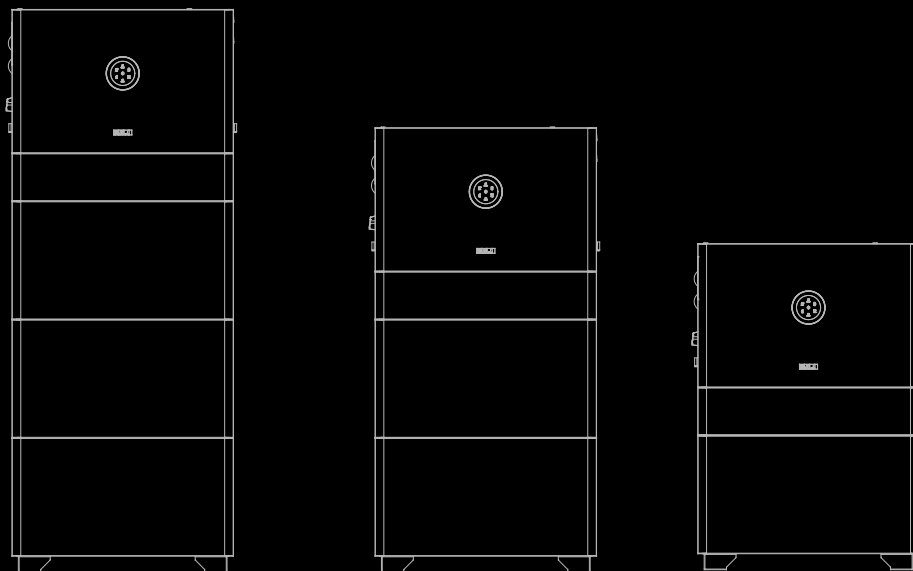




# AS3 Series

**SINGLE-PHASE ALL-IN-ONE ENERGY STORAGE SYSTEM  
USER MANUAL**



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1.

# **SAFETY PRECAUTIONS**

## 1.1. About this document

### 1.1.1. Overview

This *User Manual* provides introductions and instructions of installing, operating, maintaining, and troubleshooting of the SAJ products listed in section 2.2 "Product models".

Read the user manual carefully before any installation, operation and maintenance and follow the instructions during installation and operation. Keep this manual all time available in case of emergency.

### 1.1.2. Target audience

This document is applicable to:

- Installers
- Users

## 1.2. Safety

### CAUTION:

**ONLY** qualified and trained electricians who have read and fully understood all safety regulations contained in this manual can install, maintain, and repair the equipment. Access to the equipment is by the use of a tool, lock and key, or other means of security.

### 1.2.1. Safety levels

|                                                                                                 |
|-------------------------------------------------------------------------------------------------|
|  <b>DANGER</b> |
| Indicates a hazardous situation which, if not avoided, will result in death or serious injury.  |

|                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------|
|  <b>WARNING</b>               |
| Indicates a hazardous situation which, if not avoided, can result in death or serious injury or moderate injury. |

|                                                                                                    |
|----------------------------------------------------------------------------------------------------|
|  <b>CAUTION</b> |
| Indicates a hazardous situation which, if not avoided, can result in minor or moderate injury.     |

|                                                                                                   |
|---------------------------------------------------------------------------------------------------|
|  <b>NOTICE</b> |
| Indicates a situation that can result in potential damage, if not avoided.                        |

### 1.2.2. Symbol explanation

| Symbol                                                                              | Description                                                                                                                                                                                                          |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|    | <b>DANGER:</b> Electrical shock hazard<br>This device is directly connected to public grid and thus all work to the battery shall only be carried out by qualified personnel.                                        |
|    | <b>WARNING:</b> No open flames<br>Do not place or install near flammable or explosive materials.                                                                                                                     |
|    | <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>ATTENTION:</b> Install the product out of reach of children.                                                                                                                                                      |
|    | <b>ATTENTION:</b> Check the user manual before service.<br>If an error has occurred, refer to the troubleshooting section to remedy the error.                                                                       |
|    | <b>ATTENTION:</b> This device shall NOT be disposed of in residential waste.                                                                                                                                         |
|   | <b>ATTENTION:</b> This battery module shall NOT be disposed of in residential waste.                                                                                                                                 |
|  | <b>CAUTION:</b> Risk of electric shock from energy stored in capacitor. Do not remove cover until 5 minutes after disconnecting all sources of supply.                                                               |
|  | <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>                                                                                              |

