

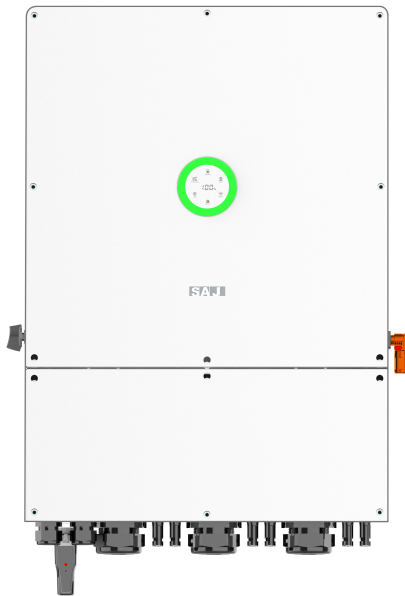
# CH2 Series

Hybrid Solar Inverter

CH2-(29.9K-50K)-(T4-T6)

CH2-30K-T6-LV

## User Manual



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## About this document

This user manual provides introductions and instructions of operating, maintaining, and troubleshooting the following SAJ product:

- CH2 Series

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### Note:

Illustrations in this document show only essential details and may differ from the actual product.

### Target Audience

This document is applicable to the personnel that transport, install, and operate on the product. The personnel are required to have the following qualifications:

- A certain level of expertise in electronics, electrical wiring, and mechanical knowledge in electrical and mechanical schematics.
- Being familiar with the composition and working principles of the product and its upstream and downstream equipment.
- Professional training related to the installation and commissioning of electrical equipment.
- The ability to respond urgently to dangers or emergencies that may arise during installation or commissioning.
- Being familiar with relevant standards and regulations in the country or region where the project is located.
- Being familiar with the contents in this manual.

### Use of the Manual

Read the user manual carefully before any installation, operation and maintenance and follow the instructions during installation and operation. Always keep the printed manual available for future reference.

### Levels of Warning Messages



#### DANGER

Indicates a hazardous situation which, if not avoided, will result in death or serious injury.



#### WARNING

Indicates a hazardous situation which, if not avoided, will result in serious injury or moderate injury.



#### CAUTION

Indicates a hazardous situation which, if not avoided, will result in minor or moderate injury.



#### NOTICE

Indicates a situation which, if not avoided, can result in property damage.

## Revision history

| Version | Date       | Changes                                                 |
|---------|------------|---------------------------------------------------------|
| V2.0    | 2026-07-27 | <a href="#">10. Product specification (on page 107)</a> |

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# 1. Safety instructions

## 1.1. Inverter safety instructions

### Personal Safety



#### DANGER

##### Risk of personnel hazard or equipment damage due to improper operations

Improper operations performed on energized equipment by unqualified personnel may lead to equipment failure or safety hazards.

- Only qualified and trained professionals who are familiar with electrical installation and local codes may install, maintain, or repair the equipment.
- Before any operation, read the safety precautions thoroughly and always follow the standard procedures during operation. Non-standard and improper operations on the energized equipment may cause fire, electric shocks, or explosion.
- Do not reconstruct or alter the equipment, add components, or change the installation sequence without permission. Any unauthorized operation including modification of product functionality of any form may cause lethal hazard to the operator, third parties, the units or their property.
- Before any operation, remove conductive objects such as watches, bracelets, bangles, rings, and necklaces to prevent electric shocks.
- During operation, do not open the housing or touch electrical terminals.



#### WARNING

##### Risk of personal injury due to direct contact with the components or housing

Direct contact with hazardous moving or hot components during the inverter's operation may lead to personal injury.

- Do not touch a running fan with your hands, components, screws, or any other tools.
- During operation, do not touch heat sink area with bare hands as the inverter surface may become hot.



#### CAUTION

##### Risk of equipment damage and personal injury

If you detect any unusual odors, hear abnormal noises, or notice smoke during operation, immediately shut down the unit and disconnect all power sources.



#### NOTICE

##### Risk of equipment malfunction and safety hazards

Failure to follow proper guidance and neglect of regular monitoring prevents the timely identification and prevention of potential issues.

- Read the entire user manual before installation and keep it at hand for future reference.
- Regularly check the status via the monitoring interface to promptly detect any abnormalities.

## Electrical Safety

### **DANGER**

#### **Risk of high voltage and electric shock**

Before any operation, disconnect the inverter from all AC and DC power sources and wait at least 5 minutes to allow internal capacitors to discharge.

### **WARNING**

#### **Risk of overheating, fire and equipment damage**

Obstructing ventilation or allowing foreign objects to enter the equipment may lead to fire hazards.

- During operation, ensure that the ventilation vents or heat dissipation systems are not obstructed or covered by other objects to prevent fire due to high temperature.
- During operation, prevent foreign matter from entering the equipment. Otherwise, equipment short-circuits or damage, load power derating, power failure, or personal injury may occur.
- Do not place any foreign objects or liquid containers on the inverter.

## Environment Requirements

### **DANGER**

#### **Risk of severe electrical shock**

- A lightning strike can induce a sudden and massive power surge, which poses severe hazard to both personnel and equipment.
- Installation, operation, and maintenance is prohibited during thunderstorms.

## Mechanical Safety

### **NOTICE**

#### **Risk of equipment failure or physical injury**

Installing or operating an inverter with pre-existing physical damage compromises safety and functionality.

- Before unpacking the inverter, check the outer packing materials for damage, such as holes and cracks, and check the inverter model. If any damage is found or the inverter model is not what you requested, do not unpack the package and contact your supplier as soon as possible.
- Before installation, inspect the equipment for any visible damage or signs of transportation damage. If damage is found, do not install or use the equipment.

## 1.2. Safety symbols

| Symbol                                                                              | Description                                                                                                                                                                             |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <p><b>Danger:</b> Electrical shock hazard</p> <p>This device is directly connected to public grid and thus all work to the system shall only be carried out by qualified personnel.</p> |



| Symbol                                                                              | Description                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>Danger:</b> Hot surface<br>The components inside the battery will release a lot of heat during operation. Do not touch metal plate housing during operating.                                                      |
|    | <b>Danger:</b> Risk of electric shock from energy stored in capacitor.<br>Do not open the cabinet door until 5 minutes after disconnecting all sources of supply.                                                    |
|    | <b>Warning:</b> No open flames<br>Do not place or install near flammable or explosive materials.                                                                                                                     |
|    | <b>Caution</b><br>Keep the product out of reach of children.                                                                                                                                                         |
|    | <b>Caution:</b> Check the user manual before service<br>If an error has occurred, refer to the troubleshooting instructions to remedy the error.                                                                     |
|    | <b>Caution</b><br>This device shall NOT be disposed of in residential waste.                                                                                                                                         |
|   | <b>Caution</b><br>This battery module shall NOT be disposed of in residential waste.                                                                                                                                 |
|  | <b>CE Mark</b><br>Equipment with the CE mark fulfills the requirements of the Low Voltage Directive and Electro Magnetic Compatibility.                                                                              |
|  | <b>RoHS compliant mark</b><br>Equipment with the RoHS mark does not exceed the allowable amounts of the restricted substances defined in Restriction of Hazardous Substances in Electrical and Electronic Equipment. |
|  | <b>RCM compliant mark</b><br>Equipment with the RCM mark is in compliance with AS/NZS 4417.1 & 2 and the EESS.                                                                                                       |
|  | <b>Recyclable</b>                                                                                                                                                                                                    |

### 1.3. Recycling and disposal

#### NOTICE

This product should not be disposed as a residential waste.

Some components inside the equipment can be recycled and reused, while others may pose a pollution risk to the environment. Please contact a locally authorized professional recycling agency for the proper handling of the product and its internal components.

## 2. Product information

### 2.1. Product introduction

CH2 Series are hybrid photovoltaic inverters applicable to both on-grid and off-grid solar systems. The energy generated by the PV system is fed to the loads first, and then the surplus energy can charge the battery for later use. More energy produced by the PV system can be exported to the grid.

CH2 Series inverters can significantly improve the self-consumption rate of the solar energy and lower the dependency on the grid.

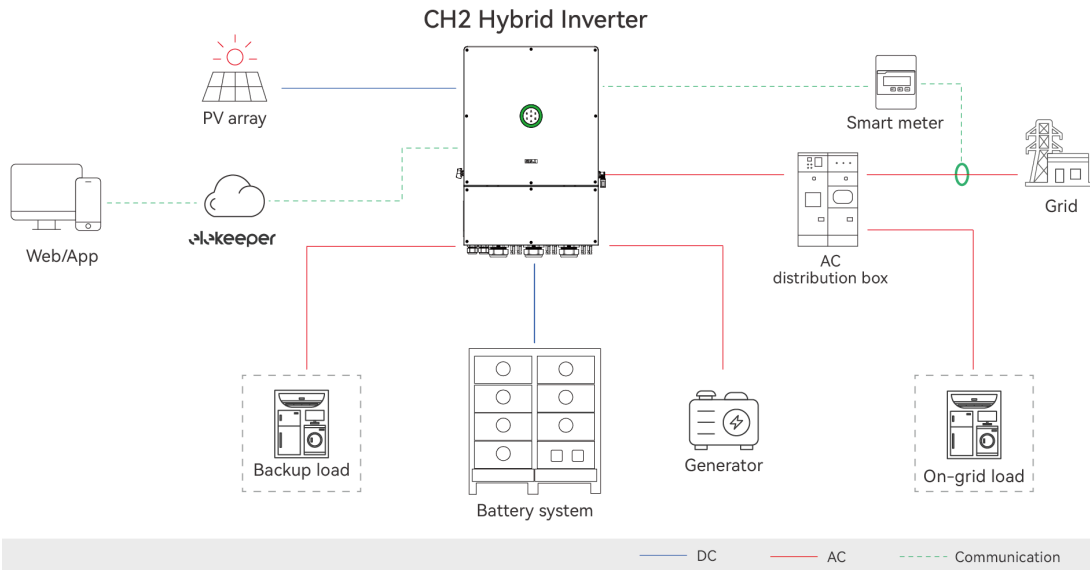


Figure 2.1. System application

#### 2.1.1. Model description

Take **CH2-50K-T6** as an example:

**CH2-50K-T6**

①                      ②                      ③

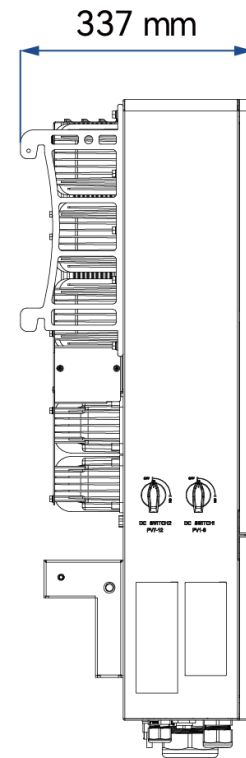
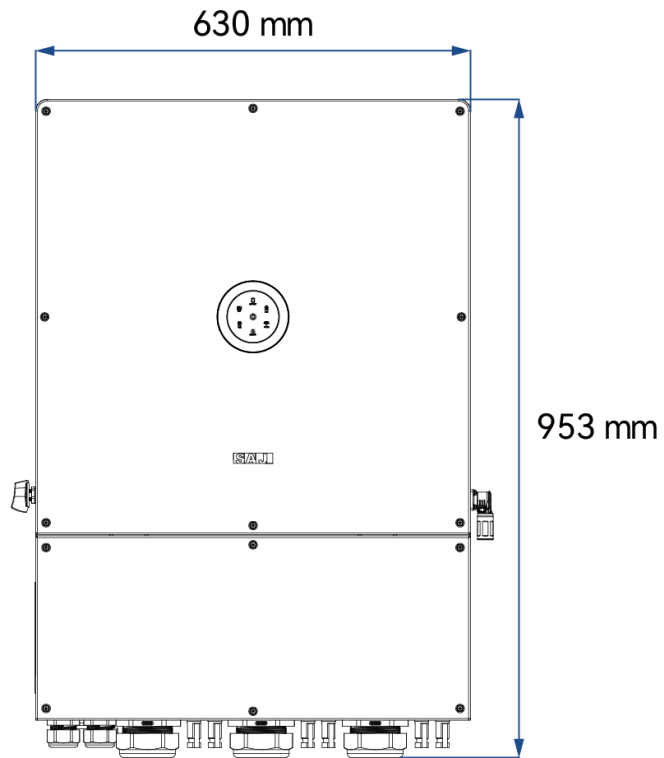
- ① The product name.
- ② The rated energy of the storage system in kW. The value includes 29.9, 30, 49.9, and 50.
- ③ T6 means three phases with 6 MPPTs. The value includes T4 and T6.
- ④ When this field is present, it indicates the low voltage model.

#### Product models

- CH2-29.9K-T4
- CH2-30K-T4
- CH2-49.9K-T6

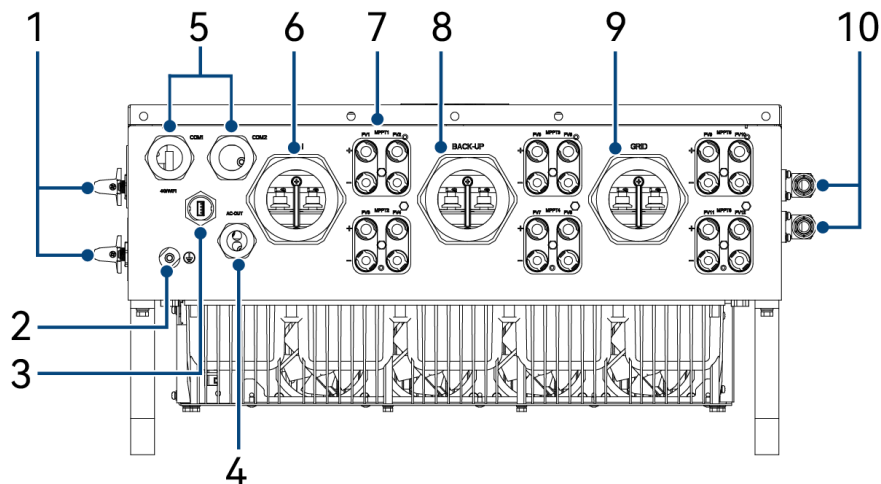
- CH2-50K-T6
- CH2-30K-T6-LV

## 2.1.2. Dimensions



## 2.1.3. Electrical terminals

### Inverter



| Callout | Silkscreen         | Description                                         |
|---------|--------------------|-----------------------------------------------------|
| 1       | /                  | The PV switches.                                    |
| 2       | /                  | The grounding cable connection port.                |
| 3       | <b>4G/WIFI</b>     | The communication module connection port.           |
| 4       | <b>AC-OUT</b>      | The connection port for 220V AC power supply cable. |
| 5       | <b>COM1, COM2</b>  | The communication connection ports.                 |
| 6       | <b>GEN</b>         | The external generator connection ports.            |
| 7       | <b>MPPT1-MPPT6</b> | The PV connection ports.                            |
| 8       | <b>BACK-UP</b>     | The AC back-up connection ports.                    |
| 9       | <b>GRID</b>        | The grid connection port.                           |
| 10      | <b>BAT+, BAT-</b>  | The battery connection ports.                       |

## 2.1.4. LED indicators

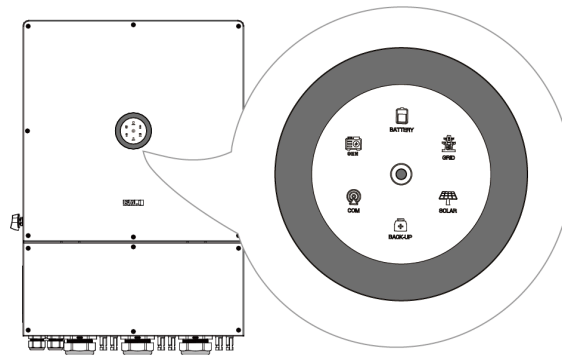


Figure 2.2. LED panel

| LED indicator | Status        | Description                                            |
|---------------|---------------|--------------------------------------------------------|
|               | LED off       | The inverter is powered off.                           |
|               | Breathing     | The inverter is at the initial state or standby state. |
|               | Solid         | The inverter is running properly.                      |
|               | Breathing     | The inverter is upgrading.                             |
|               | Solid         | The inverter is faulty.                                |
|               | Solid         | The inverter is importing electricity from the grid.   |
|               | On 1s, off 1s | The inverter is exporting electricity to the grid.     |
|               | On 1s, off 3s | No importing or exporting.                             |
|               | Off           | Off-grid.                                              |
|               | Solid         | The battery is discharging.                            |
|               | On 1s, off 1s | The battery is charging.                               |
|               | On 1s, off 3s | Low SOC.                                               |
|               | Off           | The battery is disconnected or inactive.               |
|               | Solid         | The inverter is connected to the grid.                 |
|               | On 1s, off 1s | Counting down to grid connection.                      |
|               | On 1s, off 3s | The grid is faulty.                                    |
|               | Off           | No grid.                                               |
|               | Solid         | The PV array is running properly.                      |
|               | On 1s, off 1s | The PV array is faulty.                                |
|               | Off           | The PV array is not working.                           |

| LED indicator                                                                                       | Status        | Description                                                            |
|-----------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------------------|
| <br><b>BACK-UP</b> | Solid         | The AC side load is running properly.                                  |
|                                                                                                     | On 1s, off 1s | The AC side consumption is overloaded.                                 |
|                                                                                                     | Off           | The AC side is turned off.                                             |
| <br><b>COM</b>     | Solid         | The communication with both the BMS and the meter is working.          |
|                                                                                                     | On 1s, off 1s | The meter communication is working, but the BMS communication is lost. |
|                                                                                                     | On 1s, off 3s | The BMS communication is working, but the meter communication is lost. |
|                                                                                                     | Off           | Lost communication with both the BMS and the meter.                    |
| <br><b>GEN</b>     | Solid         | The power input of the generator is connected.                         |
|                                                                                                     | On 1s, off 1s | The power output of the generator is connected.                        |
|                                                                                                     | Off           | Disconnected from the generator.                                       |

## 2.1.5. Communication terminals

The following figure shows the systems and devices that can be connected to the CH2 system.

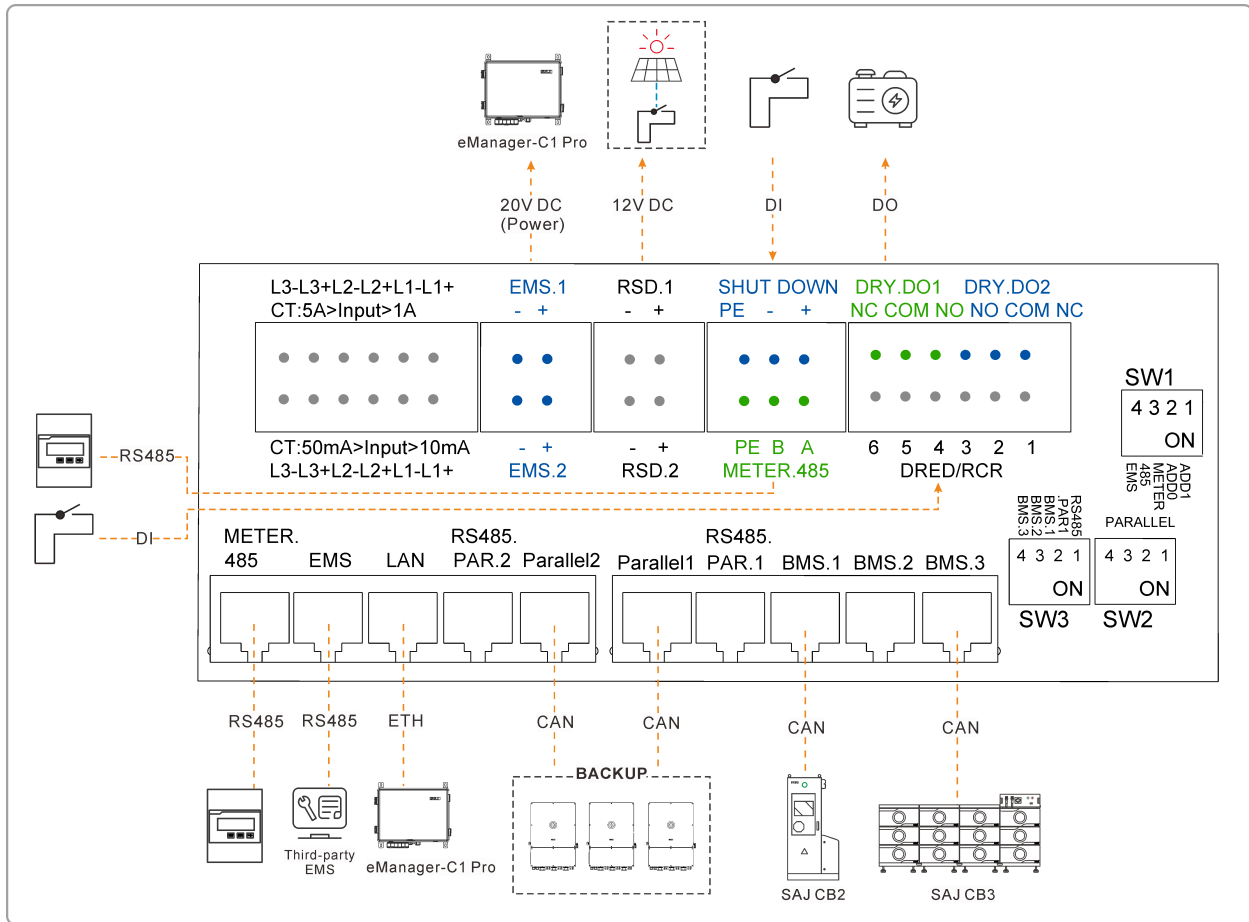


Figure 2.3. Communication connection overview

### Communication terminal descriptions

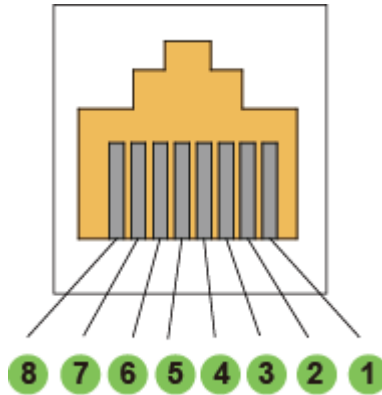
| Terminal type   | Silkscreen                      | Communication protocol | Description                                                                                                                                            |
|-----------------|---------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 6-pin connector | <b>CT:5A&gt;Input&gt;1A</b>     | RS485                  | Reserved for RS485 communication connection to CTs whose input current ranges from 1A to 5A.                                                           |
| 6-pin connector | <b>CT:50mA&gt;Input&gt;10mA</b> | RS485                  | Reserved for RS485 communication connection to CTs whose input current ranges from 50mA to 10mA.                                                       |
| 2-pin connector | <b>EMS.1</b><br><b>EMS.2</b>    | 20V DC                 | For providing EMS 20V DC power supply in parallel deployment.                                                                                          |
| 2-pin connector | <b>RSD.1</b><br><b>RSD.2</b>    | 12V DC                 | For 12V DC power supply to the fast shutdown module of the photovoltaic system. The module can control the fast shutdown and startup of the PV system. |
| 3-pin connector | <b>SHUT DOWN</b>                | DI                     | For external DI connections to shut down the inverter in emergency situations.                                                                         |
| 3-pin connector | <b>METER.RS485</b>              | RS485                  | For meter RS485 connection.                                                                                                                            |

| Terminal type   | Silkscreen                               | Communication protocol | Description                                                                                                    |
|-----------------|------------------------------------------|------------------------|----------------------------------------------------------------------------------------------------------------|
| 3-pin connector | <b>DRY.DO1</b>                           | DO                     | For diesel generator connection to control the start and stop of the generator in single deployment.           |
| 3-pin connector | <b>DRY.DO2</b>                           | DO                     | Reserved NO dry output terminal 2 for programmable relay output.                                               |
| 6-pin connector | <b>DRED/RCR</b>                          | DI                     | For demand response modes (DRM) or ripple control receiver (RCR) devices connection.                           |
| RJ45            | <b>METER.485</b>                         | RS485                  | For meter RS485 connection.                                                                                    |
| RJ45            | <b>EMS</b>                               | RS485                  | For RS485 communication with the third-party EMS.                                                              |
| RJ45            | <b>LAN</b>                               | ETH                    | For LAN communication with the SAJ EMS.                                                                        |
| RJ45            | <b>RS485.PAR.1</b><br><b>RS485.PAR.2</b> | RS485                  | RS485 communication ports reserved for future use.                                                             |
| RJ45            | <b>Parallel1</b>                         | CAN                    | For CAN communication connection between CH2 inverters in parallel deployment with the backup loads connected. |
| RJ45            | <b>Parallel2</b>                         | CAN                    |                                                                                                                |
| RJ45            | <b>BMS.1</b>                             | CAN                    | For CAN communication connection from the SAJ CB2 battery system.                                              |
| RJ45            | <b>BMS.2</b>                             | CAN                    | CAN communication port reserved for future use.                                                                |
| RJ45            | <b>BMS.3</b>                             | CAN                    | For CAN communication connection from the CB3 battery systems.                                                 |

Table 2.1. Communication terminals



See the RJ45 pin descriptions below:

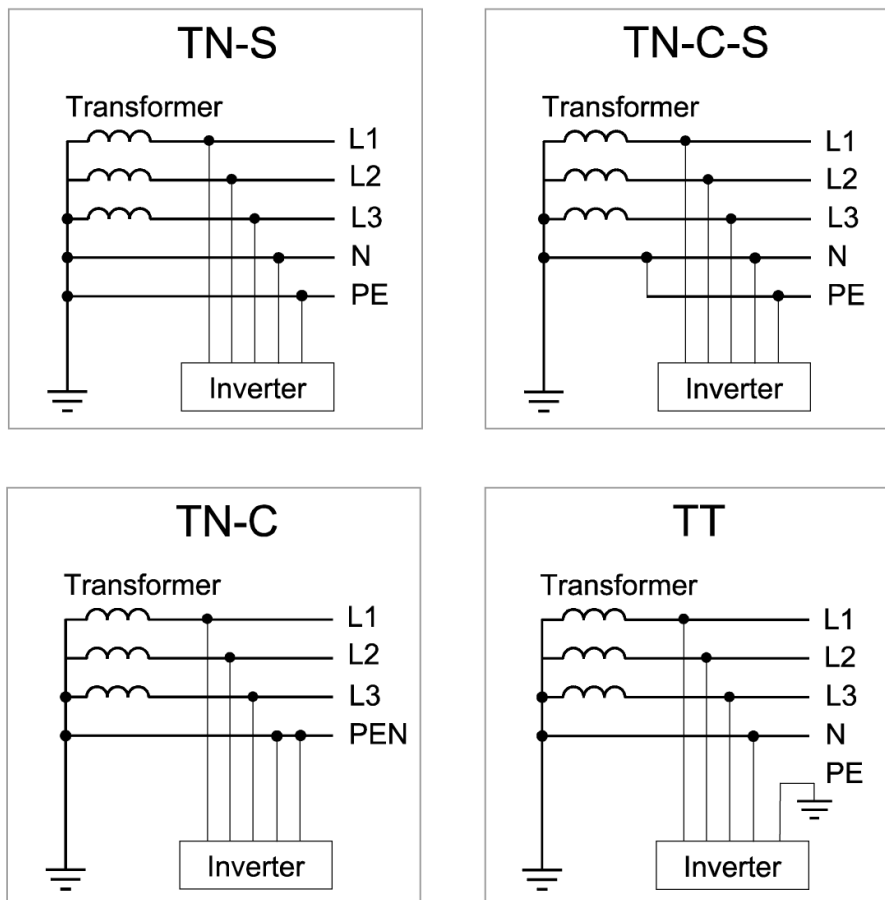


| EMS                 |                 | RS485.PAR.1/RS485.PAR.2 |         | METER.485 |         |
|---------------------|-----------------|-------------------------|---------|-----------|---------|
| 1                   | NC              | 1                       | NC      | 1         | RS485-B |
| 2                   | NC              | 2                       | NC      | 2         | RS485-A |
| 3                   | NC              | 3                       | NC      | 3         | NC      |
| 4                   | NC              | 4                       | NC      | 4         | RS485-B |
| 5                   | NC              | 5                       | NC      | 5         | RS485-A |
| 6                   | NC              | 6                       | NC      | 6         | NC      |
| 7                   | RS485-A         | 7                       | RS485-A | 7         | RS485-A |
| 8                   | RS485-B         | 8                       | RS485-B | 8         | RS485-B |
| BMS.1/ BMS.2/ BMS.3 |                 | Parallel 1/ Parallel 2  |         | LAN       |         |
| 1                   | Shut down - BMS | 1                       | SYN B   | 1         | TX_D1+  |
| 2                   | GND_S           | 2                       | SYN A   | 2         | TX_D1-  |
| 3                   | NC              | 3                       | SYN B   | 3         | RX_D2+  |
| 4                   | CANH            | 4                       | SYN A   | 4         | BI_D3+  |
| 5                   | CANL            | 5                       | SYN B   | 5         | BI_D3-  |
| 6                   | NC              | 6                       | SYN A   | 6         | RX_D2-  |
| 7                   | NC              | 7                       | CANL    | 7         | BI_D4+  |
| 8                   | NC              | 8                       | CANH    | 8         | BI_D4-  |

Table 2.2. RJ45 pin definitions

## 2.2. Grid integration types

CH2 series systems support the following grid configurations:



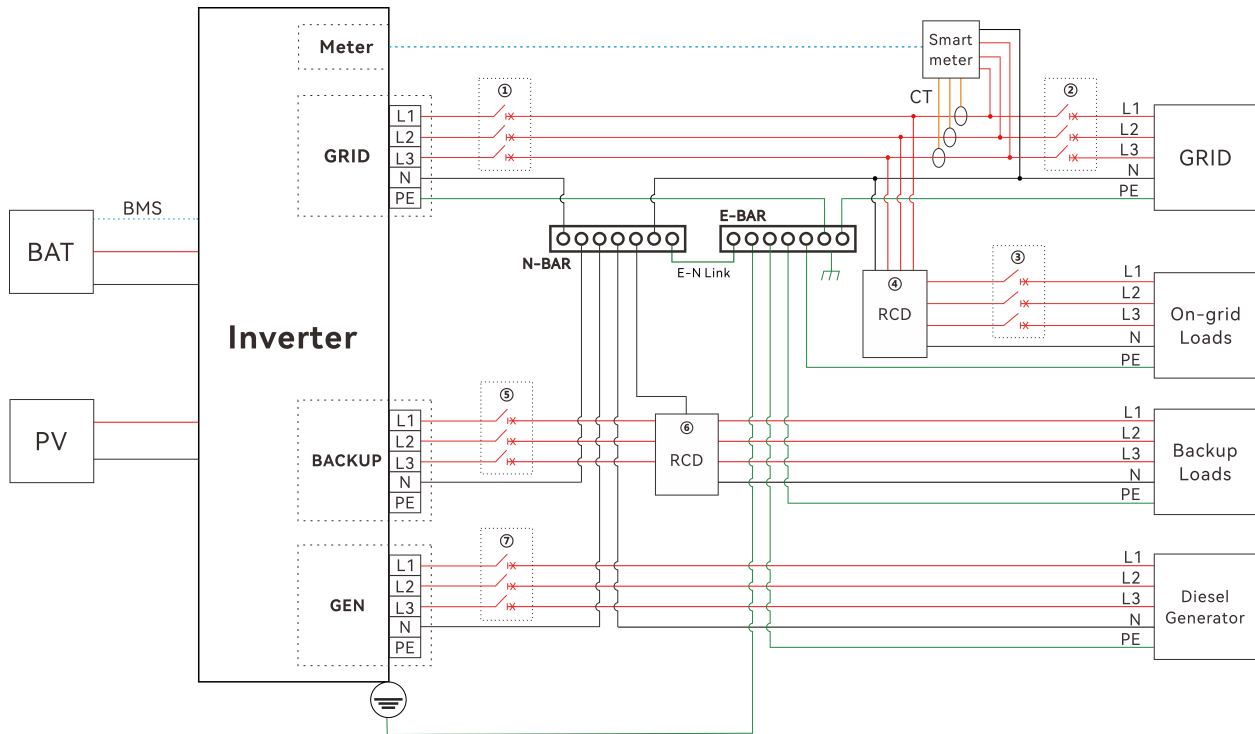


## 2.3. Electrical connection diagrams

### E-BAR and N-BAR based connection diagram

The following figure shows the system connection applicable in Australia and New Zealand.

