 60°C	
Relative Humidity	0 ~ 100%	
Cooling	Passive Cooling	
Noise Emission	< 30 dB	
Dimensions (D x W x H) in mm	213 x 550 x 530	
Weight	29.6 kg	32 kg

The range of output voltage and frequency may vary depending upon country regulation.  
 Errors and misprint are possible in spite of careful editing – liability excluded.  
 Specifications are subject to modifications.



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