### 1.2.3. Safety instructions

For safety, be sure to read all the safety instructions carefully prior to any works, and please observe the appropriate rules and regulations of the country or region where you installed all-in-one energy storage system.

|  <b>DANGER</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>• Risk of fatal personnel injuries due to electrical shock and high voltage.</li><li>• Do not touch the surface of the equipment while the housing is wet, otherwise, it might cause electrical shock.</li><li>• Do not touch the operating component of the device; it might result in burning or death.</li><li>• To prevent risk of electric shock during installation and maintenance, please make sure that all AC and battery DC terminals are plugged out.</li><li>• Do not stay close to the equipment while there are severe weather conditions including storm, lighting, etc.</li><li>• Before opening the housing, the SAJ inverter must be disconnected from the grid; you must wait for at least five minutes to let the energy storage capacitors completely discharged after disconnecting from power source.</li><li>• Make sure that the system is powered off prior to any operations.</li><li>• Do not use the battery or the battery control unit if it is defective, broken or damaged.</li><li>• Do not subject the battery to any strong force.</li><li>• Do not place the battery near a heat source, such as direct sunlight or a fireplace.</li><li>• Do not expose the battery to temperatures in excess of 50°C.</li><li>• Keep inflammable and explosive dangerous items or flames away from the battery.</li><li>• Do not soak the battery in water or expose it to moisture or liquids.</li><li>• Do not use the battery in vehicles.</li><li>• Do not use the battery in areas where the ammonia content of the air exceeds 20 ppm.</li></ul> |

 **WARNING**

- Any unauthorized actions including modification of product functionality of any form may cause lethal hazard to the operator, third parties, the units or their property. SAJ is not responsible for the loss and these warranty claims.
- Do not touch non-insulated parts or cables.
- For personal and property safety, do not short-circuit the positive (+) and negative (-) electrode terminals.
- Disconnect the AC circuit breaker, or keep it disconnect if it is tripped, and secure it against reconnection.
- Be sure that the inverter is well grounded in order to protect properties and persons.

 **CAUTION**

- Only qualified personnel who has full knowledge of local safety regulations and local standards on battery can install, maintain, retrieve, and process this product.
- Only use the battery as intended and designed. Do not change any components in the battery.
- Risk of damage due to improper modification.
- Use professional tools when operating the products.
- The inverter will become hot during operations. Do not touch the heat sink or peripheral surface during or shortly after operation.

 **NOTICE**

- During installation of the battery, the circuit breaker must be disconnected from the battery pack wiring.

## 1.3. Safe handling

### 1.3.1. Inverter

- Only qualified electricians who have read and fully understood all safety regulations in this manual can install, maintain, and repair the inverter.
- When the inverter is working, do not touch the internal components or cables to avoid electric shock.
- When the inverter is working, do not plug in or out the cables.
- Make sure that the AC input voltage and current are compatible with the rated voltage and current of the inverter; otherwise, components might be damaged, or the device cannot work properly.

### 1.3.2. Battery

- Operate and use the battery properly according to the user manual. Any attempts to modify battery without the permission from SAJ will void the limit warranty for the battery.
- The battery must be installed at a suitable location with sufficient ventilation.
- For battery installation locations, especially rarely visited spaces like storerooms, attics and closets, install smoke or multi-sensor fire detectors and interlink them with the central fire-alarm system.
- Do not use the battery if it is defective, damaged, or broken.
- Only use the battery with a compatible inverter.
- Use batteries of the same type in an ESS. Do not mix the battery with other types of battery.
- Make sure that the battery is grounded prior to use.
- Do NOT pull out any cables or open the battery enclosure when the battery is powered on.
- Only use the battery as intended and designed. Do not change any components in the battery.
- If the user wants to expand the capacity later, it is recommended to add a cluster of batteries with the same configuration and use them in parallel with the original batteries.