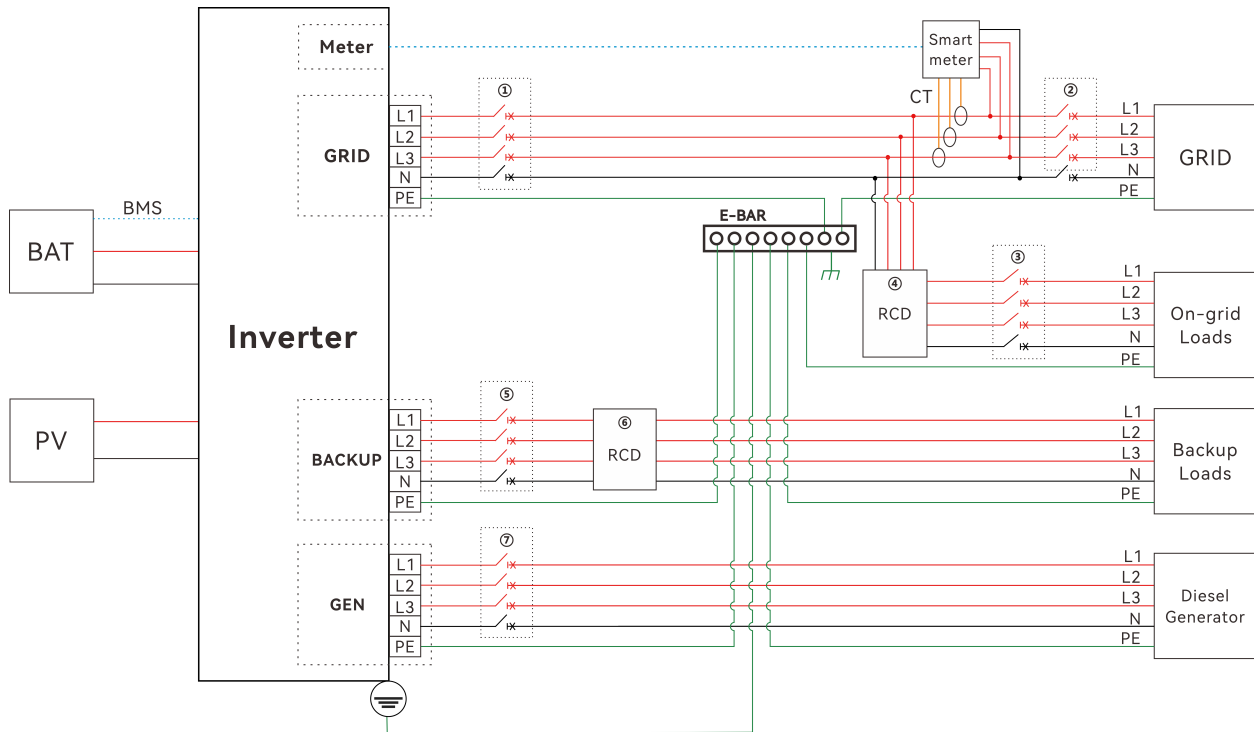
- To comply with AS/NZS3000, the neutral (N) cables of the grid and backup-load sides must be be connected together.
- Do not connect the PE terminal of the **BACK-UP** port.
- The E-BAR and the N-BAR must be connected as illustrated.



## E-BAR based connection diagram

The following figure shows the system connection for the grid system without special requirements.

**Note:** The backup PE line and earthing bar must be grounded properly. Otherwise, the backup function may be inactive during blackout.



## Recommended circuit breakers and RCD

### Circuit breaker

Prepare the inverter AC circuit breakers according to the recommended specifications below:

| Number | Circuit breaker                                          | Recommended rated current (A)                                                                                                                                    |
|--------|----------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ①      | Inverter <b>GRID</b> - with <b>BACK-UP</b> connection    | <ul style="list-style-type: none"> <li>CH2-29.9K-T4: 100</li> <li>CH2-30K-T4: 100</li> <li>CH2-49.9K-T6: 200</li> <li>CH2-50K-T6 / CH2-30K-T6-LV: 200</li> </ul> |
|        | Inverter <b>GRID</b> - without <b>BACK-UP</b> connection | <ul style="list-style-type: none"> <li>CH2-29.9K-T4: 63</li> <li>CH2-30K-T4: 63</li> <li>CH2-49.9K-T6: 100</li> <li>CH2-50K-T6 / CH2-30K-T6-LV: 100</li> </ul>   |
| ⑤      | Inverter <b>BACK-UP</b>                                  | <ul style="list-style-type: none"> <li>CH2-29.9K-T4: 63</li> <li>CH2-30K-T4: 63</li> <li>CH2-49.9K-T6: 100</li> <li>CH2-50K-T6 / CH2-30K-T6-LV: 100</li> </ul>   |

| Number | Circuit breaker     | Recommended rated current (A)                                                                                    |
|--------|---------------------|------------------------------------------------------------------------------------------------------------------|
| ⑦      | Inverter <b>GEN</b> | The rated current must be larger than the rated output current of the diesel generator, but no larger than 200A. |

Table 2.3. Recommended AC breaker specifications

|  <b>NOTICE</b> |  |
|-------------------------------------------------------------------------------------------------|--|
| Do not connect multiple inverters to one AC circuit breaker.                                    |  |

### Residual current device (RCD)

The inverter is integrated with a RCMU that can detect the real time external current leakage. When the detected current exceeds the limitation, the inverter will be disconnected from the grid quickly.

An external residual current device (RCD) can be connected with the inverter to protect the system from tripping when it is required by regional or local regulations.

| Number | RCD                         | Compatible RCD type  | Recommended rated current (mA) |
|--------|-----------------------------|----------------------|--------------------------------|
| ④      | On-grid loads RCD           | <b>A</b> or <b>B</b> | 300                            |
| ⑥      | Inverter <b>BACK-UP</b> RCD | <b>A</b> or <b>B</b> | 300                            |

Table 2.4. Recommended RCD specifications

Prepare the other circuit breakers and RCDs according to the actual grid requirement and local regulations.

## 2.4. Work mode

CH2 series systems support the following working modes:

### AI Mode

The working mode operates with AI Saving enabled. The system leverages AI-powered intelligent scheduling based on forecasts of PV generation, load demand, and electricity pricing to optimally allocate energy sources and usage, minimizing electricity bills and maximizing grid-export revenue.

### Maximum Self-Consumption

When solar power is sufficient, the electricity generated by the PV system is first supplied to the load. Any surplus energy is stored in the battery, and excess electricity is then exported to the grid. When solar power is insufficient, the battery discharges to supply power to the load.

### Time-of-Use (TOU) Mode

In the TOU (time-of-use) mode, the system imports from or exports to the grid during the set period. In this mode, advanced settings like back-mode and peak shaving are available for various power consumption requirements and local grid policies.

**Note:** In this mode, for the non-charging or non-discharging periods, enable the option of **Self-Consumption Mode** on the App so that the system can work in self-consumption mode when the system is not charging or discharging. If this option is disabled during these periods, the system will be at the bypass status and provides no power to the backup loads.

### Micro-Grid Mode

The PV system only supplies power to the loads until the battery reaches the set SOC value. In this case, the system can start up the diesel generator automatically to supply power to the battery and the loads.

### Virtual Power Plant (VPP) Mode

In this mode, the system works according to the scheduling strategy from the VPP platform and related controllers.

### 3. Transportation and storage

#### DANGER

- Observe all safety symbols displayed on the packaging prior to transportation.
- Maintain stable driving conditions throughout transportation to prevent the inverter from colliding or dropping. Otherwise, the internal power components may be damaged, potentially causing short circuits or explosions upon subsequent power-up.
- Ensure that transport vehicles are not overloaded and that weight is distributed evenly.
- Do not drill holes into the product or its housing for any transportation-related purpose. Such modifications can damage the structural integrity and functionality of the device.
- Do not store or transport the equipment in damp, flammable, or explosive environments.

#### WARNING

- When moving the equipment, use the original packaging or dedicated handling tools to avoid muscle strain from lifting heavy objects alone.
- Wear suitable protective gloves when manually handling equipment.
- When lifting the inverter, grip it firmly at the designated handles and support the base. Keep the unit level to avoid dropping.
- Do not unpack the inverter packaging if it is not used immediately.
- Do not store the inverter in areas exposed to direct sunlight, rain, strong electric fields, or high humidity. Such conditions can cause overheating, electrical failure, or corrosion.
- Do not store inverters near chemically corrosive substances or in locations prone to pests or rodents. These can cause irreversible damage to housing and internal components.
- Do not stack heavy objects on top of the inverter enclosure during storage.
- Do not tilt or invert the packaging. Maintain the upright orientation as indicated on the carton to prevent internal displacement or component stress.

#### CAUTION

- The storage temperature must remain between  $-30^{\circ}\text{C}$  and  $+60^{\circ}\text{C}$  ( $-22^{\circ}\text{F}$  to  $+140^{\circ}\text{F}$ ), with relative humidity between 5% and 95% (non-condensing).
- Store inverters in a clean, dry, and well-ventilated area to avoid moisture buildup and overheating.
- Promptly replace any packaging materials that have been damaged by insects or rodents.

#### NOTICE

- It is recommended to retain the original packaging for future relocation or return for repair.
- Before long-term storage (exceeding 6 months), ensure the storage environment meets requirements and periodically inspect the packaging integrity. Check for environmental damage, pest intrusion, or packaging degradation.



### 3.1. Transportation equipment

The installers need to prepare proper equipment for transporting and lifting the product.

#### Forklift

Use a forklift to move or lift the inverter with package. Keep no more than four inverters in one stack during transportation.

The forklift must meet the following requirements:

- The load capacity must be greater than one ton.
- The length of the fork blades must be greater than 1.2 meters. Use fork extensions if needed.
- The fork blades can slide under the bottom of the stack for lifting and moving.

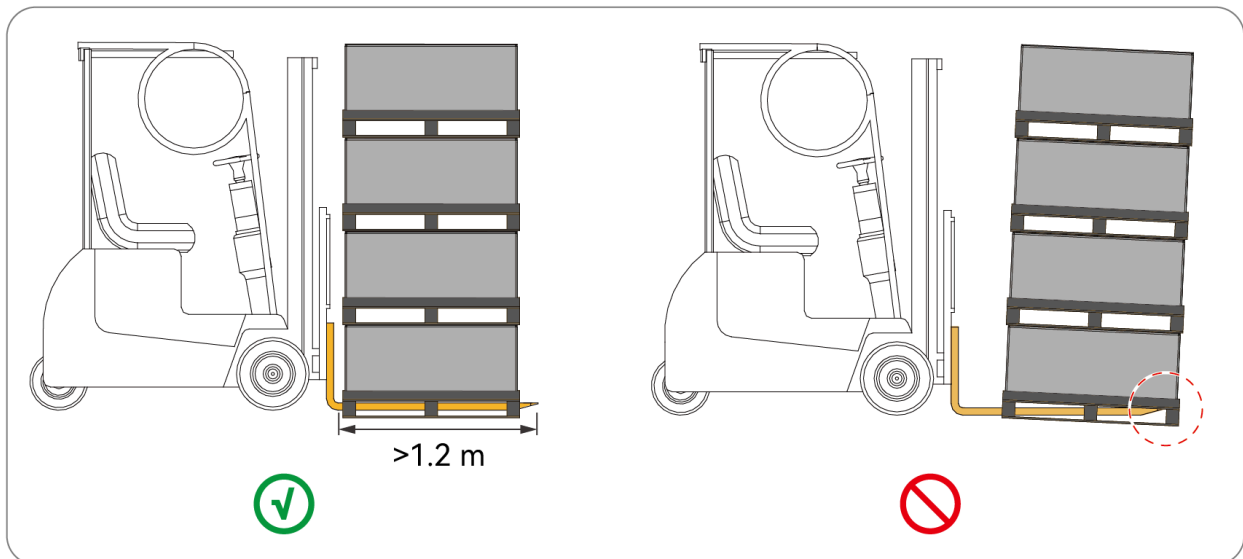


Figure 3.1. Moving with forklift

## 4. Installation instructions

### 4.1. Installation preparation

Read the following sections to determine the installation site.

The safety regulations vary in different countries and regions. Follow local safety regulations.

#### 4.1.1. Precautions

For safety, be sure to read all the safety instructions carefully prior to any work and observe the appropriate rules and regulations of the country or region where you install the product.



#### **DANGER**

**Danger to life due to potential fire or electric shock.**

Do not install the product near any inflammable or explosive items.



#### **NOTICE**

**This equipment meets the pollution degree.**

- Inappropriate or unharmonised installation environment may jeopardize the life span of the product.
- The installation site must be well ventilated.

#### 4.1.2. Installation environment requirement

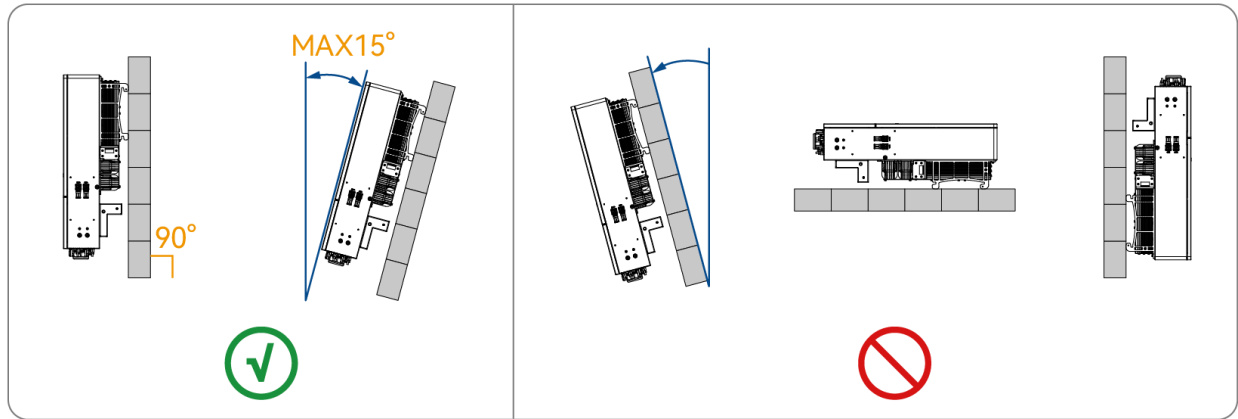
It is strongly suggested to install the product in an outdoor location, that is more than 2000 meters from the coast. When selecting the installation location, follow the guidelines below:

- Consult the dealer or SAJ technical support when the distance from the installation location to the coast is between 500 and 2000 meters. Do not install the product within 500 meters from the coast.
- Do not install the product in areas affected by salt damage or pollution which can lead to corrosion of the equipment.
- Do not install the product in areas with moderate or heavy dust pollution, metallic dust pollution, saline-alkali land, corrosive gas pollution, or corrosive rainwater pollution.
- Keep the air inlet and outlet at the installation site clear. If natural airflow is insufficient, add extra ventilation and consult SAJ for assistance.
- The installation environment must be free of inflammable or explosive materials.
- The product must be installed in a place away from any heat source.
- Do not install the product at a place where the temperature changes extremely.
- The height of the product from the ground should be considered to prevent the equipment from soaking in water. The specific height is determined by the site environment.

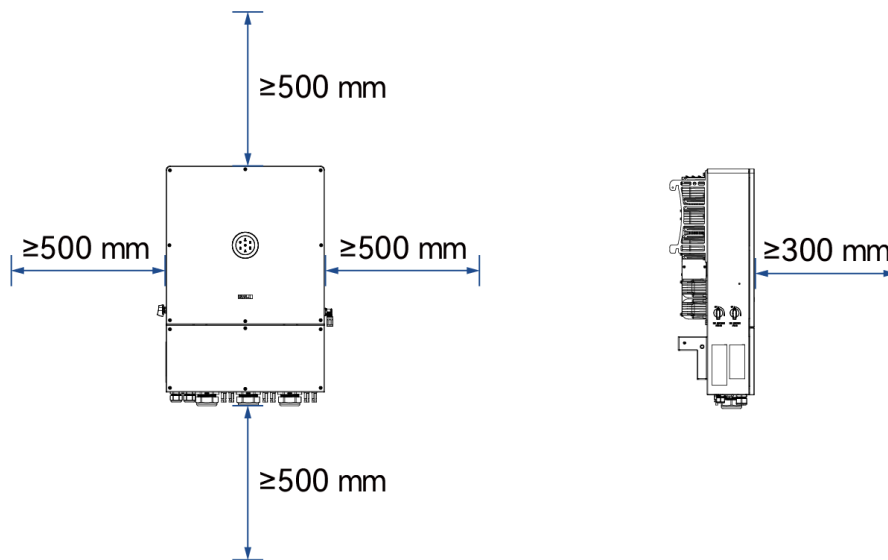
### 4.1.3. Plan the installation site

This device is equipped with an air conditioner for cooling and provides the ingress protection of IP 55 (Battery) and IP66 (Inverter). The device can be installed either indoors or outdoors. For outdoor installation, the equipment shall be installed in an environment of Pollution Degree 3.

1. Install the inverter vertically. Do not install it backward-tilted, forward-tilted, or horizontally.



2. Poor air ventilation will affect the working performance of internal electronic components and shorten the service life of the system. Reserve enough clearance around the product to ensure a good air circulation at the installation area.



#### 4.1.4. Installation tools

Installation tools include but are not limited to the following recommended ones. Use other auxiliary tools on site if necessary.

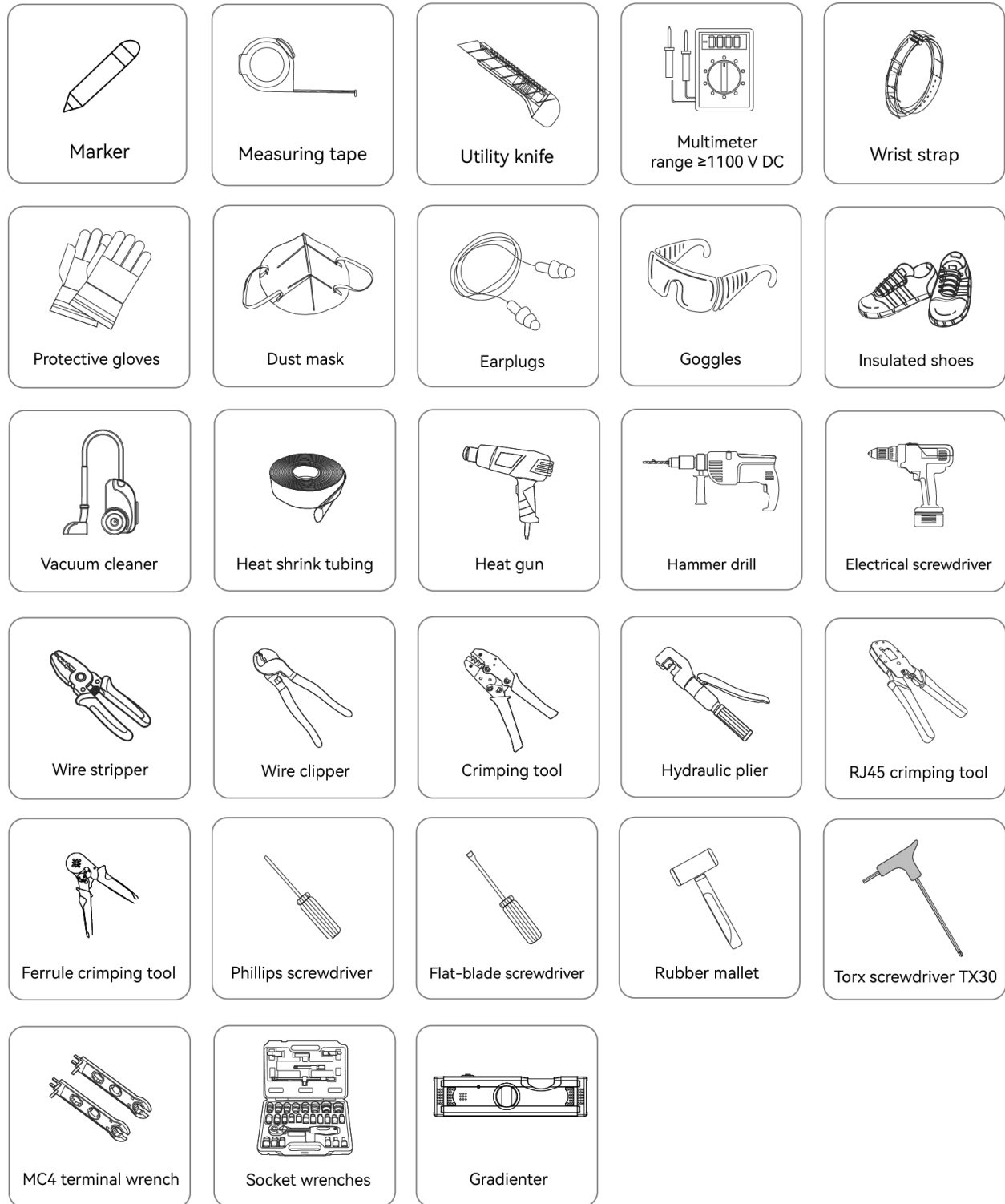
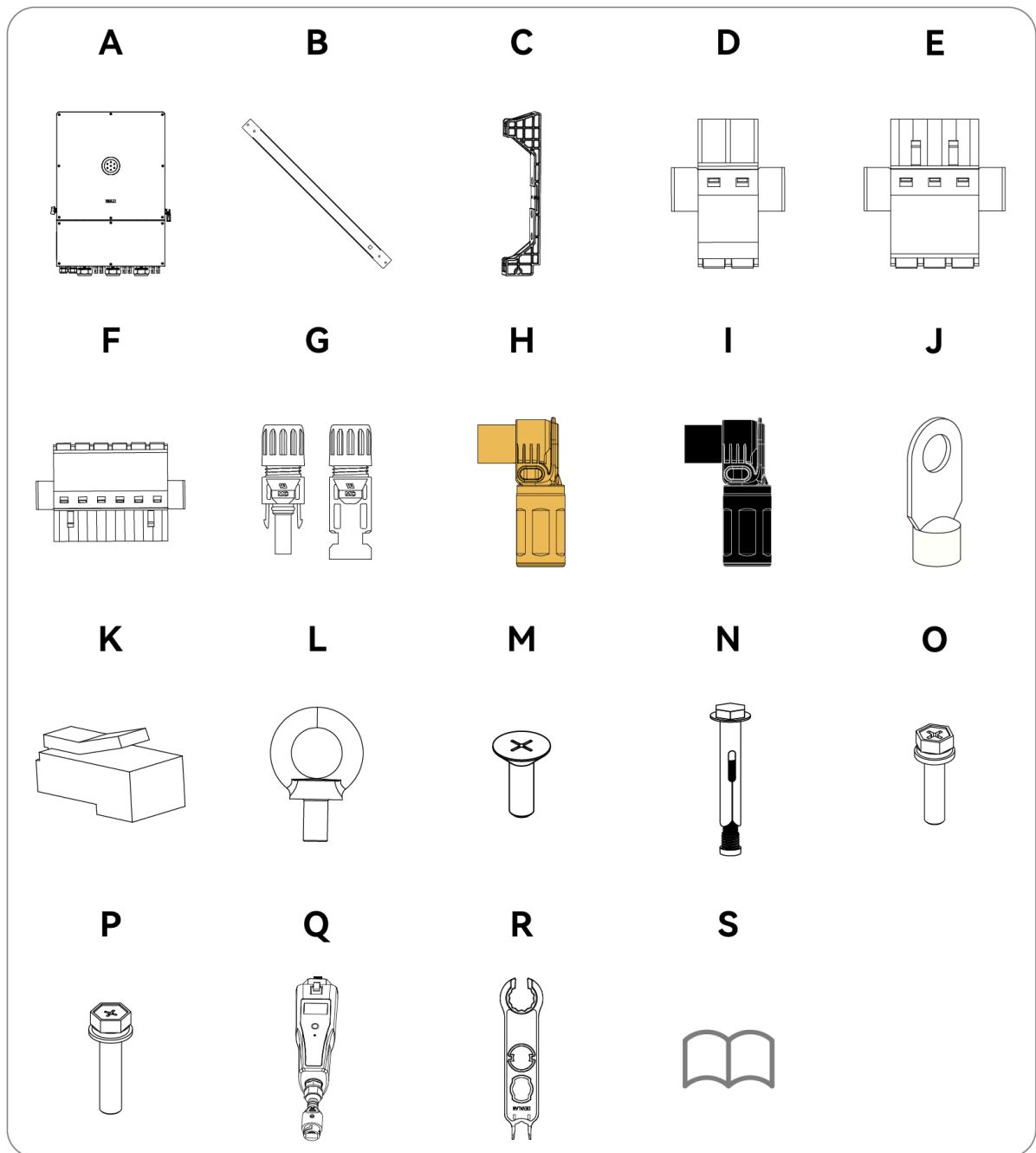


Figure 4.1. Suggested installation tools

#### 4.1.5. Packing list



| Number | Quantity                                  | Designation                         |
|--------|-------------------------------------------|-------------------------------------|
| A      | 1                                         | CH2 inverter                        |
| B      | 1                                         | Back panel                          |
| C      | 2                                         | Side bracket                        |
| D      | 2                                         | 2-pin communication connector       |
| E      | 4                                         | 3-pin communication connector       |
| F      | 4                                         | 6-pin communication connector       |
| G      | T4 models: 8 pairs<br>T6 models: 12 pairs | PV positive and negative connectors |
| H      | 1                                         | Positive battery connector (Orange) |

| Number | Quantity                                                                                                        | Designation                        |
|--------|-----------------------------------------------------------------------------------------------------------------|------------------------------------|
| I      | 1                                                                                                               | Negative battery connector (Black) |
| J      | <ul style="list-style-type: none"> <li>• RNBS 38-8: 5</li> <li>• RNB70-10: 12</li> <li>• SC50-10: 12</li> </ul> | OT/DT terminals                    |
| K      | 10                                                                                                              | RJ45 plug                          |
| L      | 2                                                                                                               | M12x20 eye bolts                   |
| M      | 4                                                                                                               | M4x10 flat-head screw              |
| N      | 4                                                                                                               | M10x100 expansion bolt             |
| O      | 2                                                                                                               | M6x30 screw                        |
| P      | 4                                                                                                               | M10x45 screw                       |
| Q      | 1                                                                                                               | Communication module               |
| R      | 1                                                                                                               | PV connector removal tool          |
| S      | 1                                                                                                               | Document                           |

## 4.2. Mount the inverter

Select one of the following options to mount the inverter:

- Mount the inverter on the wall.
- Mount the inverter on a frame. With this option, the installer needs to prepare the frame that can bear the weight of the inverter. Four M10x45 screws are provided in the delivery for securing the mounting bracket to the frame.

### 4.2.1. Mount the inverter on wall

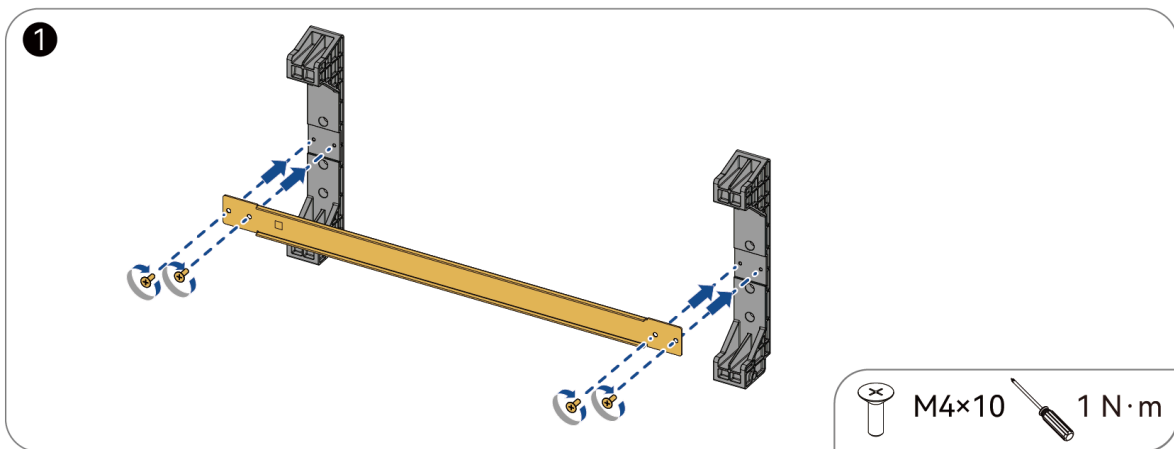


**CAUTION**

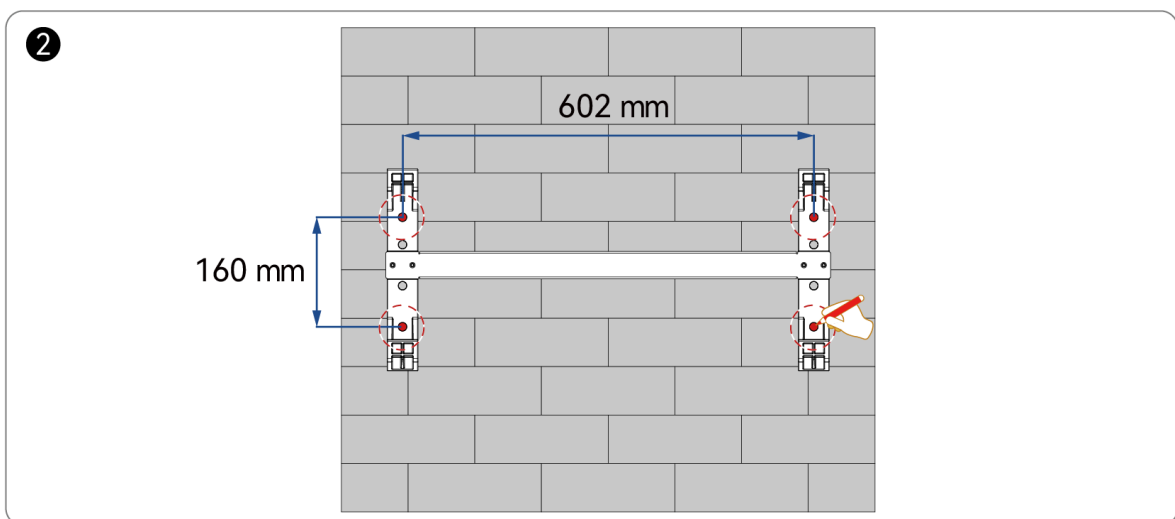
Make sure that the wall can bear the weight of the inverter and the accessories.

#### Procedure

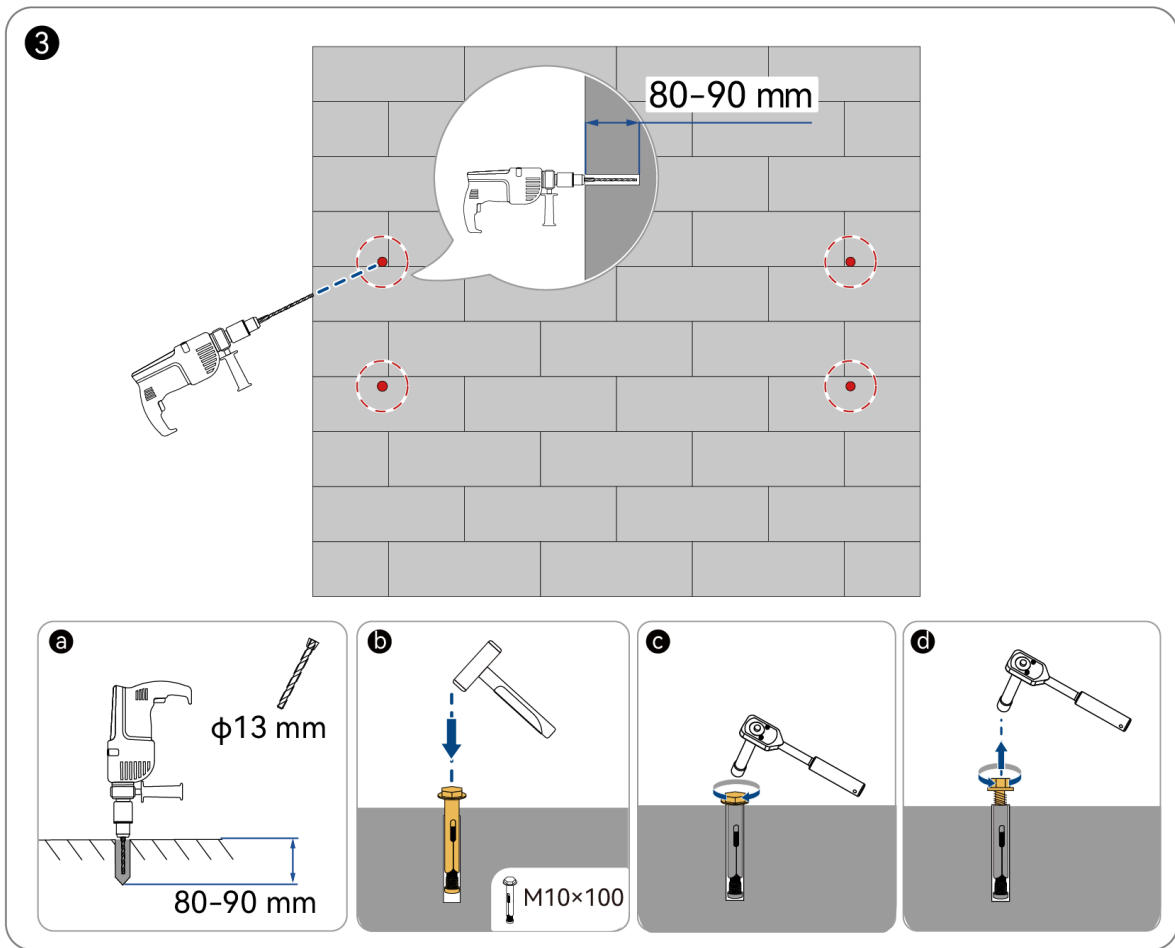
1. Secure the back panel with the two side brackets to assemble the mounting bracket.