## 1.4. Emergency

Despite of its careful and professional protection design against any hazards, battery damage can still occur. If a small amount of battery electrolyte is released because of severe outer casing damage, or if the battery explodes after a nearby fire and releases toxic gases such as carbon monoxide and carbon dioxide due to delayed treatment, the following actions are recommended:

- Eye contact: Rinse eyes with a large amount of running water and seek medical advice.
- Contact with skin: Wash the contacted area with soap thoroughly and seek medical advice.
- Inhalation: If you feel discomfort, dizziness, or vomiting, seek medical advice immediately.
- Use a FM-200 or Carbon Dioxide (CO<sub>2</sub>) fire extinguishers to extinguish the fire if there is a fire in the area where the battery pack is installed. Wear a gas mask and avoid inhaling toxic gases and harmful substances produced by the fire.
- Use an ABC fire extinguisher, if the fire is not caused by battery and not spread to it yet.

**WARNING**

- If a fire has just occurred, try to disconnect the battery circuit breaker, and cut off the

- power supply first, but only if you can do so without endangering yourself.
- If the battery is on fire, do not attempt to extinguish the fire but evacuate the crowd immediately.

Potential danger of damaged battery:

- **Chemical Hazard:**

Despite of its careful and professional protection design against any hazard results, rupture of battery may still occur due to mechanical damage, internal pressure etc., and may result in a leakage of battery electrolyte. The electrolyte is corrosive and flammable. When there is fire, the toxic gases produced will cause skin and eyes irritation, and discomfort after inhalation. Therefore:

- Do not open damaged batteries.
- Do not damage the battery again (shock, fall, trample, etc.).
- Keep damaged batteries away from water (except to prevent an energy storage system from catching fire).
- Do not expose the damaged battery to the sun to prevent internal heating of the battery.

- **Electrical hazard:**

The reason of fire and explosion accidents in lithium batteries is battery explosion. Here are the main factors of battery explosion:

- Short-circuit of battery. Short circuit will generate high heat inside battery, resulting in partial electrolyte gasification, which will stretch the battery shell. The temperature reaching ignition point of internal material will lead to explosive combustion.
- Overcharge of battery. Overcharge of battery may precipitate lithium metal. If the shell is broken, it will come into direct contact with the air, resulting in combustion. The electrolyte will be ignited at the same time, resulting in strong flame, rapid expansion of gas and explosion.

# 2.

## **PRODUCT INFORMATION**



## 2.1. General introduction

Abbreviations forms will be used throughout the documentation.

| Product series               | Abbreviation             |
|------------------------------|--------------------------|
| AS3-(3K-6K)-S-(W, G)-P       | AS3 inverter             |
| AS3-(3K-6K)-S-(W, G)-P-BE/IE |                          |
| BU3-5.0-(TV1, TV2)-PRO       | BU3 battery              |
| BC3-TV                       | BC3 battery junction box |
| BE3-TV                       | Battery base             |
| CU2-7.4K-S(-I)               | CU2 EV charger           |

SAJ AS3 is a single-phase inverter which is applied to the residential energy storage system which stores the electricity for household future use.

BU3 battery is built internally with a battery management system (BMS), which is used to ensure efficiency of the BU3 battery and protect the battery from operating outside its specified limitations. Working with an optional BC3 battery junction box, up to 8 battery packs can be used for storage expansion.

SAJ BU3 battery has the detection mechanism to report the insulation fault alarm. After system startup and commissioning, if a battery insulation error occurs, an error code <112> will be reported on the elekeeper App.

## 2.2. Product models

### 2.2.1. System

| Model type<br>Communication mode | Professional model                                                                                                                                                                                                                           |
|----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| With a built-in AIO3 module      | <ul style="list-style-type: none"> <li>AS3-3K-S-W-PX</li> <li>AS3-3.6K-S-W-PX</li> <li>AS3-4K-S-W-PX</li> <li>AS3-4.6K-S-W-PX</li> <li>AS3-5K-S-W-PX</li> <li>AS3-5K-S-W-PX-BE*</li> <li>AS3-6K-S-W-PX</li> <li>AS3-6K-S-W-PX-IE*</li> </ul> |
| With a built-in 4G module        | <ul style="list-style-type: none"> <li>AS3-3K-S-G-PX</li> </ul>                                                                                                                                                                              |

|  |                                                                                                                                                                                                                                     |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <ul style="list-style-type: none"> <li>● AS3-3.6K-S-G-PX</li> <li>● AS3-4K-S-G-PX</li> <li>● AS3-4.6K-S-G-PX</li> <li>● AS3-5K-S-G-PX</li> <li>● AS3-5K-S-G-PX-BE*</li> <li>● AS3-6K-S-G-PX</li> <li>● AS3-6K-S-G-PX-IE*</li> </ul> |
|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