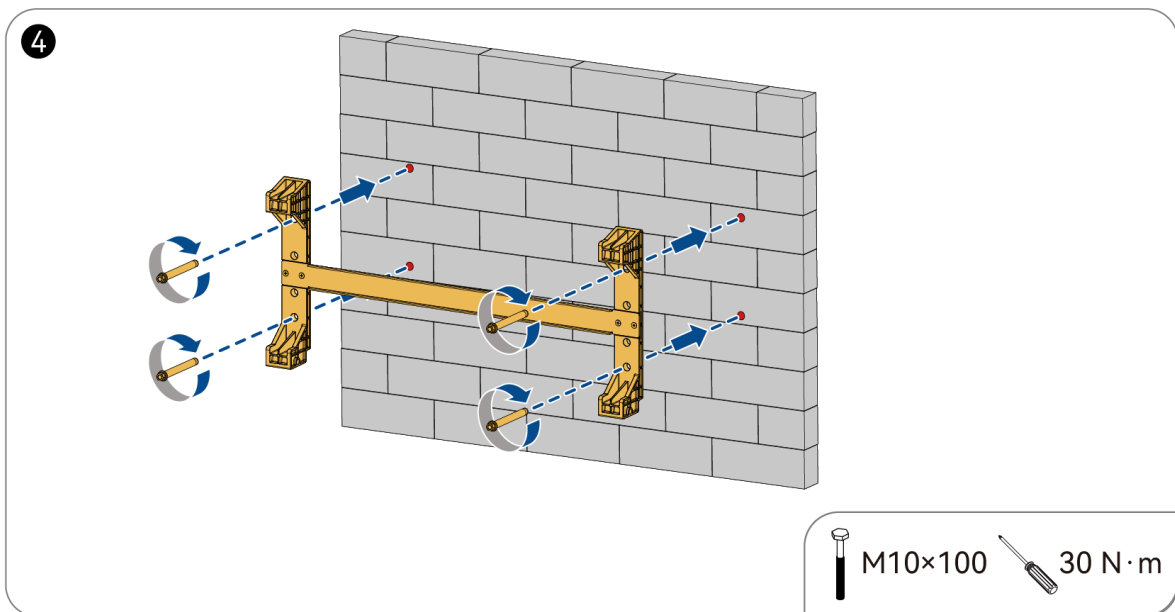
2. Mark the drilling positions on the wall with the mounting bracket.



3. Drill four holes at the depth of 80-90 mm in the wall and place the expansion tubes in the holes using a rubber mallet.

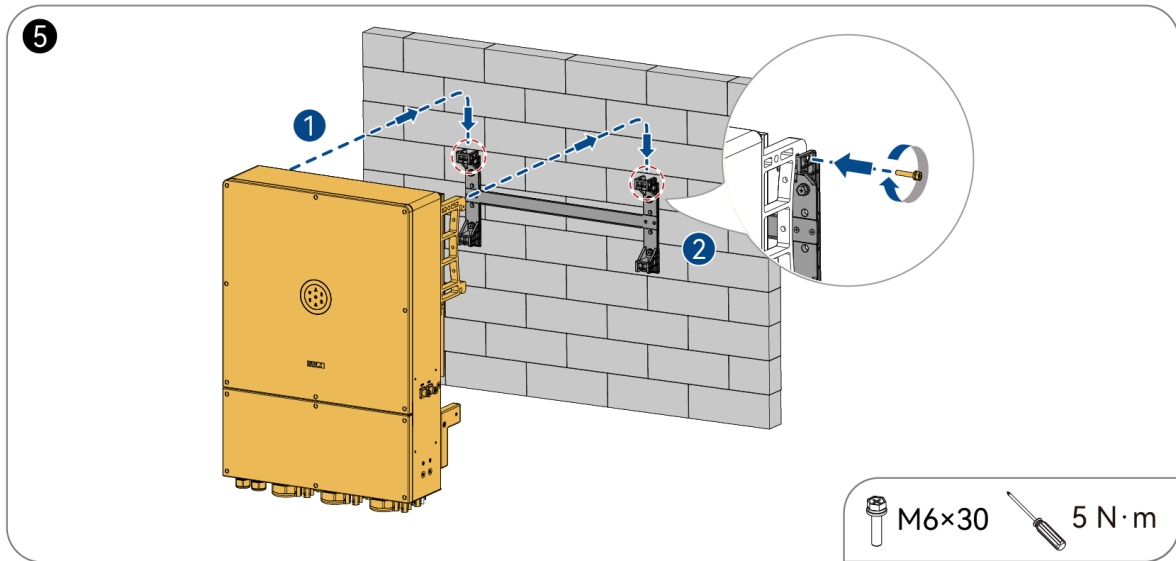


4. Secure the mounting bracket to the wall with screws.





5. Carefully mount the inverter onto the mounting bracket. Make sure that the rear part of the inverter is closely mounted into the bracket. Secure the inverter to the mounting bracket with one screw on each side.



## 4.2.2. Mount the inverter on external frame

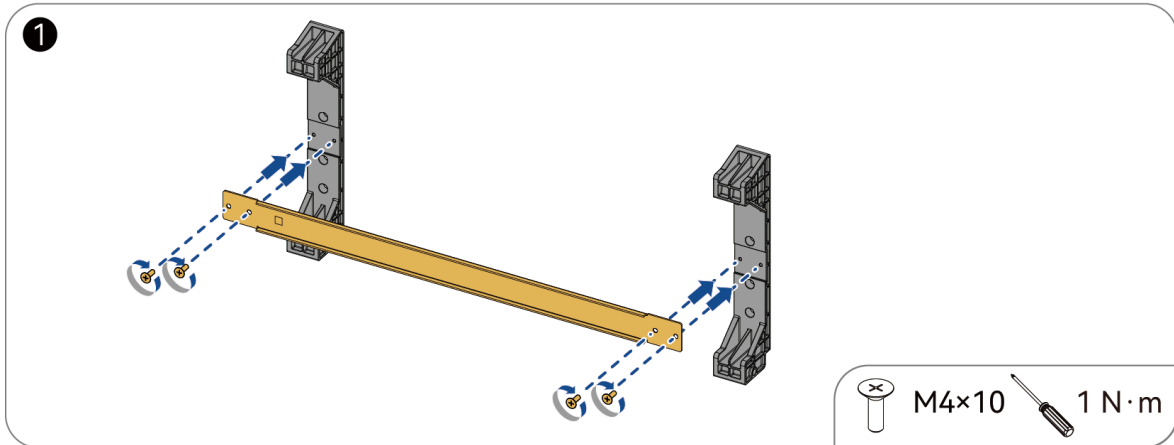


**CAUTION**

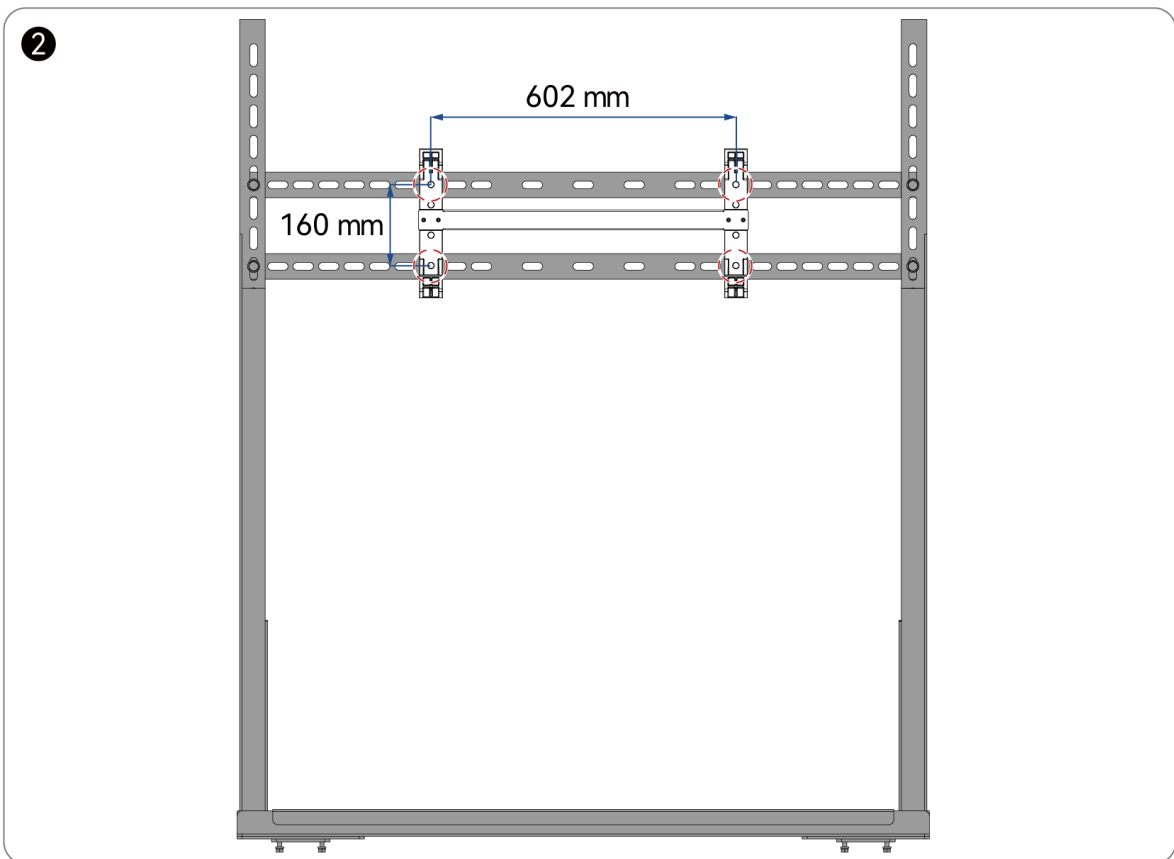
Make sure that the frame can bear the weight of the inverter and the accessories.

### Procedure

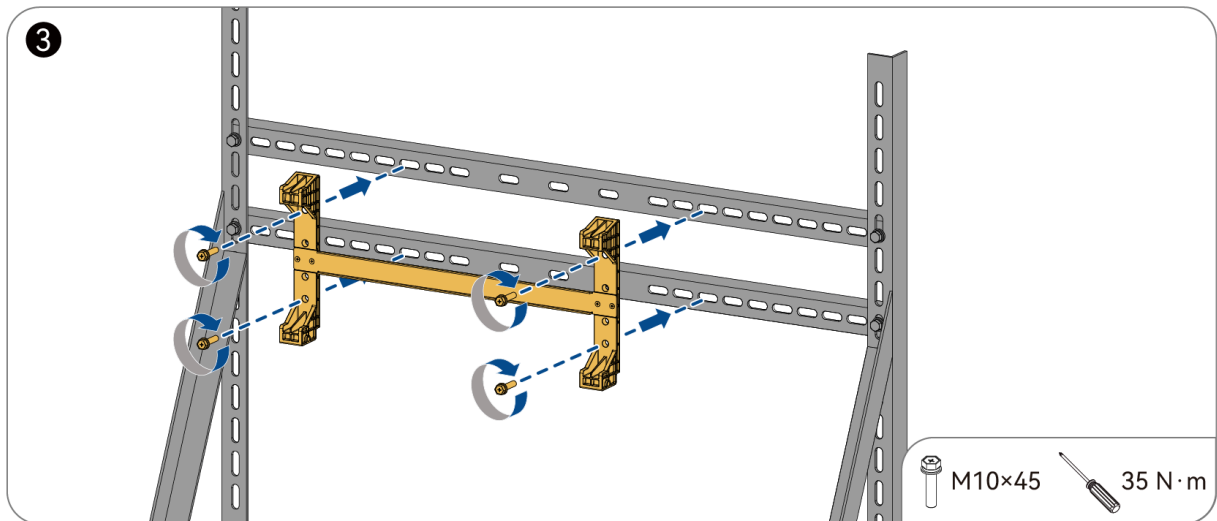
1. Secure the back panel with the two side brackets to assemble the mounting bracket.



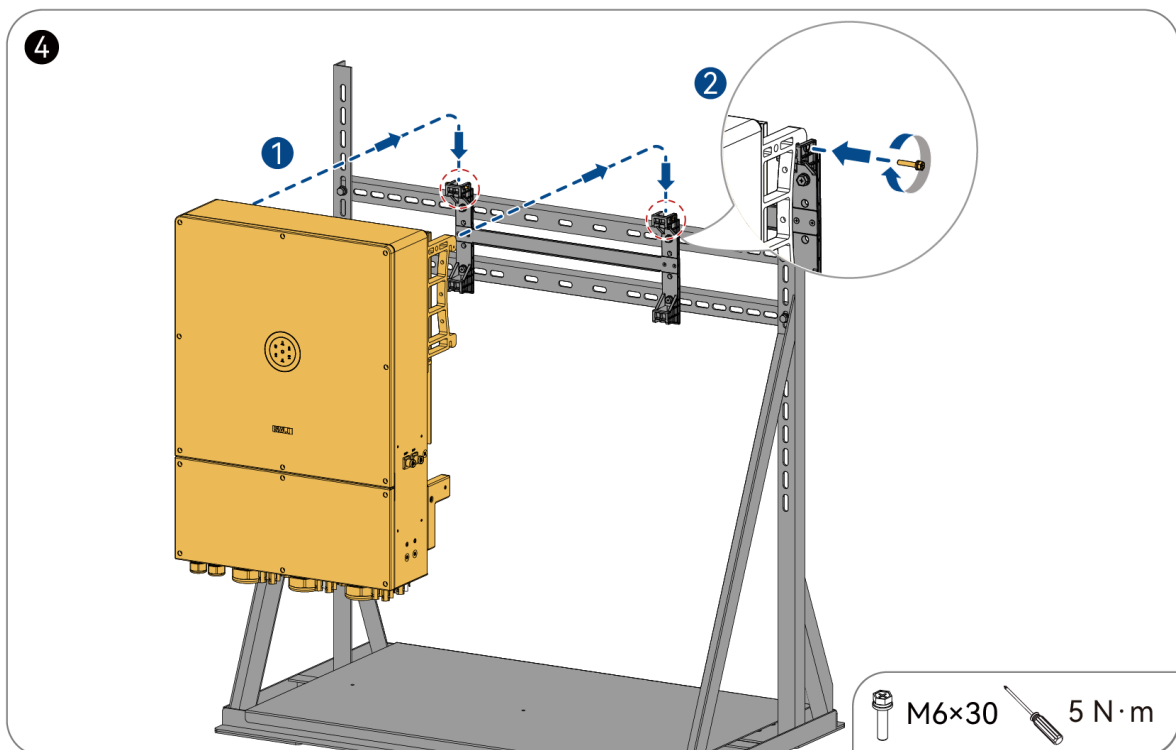
2. Drill four holes on the frame or adjust the existing positions of the frame according to the size of the mounting bracket.



3. Secure the mounting bracket to the frame with screws.



4. Carefully mount the inverter onto the mounting bracket. Make sure that the rear part of the inverter is closely mounted into the bracket. Secure the inverter to the mounting bracket with one screw on each side.



## 5. Electrical connection

### 5.1. Electrical connection safety

Electrical connection must only be operated by professional technicians. Before the operation, the technicians must wear necessary personal protective equipment (PPE) including insulating gloves, insulating shoes, and a safety helmet.



#### DANGER

**Danger to life due to potential fire or electricity shock.**

- Do not install the cabinet near any inflammable or explosive items.
- When it is powered on, the equipment should comply with national rules and regulations.



#### WARNING

Any improper operation during cable connection can cause device damage or personal injury.

#### 5.1.1. Wiring guidelines

- The selection, installation, and routing of cables must comply with local laws, regulations, and standards.
- During the placement of power cables, avoid coiling or twisting. If a power cable is found to be too short, replace it entirely; do not create splices or weld joints within the cable.
- Ensure that all cables are firmly connected, have good insulation, and are appropriately sized for their application.
- Cable trays and pass-through holes should not have sharp edges. Use protective measures at conduit entrances or pass-through holes to prevent damage to cables from sharp edges or burrs.
- Group similar types of cables together and secure them neatly, ensuring they lie flat and straight without damage to the outer jacket. Different types of cables should be laid separately to avoid entanglement or crossing.
- For buried cables, use cable supports and clamps to securely fix them in place. Ensure that backfilled soil around underground cables is compacted to prevent deformation or damage during the backfilling process.
- When external conditions like installation methods or ambient temperatures change, verify the cable selection according to local regulations to ensure parameters like current-carrying capacity.
- To prevent insulation aging or damage due to high temperatures, maintain a minimum distance of 30 mm between cables and heat-generating components or heat source peripheries.

#### 5.1.2. Ground protection

- Follow the grounding guidelines below for the equipment which is critical to ensure electrical safety and compliance with local standards:
- The impedance of the equipment's grounding system must meet the requirements specified by local electrical standards.
- The equipment must be permanently connected to a protective ground. Before operating the equipment, always check the electrical connections to ensure that the equipment is reliably grounded.
- It is strictly prohibited to operate the equipment if the grounding conductor has not been installed.
- Do not damage or tamper with the grounding conductor in any way.

### 5.1.3. AC- and DC-side handling

- Before installing or removing power cables, turn off all switches on both the AC and DC sides to ensure that no electrical flows through the system during the operation.
- Prior to connecting the AC side cables, verify that the phase sequence of the three-phase cables matches the silk-screen markings on the cable connectors.
- If the equipment has multiple input and output paths, disconnect all inputs and outputs before proceeding. After ensuring all power sources are disconnected, wait for at least 5 minutes to allow any residual charge in capacitors or other components to dissipate. Only then should you perform any operations on the equipment.

### 5.1.4. Electrostatic Discharge (ESD) Protection



#### CAUTION

Contact with or improper handling of printed circuit boards or other electrostatic discharge sensitive components can lead to device damage.

- Avoid unnecessary contact with circuit boards.
- Adhere to ESD protection standards, such as wearing an anti-static wrist strap.

### 5.1.5. Earth fault alarm monitoring

This inverter is of transformer-less design and therefore does not provide galvanic isolation between the DC and AC sides. To comply with safety requirements, it incorporates earth fault alarm monitoring function in accordance with IEC 62109-2, *clause 13.9*. This function continuously checks the insulation resistance of the PV array to earth.

If an earth fault is detected due to damaged cables, moisture ingress or similar reasons, the inverter responds as follows:

- The LED light illuminates **red**.
- An error code **<31>** is displayed in the elekeeper App.



#### NOTICE

This inverter **must not be connected to functionally earthed PV arrays**, where either the positive or negative pole is permanently connected to earth. Such installations would be interpreted as a permanent earth fault, causing continuous false alarms and potentially damaging the inverter's internal circuitry.

## 5.2. Plan the cable connections

### 5.2.1. Single deployment

#### On-grid and backup

The following diagram shows the system connections of a single machine where both the backup and the on-grid loads are enabled.

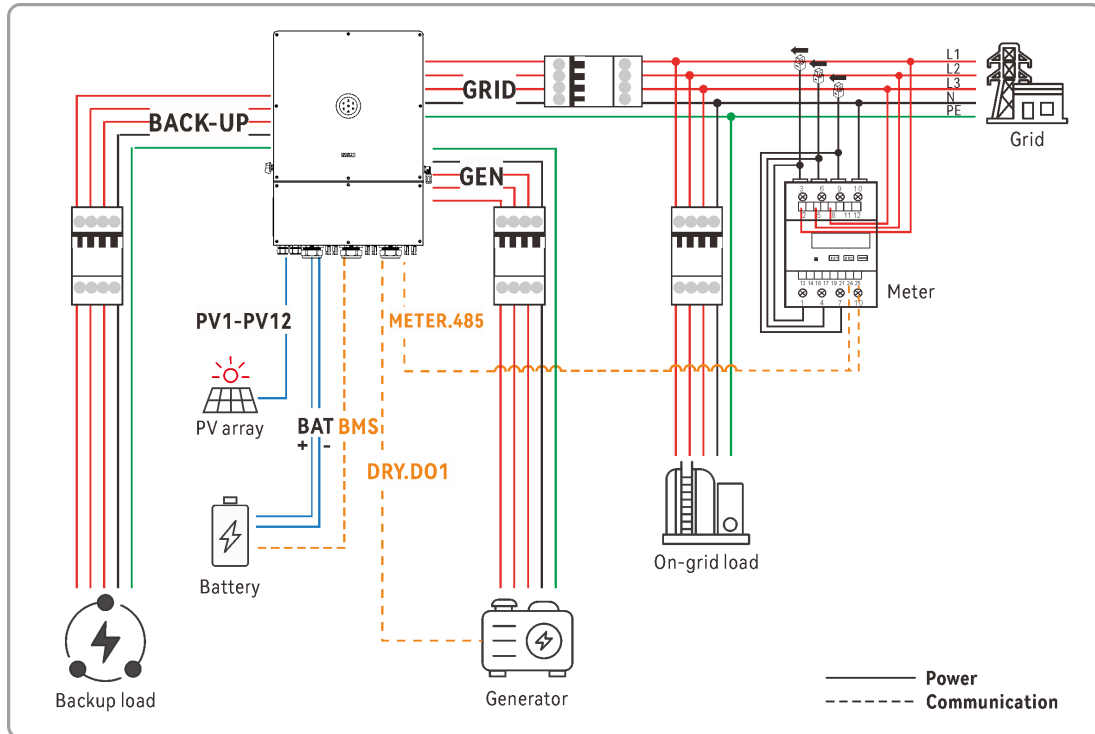


Figure 5.1. Single deployment with on-grid and backup connections

## On-grid only

The following diagram shows the system connections of a single machine where only the on-grid loads are enabled.

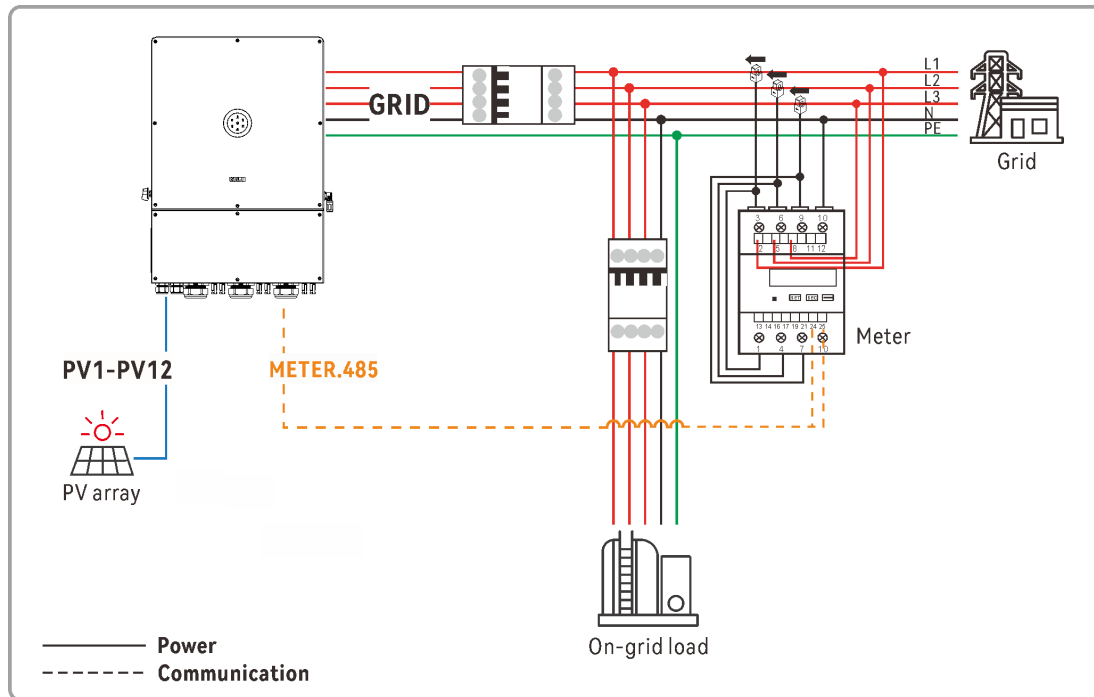


Figure 5.2. Single deployment with on-grid connection

## 5.2.2. Parallel deployment

The CH2 inverters support parallel deployment of 10 inverters at maximum for different application scenarios.

### On-grid and backup

The following diagram shows the system connections of parallel deployment where both the backup and the on-grid loads are enabled.

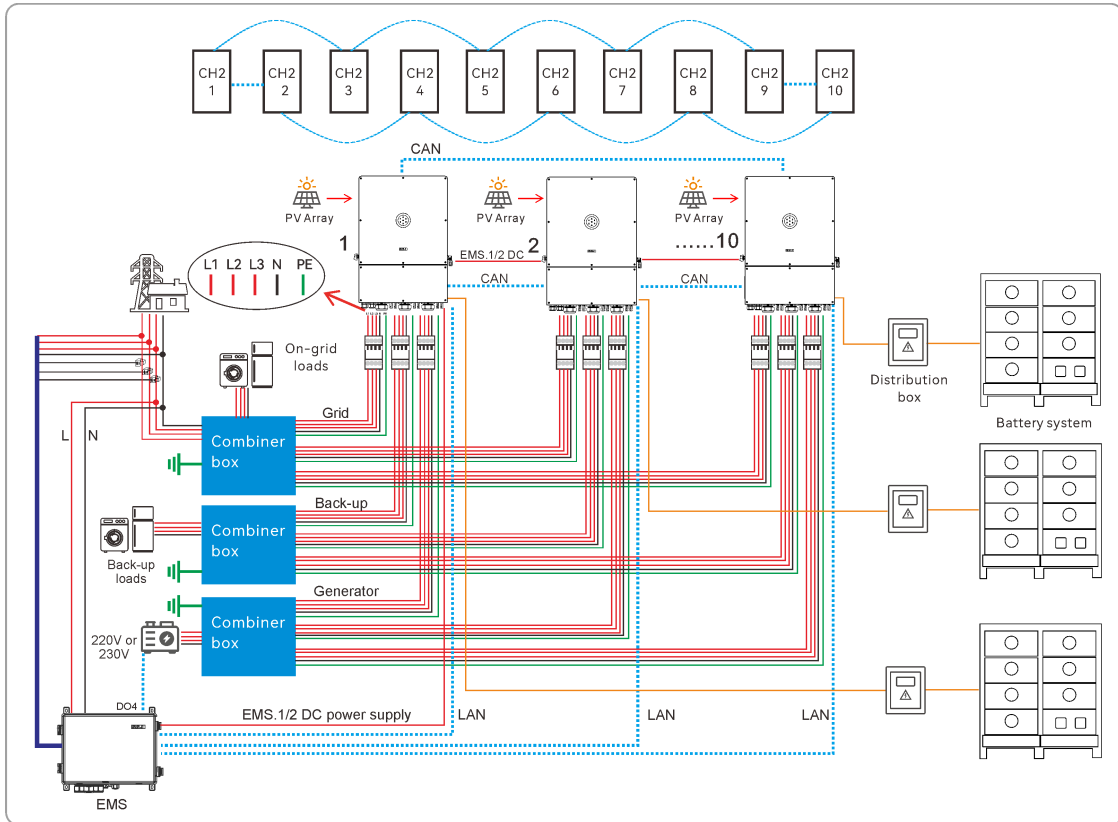


Figure 5.3. Parallel deployment with on-grid connection



The following figure shows the detailed cable connections of EMS:

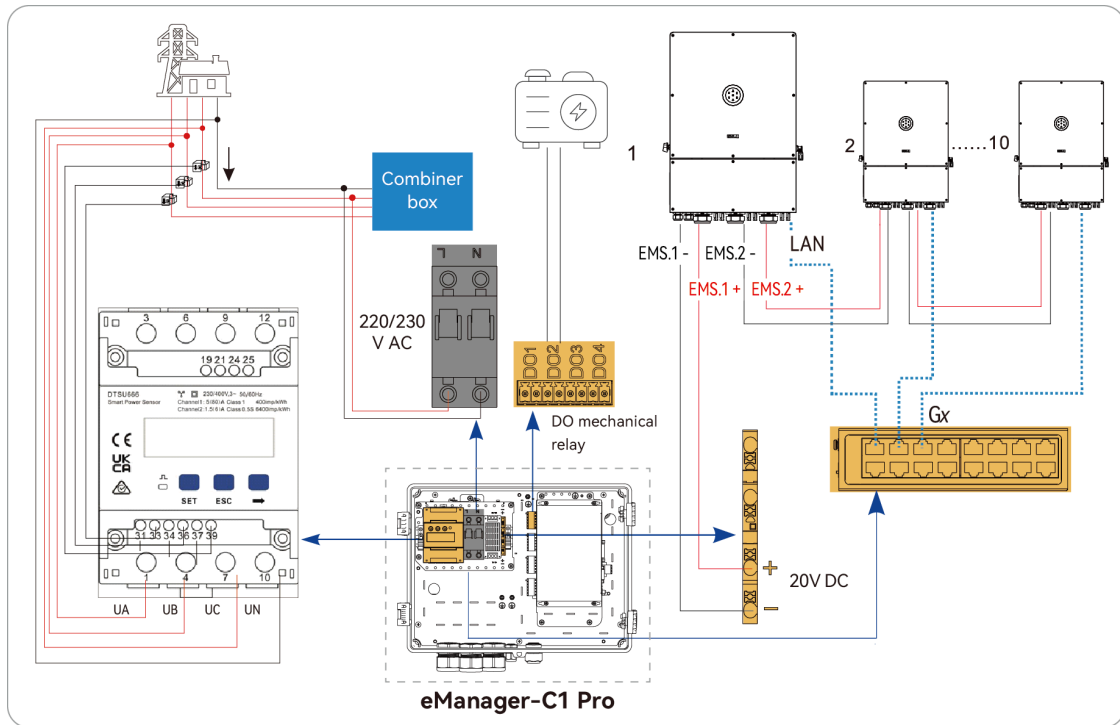


Figure 5.4. EMS cable connections in parallel deployment

## On-grid only

The following diagram shows the system connections of parallel deployment where only the on-grid loads are enabled.

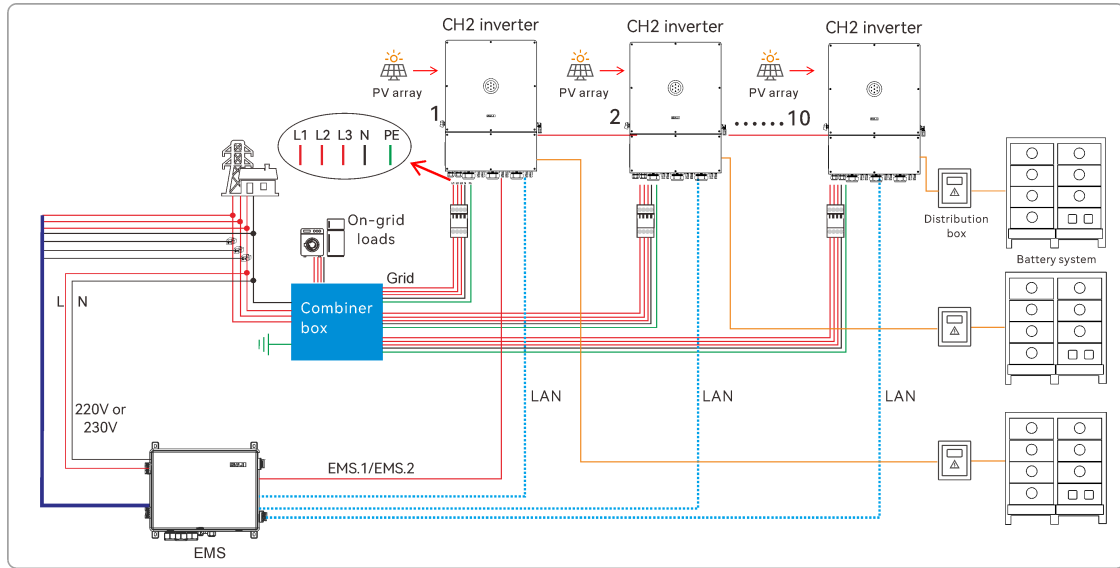


Figure 5.5. Parallel deployment with on-grid connection

### Note:

In this case, prepare a circuit breaker between the inverter and the battery system according to the rated energy of the battery system.