### 2.2.2. Inverter

| Model type<br>Communication mode | Professional model                                                                                                                                                                                                                                   |
|----------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| With a built-in AIO3 module      | <ul style="list-style-type: none"> <li>● AS3-3K-S-W-P</li> <li>● AS3-3.6K-S-W-P</li> <li>● AS3-4K-S-W-P</li> <li>● AS3-4.6K-S-W-P</li> <li>● AS3-5K-S-W-P</li> <li>● AS3-5K-S-W-P-BE*</li> <li>● AS3-6K-S-W-P</li> <li>● AS3-6K-S-W-P-IE*</li> </ul> |
| With a built-in 4G module        | <ul style="list-style-type: none"> <li>● AS3-3K-S-G-P</li> <li>● AS3-3.6K-S-G-P</li> <li>● AS3-4K-S-G-P</li> <li>● AS3-4.6K-S-G-P</li> <li>● AS3-5K-S-G-P</li> <li>● AS3-5K-S-G-P-BE*</li> <li>● AS3-6K-S-G-P</li> <li>● AS3-6K-S-G-P-IE*</li> </ul> |

### 2.2.3. Battery pack

| Equipment | Professional model                                                                             |
|-----------|------------------------------------------------------------------------------------------------|
| Battery   | <ul style="list-style-type: none"> <li>● BU3-5.0-TV1-PRO</li> <li>● BU3-5.0-TV2-PRO</li> </ul> |

### 2.2.4. Battery junction box

BC3-TV

### 2.2.5. CU2 EV Charger

CU2-7.4K-S(-I)

## 2.2.6. Wall-mounting bracket

BT3-TV

## 2.3. Model description

### ■ System model

**AS3** - **xK** - **S** - ***a*** - ***P*** ***X*** - ***b***

### ■ Inverter model

**AS3** - **xK** - **S** - ***a*** - ***P*** - ***b***

**AS3:** Product model series.

**xK:** Rated power. For example, 6K indicates the rated power of the inverter is 6 kW.

**S:** Single phase.

**a:** Communication module type in this model.

- **W:** With a built-in AIO3 module.
- **G:** With a built-in 4G module.

**P:** Professional model.

**X:** Quantity of the battery modules, ranging from 1 to 8.

**b:** This model is applicable to this country or region. **BE** and **IE** indicate Belgium and Ireland respectively.

### ■ Battery model

**BU3** - **5.0** - **TVx** - **PRO**

**BU3-5.0:** Battery model series.

**TVx:** **TV** indicates a pack-level optimizer. **x** indicates the battery cell manufacturer.

**PRO:** Professional model.

## 2.4. Dimension

### 2.4.1. AS3 inverter

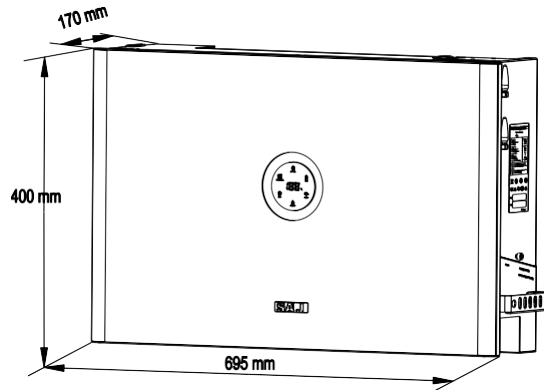


Figure 2.1. AS3 inverter dimension

### 2.4.2. Battery base

The height **X** can be adjusted from 75 mm to 120 mm.