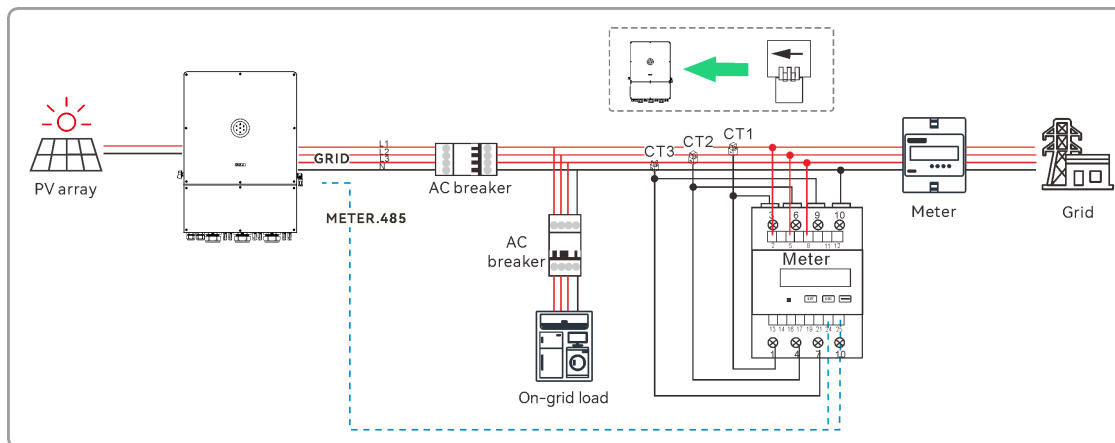
### 5.2.3. Meter connection solutions

CH2 series inverters support the following meter connection solutions. Plan the meter connection according to actual customer requirements.

For customized requirements and solutions, contact SAJ product support.

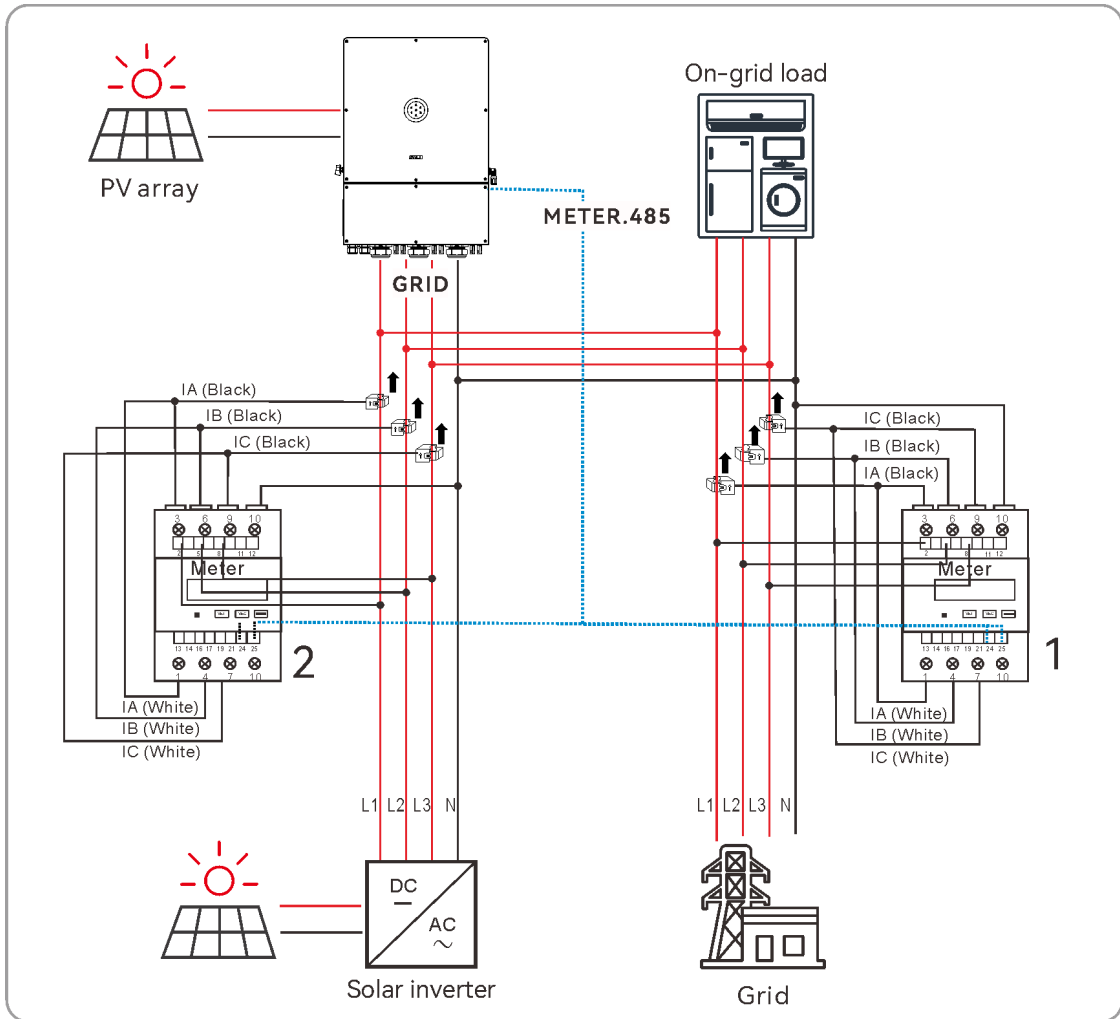
#### One meter for single deployment

The directional arrow on the CT must point towards the inverter.



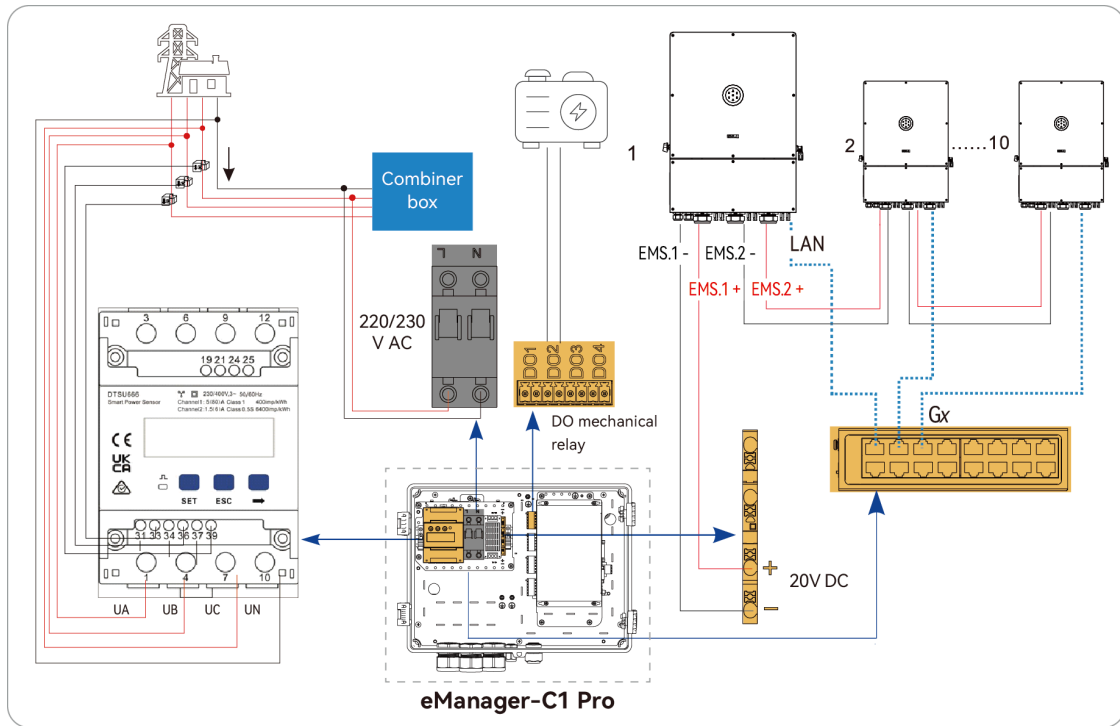
## Two meters for single deployment with a solar inverter

The second PV meter can be installed for the solar inverter and reports data to CH2 through RS485 connection.



## Parallel deployment

In parallel deployment, follow the diagram below to connect to the meter integrated in the EMS communication box. During commissioning, configure the export limit control function on the elekeeper App according to local grid requirements and regulations.



### 5.3. Prepare electrical cables

Prepare the items listed in this section before installation.

#### Grounding cable

| Cable type                           | Conductor cross-sectional area (mm <sup>2</sup> ) | Connecting terminal                |
|--------------------------------------|---------------------------------------------------|------------------------------------|
| Outdoor multi-core copper wire cable | 35                                                | RNB38-8 OT terminal in the package |

Table 5.1. Grounding cable

#### PV power cables

| Cable type                                    | Conductor cross-sectional area (mm <sup>2</sup> ) | Maximum current (A) |
|-----------------------------------------------|---------------------------------------------------|---------------------|
| Outdoor single-conductor PV cable (≥1000V DC) | 4.0-6.0                                           | 30-35               |

Table 5.2. PV power cable

#### Communication cables

| Port                                                                                | Cable type / Connecting terminal                                                                             | Maximum length (m) |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|--------------------|
| <ul style="list-style-type: none"> <li>METER.485</li> <li>EMS</li> </ul>            | Standard CAT6 outdoor shielded network cable. Use the RJ45 connectors in the package to assemble the cables. | 300                |
| <ul style="list-style-type: none"> <li>LAN</li> <li>Parallel1, Parallel2</li> </ul> |                                                                                                              | 100                |
| <ul style="list-style-type: none"> <li>BMS.1</li> <li>BMS.3</li> </ul>              |                                                                                                              | 20                 |

Table 5.3. RJ45 communication cables

| Cable type                                              | Conductor cross-sectional area (mm <sup>2</sup> ) | Connecting terminal                                                                 |
|---------------------------------------------------------|---------------------------------------------------|-------------------------------------------------------------------------------------|
| Multi-core high-temperature outdoor communication cable | 0.20-3.31                                         | 2/3/6-pin connectors installed on the communication terminal block of the inverter. |

Table 5.4. 2/3/6-pin communication cables

## AC power cables - single deployment

**Cable type:** Outdoor multi-core high-temperature cable ( $\geq 400V$ )

The following table specifies the required **GRID**, **GEN**, and **BACK-UP** AC cable gauges when the backup output is active in single deployment. Under this configuration, the Grid and the Generator are capable of powering the backup loads and simultaneously charging the battery.

| Model         | Cable cross-sectional area (mm <sup>2</sup> ) |             | Conductor material |
|---------------|-----------------------------------------------|-------------|--------------------|
|               | Range                                         | Recommended |                    |
| CH2-29.9K-T4  | 16-35                                         | 25          | Copper             |
| CH2-30K-T4    | 16-35                                         | 25          |                    |
| CH2-49.9K-T6  | 25-70                                         | 50          |                    |
| CH2-50K-T6    | 25-70                                         | 50          |                    |
| CH2-30K-T6-LV |                                               |             |                    |

Table 5.5. Single deployment with on-grid and backup connections

The following table specifies the required **GRID** AC cable gauges when the backup output is disabled in single deployment:

| Model         | Cable cross-sectional area (mm <sup>2</sup> ) |             | Conductor material |
|---------------|-----------------------------------------------|-------------|--------------------|
|               | Range                                         | Recommended |                    |
| CH2-29.9K-T4  | 16-35                                         | 16          | Copper             |
| CH2-30K-T4    | 16-35                                         | 16          |                    |
| CH2-49.9K-T6  | 25-70                                         | 25          |                    |
| CH2-50K-T6    | 25-70                                         | 25          |                    |
| CH2-30K-T6-LV |                                               |             |                    |

Table 5.6. Single deployment with on-grid connection

### Note:

When the grid-connection distance is large, select AC cables with larger diameter for the actual condition.

## AC power cables - parallel deployment

**Cable type:** Outdoor multi-core high-temperature cable ( $\geq 400V$ )

The following table specifies the required **GRID**, **GEN**, and **BACK-UP** AC cable gauges when the backup output is active in parallel deployment.

| Model         | Cable cross-sectional area (mm <sup>2</sup> ) |             | Conductor material |
|---------------|-----------------------------------------------|-------------|--------------------|
|               | Range                                         | Recommended |                    |
| CH2-49.9K-T6  | 70-120                                        | 70          | Copper             |
| CH2-50K-T6    | 70-120                                        | 70          |                    |
| CH2-30K-T6-LV |                                               |             |                    |

Table 5.7. Parallel deployment with on-grid and backup connections

**Note:** When the backup output is active, the power cable length must meet the following requirements:

- All the power cables from the **BACK-UP** terminals of the inverters in the combined cabinet to the combiner box shall be of equal length.
- All the power cables from the **GEN** terminals of the inverters in the combined cabinet to the combiner box shall be of equal length.

The following table specifies the required **GRID** AC cable gauges when the backup output is disabled in parallel deployment:

| Model         | Cable cross-sectional area (mm <sup>2</sup> ) |             | Conductor material |
|---------------|-----------------------------------------------|-------------|--------------------|
|               | Range                                         | Recommended |                    |
| CH2-49.9K-T6  | 25-70                                         | 25          | Copper             |
| CH2-50K-T6    | 25-70                                         | 25          |                    |
| CH2-30K-T6-LV |                                               |             |                    |

Table 5.8. Parallel deployment with on-grid connection

**Note:**

When the grid-connection distance is large, select AC cables with larger diameter for the actual condition.

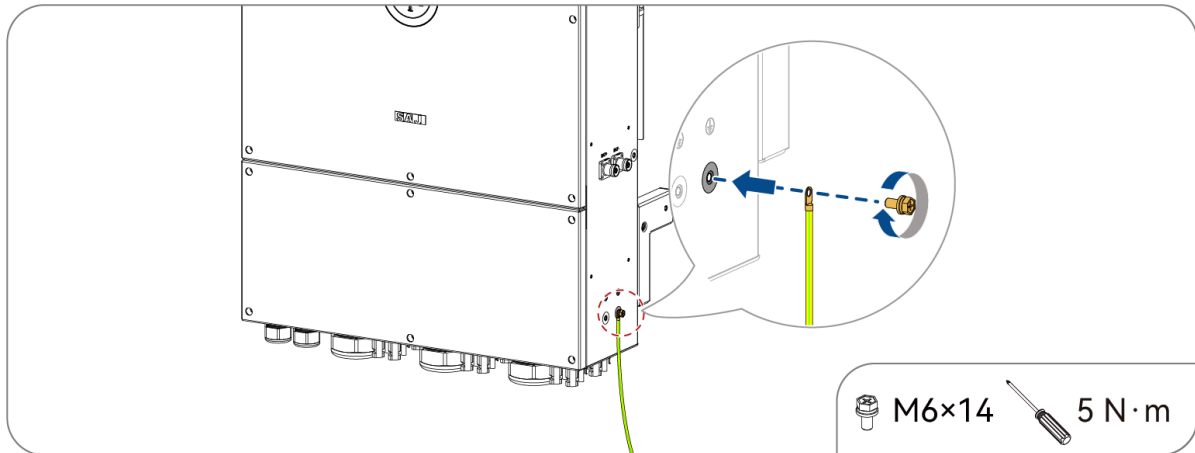


## 5.4. Connect the grounding cable



### WARNING

Connect the grounding cable before other electrical connections.



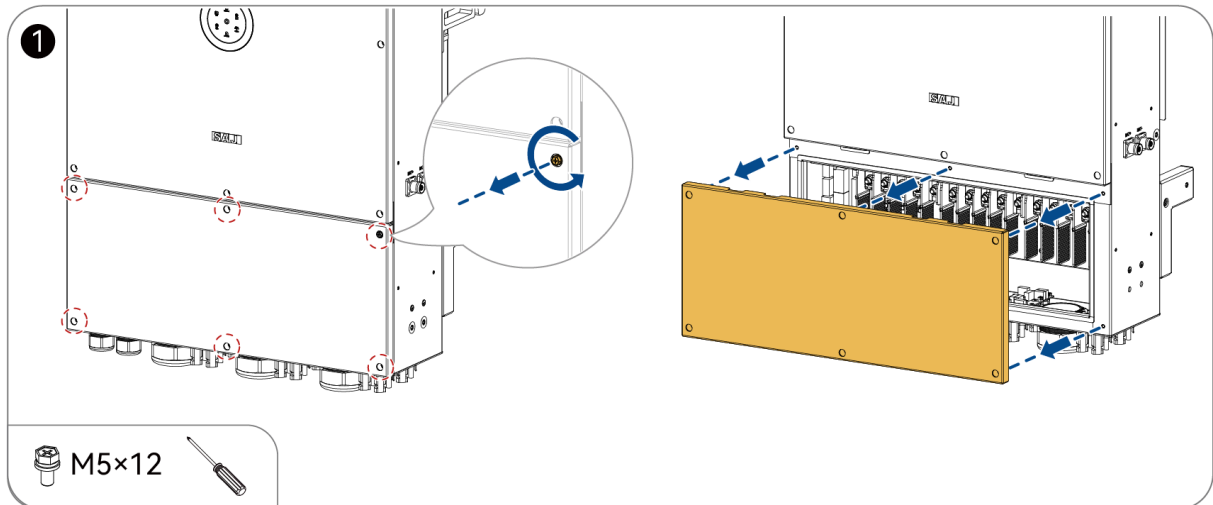
### Procedure

1. Assemble the cable with the RNBS38-8 OT/DT terminal.
2. Remove the screw from one of the grounding terminal, insert the screw through the OT/DT terminal, and tighten the cable with the screw.  
Two grounding connection points are provided for cable connection convenience. Select one of the ports for connection.
3. Connect the other cable end to the external earthing bar.

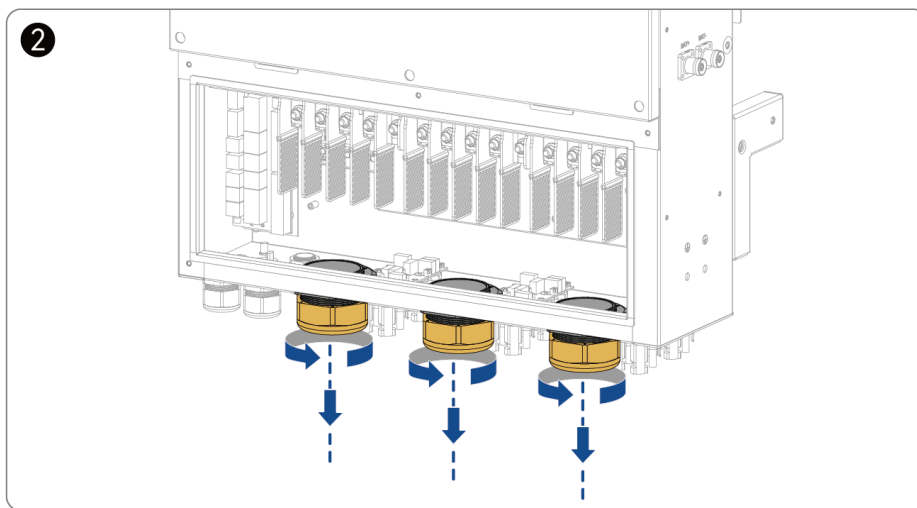
## 5.5. Connect the AC power cables

### Procedure

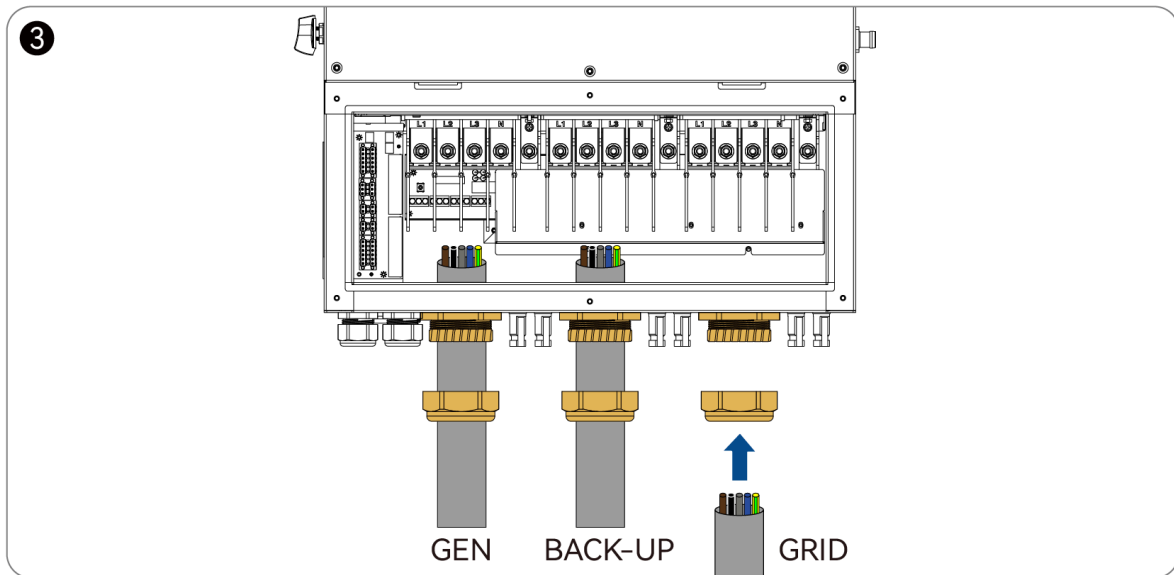
1. Remove the front cable cover of the inverter.



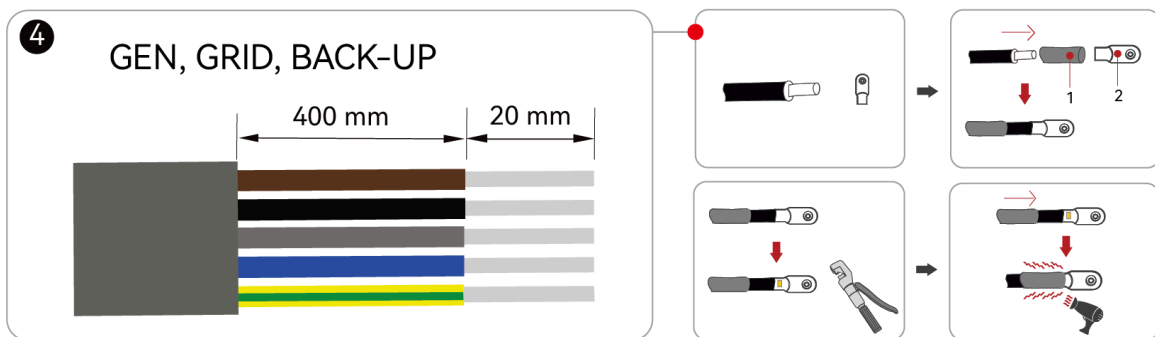
2. Loosen the water-proof nuts of **GEN**, **BACK-UP**, and **GRID** cable glands at the bottom of the inverter.



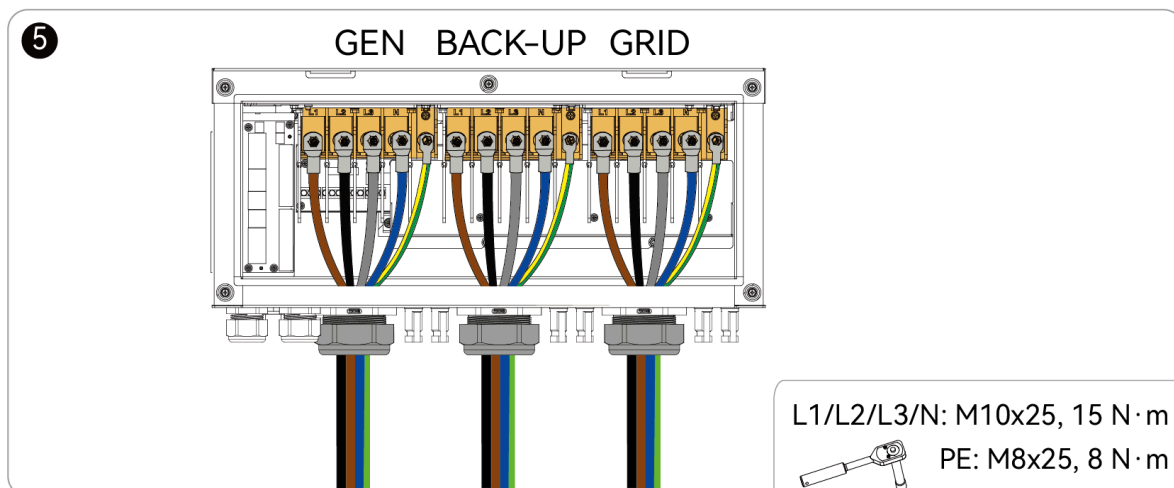
3. Pass the AC cables through the corresponding cable glands at the bottom of the inverter.



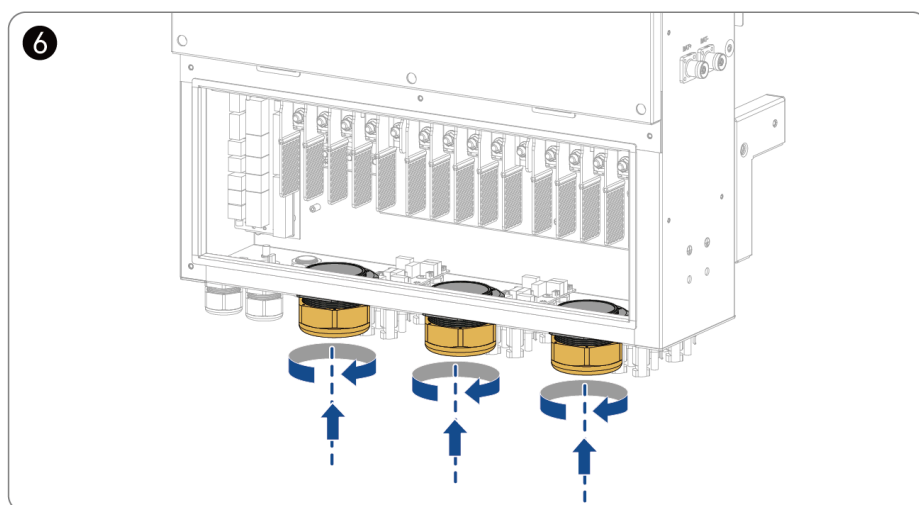
4. Peel off the insulation skin of the AC cables at proper length and crimp the cable ends with the RNB70-10 or SC50-10 OT/DT terminals tightly. Select the corresponding terminals depending on the cable specification.



5. Loosen the screws on the **L1**, **L2**, **L3**, **N** and **PE** ports. Secure the AC cables to the corresponding ports of **L1**, **L2**, **L3**, **N** and **PE** with the screws.



6. Fasten the water-proof nuts of **GEN**, **BACK-UP**, and **GRID** cable glands at the bottom of the inverter.



## 5.6. Connect to the third-party battery system

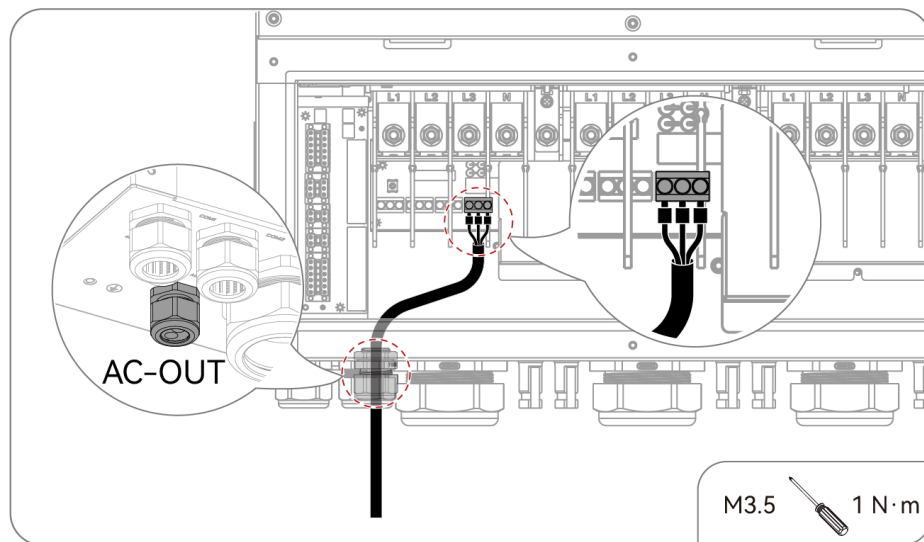
The inverter **AC-OUT** port provides 220V AC power supply that can be connected as needed for third-party battery systems. For example, the air conditioner power supply of the third-party system.

### Procedure

1. Prepare the AC power supply cable according to the following specification:

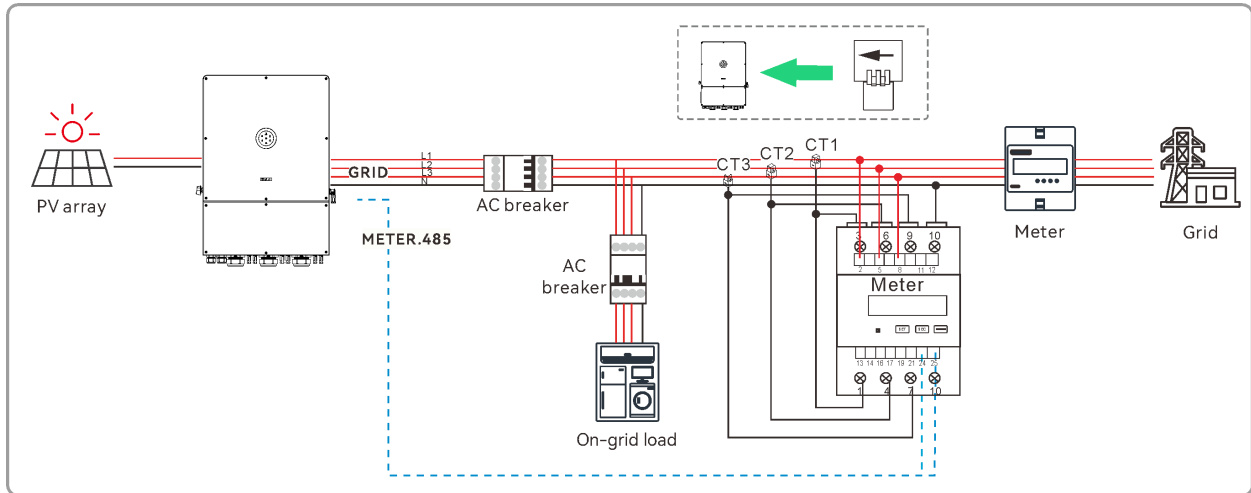
| Cable                      | Conductor cross-sectional area range (mm <sup>2</sup> ) | Terminal connector |
|----------------------------|---------------------------------------------------------|--------------------|
| 220V AC power supply cable | 1-5                                                     | Tubular E2508      |

2. Crimp and connect one cable end to the inverter. Connect the other cable end to the third-party battery system.



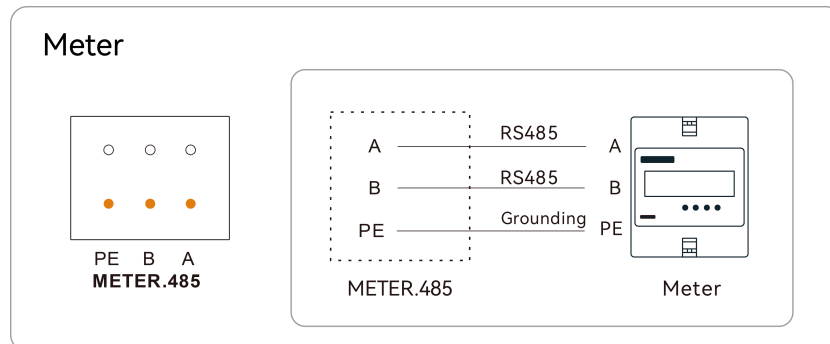
## 5.7. Connect the PV meters

Connect the PV meter cables according to the meter connection solution diagrams.



### Procedure

1. Connect the meter power cables and CT cables. Point the CTs to the inverter.
2. Connect the RS485 communication cables between the inverter 3-pin **METER.485** port and the meter communication port.



## 5.8. Connect the communication cables

Follow this common procedure to connect the 2-pin, 3-pin, 6-pin, and RJ45 communication cables for the corresponding functions.

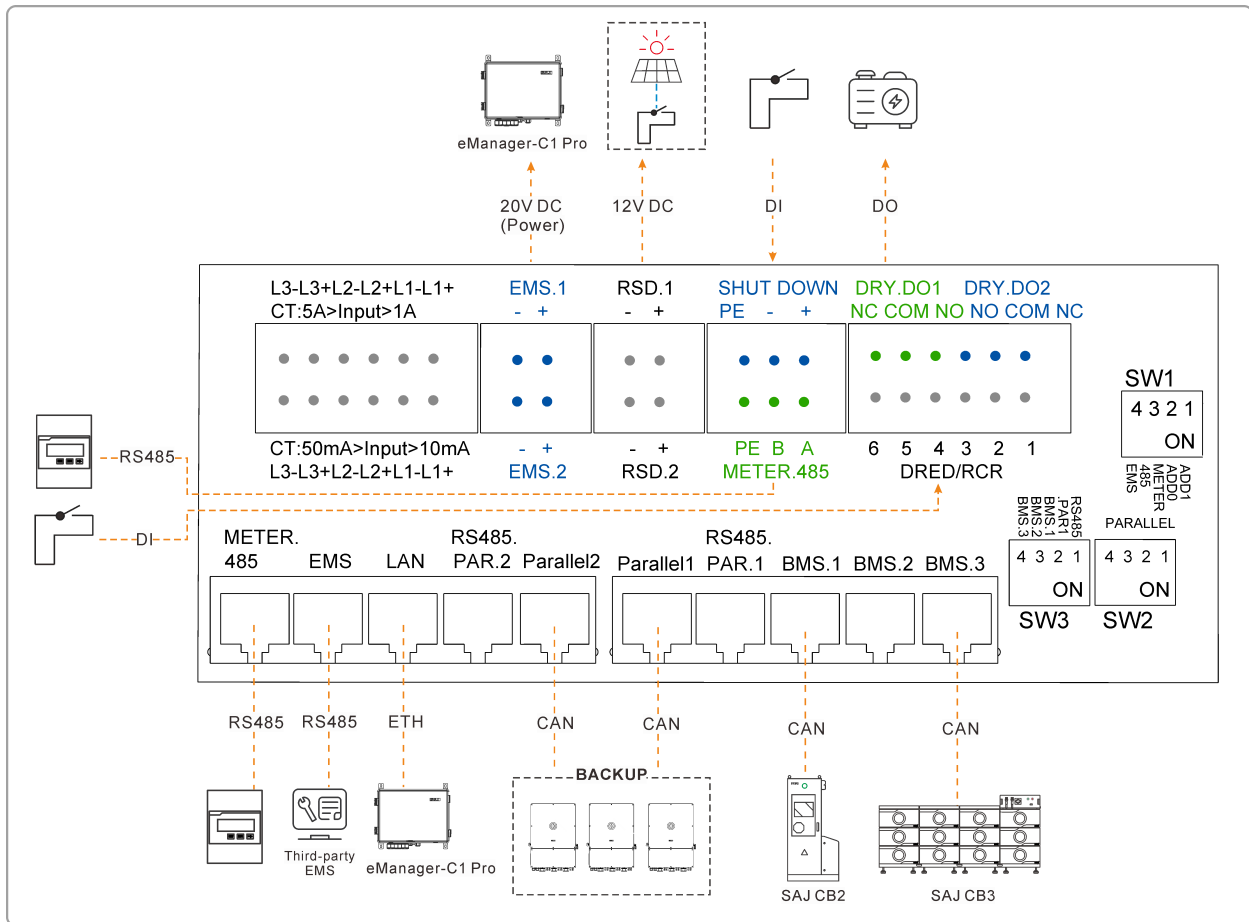
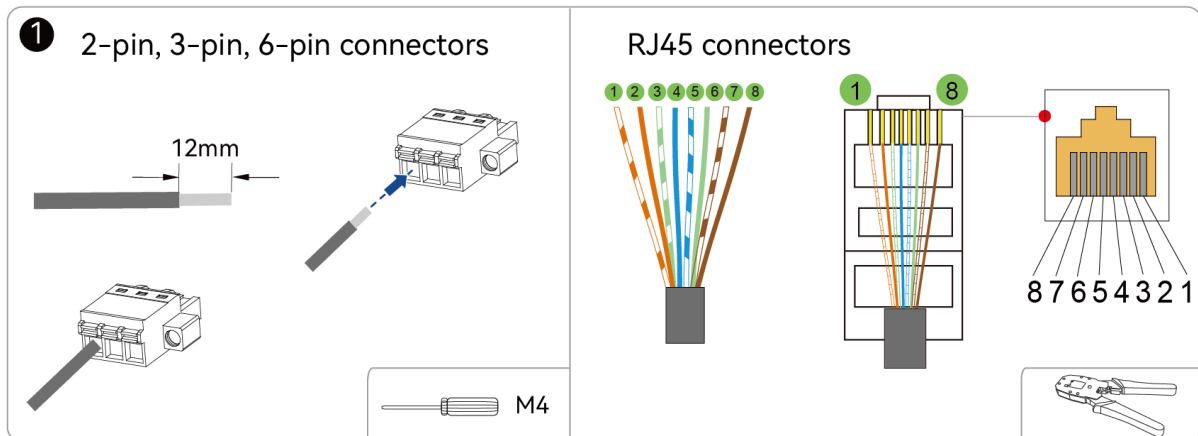


Figure 5.6. Communication connection overview

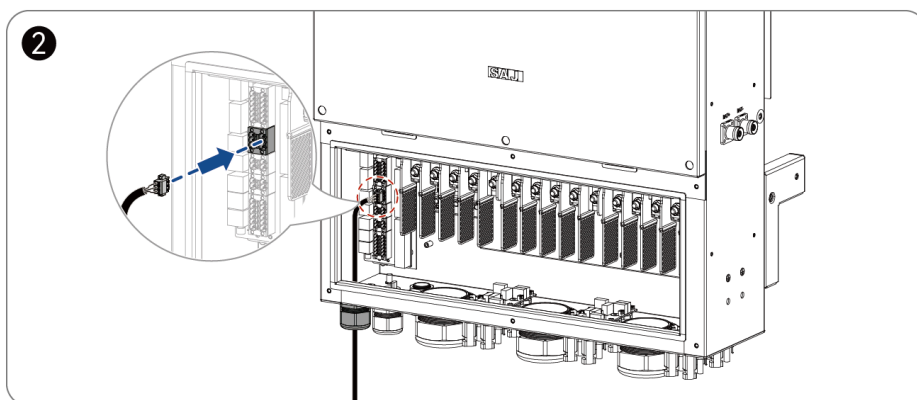
### Procedure

1. Assemble the pin connectors and RJ45 connectors according to the actual requirement.



2. Connect the communication cables to the corresponding ports.

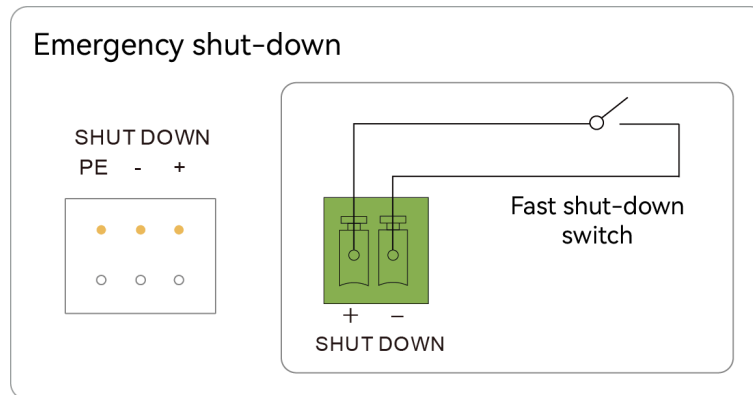
**Example:** Connect the 3-pin cable as follows:





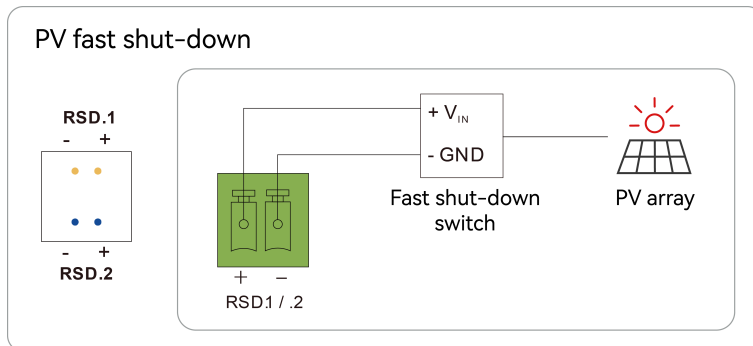
### 5.8.1. Connect the emergency shutdown device

The 3-pin **SHUT DOWN** port can connect with an external switch to stop the inverter immediately in emergent situations.



### 5.8.2. Connect the PV fast shutdown device

The **RSD.1** and **RSD.2** ports can supply power to the fast shutdown module of the photovoltaic system at the rated voltage of 12 V. The two ports can control the fast shutdown and startup of the PV system by turning on or off the power supply to the fast shutdown module.



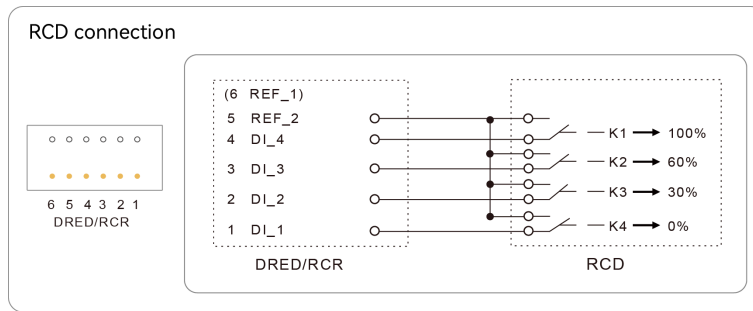
### 5.8.3. Connect the RCR device

According to the local regulations, a ripple control receiver (RCR) device is required to control the maximum output power that is exported to the grid.

When the RCR device connecting to the DI port is closed, the device signals the inverter to export power to the grid at the corresponding level that is configured for the **RCR Power Settings** on the elekeeper App. Each port corresponds to the following settings on the App:

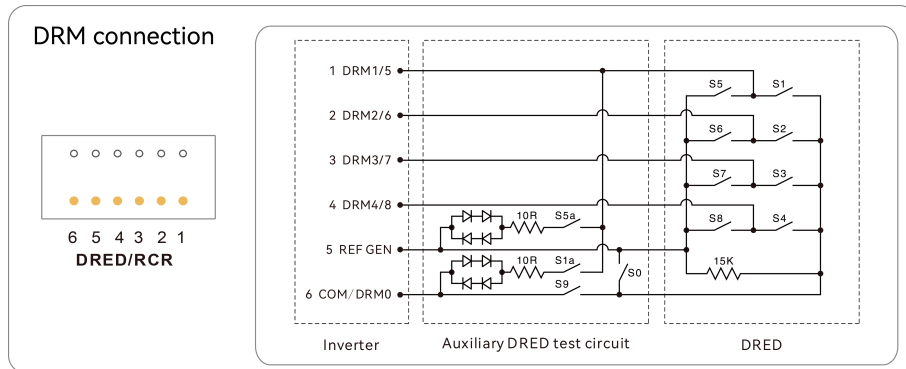
- **DI1:** LEVEL1
- **DI2:** LEVEL2
- **DI3:** LEVEL3
- **DI4:** LEVEL4

The rated power control limit of K1 to K4 devices increases. Connect the devices accordingly to the 6-pin **DRED/RCR** ports **DI1** to **DI4**.



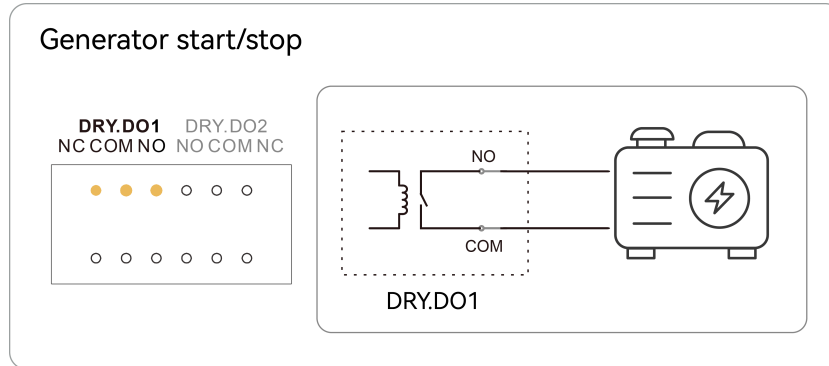
### 5.8.4. Connect the DRED device (Australia and New Zealand)

According to the local regulations in Australia and New Zealand, a DRED device is required for demand response modes (DRM) control. Connect the DRED device to the following 6-pin **DRED/RCR** port:



### 5.8.5. Connect the generator communication

Connect the generator to the 2-pin **GEN** port to control the start and stop of the generator:

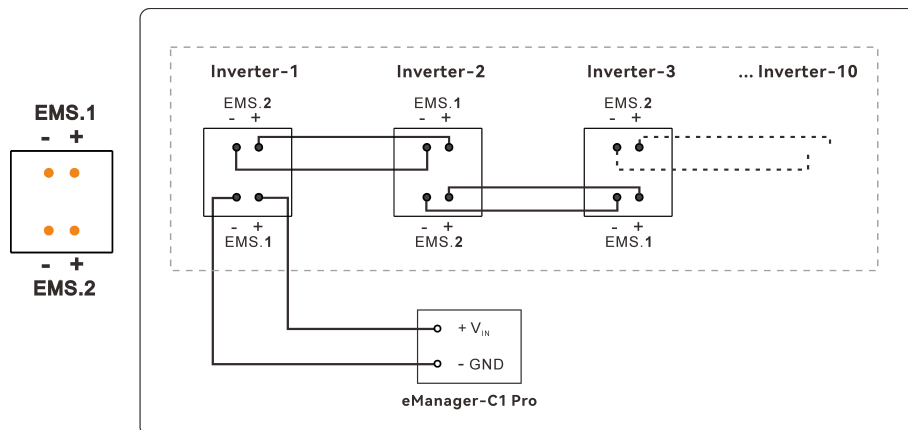


### 5.8.6. Connect the parallel deployment communication

For CH2 parallel deployment, connect the communication cables as illustrated in section *Parallel deployment*.

- The **EMS.1** and **EMS.2** ports can supply power to the energy management system (EMS) at the rated output voltage of 20 V DC in parallel deployment. In parallel deployment, multiple inverters can supply power to the EMS at the same time, and at least two inverters must provide the power supply to the EMS. The length of the power supply wire to the EMS is limited to 50 meters.

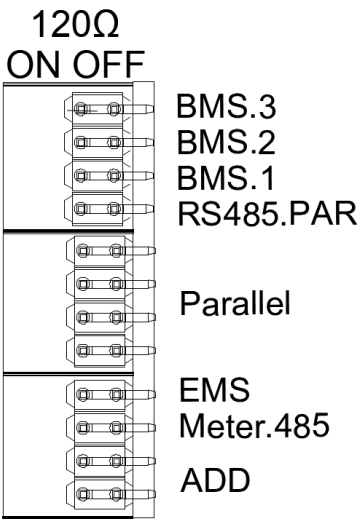
For the 20V DC power input connection, connect the 2-pin communication cables according to the following diagram:



- When the inverters are deployed in parallel, the generator needs connect to the **DO4** interface of eManager-C1 Pro for the start and stop control.

5.8.7. Turn on DIP switches

The dual inline package (DIP) switches are provided to control the activation of 120 Ω terminal resistors to ensure the communication stability of the corresponding communication functions.



After all the communication cables are connected, turn on the corresponding DIP switch according to the following instructions:

| Switch              | Description                                                                                                                              |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| BMS.3, BMS.2, BMS.1 | For the CAN communication between battery management systems (BMS). Turn the switch on when the corresponding BMS connection is enabled. |
| RS485.PAR           | For RS485 PAR1 communication. Turn the switch on as needed.                                                                              |
| Parallel            | For cabinet parallel deployment. Turn the switches to the <b>ON</b> position on the two cabinets that are physically farthest apart.     |
| EMS                 | For RS485 communication with the EMS. Turn the switch on as needed.                                                                      |
| METER.485           | For RS485 communication with the external meters. Turn the switch on as needed.                                                          |
| ADD                 | Reserved for future use.                                                                                                                 |

Table 5.9. DIP switches

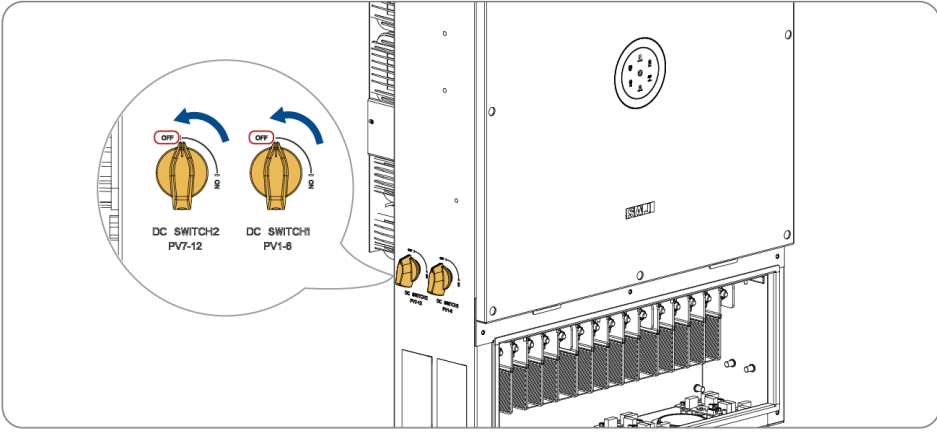
## 5.9. Connect the PV cables

Before you begin


**WARNING**

**Risk of electric shock**

Make sure that the two PV switches on the inverter are turned off before the electrical connections.



- Prepare a multimeter with DC voltage range larger than 1000 V. Multimeter of lower measurement range can be damaged.

### PV cable connection guidelines:

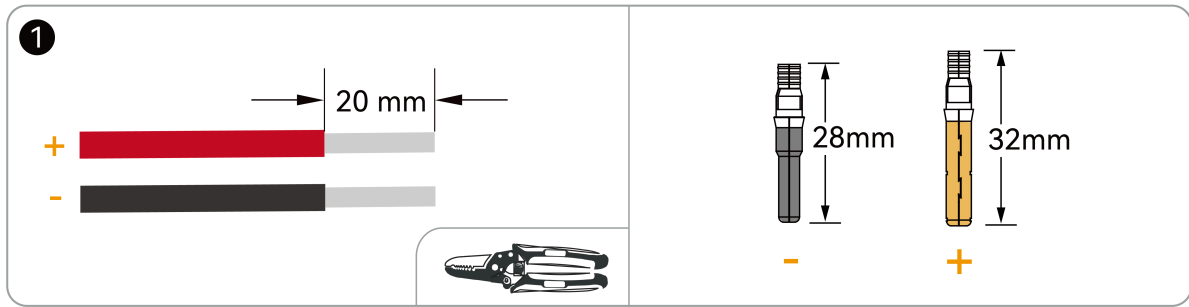
- Evenly distribute the PV input cables across the PV input terminals.
- Maximize the number of MPPT inputs.
- PV strings connected to the same MPPT circuit must use solar panels of the same model and in the same quantity.

| Number of PV array | Inverter PV terminal | Number of PV array | Inverter PV terminal                     |
|--------------------|----------------------|--------------------|------------------------------------------|
| 1                  | PV 1                 | 7                  | PV 1, 2, 3, 5, 7, 9, 11                  |
| 2                  | PV 1, 3              | 8                  | PV 1, 2, 3, 4, 5, 7, 9, 11               |
| 3                  | PV 1, 3, 5           | 9                  | PV 1, 2, 3, 4, 5, 6, 7, 9, 11            |
| 4                  | PV 1, 3, 5, 7        | 10                 | PV 1, 2, 3, 4, 5, 6, 7, 8, 9, 11         |
| 5                  | PV 1, 3, 5, 7, 9     | 11                 | PV 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11     |
| 6                  | PV 1, 3, 5, 7, 9, 11 | 12                 | PV 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12 |

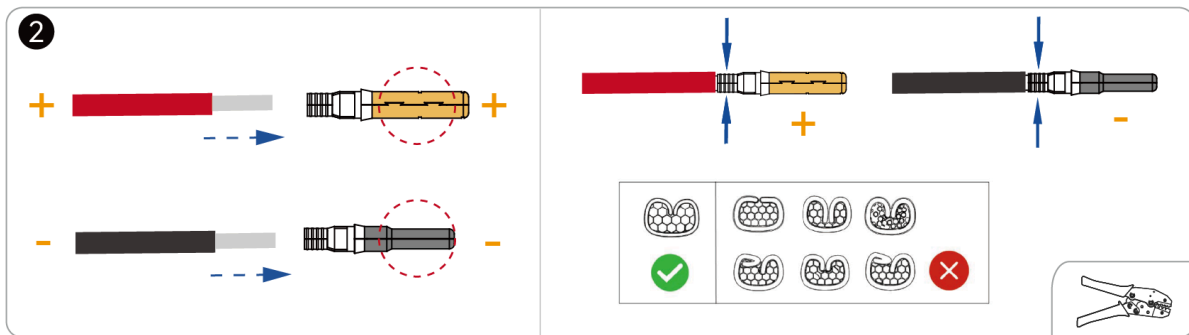
Table 5.10. MPPT terminal connection guideline

### Procedure

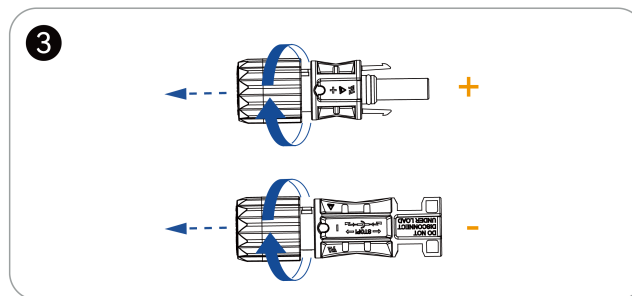
1. Use a wide-bladed screwdriver to strip off the insulation layer by 20 mm from one end of each PV power cable.



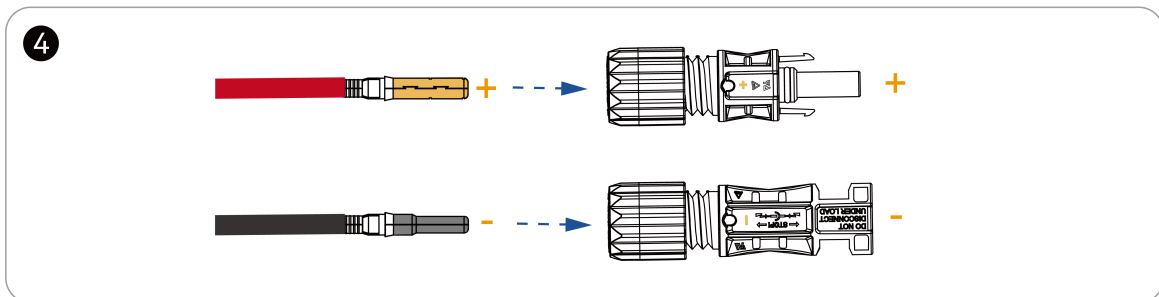
2. Insert the cable ends to the sleeves. Use crimping pliers to assembly the cable ends.



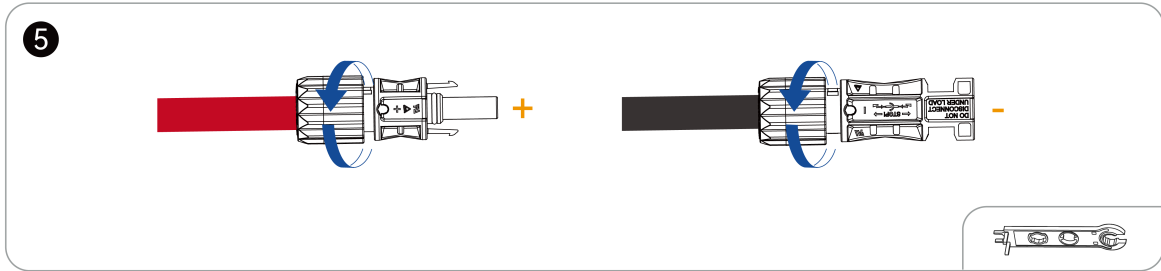
3. Loosen the lock screws on the positive and negative connectors.



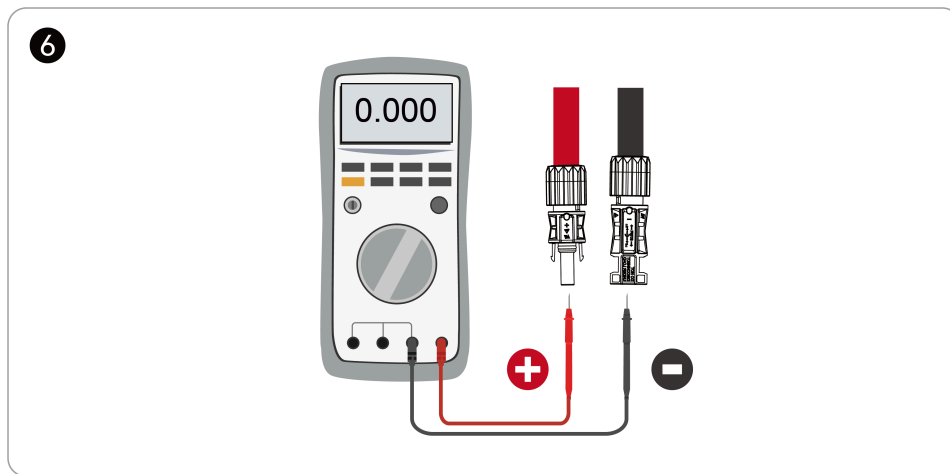
4. Insert the positive and negative cables into the positive and negative connectors. Gently pull the cables backward to ensure firm connection.



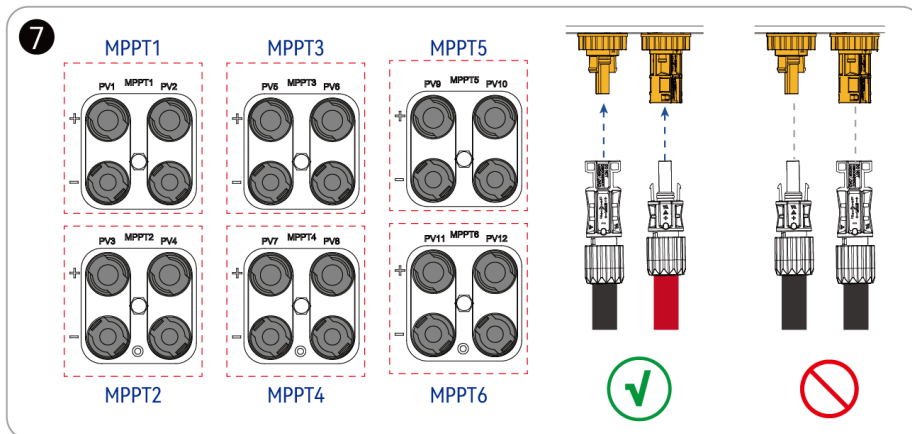
5. Tighten the lock screws on the positive and negative cable connectors with the D4 assembly tool.



6. Measure the DC voltage of each positive and negative PV input cable with the multimeter.  
Make sure that each PV input shows DC voltage around 1000 V with correct polarity.



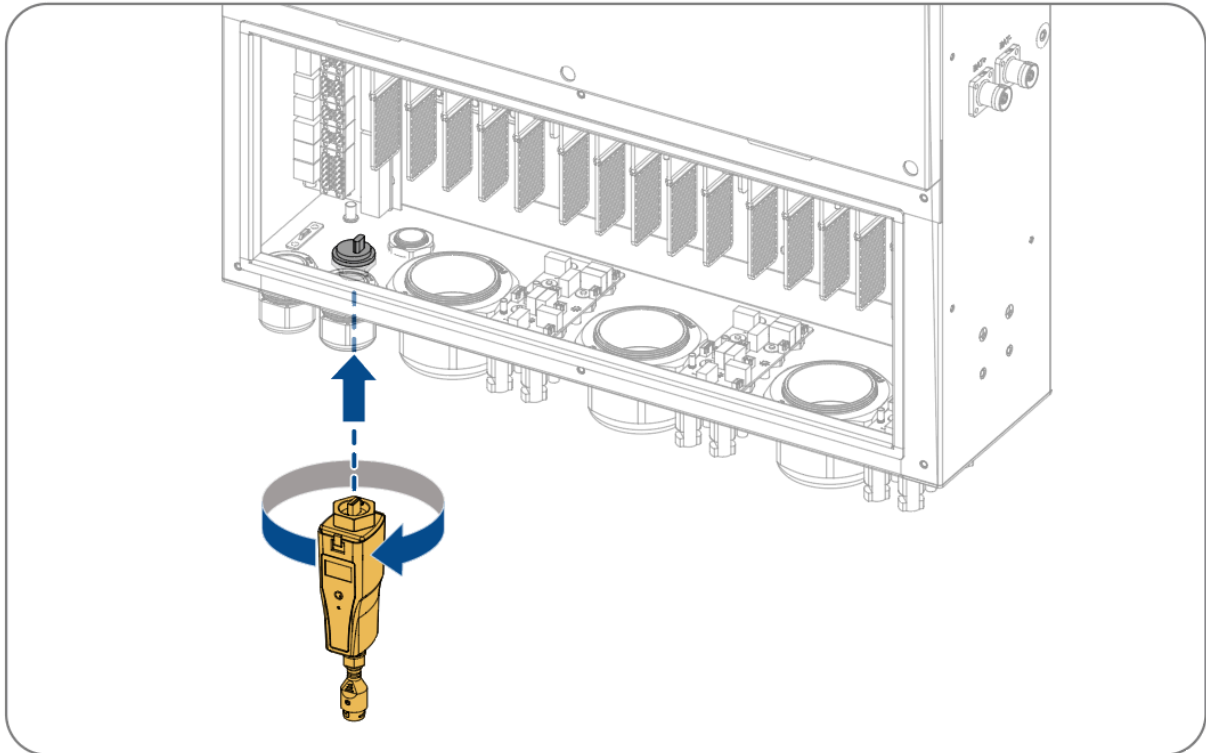
7. Insert the positive and negative cable connectors into the positive and negative PV ports on the inverter until a “click” sound is heard.



## 5.10. Connect the communication module

### Procedure

Remove the dust-proof cover from the **4G/WIFI** port, plug in the communication module, and rotate less than 90 degrees to secure the module.





## 5.11. Connect battery power cables

Follow this procedure to prepare and connect the battery power cables to the inverter.



### WARNING

#### Risk of electrical shock

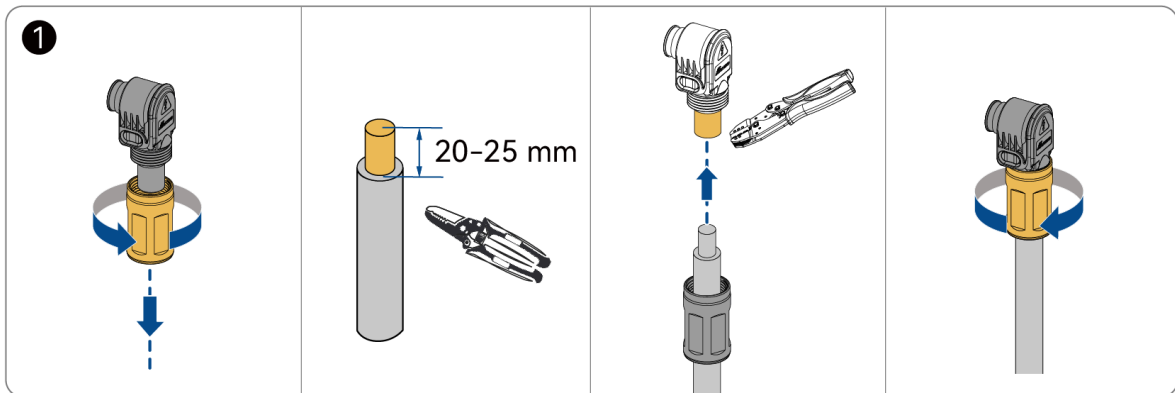
- Power off the battery system before connecting the power cable to avoid high voltage danger.
- The electrical connection of high voltage battery systems must be operated by qualified technicians in accordance with local and national power grid standards and regulations.