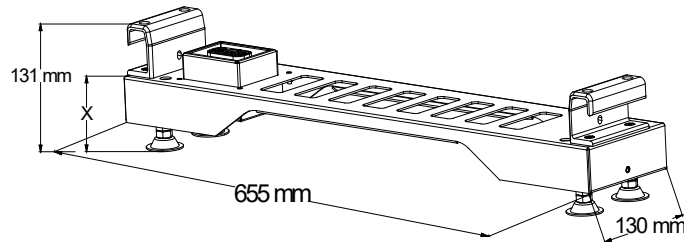


Figure 2.2. Dimension of the battery base

### 2.4.3. BU3 battery pack

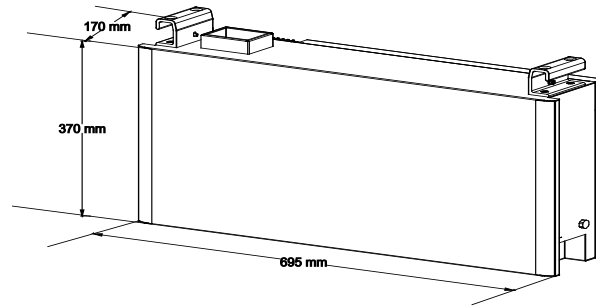


Figure 2.3. Dimension of the battery pack

### 2.4.4. BC3 battery junction box

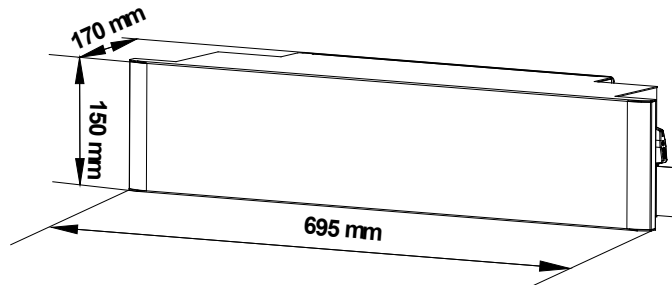


Figure 2.4. Dimension of the BC3 battery junction box

### 2.4.1. CU2 Charger

Charger A or charger B will be received depending on the actual configurations.