#### Note:

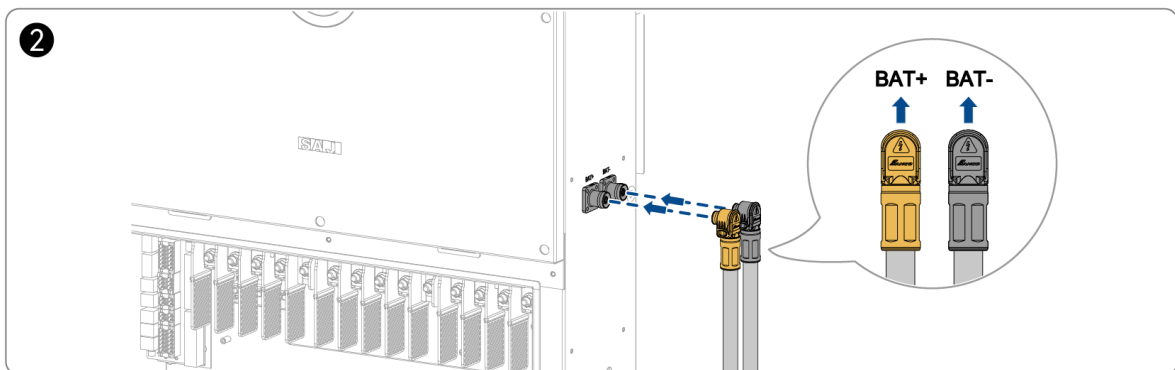
It is optional to install a breaker between the battery system and the inverter.

#### Procedure

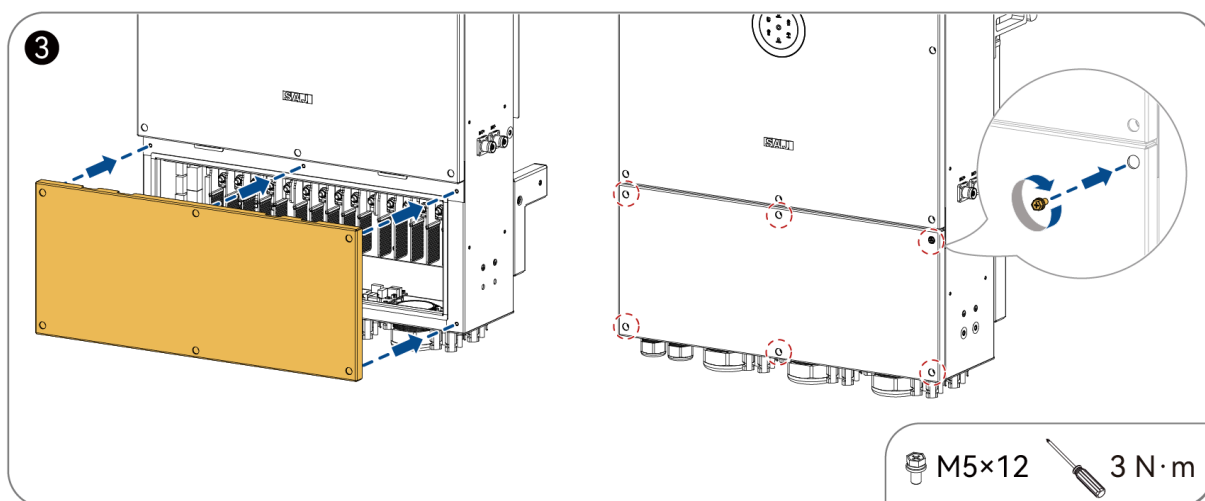
1. Assemble the positive and negative power cable ends to be connected to the inverter.



2. Connect the positive power cable to the **BAT+** port on the inverter; connect the negative power cable to the **BAT-** port on the inverter.



3. Install back the inverter cable cover.



## 6. Startup and shutdown

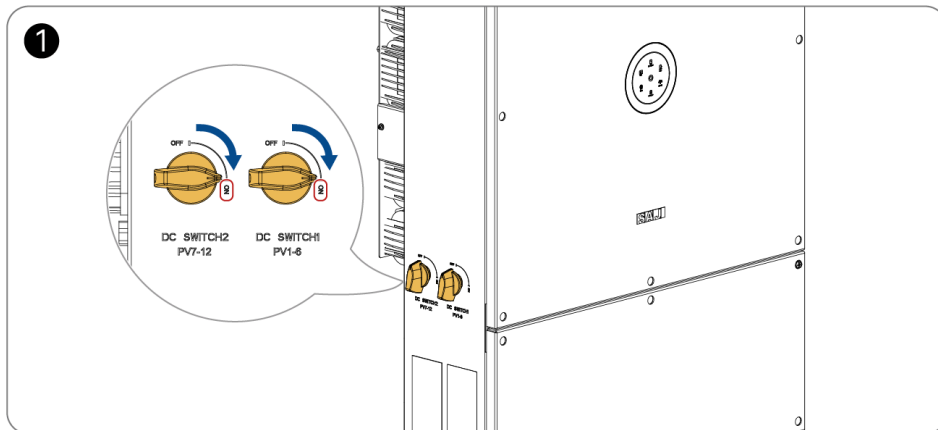
### 6.1. Start up the system

#### Before you begin

Check that all the cable connections are completed as instructed.

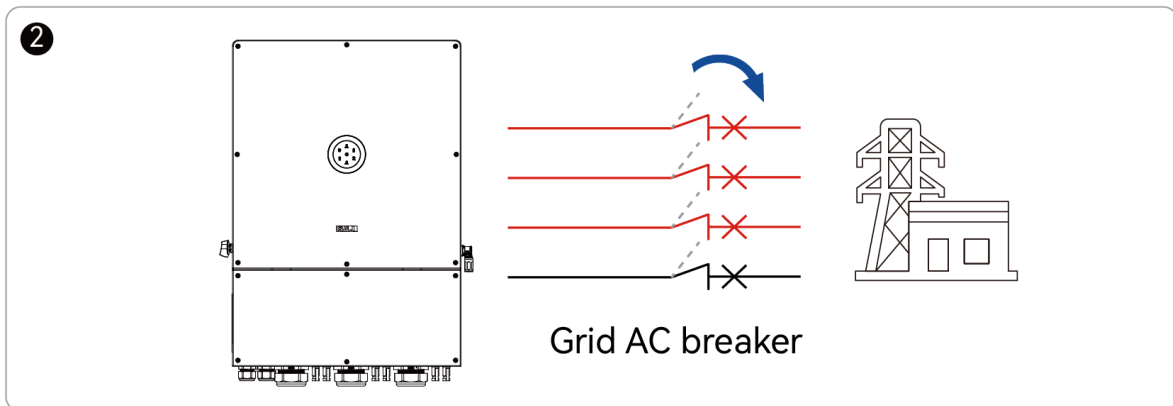
#### Procedure

1. Turn the two DC switches to the **ON** position on the inverter to enable the PV side connection.



2. Connect the external AC circuit breaker to enable the connection to the grid.

When the LED indicator shows solid green, it indicates that the inverter is up and running.



## 6.2. Shut down the system

When the solar light intensity is not strong enough or the output voltage of the photovoltaic system is less than the minimum input power of the inverter, the inverter will shut down automatically.

Follow this procedure to shut down the inverter manually.



### DANGER

#### Risk of high voltage and electric shock

Before any operation, disconnect the inverter from all AC and DC power sources and wait at least 5 minutes to allow internal capacitors to discharge.

#### Procedure

1. Disconnect the external AC circuit breaker to disconnect from the grid.

When multiple inverters are connected, disconnect the minor circuit breaker first, and then disconnect the main circuit breaker.

2. Turn off the two DC switches on the inverter to disconnect from the PV.

## 7. Commissioning on elekeeper App Version 5.0

### 7.1. About elekeeper

The SAJ elekeeper Application Version 5.0 is an easy-to-use, AI-powered energy management platform designed for homeowners and businesses with full ecosystem autonomous AI control. It gives the Owner full control over their energy – from generation and storage to consumption and selling – through a single App that works on phones, tablets, and computers. The platform provides the following AI-powered modules:

- **AI Care:** provides six-dimensional system diagnosis and 24/7 system protection.
- **AI Saving:** provides AI-powered working strategy adaptation for various scenarios to maximize user revenue.
- **AI Keeper:** provides intelligent functions including full voice autonomous control, user intent recognition, , electricity data analysis, and autonomous task planning.

### 7.2. Download the elekeeper App

Search for "elekeeper" in the App store and download the App.

Alternatively, scan the below QR code to download the App.



### 7.3. Sign up at the elekeeper App

The end user, installer, or distributor can follow this procedure to sign up at the elekeeper App. The installer can also follow this procedure to create an account for the end user.

**Note:** Recommend activating the Location Services on the phone for optimum utilization of the functions.

#### Procedure

1. Open the App and tap **Sign Up** on the login page.



2. Select the country of the installation site and the user role.

Sign Up

Please select your country

Algeria

Corresponding Server

International Node

Please select your role

End User

End Product User

Installer

Retail/Installation/Service

Distributor

Product distribution services only

Next

| Parameter                      | Description                                                                                                                                                                                                                                                                                                      |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Corresponding Server</b>    | The server is set automatically depending on the selected country.                                                                                                                                                                                                                                               |
| <b>Please select your role</b> | <ul style="list-style-type: none"> <li><b>End User:</b> The owner of the power plant. Select this option when the installer is signing up for the end user.</li> <li><b>Installer:</b> The installation and retail service providers.</li> <li><b>Distributor:</b> The distribution service provider.</li> </ul> |

Table 7.1. Signup parameters

3. For the **End User** role, fill in the user information accordingly.

Register the owner's account

User Name

Please enter username

Email

Enter mailbox

Send Code

Captcha

Please enter the verification code

Password

Please enter password

Confirm Password

Please confirm the password

Previous

Next

Register the owner's account

Superior Installer

Please enter

Please enter the installer or distributor code to ensure timely after sales service

Country

Belgium

Time Zone

(UTC+01:00) Brussels, Copenhagen, ...

Town/City

Please select

Postal Code

Enter ZIP/Postal Code

Detailed address

Please enter the detailed address

☒
 Agree (Owner Privacy Policy) And (User Registration Agreement)

Previous

Sign Up

4. For the **Installer** role, either create a company or join an existing company to provide the information accordingly.  
To create a company:

To join a company:

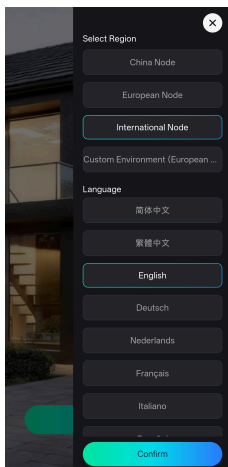
To check an existing user's company code, open page **My**:

- For the **Distributor** role, provide similar information as the **Installer** role.

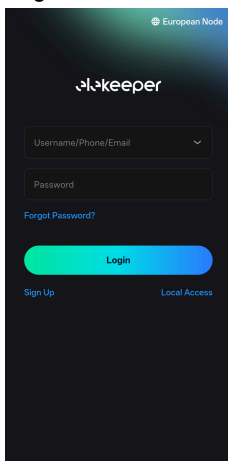
## 7.4. Log in to the elekeeper App

### Procedure

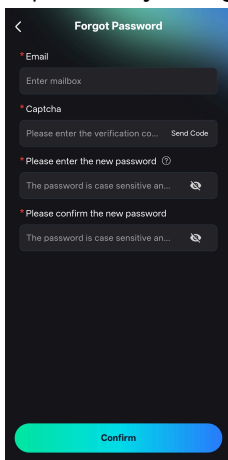
1. Open the App and tap the globe icon  on the top right corner.
2. Select the **Region** and **Language** depending on the installation site of the system.



3. Log in with the username, phone number, or email.



4. (Optional) If you forgot your password, reset your password with email verification.





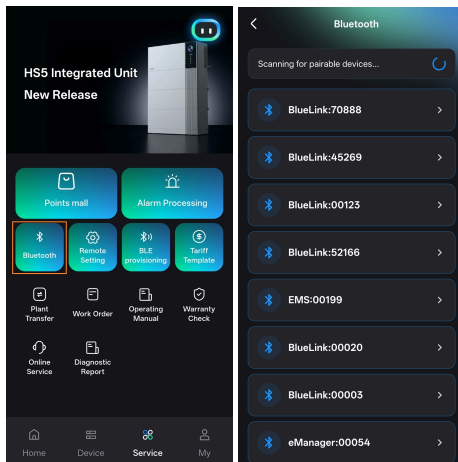
## 7.5. Perform one-click initialization

### Procedure

1. On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Tap **One-Click Initialize** to start initialization.

#### Example:



3. Configure the battery parameters as needed.

**Battery Settings**

Battery Brand  
CB2

Battery Capacity  
0.0 Ah

Equalized Charging Voltage  
0.0 V

Battery Voltage Alarm Setting  
0.0 V

Grid-Connected Discharge Cutoff Voltage  
0.0 V

Previous Next

4. Select the connected meter.

**Meter Settings**

Wiring Method  
One Three-Phase Four-Wire Meter

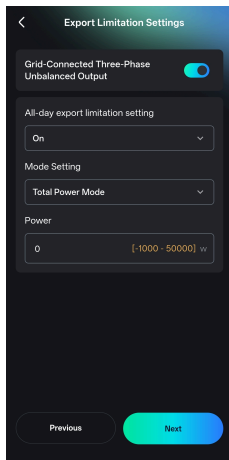
System Schematic

Previous Next

5. Configure the export limitation function.

The export limitation function controls the maximum power that the inverter exports to the grid.

**Example:**

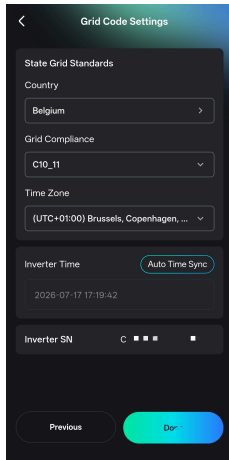


| Parameter                                                                                                                                                | Description                                                                                              |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| <b>All-day export limitation settings</b>                                                                                                                | Enable or disable the export power limitation function that runs continuously throughout the entire day. |
| <ul style="list-style-type: none"> <li>• <b>Total Power Mode</b></li> <li>• <b>Phase Current Mode</b></li> <li>• <b>Each Phase Power Mode</b></li> </ul> | The modes for the export power limitation function.                                                      |
| <b>Power</b>                                                                                                                                             | The power limit setting.                                                                                 |

6. Configure the working strategy.

## 7. Configure the safety parameters.

### Example:



| Parameter              | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Country</b>         | The equipment installation location.                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Grid Compliance</b> | <p>The grid setting. For Australia, select the specific type of compliance according to the owner's grid configuration.</p> <ul style="list-style-type: none"> <li>• <b>AS4777_AustraliaA</b>: For large interconnected power system.</li> <li>• <b>AS4777_AustraliaB</b>: For small interconnected power systems. For example, Western Power.</li> <li>• <b>AS4777_AustraliaC</b>: For isolated or remote power systems. For example, Horizon Power and TasNetworks.</li> </ul> |
| <b>Time Zone</b>       | Tap the time zone of the installation site.                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Inverter Time</b>   | Tap <b>Auto Time Sync</b> to sync the inverter time to the time of the device running the App.                                                                                                                                                                                                                                                                                                                                                                                   |

## 7.6. Perform installation diagnosis

After the inverter initialization is completed, perform one-click installation diagnosis to verify the installation status of the system, including the network connection, battery settings, wiring status, and so on.

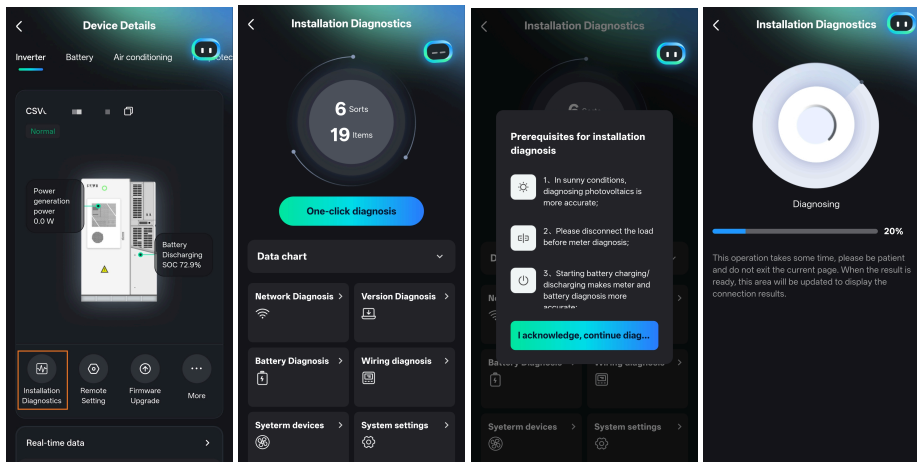
### Procedure

1. On the **Home** page, tap the device name to open the **Device Details** page.

### Example:



## 2. Tap **Installation Diagnostics** to start one-click diagnosis.

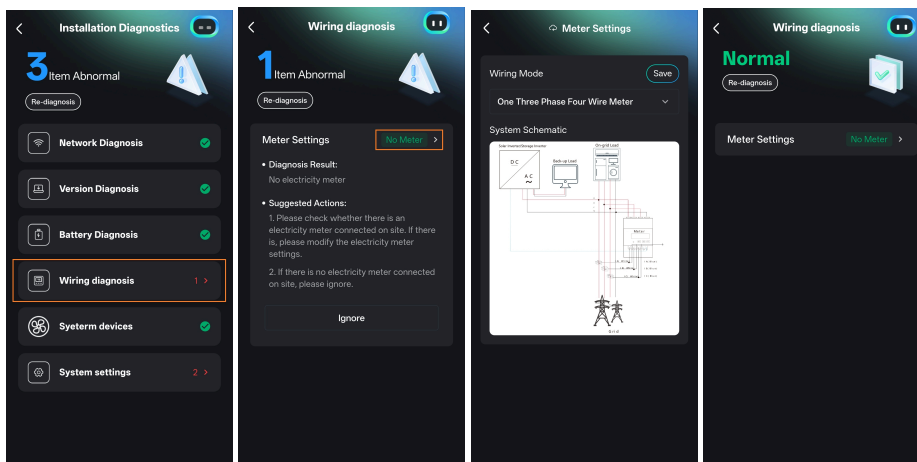


**Note:** If the software versions of the product are too low, follow the prompt-up to upgrade the system version first.

## 3. Check the faulty diagnostics results and take the suggested actions.

### Example:

- Tap **Wiring diagnosis** to check the detailed issue and suggested actions.
- Tap **No Meter** to change the meter settings where applicable or ignore this issue.
- Tap **Re-diagnosis** to run the check again.
- Take necessary actions until the issue is resolved.



## 7.7. Run self-test for grid connection (For Italy)

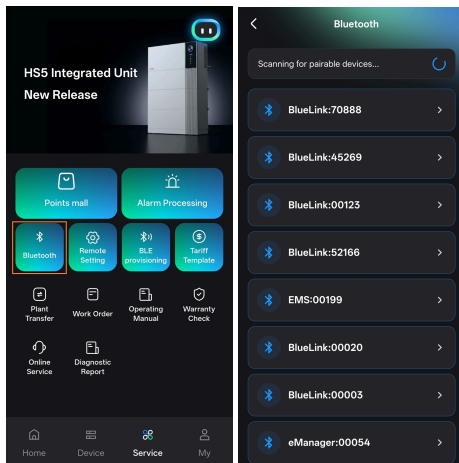
Italian Standard CEI0-21 requires a self-test function for all inverters that connect to the utility grid. During the self-testing time, the inverter will check the reaction time for over-frequency, under-frequency, over-voltage and under-voltage. The self-test ensures that the inverter can disconnect from the grid when required. If the self-test fails, the inverter cannot feed into the grid.

### Procedure

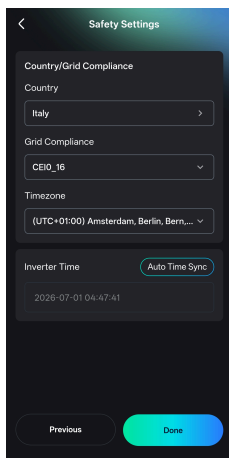
- On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

### Example:

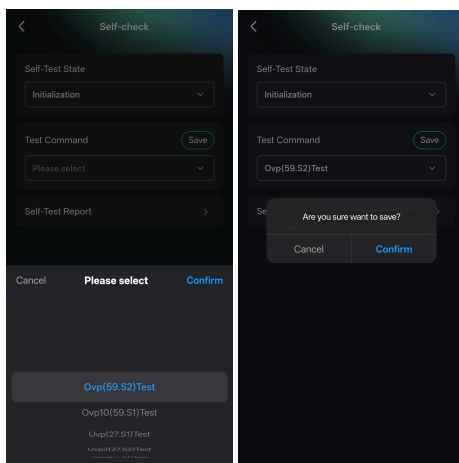
- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



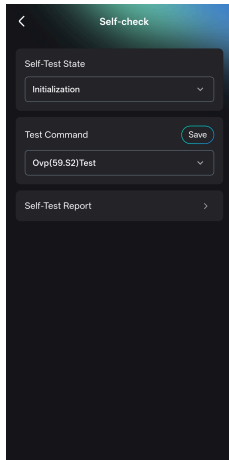
2. On the **Device List** page, tap **Grid Code Settings** and check whether the grid compliance is set to **Italy** grid codes. Change the settings if needed.



3. On the **Local Connection** page, tap **Self-check**. Choose the self-test items as required, and tap **Save**.  
It takes around 5 minutes to complete each item. After the test item is completed, **Self-Test State** shows **Initialization**.



4. Tap **Self-Test Report** to check the test report. Download the test report if the self-test fails and contact **SAJ** or your inverter supplier.

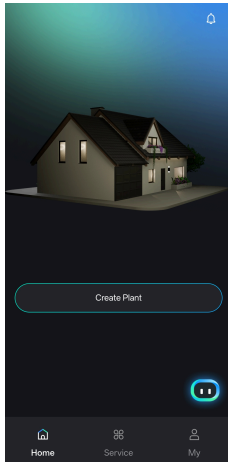


## 7.8. Create a power plant

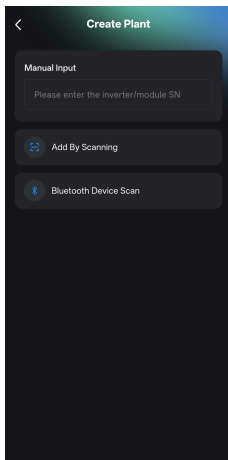
Follow this procedure to create a power plant.

### Procedure

1. On the **Home** page, tap **Create Plant**.



2. Provide the product serial number (SN) to add the devices in the plant.
  - **Manual Input:** Enter the SN of the inverter or the communication module.
  - **Add By Scanning:** Scan the SN.
  - **Bluetooth Device Scan:** Connect to the inverter or communication module through Bluetooth connection.



3. Configure the plant details based on the owner's actual information.



**Create Plant**

1 Add Device 2 Station Information 3 Link Installer

\* Plant Name  
CHS2 plant

\* Country  
Belgium

\* Time Zone  
(UTC+01:00) Brussels, Copenhagen, Madrid, Paris

\* City  
Woluwe-Saint-Lambert

\* Detailed address

\* Post Code

Previous Next

Is photovoltaic installed ☒

\* Plant capacity ①  
50 kWp

Number of PV Panels  
12

PV Panel Azimuth ①  
45

PV Panel Inclination ①  
45

Previous Next

4. Provide the end user and installer information for future maintenance and support purposes.

The installer company code is created when the installed signs up at the App. For example, 19067G.

**Create Plant**

1 Add Device 2 Station Information 3 Customer

Please enter both owner and installer info for plant maintenance and support

End User [Select Owner](#)

Username / Phone Number

Search

Installer

Username / Phone Number / Company ...

Search

Ignore

Previous Save

5. After the plant is created successfully, check the plant status as needed.

**Plant** Device +

0°C

Grid 0 W Photovoltaic 0 W Load 0 W

Diesel Generator 148 W 90.1% Discharge

Normal CHS2 plant

Revenue Max Self Consumption

0 Yesterday 0 Month 0 Total

AI Saving 3.0

Home Service My

**Plant** Device +

Normal 0.0 W 90.1%

Associated Devices

EMS Module(199) Grid Meter(199)

0 W Normal Offline

Energy Storage PV Meter(199)

Offline Offline

Diesel(199)

Home Service My

**Device Details**

Inverter Battery Air conditioning

CSVL

Normal

Power generation power 0.0 W

Battery Discharging SOC 72.9%

Installation Diagnostics Remote Setting Firmware Upgrade More

Real-time data

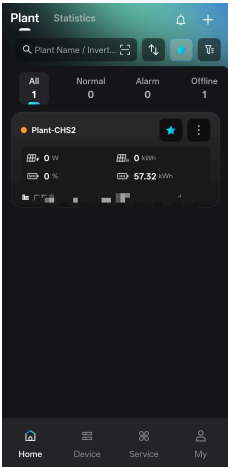
## 7.9. View the power plant details

Follow this procedure to check detailed power plant information.

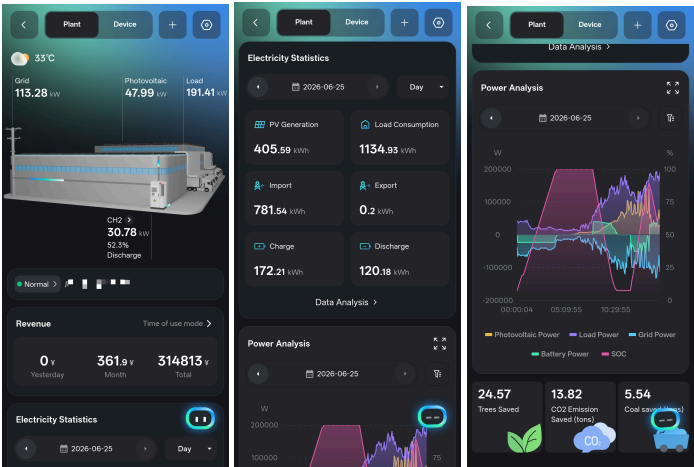
### Procedure

- On the **Home** page, select and tap the target power plant.

**Example:**



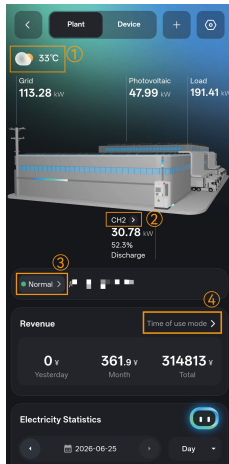
- Check the following plant information.



| Information             | Description                                                                                                                                                                                                                                                                                                                                        |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Live energy information | <ul style="list-style-type: none"> <li><b>Grid:</b> The power that the device is importing from or exporting to the grid.</li> <li><b>Photovoltaic:</b> The current power generated by the PV array.</li> <li><b>Load:</b> The overall power consumption by the load.</li> <li><b>Discharge:</b> The current SOC of the battery system.</li> </ul> |
| Revenue                 | The daily, monthly, and total revenue of the power plant.                                                                                                                                                                                                                                                                                          |
| Electricity Statistics  | The energy statistics of the power plant. Daily, weekly, monthly, yearly, and total statistics are available for detailed data analysis.                                                                                                                                                                                                           |
| Power Analysis          | The power statistics of the power plant.                                                                                                                                                                                                                                                                                                           |

Table 7.2. Power plant information

- Tap each highlighted area for further information or operation.



| Number | Description                                                                                                |
|--------|------------------------------------------------------------------------------------------------------------|
| ①      | Tap to check the weather forecast.                                                                         |
| ②      | Tap to open the <b>Device Details</b> page for detailed device status and operations like remote settings. |
| ③      | Tap to open the alarm messages list.                                                                       |
| ④      | Tap to check or modify the working strategy of the device.                                                 |

## 7.10. Configure working strategy

Follow this procedure to configure the device working strategy.

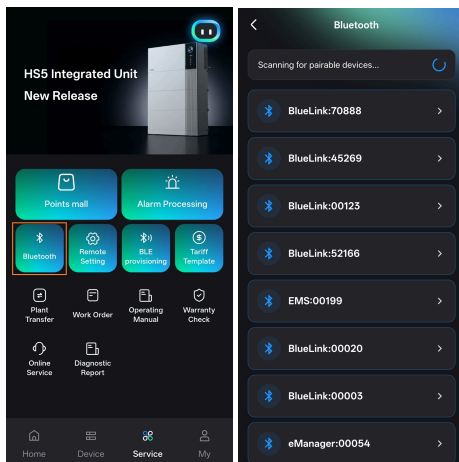
**Note:** The working strategy options and parameters may vary for different devices. Configure the parameters based on the actual App.

### Procedure

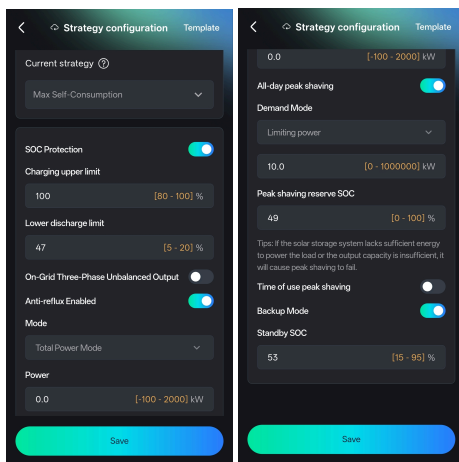
1. On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Select **Strategy Configuration** or **Working Modes** (depending on the device) to configure the parameters as needed.
3. For mode **Max Self-Consumption**, configure the following parameters:

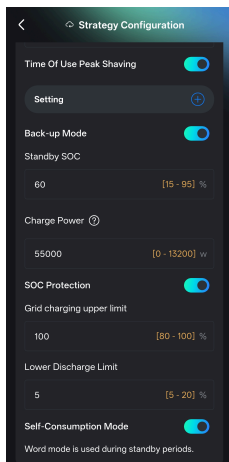


| Parameter                   | Description                                                                                                   |
|-----------------------------|---------------------------------------------------------------------------------------------------------------|
| <b>Current strategy</b>     | The active working strategy for the device.                                                                   |
| <b>SOC Protection</b>       | Whether to enable battery state of charge (SOC) protection to help prevent excessive charging or discharging. |
| <b>Charging upper limit</b> | The maximum battery SOC allowed during charging. Once reached, the battery stops charging.                    |

| Parameter                                    | Description                                                                                                                                           |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Lower discharge limit</b>                 | The minimum battery SOC allowed during discharging to protect the battery from over-discharge. Once reached, the battery stops discharging.           |
| <b>On-Grid Three-Phase Unbalanced Output</b> | Whether to enable three-phase unbalanced output when the system is operating on-grid.<br>This parameter is applicable for three-phase inverters only. |
| <b>Anti-reflux Enabled</b>                   | Enables or disables export limit control function to prevent power from feeding back to the grid.                                                     |
| <b>Mode</b>                                  | Selects the export limit control mode used by the system.                                                                                             |
| <b>Power</b>                                 | The power limit value used in the selected control mode.                                                                                              |
| <b>All-day peak shaving</b>                  | Enables or disables peak shaving throughout the entire day.                                                                                           |
| <b>Demand Mode</b>                           | Selects the demand control method used for peak shaving.                                                                                              |
| <b>Demand Mode power</b>                     | Sets the target power limit used when the selected demand mode requires a power threshold.                                                            |
| <b>Peak shaving reserve SOC</b>              | Sets the battery SOC reserved for peak shaving operation.                                                                                             |
| <b>Time of use peak shaving</b>              | Enables or disables peak shaving based on configured time periods.                                                                                    |
| <b>Backup Mode</b>                           | Enables or disables backup power operation so the battery can reserve energy for backup loads.                                                        |
| <b>Standby SOC</b>                           | Sets the battery SOC to be maintained in standby for backup or reserve purposes.                                                                      |

Table 7.3. Max Self-Consumption parameters

4. For **Time of Use Peaking Shaving** mode, configure the following parameters:

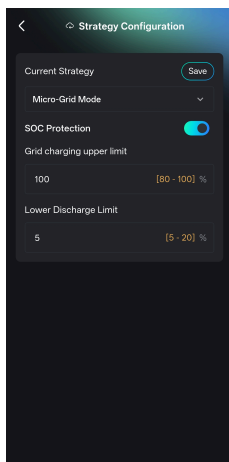


| Parameter                       | Description                                                                                                                             |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| <b>Time Of Use Peak Shaving</b> | Enables or disables peak shaving based on configured time-of-use periods.                                                               |
| <b>Setting</b>                  | The time-of-use setting area where you can add and configure the charging and discharging schedules at configured charging power limit. |
| <b>Back-up Mode</b>             | Whether to enable the backup power operation so the battery can reserve energy for backup loads.                                        |
| <b>Standby SOC</b>              | The battery SOC to be maintained in standby for backup or reserve purposes.                                                             |
| <b>Charge Power</b>             | The charging power used when backup mode charging is active.                                                                            |
| <b>SOC Protection</b>           | Whether to enable battery state of charge (SOC) protection to help prevent excessive charging or discharging.                           |

| Parameter                        | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|----------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Grid charging upper limit</b> | The maximum battery SOC allowed when charging from the grid.                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Lower Discharge Limit</b>     | The minimum battery SOC allowed during discharging to protect the battery from over-discharge.                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Self-Consumption Mode</b>     | Whether to enable self-consumption mode during standby periods. <ul style="list-style-type: none"> <li>For CHS2 series, enable this option of <b>Self-Consumption Mode</b> for the non-charging or non-discharging periods so that the system can work in self-consumption mode when the system is not charging or discharging. If this option is disabled during these periods, the system will be at the bypass status and provides no power to the backup loads.</li> </ul> |

Table 7.4. TOU mode parameters

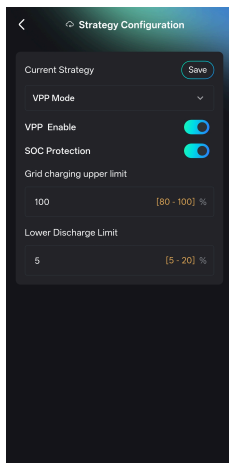
5. For **Micro-Grid Mode**, configure the following parameters:



| Parameter                        | Description                                                                                                      |
|----------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Current Strategy</b>          | The active working strategy for the device.                                                                      |
| <b>SOC Protection</b>            | Enables or disables battery SOC protection to help prevent excessive charging or discharging in micro-grid mode. |
| <b>Grid charging upper limit</b> | The maximum battery SOC allowed when charging from the grid.                                                     |
| <b>Lower Discharge Limit</b>     | Sets the minimum battery SOC allowed during discharging to protect the battery from over-discharge.              |

Table 7.5. Micro-Grid mode parameters

6. For **VPP Mode**, configure the following parameters:



| Parameter                        | Description                                                                                               |
|----------------------------------|-----------------------------------------------------------------------------------------------------------|
| <b>VPP Enable</b>                | Enables or disables VPP mode for the device.                                                              |
| <b>SOC Protection</b>            | Enables or disables battery SOC protection to help prevent excessive charging or discharging in VPP mode. |
| <b>Grid charging upper limit</b> | The maximum battery SOC allowed when charging from the grid.                                              |
| <b>Lower Discharge Limit</b>     | Sets the minimum battery SOC allowed during discharging to protect the battery from over-discharge.       |

Table 7.6. VPP mode parameters

## 7.11. Set the battery parameters

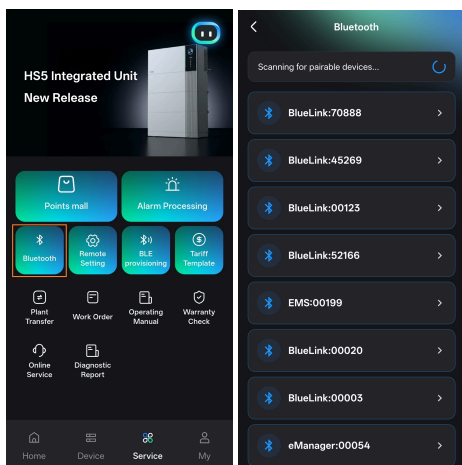
The installation technicians can configure the **Battery Settings** during the initialization of the inverter on the elekeeper App or set the parameters after installation through remote connection.

### Procedure

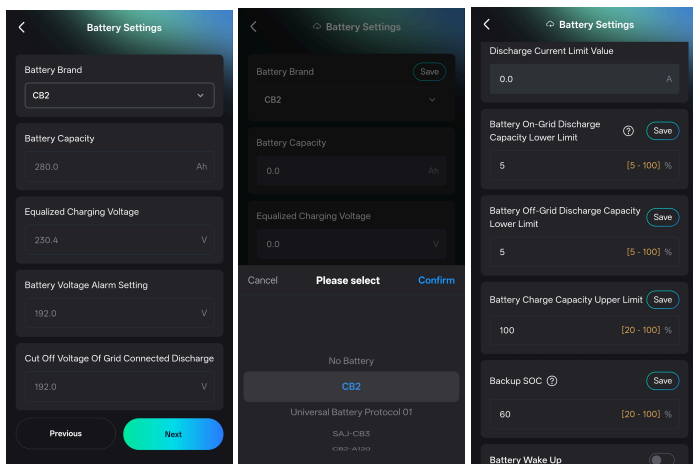
- On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- BlueLink: 45269** for a communication module or inverter.
- EMS: 00199** for EMS units.



- Select **Battery Settings** and configure the parameters as needed.



| Parameter                            | Description                                                                                                                                               |
|--------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Battery Brand</b>                 | The brand of the battery currently adapted for match the corresponding BMS communication protocol.                                                        |
| <b>Battery Capacity</b>              | The rated ampere-hour capacity (Ah) of the battery pack, used by the system to estimate total energy (kWh) and remaining runtime.                         |
| <b>Equalized Charging Voltage</b>    | The maximum charging voltage limit for the battery. When reached, charging stops or switches to constant voltage to prevent overcharging and cell damage. |
| <b>Battery Voltage Alarm Setting</b> | The voltage threshold at which a low-voltage alarm is triggered. It reminds the user to monitor battery level.                                            |



| Parameter                                              | Description                                                                                                                                                                                                  |
|--------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Cut Off Voltage Of Grid Connected Discharge</b>     | The voltage at which the battery hard-stops discharging during grid-tied operation and switches to grid power, serving as the final physical protection.                                                     |
| <b>Charge Current Limit Value</b>                      | The maximum charging current (A) allowed by the battery. The system limits the input power beyond this current to protect cells from high current stress.                                                    |
| <b>Discharge Current Limit Value</b>                   | The maximum discharging current (A) allowed. The load power is limited beyond this current to avoid overcurrent damage to the battery.                                                                       |
| <b>Battery On-Grid Discharge Capacity Lower Limit</b>  | The SOC percentage at which discharging stops during grid-tied operation, switching to grid power to reserve energy for unexpected outages.                                                                  |
| <b>Battery Off-Grid Discharge Capacity Lower Limit</b> | The lower SOC percentage (typically lower than the grid-tied value) allowed during off-grid/power outage situations to extend emergency backup duration.                                                     |
| <b>Battery Charge Capacity Upper Limit</b>             | The SOC percentage at which charging stops. Reducing this value can prolong battery life.                                                                                                                    |
| <b>Backup SOC</b>                                      | The target SOC threshold maintained by the system (higher than the grid-tied discharge limit). When SOC falls below this, the system prioritizes PV or grid charging to ensure sufficient backup power.      |
| <b>Battery Wake Up</b>                                 | A function to force a wake-up voltage or restart communication when the battery enters sleep state due to undervoltage, overtemperature, or BMS protection, allowing reconnection without physical rewiring. |

Table 7.7. Battery parameters

## 7.12. Configure export limit control function

The export limit function controls the maximum power that the inverter exports to the grid. For this function to take effect in single-machine deployment, the installer needs to prepare a meter and connect the meter to the inverter.

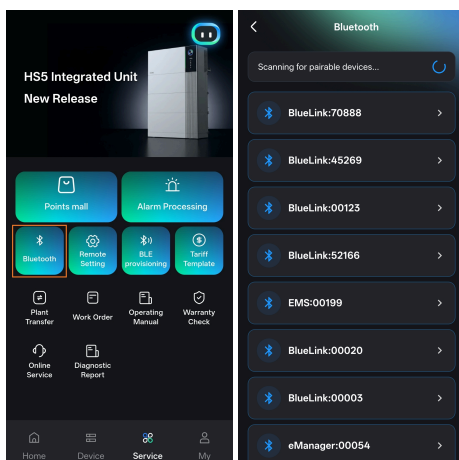
Follow this procedure to configure the export limit control parameters.

### Procedure

- On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

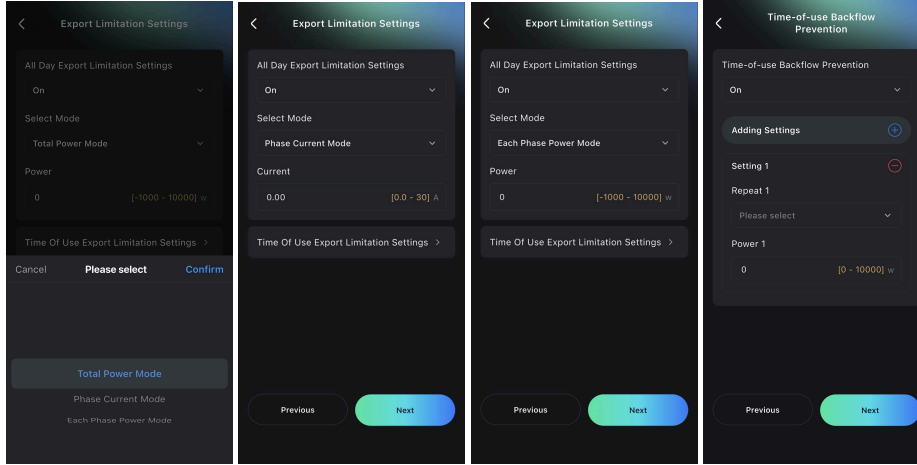
#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Select **Export Limitation Settings** to configure the parameters as needed.

**Example:**



| Parameter                                                                                                                                                | Description                                                                                                                                                                                          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>All Day Export Limitation Settings</b>                                                                                                                | Enable or disable the export power limitation function that runs continuously throughout the entire day.                                                                                             |
| <ul style="list-style-type: none"> <li>• <b>Total Power Mode</b></li> <li>• <b>Phase Current Mode</b></li> <li>• <b>Each Phase Power Mode</b></li> </ul> | The modes for the export power limitation function.                                                                                                                                                  |
| <b>Time Of Use Export Limitation Settings</b>                                                                                                            | <p>The time-specific settings that take priority over the <b>All Day Export Limitation Settings</b>.</p> <p>The settings can be executed once on specific time and date or repeatedly as a loop.</p> |

## 7.13. Configure power adjustment function

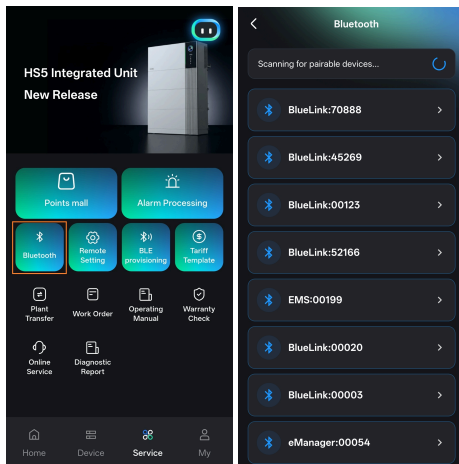
The power adjustment function allows the inverter to regulate and optimize the output power according to grid requirements and operational conditions. This function enables the inverter to adjust active and reactive power dynamically to improve grid stability, comply with local regulations, and enhance energy efficiency.

### Procedure

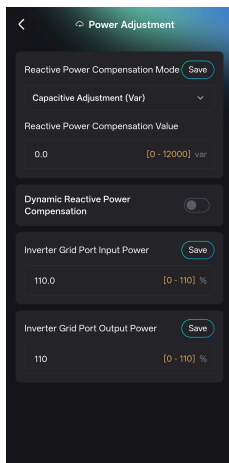
1. On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Select **Power Adjustment**, and configure the following parameters as needed.



| Parameter                                  | Description                                                                                                                                                                    |
|--------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Reactive Power Compensation Mode</b>    | The mode for reactive power compensation. Select the mode according to the local grid regulation.<br>Set the power value or power factor value according to the selected mode. |
| <b>Reactive Power Compensation Value</b>   | Value for reactive power compensation in var.                                                                                                                                  |
| <b>Power Factor (PF)</b>                   | The power factor range in percentage.                                                                                                                                          |
| <b>Dynamic Reactive Power Compensation</b> | Whether to enable dynamic reactive power compensation.                                                                                                                         |

| Parameter                              | Description                                        |
|----------------------------------------|----------------------------------------------------|
| <b>Inverter Grid Port Input Power</b>  | Input power percentage at the inverter grid port.  |
| <b>Inverter Grid Port Output Power</b> | Output power percentage at the inverter grid port. |

Table 7.8. Power adjustment parameters

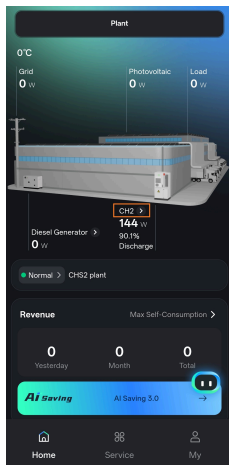
## 7.14. Configure the DRM settings

When the **Country** is set to Australia on page **Safety Settings**, set the demand response mode (DRM) according to local regulations as needed.

### Procedure

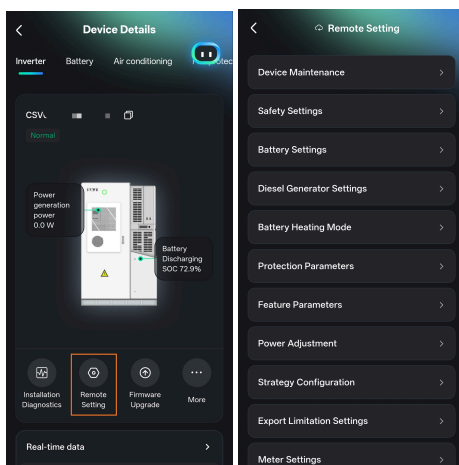
1. On the **Home** page, tap the device name to open the **Device Details** page.

**Example:**



2. On page **Device Details**, tap **Remote Setting** to open the device settings.

**Example:**



**Note:** The settings menu and parameter list may vary for different devices and user roles.

3. Select **DRM Settings**, and enable the **DRM Check** function.



## 7.15. View or configure the V-Watt and V-Var settings

This inverter complies with AS/NZS 4777.2: 2020 for power quality response modes. It meets DNSPs' grid connection rules and requirements for the volt-watt and volt-var settings in different regions.

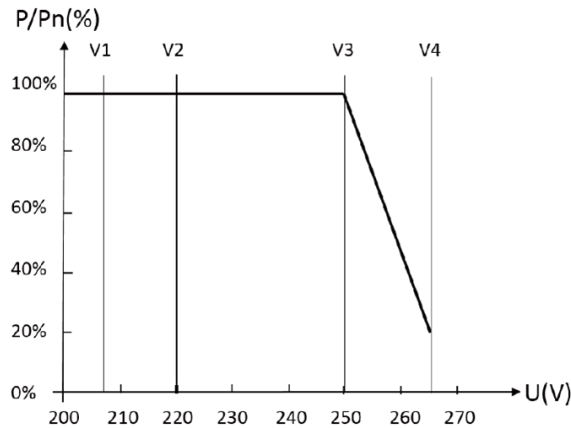


Figure 7.1. Curve for a Volt-Watt response mode (AS4777 Series)

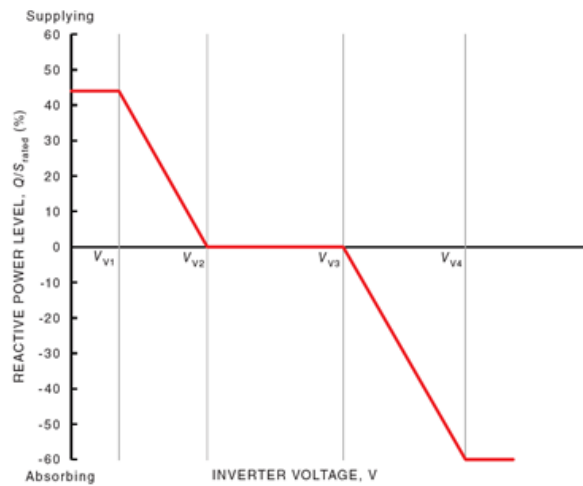


Figure 7.2. Curve for a Volt-Var control mode (AS4777 Series)

### Note:

With regard to the power rate limit mode, SAJ product sets the product WGra to 16.67%Pn by default in the following cases according to the requirements of 3.3.5.2 as 4777.2: 2020.

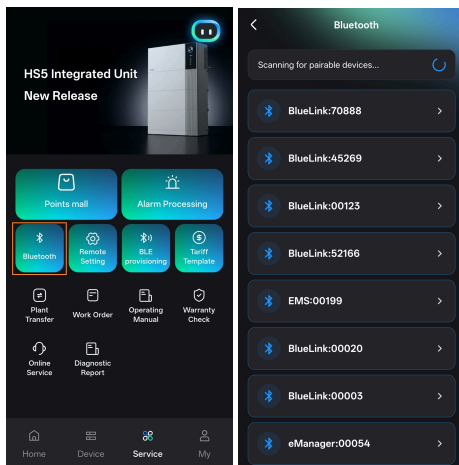
- Soft ramp up after connection.
- Reconnect or soft ramp up/down following a response to frequency disturbance.

### Procedure

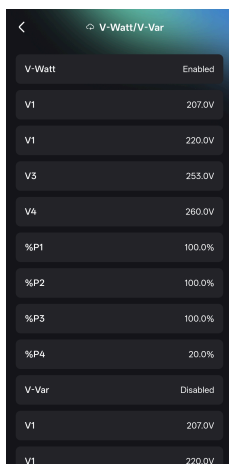
1. On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Select **V-Watt/V-Var** to set or view the parameter values.



## 7.16. Configure the AFCI function

Follow this procedure to enable the AFCI function on the elekeeper App for the applicable devices.

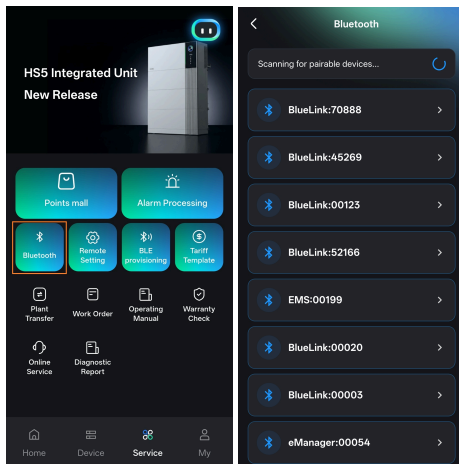
The inverter is equipped with an arc-fault circuit interrupter (AFCI). The AFCI is a safety feature designed to detect and interrupt arc faults, which are unintended electrical discharges that can cause fires. It continuously monitors the MPPT electrical circuits for characteristic signatures of arcing conditions. When an arc fault is detected, the AFCI function quickly interrupts the circuit to prevent potential fire hazards to enhance the system safety and reliability.

### Procedure

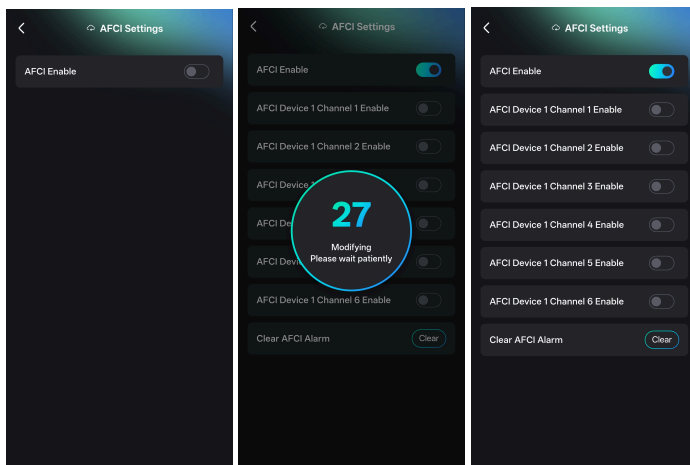
1. On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Select **AFCI Settings**, and tap the icon to enable the AFCI function.





## 7.17. Configure G100 function

The G100 function is only applicable when the **Country** setting is UK (United Kingdom) on page **Safety Settings**. This function controls the export and import limit at the connection point of the distribution network.

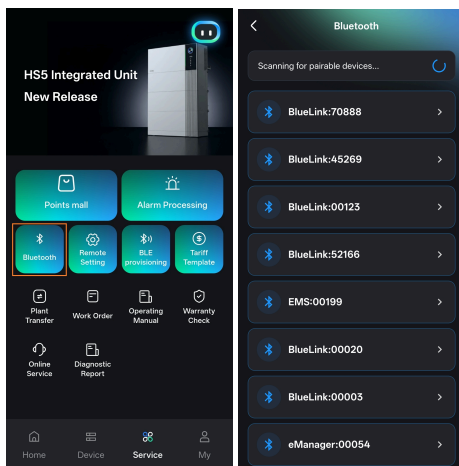
If export and import limit control fails at the connection point, the inverter (or PCS, hereinafter referred as the inverter) will shut down and can only be restarted by resetting the G100 system. If the failure happens four times within 30 days, the inverter will be locked and can only be restored to operation by clearing the fault history.

### Procedure

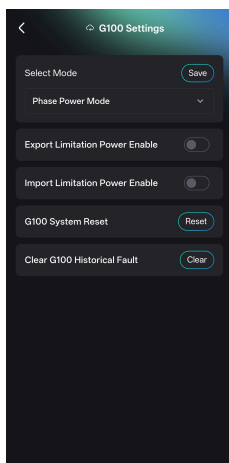
1. On page **Service**, tap **Bluetooth**. Select the communication module, inverter or EMS according to the last five digits of the serial number (SN).

#### Example:

- **BlueLink: 45269** for a communication module or inverter.
- **EMS: 00199** for EMS units.



2. Select **G100 Settings** to configure the parameters as needed.



| Parameter                             | Description                                                                              |
|---------------------------------------|------------------------------------------------------------------------------------------|
| <b>Mode</b>                           | Whether to control the export and import power limit per total power or per phase power. |
| <b>Export Limitation Power Enable</b> | The total power or phase power to be exported to the grid depending on the mode.         |
| <b>Import Limitation Power Enable</b> | The total power or phase power to be imported from the grid depending on the mode.       |

| Parameter                          | Description                                                                          |
|------------------------------------|--------------------------------------------------------------------------------------|
| <b>G100 System Reset</b>           | To restart the inverter after an export or import limit control failure happens.     |
| <b>Clear G100 Historical Fault</b> | To manually clear the history of limit control failures for restarting the inverter. |

Table 7.9. G100 settings

## 8. Operation and maintenance

### 8.1. General safety instructions



#### WARNING

Danger of high voltage

- After the system is shut down, wait for at least five minutes to let the energy storage capacitors discharge completely before you open the cabinet door for any maintenance operations.
- Only qualified electrical technicians are allowed to perform the maintenance operations.
- Only perform the maintenance operations in clear and dry weather with no wind or sand. Do not open the cabinet door in weather conditions such as rain, snow, thunderstorms, sandstorms, or heavy fog.
- Do not allow any items (such as fingers, parts, screws, or tools) to contact the fan until it has been powered off and has completely stopped rotating to prevent mechanical injuries.



#### CAUTION

- Do not leave any screws, washers, and other metal parts inside the cabinet. It can cause short circuits, arc discharges, or other electrical faults, which can lead to serious incidents such as fires or explosions.
- Sand or impact of moisture could damage the electrical components and affect the operating performance of the system.

To ensure the safety and efficiency of maintenance work on the BESS, it is essential to strictly follow these safety operating procedures:

- There must be at least two people or more on-site during maintenance work to assist and respond in emergencies.
- During maintenance, use insulating materials to cover nearby live components to prevent accidental electric shock.
- Do not power on the equipment before completing fault diagnosis to avoid new faults or safety hazards.
- During live inspections, pay attention to warning signs on the equipment and avoid standing near the cabinet door to prevent injuries from unexpected situations.
- For switches that need to be disconnected for maintenance, place a "Do Not Close" warning sign at the switch location to prevent accidental operation.
- After replacing power components or changing wiring in the system, manually start the wiring detection and topology recognition process to ensure normal system operation and avoid abnormalities.
- After completing all maintenance and replacement operations, promptly lock the cabinet door and properly store the keys to ensure the safety of the equipment.

### 8.2. Regular maintenance

Conduct regular maintenance of the product to ensure its long-term stable operation.

The maintenance cycles provided in this section are for reference; actual maintenance cycles should be adjusted based on the specific environmental conditions at the project site. Especially in harsh environments such as desert areas, maintenance cycles should be shortened, and cleaning and anti-corrosion measures should be more frequent.

| Maintenance item                                 | Method                                                                                                                                                                                                                                                                                                                                                                     | Interval                                                                                                                                                    |
|--------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Air inlet and outlet cleaning and fan inspection | <ul style="list-style-type: none"> <li>• Check if there is dust accumulation at the air inlets and outlets. If necessary, remove the baffles for cleaning.</li> <li>• Check for any abnormal noise while the fan is running.</li> </ul>                                                                                                                                    | Once every six months to one year.                                                                                                                          |
| System operating status                          | <ul style="list-style-type: none"> <li>• Check if the inverter appearance is damaged or deformed.</li> <li>• Check for any abnormal sound during inverter operation.</li> <li>• While the inverter is running, verify that all parameters are set correctly on the elekeeper App.</li> </ul>                                                                               | Once every six months                                                                                                                                       |
| Electrical connections                           | <ul style="list-style-type: none"> <li>• Check if cable connections are detached or loose.</li> <li>• Check cables for damage, specifically looking for scratches on surfaces in contact with metal.</li> <li>• Check if the sealing plugs for unused DC input terminals have fallen off. Ensure waterproof covers are installed on unused terminals and ports.</li> </ul> | <ul style="list-style-type: none"> <li>• First time: six months after commissioning.</li> <li>• Subsequently: Once every six months to one year.</li> </ul> |
| Grounding reliability                            | Check whether the ground cable is securely and reliably grounded.                                                                                                                                                                                                                                                                                                          | <ul style="list-style-type: none"> <li>• First time: six months after commissioning.</li> <li>• Subsequently: Once every six months to one year.</li> </ul> |
| Vegetation clearing around inverter              | <ul style="list-style-type: none"> <li>• Proactively perform inspection and weeding before the dry/withering season.</li> <li>• Promptly remove debris after clearing; do not stack it around the inverter.</li> </ul>                                                                                                                                                     | Based on the local dry/withering season.                                                                                                                    |

Table 8.1. Maintenance Operations

## 9. Troubleshooting

For the errors reported as below, take the suggested troubleshooting actions in the listed order first. If the error is still present after taking the suggested actions or no specific action is suggested, contact the service support for further assistance.



### NOTICE

The troubleshooting operations must be performed by authorized technicians.