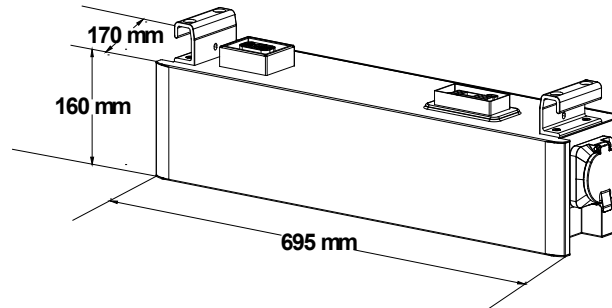


Figure 2.5. Dimension of the CU2 charger A

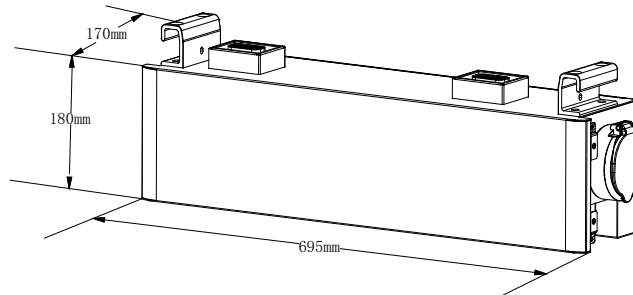


Figure 2.6. Dimension of the CU2 charger B

## 2.5. Ports, switches, and LED on the AS3 inverter

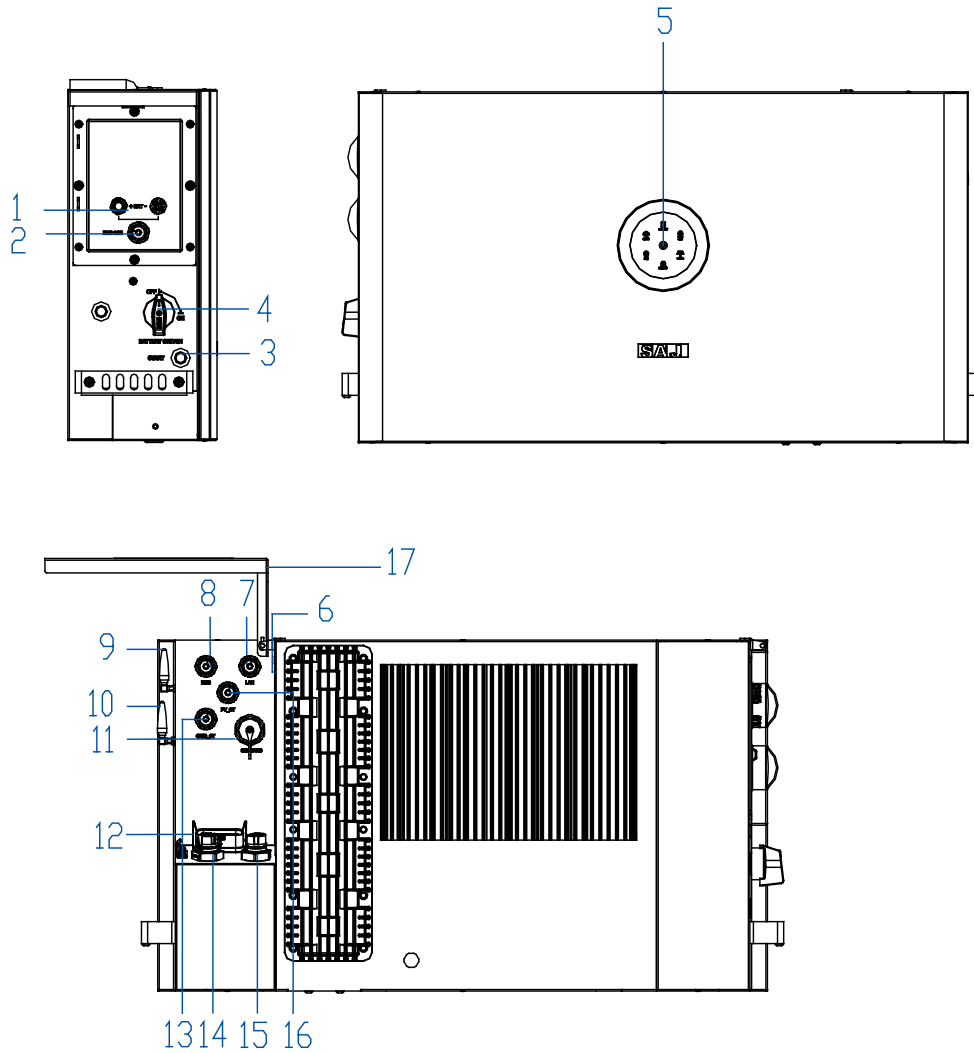


Figure 2.7. Ports, switches, and LED on the inverter

| Callout | Silkscreen     | Description                                                                                                                     |
|---------|----------------|---------------------------------------------------------------------------------------------------------------------------------|
| 1       | BAT (+, -)     | BAT+ and BAT- ports<br>Used for parallel connection.                                                                            |
| 2       | BMS CAN        | Battery communication port                                                                                                      |
| 3       | START          | Start button                                                                                                                    |
| 4       | BATTERY SWITCH | Switch for controlling battery power input and output                                                                           |
| 5       | /              | LED panel                                                                                                                       |
| 6       | /              | Grounding port                                                                                                                  |
| 7       | LAN            | LAN port<br>Only available when an AIO3 module is embedded in the inverter.<br>It is used by the AIO3 module for communication. |
| 8       | EMS            | EMS port<br>Used in the paralleling scenario.                                                                                   |
| 9       | WIFI           | Wi-Fi/Bluetooth antenna                                                                                                         |
| 10      | 4G             | 4G antenna<br>Only available when a 4G module is embedded in the inverter.                                                      |
| 11      | SIM CARD       | SIM card slot. Only available when a 4G module is embedded in the inverter.                                                     |
| 12      | COMM           | Communication port                                                                                                              |
| 13      | GRID_CT        | Port for connecting the CT on the grid side                                                                                     |
| 14      | BACK-UP        | Port for connecting to the backup loads                                                                                         |
| 15      | GRID           | Port for connecting to the grid utility                                                                                         |
| 16      | PV_CT          | Port for connecting the CT on the solar inverter side.<br>Only used in the AC-coupling scenario.                                |
| 17      | /              | The protective cover of the cable terminal connections to prevent unexpected operations.                                        |

Table 2.1. Description of the ports, switches, and LED on the AS3 inverter

The inverter features the blind-mate connector that connects the inverter to the battery pack, ensuring quick electrical connection and communication between the two components. The following figure shows the ports of the blind-mate connector.