| Error code | Error message                 | Cause                                                                                                                                                                                       | Troubleshooting actions                                                                                                                                                                                                                                                                              |
|------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1          | Master Relay Error            | <ol style="list-style-type: none"> <li>1. The live wire is grounded on the grid side.</li> <li>2. The grid voltage is too low.</li> <li>3. The inverter relay circuit is faulty.</li> </ol> | <ol style="list-style-type: none"> <li>1. Measure whether the voltage between the ground wire and the neutral wire is greater than 10V.</li> <li>2. Measure whether the grid voltage is too low.</li> </ol>                                                                                          |
| 2          | Master EEPROM Error           | Internal EEPROM failure of the inverter.                                                                                                                                                    | <ol style="list-style-type: none"> <li>1. After turning off the AC/DC switch for 5 minutes, restart the inverter.</li> <li>2. Check whether the firmware is upgraded to the correct version.</li> </ol>                                                                                              |
| 3          | Master Temperature High Error | The inverter temperature is too high.                                                                                                                                                       | <ol style="list-style-type: none"> <li>1. Check whether the heat dissipation channel of the inverter is blocked.</li> <li>2. Check whether the inverter is installed in a location exposed to direct sunlight.</li> <li>3. Check whether the installation environment is well-ventilated.</li> </ol> |
| 4          | Master Temperature Low Error  | The inverter temperature is too low.                                                                                                                                                        | Check whether the ambient temperature of the inverter installation location too low.                                                                                                                                                                                                                 |
| 5          | Lost Communication M<->S      | Internal communication of the inverter is lost.                                                                                                                                             | After turning off the AC and DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                          |
| 6          | GFCI Device Error             | The inverter GFCI device fails.                                                                                                                                                             | After turning off the AC and DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                          |
| 7          | DCI Device Error              | The inverter DCI device fails.                                                                                                                                                              | After turning off the AC and DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                          |
| 8          | Current Sensor Error          | The inverter current sensor malfunctions.                                                                                                                                                   | <ol style="list-style-type: none"> <li>1. After turning off the AC and DC switch for 5 minutes, restart the inverter.</li> <li>2. Whether the positive and negative poles of the string MC4 connectors are reversed.</li> </ol>                                                                      |

| Error code | Error message              | Cause                                                                                  | Troubleshooting actions                                                                                                                                                                                                                                                                                                 |
|------------|----------------------------|----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 9          | Master Phase1 Voltage High | The grid voltage is higher than the inverter safety regulations.                       | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too high.</li> <li>2. Check whether the inverter AC output cable connection is secure and whether the grid-connected cable is too thin.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol> |
| 10         | Master Phase1 Voltage Low  | The grid voltage is lower than the allowed range of the inverter safety regulations.   | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too low.</li> <li>2. Check whether the inverter AC output cable connection is secure.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol>                                                   |
| 11         | Master Phase2 Voltage High | The grid voltage is higher than the inverter safety regulations allow.                 | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too high.</li> <li>2. Check whether the inverter AC output cable connection is secure and whether the grid-connected cable is too thin.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol> |
| 12         | Master Phase2 Voltage Low  | The grid voltage is lower than the allowed range of the inverter safety regulations.   | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too low.</li> <li>2. Check whether the inverter AC output cable connection is secure.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol>                                                   |
| 13         | Master Phase3 Voltage High | The grid voltage is higher than the inverter safety regulations.                       | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too high.</li> <li>2. Check whether the inverter AC output cable connection is secure and whether the grid-connected cable is too thin.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol> |
| 14         | Master Phase3 Voltage Low  | The grid voltage is lower than the allowable range of the inverter safety regulations. | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too low.</li> <li>2. Check whether the inverter AC output cable connection is secure.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol>                                                   |
| 15         | Grid Voltage 10Min High    | The grid voltage is higher than the inverter safety regulations.                       | <ol style="list-style-type: none"> <li>1. Check whether the grid voltage is too high.</li> <li>2. Check whether the inverter AC output cable connection is secure and whether the grid-connected cable is too thin.</li> <li>3. Check whether the inverter grid compliance is selected correctly on the App.</li> </ol> |

| Error code | Error message                  | Cause                                                                                | Troubleshooting actions                                                                                                                                                                                                                                                           |
|------------|--------------------------------|--------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 16         | OffGrid Output Voltage Low     | The system temperature is too high, causing the battery to reduce load output.       | <ol style="list-style-type: none"> <li>1. Check whether the ambient temperature is too high.</li> <li>2. Check whether the inverter heat dissipation channel is blocked.</li> <li>3. Check whether the inverter is installed in a location exposed to direct sunlight.</li> </ol> |
| 17         | OffGrid Output Short Circuit   | External wiring short circuit on back-up side.                                       | Check the external cable connections on the back-up side.                                                                                                                                                                                                                         |
| 18         | Master Grid Frequency High     | The grid frequency is higher than the upper limit specified by the local power grid. | <ol style="list-style-type: none"> <li>1. Check whether the grid compliance of the inverter is selected correctly on the App.</li> <li>2. After 5 minutes of disconnecting the AC and DC switch, restart the inverter.</li> </ol>                                                 |
| 19         | Master Grid Frequency Low      | The grid frequency is lower than the lower limit specified by the local power grid.  | <ol style="list-style-type: none"> <li>1. Check whether the grid compliance of the inverter is selected correctly on the App.</li> <li>2. After 5 minutes of disconnecting the AC and DC switch, restart the inverter.</li> </ol>                                                 |
| 20         | BATInputMode Error             | The actual battery connection is not parallel connection.                            | <ol style="list-style-type: none"> <li>1. Check whether all battery connections are secure.</li> <li>2. Check whether the battery input mode is configured to parallel mode.</li> </ol>                                                                                           |
| 21         | Phase1 DCV High                | The DC component of the AC L1 output exceeds the limit range.                        | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                           |
| 22         | Phase2 DCV High                | The DC component of the AC L2 output exceeds the limit range.                        | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                           |
| 23         | Phase3 DCV High                | The DC component of the AC L3 output exceeds the limit range.                        | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                           |
| 24         | Master No Grid Error           | The inverter cannot detect the grid voltage.                                         | <ol style="list-style-type: none"> <li>1. Confirm whether there is a power outage in the power grid.</li> <li>2. Check whether the grid-connected box switch is tripped.</li> <li>3. Check whether the inverter AC cable is firmly connected.</li> </ol>                          |
| 25         | DC ReverseConnect Error        | There is a reverse connection at the PV or battery port.                             | Check whether the negative and positive cables at the PV side and the battery side are connected correctly.                                                                                                                                                                       |
| 26         | Parallel machine CAN Com Error | Parallel CAN communication failed.                                                   | Check the cable connections for parallel CAN communication.                                                                                                                                                                                                                       |

| Error code | Error message           | Cause                                                                                   | Troubleshooting actions                                                                                                                                                                                                                                                                                                                                     |
|------------|-------------------------|-----------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 27         | GFCI Error              | A ground leakage current fault was detected in the power station system.                | <ol style="list-style-type: none"> <li>1. Turn off the AC and DC switches and wait for 5 minutes.</li> <li>2. Check whether the ground wire of the AC output end is firm, and whether the AC wiring is correct.</li> <li>3. Check whether the AC and DC cables are damaged or soaked in water, and whether the battery board is soaked in water.</li> </ol> |
| 28         | Phase1 DCI High         | The DC component of the AC L1 output exceeds the limit range.                           | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                     |
| 29         | Phase2 DCI High         | The DC component of the AC L2 output exceeds the limit range.                           | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                     |
| 30         | Phase3 DCI High         | The DC component of the AC L3 output exceeds the limit range.                           | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                     |
| 31         | ISO Error               | The insulation resistance between the string and the ground is less than the set value. | <ol style="list-style-type: none"> <li>1. Turn off the AC and DC switches and wait for 5 minutes.</li> <li>2. Check whether the ground wire of the AC output end is firm, and whether the AC wiring is correct.</li> <li>3. Check whether the AC and DC cables are damaged or soaked in water, and whether the battery board is soaked in water.</li> </ol> |
| 32         | Bus Voltage Imbalance   | The voltage distribution among the three phases is unequal.                             | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                     |
| 33         | Master Bus Voltage High | The DC input voltage exceeds the allowed input limit of the inverter.                   | <ol style="list-style-type: none"> <li>1. Check the number of battery panels in each string and calculate whether the open circuit voltage of the string exceeds the maximum input voltage of the inverter.</li> <li>2. If the above items are normal, turn off the AC/DC switch for 5 minutes, and then restart the inverter.</li> </ol>                   |
| 34         | Master Bus Voltage Low  | The bus voltage of the inverter is too low.                                             | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                     |
| 35         | Master Grid Phase Error | Grid phase error.                                                                       | Measure whether the voltage between three-phase power of the grid is normal.                                                                                                                                                                                                                                                                                |
| 36         | Master PV Voltage High  | The DC input voltage of the inverter is too high.                                       | <ol style="list-style-type: none"> <li>1. Check the number of battery panels in each string and calculate whether the open circuit voltage of the string exceeds the maximum input voltage of the inverter.</li> <li>2. If the above items are normal, turn off the AC/DC switch for 5 minutes, and then restart the inverter.</li> </ol>                   |



| Error code | Error message                | Cause                                                                                                                                                                       | Troubleshooting actions                                                                                                                                                                                                                                                                                                                   |
|------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 37         | Master Islanding Error       | Loss of power grid causes islanding.                                                                                                                                        | <ol style="list-style-type: none"> <li>1. Confirm whether there is a power outage in the power grid.</li> <li>2. Check whether the grid-connected box switch is tripped, and whether the inverter AC cables are firmly connected.</li> <li>3. Close the AC switch and reconnect to the grid.</li> </ol>                                   |
| 38         | Master HW Bus Voltage High   | The DC input voltage exceeds the allowed input limit of the inverter.                                                                                                       | <ol style="list-style-type: none"> <li>1. Check the number of battery panels in each string and calculate whether the open circuit voltage of the string exceeds the maximum input voltage of the inverter.</li> <li>2. If the above items are normal, turn off the AC/DC switch for 5 minutes, and then restart the inverter.</li> </ol> |
| 39         | Master HW PV Current High    | <ol style="list-style-type: none"> <li>1. The positive and negative poles of the string are connected reversely.</li> <li>2. The inverter is internally damaged.</li> </ol> | <ol style="list-style-type: none"> <li>1. Check whether the positive and negative poles of the string are reversely connected.</li> <li>2. If the above items are normal, turn off the AC/DC switch for 5 minutes, and then restart the inverter.</li> </ol>                                                                              |
| 40         | Master Self-Test Failed      | Inverter power-on self-test abnormality.                                                                                                                                    | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                         |
| 41         | Master HW Inv Current High   | The grid-side output current exceeds the inverter limit.                                                                                                                    | <ol style="list-style-type: none"> <li>1. Turn off the AC and DC switch and check whether the AC cable is firmly connected.</li> <li>2. If the above items are normal, turn off the AC/DC switch for 5 minutes, and then restart the inverter.</li> </ol>                                                                                 |
| 42         | Master AC SPD Error          | AC lightning protection circuit abnormality.                                                                                                                                | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                         |
| 43         | Master DC SPD Error          | DC lightning protection circuit abnormality.                                                                                                                                | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                         |
| 44         | Master Grid NE Voltage Error | Live line grounding occurs on the grid side.                                                                                                                                | Measure whether the voltage between the ground wire and the neutral wire is greater than 10V. If it is greater than 10V, the live wire is grounded.                                                                                                                                                                                       |
| 45         | Master Fan1 Error            | Fan 1 blades are stuck or damaged.                                                                                                                                          | <ol style="list-style-type: none"> <li>1. Check whether the external fan (if any) is running normally.</li> <li>2. Turn off the AC and DC switch, waiting for 5 minutes, and then restart the inverter.</li> </ol>                                                                                                                        |
| 46         | Master Fan2 Error            | Fan 2 blades are stuck or damaged.                                                                                                                                          | <ol style="list-style-type: none"> <li>1. Check whether the external fan (if any) is running normally.</li> <li>2. Turn off the AC and DC switch, waiting for 5 minutes, and then restart the inverter.</li> </ol>                                                                                                                        |
| 47         | Master Fan3 Error            | Fan 3 blades are stuck or damaged.                                                                                                                                          | <ol style="list-style-type: none"> <li>1. Check whether the external fan (if any) is running normally.</li> <li>2. Turn off the AC and DC switch, waiting for 5 minutes, and then restart the inverter.</li> </ol>                                                                                                                        |

| Error code | Error message                                      | Cause                                                                        | Troubleshooting actions                                                                                                                                                                                                                                                                                                                                              |
|------------|----------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 48         | Master Fan4 Error                                  | Fan 4 blades are stuck or damaged.                                           | <ol style="list-style-type: none"> <li>1. Check whether the external fan (if any) is running normally.</li> <li>2. Turn off the AC and DC switch, waiting for 5 minutes, and then restart the inverter.</li> </ol>                                                                                                                                                   |
| 49         | Lost Communication between Master and Meter        | Abnormal communication between inverter and meter.                           | <ol style="list-style-type: none"> <li>1. Confirm whether the meter is working normally.</li> <li>2. Check whether the communication cable connection between the inverter and the meter is secure.</li> <li>3. Check whether the communication parameters between the inverter and the meter are set correctly, including address, baud rate, and so on.</li> </ol> |
| 50         | Lost Communication between M<->S                   | Internal communication of the inverter is lost.                              | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                              |
| 51         | Lost Communication between inverter and Grid Meter | The communication between the inverter and the grid meter is abnormal.       | <ol style="list-style-type: none"> <li>1. Confirm whether the meter is working normally.</li> <li>2. Check whether the communication cable connection between the inverter and the meter is secure.</li> <li>3. Check whether the communication parameters between the inverter and the meter are set correctly, including address, baud rate, and so on.</li> </ol> |
| 52         | HMI EEPROM Error                                   | Internal EEPROM failure of the inverter.                                     | <ol style="list-style-type: none"> <li>1. After turning off the AC/DC switch for 5 minutes, restart the inverter.</li> <li>2. Check whether the firmware is upgraded to the correct version.</li> </ol>                                                                                                                                                              |
| 53         | HMI RTC Error                                      | RTC error.                                                                   | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                                                    |
| 54         | BMS Device Error                                   | Battery abnormality.                                                         | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                                                    |
| 55         | BMS Lost.Conn                                      | BMS does not start normally.                                                 | Check whether the BMS START button is on.                                                                                                                                                                                                                                                                                                                            |
| 56         | CT Device Err                                      | CT Device Err                                                                | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                                                    |
| 57         | AFCI Lost Com.Err                                  | AFCI board communication interrupted.                                        | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                                                    |
| 67         | Emergency stop                                     | Emergency stop button pressed.                                               | Reset the emergency stop button.                                                                                                                                                                                                                                                                                                                                     |
| 69         | Fire lockout fault                                 | The fire alarms are triggered, including smoke, flooding, or aerosol alarms. | <ol style="list-style-type: none"> <li>1. Check whether the cabinet is free of any smoke, water immersion, or abnormal situation.</li> <li>2. If the cabinet is working properly, clear the alarm manually on the App.</li> </ol>                                                                                                                                    |
| 81         | Lost Communication D<->C                           | Internal communication of the inverter is lost.                              | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                                                                                                                              |
| 83         | Master Arc Device Error                            | Arc Device Error.                                                            | Contact technical support for further assistance.                                                                                                                                                                                                                                                                                                                    |

| Error code | Error message                 | Cause                                                                                                                                                                       | Troubleshooting actions                                                                                                                                                                                                                                                                                          |
|------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 84         | Master PV Mode Error          | PV mode selection error.                                                                                                                                                    | Check whether the inverter string mode is set correctly.                                                                                                                                                                                                                                                         |
| 85         | Authority expires             | Authority expires.                                                                                                                                                          | Contact technical support for further assistance.                                                                                                                                                                                                                                                                |
| 86         | DRM0 Error                    | DRM0 Error                                                                                                                                                                  | Contact technical support for further assistance.                                                                                                                                                                                                                                                                |
| 87         | Master Arc Error              | DC arcing caused by DC short circuit or poor terminal contact.                                                                                                              | <ol style="list-style-type: none"> <li>1. Check whether each terminal is in good contact and whether the PV positive and negative insulation to the ground is normal.</li> <li>2. If the above items are normal, turn off the AC and DC switch, waiting for 5 minutes, and then restart the inverter.</li> </ol> |
| 88         | Master SW PV Current High     | <ol style="list-style-type: none"> <li>1. The positive and negative poles of the string are connected reversely.</li> <li>2. The inverter is internally damaged.</li> </ol> | <ol style="list-style-type: none"> <li>1. Check whether the positive and negative poles of the string are reversely connected.</li> <li>2. If the above items are normal, turn off the AC and DC switch, waiting for 5 minutes, and then restart the inverter.</li> </ol>                                        |
| 89         | Battery Voltage High          | The battery voltage is higher than the maximum voltage value of the inverter.                                                                                               | Contact technical support for further assistance.                                                                                                                                                                                                                                                                |
| 90         | Battery Current High          | The battery power is too low or the load is too large, causing the battery unable to output.                                                                                | <ol style="list-style-type: none"> <li>1. Reduce the back-up load.</li> <li>2. Charge the battery or stop using the battery.</li> </ol>                                                                                                                                                                          |
| 91         | Battery Charge Voltage High   | The voltage is too high during battery charging.                                                                                                                            | <ol style="list-style-type: none"> <li>1. Do not turn off the battery during charging.</li> <li>2. Restart the battery and the inverter.</li> </ol>                                                                                                                                                              |
| 92         | Battery OverLoad              | The battery power is too low or the load is too large, causing the battery to be unable to output.                                                                          | <ol style="list-style-type: none"> <li>1. Reduce the back-up load.</li> <li>2. Charge the battery or stop using the battery.</li> </ol>                                                                                                                                                                          |
| 93         | Battery SoftConnet TimeOut    | Battery precharge bus failed.                                                                                                                                               | Contact technical support for further assistance.                                                                                                                                                                                                                                                                |
| 94         | Output OverLoad               | The load connected to the back-up end is greater than the maximum output power of H2.                                                                                       | Reduce the back-up load.                                                                                                                                                                                                                                                                                         |
| 95         | Battery Open Circuit          | Inverter cannot detect battery voltage.                                                                                                                                     | <ol style="list-style-type: none"> <li>1. Check whether the battery circuit breaker is open.</li> <li>2. Check whether the connection of the battery power cables is secure.</li> </ol>                                                                                                                          |
| 96         | Battery Discharge Voltage Low | Low voltage is detected during battery discharge.                                                                                                                           | Do not turn off the battery during battery discharge.                                                                                                                                                                                                                                                            |

| Error code | Error message                        | Cause                                                                                                                                                                                                                                                                                                    | Troubleshooting actions                                                                                                                                                                                                                                 |
|------------|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 97         | BMS Internal Communication Error     | <ol style="list-style-type: none"> <li>1. The communication between the battery high-voltage box and the battery pack is abnormal.</li> <li>2. The last battery pack was not connected to the resistor plug, which causes the high voltage box fail to recognize the number of battery packs.</li> </ol> | <ol style="list-style-type: none"> <li>1. Check whether the communication cable is correctly connected.</li> <li>2. Check whether the last battery pack has a resistor plug.</li> <li>3. Check whether the communication network is working.</li> </ol> |
| 98         | Bat Sequence Error                   | Battery pack communication abnormality.                                                                                                                                                                                                                                                                  | <ol style="list-style-type: none"> <li>1. Check whether the communication cable is correctly connected.</li> <li>2. Check whether the last battery pack has a resistor plug.</li> <li>3. Check whether the communication network is working.</li> </ol> |
| 99         | Discharge Over Current Protection    | The discharge current exceeds the set threshold.                                                                                                                                                                                                                                                         | Wait for the fault to be cleared automatically or restart the inverter.                                                                                                                                                                                 |
| 100        | Charge Over Current Protection       | The charge current exceeds the set threshold.                                                                                                                                                                                                                                                            | Wait for the fault to be cleared automatically or restart the inverter.                                                                                                                                                                                 |
| 101        | Module Under Voltage Protection      | The total pressure is lower than the set threshold.                                                                                                                                                                                                                                                      | Force charging the battery.                                                                                                                                                                                                                             |
| 102        | Module Over Voltage Protection       | The total pressure is higher than the set threshold.                                                                                                                                                                                                                                                     | Wait for the fault to be cleared automatically or restart the inverter.                                                                                                                                                                                 |
| 103        | Single Cell Under Voltage Protection | The cell voltage is lower than the set maximum value.                                                                                                                                                                                                                                                    | Force charging the battery.                                                                                                                                                                                                                             |
| 104        | Single Cell Over Voltage Protection  | The cell voltage is higher than the set maximum value.                                                                                                                                                                                                                                                   | Wait for the fault to be cleared automatically or restart the inverter.                                                                                                                                                                                 |
| 105        | BMS Hardware Error                   | <ol style="list-style-type: none"> <li>1. Single voltage detection module failure.</li> <li>2. Temperature detection module failure.</li> <li>3. Current detection module failure.</li> </ol>                                                                                                            | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                                                                 |
| 106        | Charging temperature low protection  | Charging the battery below 0°C.                                                                                                                                                                                                                                                                          | Wait for the battery to heat up until the fault is cleared.                                                                                                                                                                                             |
| 107        | Charging temperature high protection | Battery temperature is too high.                                                                                                                                                                                                                                                                         | Wait for the battery to cool down until the fault is cleared.                                                                                                                                                                                           |

| Error code | Error message                             | Cause                                                                                                                                                                  | Troubleshooting actions                                                                                                                                                                                              |
|------------|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 108        | Discharging temperature low protection    | The battery temperature is too low, disconnect the relay to stop discharging.                                                                                          | Wait for the battery to heat up until the fault is cleared.                                                                                                                                                          |
| 109        | Discharging temperature high protection   | Battery temperature is too high.                                                                                                                                       | Wait for the battery to cool down until the fault is cleared.                                                                                                                                                        |
| 110        | BMS Relay Error                           | <ol style="list-style-type: none"> <li>1. The negative or positive relay is stuck.</li> <li>2. The negative or positive relay cannot be closed.</li> </ol>             | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                              |
| 111        | Pre-charge Error                          | <ol style="list-style-type: none"> <li>1. The precharge relay is damaged.</li> <li>2. Precharge blocking circuit.</li> <li>3. BMS damaged.</li> </ol>                  | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                              |
| 112        | BMS Insulation Error                      | The battery pack may have a leakage problem.                                                                                                                           | Contact technical support for further assistance.                                                                                                                                                                    |
| 113        | BMS supplier Incompatibility              | The battery pack and the BMS used in the high-voltage box do not match.                                                                                                | Contact technical support for further assistance.                                                                                                                                                                    |
| 114        | Battery cell supplier incompatibility     | Battery pack cell manufacturers are inconsistent.                                                                                                                      | Contact technical support for further assistance.                                                                                                                                                                    |
| 115        | Battery cell incompatibility              | Battery pack cell levels are inconsistent.                                                                                                                             | Contact technical support for further assistance.                                                                                                                                                                    |
| 116        | Battery pack models incompatibility       | The battery pack model does not match.                                                                                                                                 | Contact technical support for further assistance.                                                                                                                                                                    |
| 117        | Circuit Breaker Is Open                   | <ol style="list-style-type: none"> <li>1. The battery circuit breaker is not closed.</li> <li>2. The battery circuit breaker auxiliary contact is abnormal.</li> </ol> | Close the battery air switch.                                                                                                                                                                                        |
| 118        | Temperature Difference Is Too Wide        | Temperature detection module error.                                                                                                                                    | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                              |
| 119        | Voltage Difference Is Too Wide (Class II) | The sampling line is loose.                                                                                                                                            | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                              |
| 120        | Voltage Difference Is Too Wide (Class I)  | The sampling line is loose.                                                                                                                                            | After turning off the AC/DC switch for 5 minutes, restart the inverter.                                                                                                                                              |
| 121        | BMS Over Temperature Protect              | <ol style="list-style-type: none"> <li>1. The ambient temperature is too high.</li> <li>2. Battery overloaded.</li> </ol>                                              | <ol style="list-style-type: none"> <li>1. Check whether the ambient temperature of the battery is too high.</li> <li>2. If the temperature is normal, let the battery rest for 30 minutes and restart it.</li> </ol> |

| Error code | Error message                            | Cause                                                                   | Troubleshooting actions                                                                          |
|------------|------------------------------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|
| 122        | Short Circuit Protect                    | The positive and negative terminals of the battery are short-circuited. | Check whether the battery cable connections are correct.                                         |
| 123        | Total voltage match failed               | Contact technical personnel to troubleshoot the problem.                | Contact technical support for further assistance.                                                |
| 124        | The system is locked                     | Contact technical personnel to troubleshoot the problem.                | Contact technical support for further assistance.                                                |
| 125        | FUSE error protection                    | Contact technical personnel to troubleshoot the problem.                | Contact technical support for further assistance.                                                |
| 126        | Battery Port Voltage Abnormal Protection | The voltage on the battery charging port is too high.                   | Check whether the positive and negative battery power cables are connected to the correct ports. |

## 10. Product specification

| Model                                 | CH2-29.9K-T4               | CH2-30K-T4 | CH2-49.9K-T6 | CH2-50K-T6 |
|---------------------------------------|----------------------------|------------|--------------|------------|
| <b>DC Input</b>                       |                            |            |              |            |
| Max. PV Array Power [Wp]@STC          | 59800                      | 60000      | 99998        | 100000     |
| Max. DC Voltage [V]                   | 1000                       |            |              |            |
| MPPT Voltage Range [V]                | 180–850                    |            |              |            |
| Rated DC Voltage [V]                  | 600                        |            |              |            |
| Start Voltage [V]                     | 200                        |            |              |            |
| Max. DC Input Current [A]             | 4*45                       |            | 6*45         |            |
| Max. DC Input Current per String [A]  | 22.5                       |            |              |            |
| Max. DC Short Circuit Current [A]     | 4*55                       |            | 6*55         |            |
| Number of Strings per MPPT            | 2                          |            |              |            |
| <b>Battery Parameters</b>             |                            |            |              |            |
| Battery Type                          | LiFePO4                    |            |              |            |
| Battery Voltage Range [V]             | 179.2–800                  |            |              |            |
| Max. Charging/Discharging Current [A] | 150                        |            |              |            |
| <b>AC Output [On-grid]</b>            |                            |            |              |            |
| Rated AC Power [VA]                   | 29900                      | 30000      | 49999        | 50000      |
| Max. Apparent Power [VA]              | 29900                      | 33000      | 49999        | 55000      |
| Rated Output Current [A]@230V AC      | 43.3                       | 43.5       | 72.1         | 72.5       |
| Max. AC Continuous Current [A]        | 43.3                       | 47.9       | 72.1         | 79.8       |
| Current Inrush [A]                    | 192                        |            |              |            |
| Max. AC Fault Current [A]             | 182.6                      |            |              |            |
| Rated AC Voltage [V]                  | 3L+N+PE, 380/400           |            |              |            |
| Rated Output Frequency/Range [Hz]     | 50 Hz: 45–55; 60 Hz: 55–65 |            |              |            |
| Power Factor [cos $\phi$ ]            | 0i – 1 – 0c                |            |              |            |
| Total Harmonic Distortion [THDi]      | <3%                        |            |              |            |
| <b>AC Input [On-grid]</b>             |                            |            |              |            |
| Rated AC Voltage [V]                  | 3L+N+PE, 400               |            |              |            |
| Rated Frequency [Hz]                  | 50, 60                     |            |              |            |
| Max. Input Current [A] <sup>1</sup>   | 80                         | 80         | 200          | 200        |
| Max. Input Current [A] <sup>2</sup>   | 43.3                       | 47.9       | 72.1         | 79.8       |
| <b>AC Input [Generator]</b>           |                            |            |              |            |
| Max. Input Power [VA]                 | 138000                     | 138000     | 138000       | 138000     |
| Max. Input Current [A]@230V           | 200                        | 200        | 200          | 200        |
| Rated Input Voltage [V]               | 3L+N+PE, 400               |            |              |            |
| Rated Input Frequency/Range [Hz]      | 50 Hz: 45–55; 60 Hz: 55–65 |            |              |            |
| <b>AC Output [Back-up]</b>            |                            |            |              |            |
| Max. Apparent Power [VA]              | 29900                      | 33000      | 49999        | 55000      |
| Peak Output Apparent Power [VA]       | 29900                      | 45000, 5s  | 49999        | 75000, 5s  |
| Rated AC Voltage [V]                  | 3L+N+PE, 400               |            |              |            |

| Model                              | CH2-29.9K-T4                                                                                                                                                            | CH2-30K-T4 | CH2-49.9K-T6 | CH2-50K-T6 |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|------------|
| Rated Output Frequency/Range [Hz]  | 50 Hz: 45-55; 60 Hz: 55-65                                                                                                                                              |            |              |            |
| Output THDv (@ Linear Load)        | <3%                                                                                                                                                                     |            |              |            |
| Efficiency                         |                                                                                                                                                                         |            |              |            |
| Max. Efficiency                    | ≥98.0%                                                                                                                                                                  |            |              |            |
| Euro Efficiency                    | 97.3%                                                                                                                                                                   |            |              |            |
| Max. Battery to AC Efficiency      | 96.0%                                                                                                                                                                   |            |              |            |
| Protection                         |                                                                                                                                                                         |            |              |            |
| PV String Current Monitoring       | Integrated                                                                                                                                                              |            |              |            |
| PV Insulation Resistance Detection | Integrated                                                                                                                                                              |            |              |            |
| Residual Current Monitoring        | Integrated                                                                                                                                                              |            |              |            |
| PV Reverse Polarity Protection     | Integrated                                                                                                                                                              |            |              |            |
| Anti-islanding Protection          | Integrated                                                                                                                                                              |            |              |            |
| AC Overcurrent Protection          | Integrated                                                                                                                                                              |            |              |            |
| AC Short Circuit Protection        | Integrated                                                                                                                                                              |            |              |            |
| AC Overvoltage Protection          | Integrated                                                                                                                                                              |            |              |            |
| DC Switch                          | Integrated                                                                                                                                                              |            |              |            |
| DC Surge Protection                | II                                                                                                                                                                      |            |              |            |
| AC Surge Protection                | II                                                                                                                                                                      |            |              |            |
| AFCI                               | Integrated                                                                                                                                                              |            |              |            |
| RSD                                | Optional                                                                                                                                                                |            |              |            |
| General Parameters                 |                                                                                                                                                                         |            |              |            |
| Communication                      | Wi-Fi/Ethernet/CAN/RS485                                                                                                                                                |            |              |            |
| Topology                           | Transformerless                                                                                                                                                         |            |              |            |
| Operating Temperature Range        | -40°C to +60°C (45°C to 60°C with derating)                                                                                                                             |            |              |            |
| Cooling Method                     | Smart fan cooling                                                                                                                                                       |            |              |            |
| Ambient Humidity                   | 0-100% (Non-condensing)                                                                                                                                                 |            |              |            |
| Altitude [m]                       | ≤3000                                                                                                                                                                   |            |              |            |
| Ingress Protection Rating          | IP66                                                                                                                                                                    |            |              |            |
| Dimensions [H*W*D] [mm]            | 630*953*337                                                                                                                                                             |            |              |            |
| Weight [kg]                        | 89                                                                                                                                                                      |            |              |            |
| Warranty [Year]                    | 5/10                                                                                                                                                                    |            |              |            |
| Standard                           | VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150, IEC62109-1/-2, NBT32004-2018, EN61000-6-2, EN61000-6-4 |            |              |            |

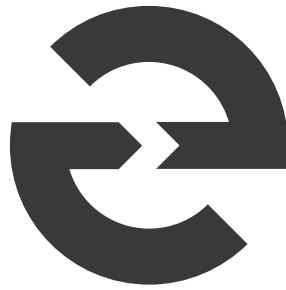
1. The inverter is working for both battery charging and the bypass mode.
2. The inverter is working for battery charging only.



| Model                                 | CH2-30K-T6-LV              |
|---------------------------------------|----------------------------|
| <b>DC Input</b>                       |                            |
| Max. PV Array Power [Wp]@STC          | 60000                      |
| Max. DC Voltage [V]                   | 1000                       |
| MPPT Voltage Range [V]                | 180-850                    |
| Rated DC Voltage [V]                  | 600                        |
| Start Voltage [V]                     | 200                        |
| Max. DC Input Current [A]             | 6*45                       |
| Max. DC Input Current per String [A]  | 22.5                       |
| Max. DC Short Circuit Current [A]     | 6*55                       |
| Number of Strings per MPPT            | 2                          |
| <b>Battery Parameters</b>             |                            |
| Battery Type                          | LiFePO4                    |
| Battery Voltage Range [V]             | 179.2-800                  |
| Max. Charging/Discharging Current [A] | 150                        |
| <b>AC Output [On-grid]</b>            |                            |
| Rated AC Power [W]@220V               | 30000 (28000W@208V AC)     |
| Max. Apparent Power [VA]@220V         | 30000 (28000VA@208V AC)    |
| Rated Output Current [A]@220V         | 78.7                       |
| Max. AC Continuous Current [A]        | 78.7                       |
| Current Inrush [A]                    | 192                        |
| Max. AC Fault Current [A]             | 182.6                      |
| Rated AC Voltage [V]                  | 3L+N+PE, 220/230           |
| Rated Output Frequency/Range [Hz]     | 50 Hz: 45-55; 60 Hz: 55-65 |
| Power Factor [cos $\phi$ ]            | 0.8 leading - 0.8 lagging  |
| Total Harmonic Distortion [THDi]      | <3%                        |
| <b>AC Input [On-grid]</b>             |                            |
| Rated AC Voltage [V]                  | 3L+N+PE, 220/230           |
| Rated Frequency [Hz]                  | 50, 60                     |
| Max. Input Current [A] <sup>1</sup>   | 200                        |
| Max. Input Current [A] <sup>2</sup>   | 78.7                       |
| <b>AC Input [Generator]</b>           |                            |
| Max. Input Power [W]@220V             | 60000                      |
| Max. Input Current [A]@220V           | 157.5                      |
| Rated Input Voltage [V]               | 3L+N+PE, 220/230           |
| Rated Input Frequency/Range [Hz]      | 50 Hz: 45-55; 60 Hz: 55-65 |
| <b>AC Output [Back-up]</b>            |                            |
| Max. Apparent Power [VA]@220V         | 30000 (28000VA@208V AC)    |
| Peak Output Apparent Power [VA]@220V  | 45000, 5s                  |
| Rated AC Voltage [V]                  | 3L+N+PE, 220/230           |
| Rated Output Frequency/Range [Hz]     | 50 Hz: 45-55; 60 Hz: 55-65 |
| Power Factor [cos $\phi$ ]            | 0.8 leading - 0.8 lagging  |
| Output THDv (@ Linear Load)           | <3%                        |

| Model                              | CH2-30K-T6-LV                                                                                                                                                           |
|------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Efficiency</b>                  |                                                                                                                                                                         |
| Max. Efficiency                    | ≥98.0%                                                                                                                                                                  |
| Euro Efficiency                    | 97.3%                                                                                                                                                                   |
| Max. Battery to AC Efficiency      | 96.0%                                                                                                                                                                   |
| <b>Protection</b>                  |                                                                                                                                                                         |
| PV String Current Monitoring       | Integrated                                                                                                                                                              |
| PV Insulation Resistance Detection | Integrated                                                                                                                                                              |
| Residual Current Monitoring        | Integrated                                                                                                                                                              |
| PV Reverse Polarity Protection     | Integrated                                                                                                                                                              |
| Anti-islanding Protection          | Integrated                                                                                                                                                              |
| AC Overcurrent Protection          | Integrated                                                                                                                                                              |
| AC Short Circuit Protection        | Integrated                                                                                                                                                              |
| AC Overvoltage Protection          | Integrated                                                                                                                                                              |
| DC Switch                          | Integrated                                                                                                                                                              |
| DC Surge Protection                | II                                                                                                                                                                      |
| AC Surge Protection                | II                                                                                                                                                                      |
| AFCI                               | Integrated                                                                                                                                                              |
| RSD                                | Optional                                                                                                                                                                |
| <b>General Parameters</b>          |                                                                                                                                                                         |
| Communication                      | Wi-Fi/Ethernet/CAN/RS485                                                                                                                                                |
| Topology                           | Transformerless                                                                                                                                                         |
| Operating Temperature Range        | -40°C to +60°C (45°C to 60°C with derating)                                                                                                                             |
| Cooling Method                     | Smart fan cooling                                                                                                                                                       |
| Ambient Humidity                   | 0-100% (Non-condensing)                                                                                                                                                 |
| Altitude [m]                       | ≤3000                                                                                                                                                                   |
| Ingress Protection Rating          | IP66                                                                                                                                                                    |
| Dimensions [H*W*D] [mm]            | 630*953*337                                                                                                                                                             |
| Weight [kg]                        | 89                                                                                                                                                                      |
| Warranty [Year]                    | 5/10                                                                                                                                                                    |
| Standard                           | VDE4105, IEC61727/62116, VDE0126, AS4777.2, CEI 0 21, EN50549-1, G98, G99, C10-11, UNE217002, NBR16149/NBR16150, IEC62109-1/-2, NBT32004-2018, EN61000-6-2, EN61000-6-4 |

1. The inverter is working for both battery charging and the bypass mode.
2. The inverter is working for battery charging only.



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