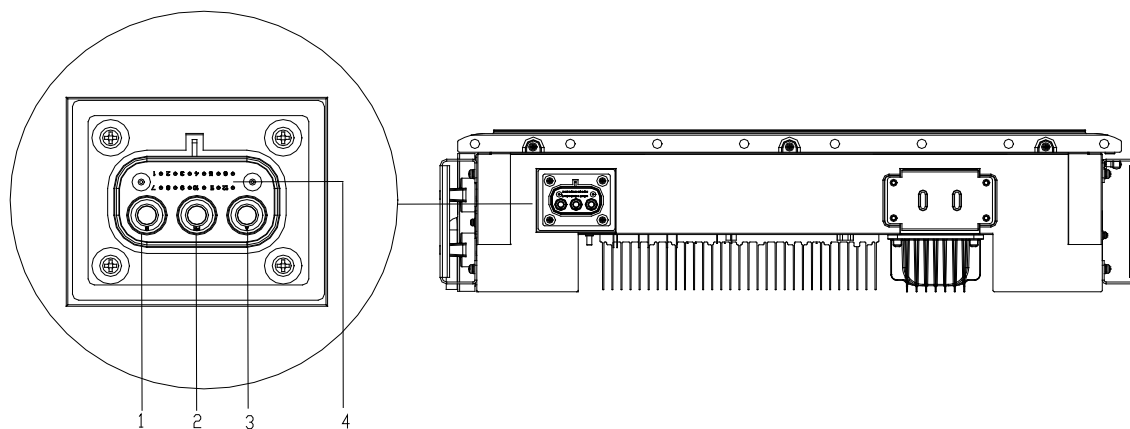


Figure 2.8. Ports of the blind-mate connector on the inverter

| Callout | Silkscreen | Description                                                 |
|---------|------------|-------------------------------------------------------------|
| 1       | B          | The negative pole port of the blind-mate connector.         |
| 2       | PE         | The protective earth (PE) port of the blind-mate connector. |
| 3       | A          | The positive pole port of the blind-mate connector.         |
| 4       | 1-12       | The communication ports of the blind-mate connector.        |

Table 2.2. Description of the blind-mate connector on the inverter

## 2.6. LED indicators on the inverter

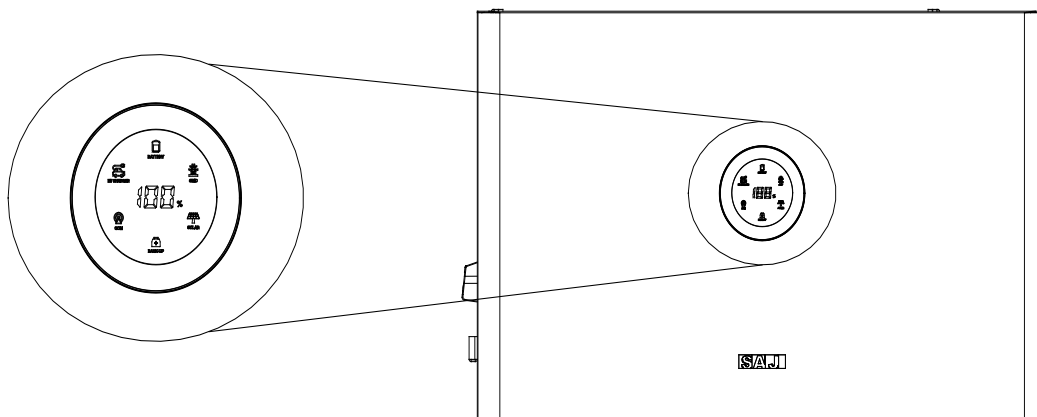


Figure 2.9. AS3 inverter LED

| LED indicator | Status                | Description                                         |
|---------------|-----------------------|-----------------------------------------------------|
|               | Off                   | The inverter is powered off.                        |
|               | Breathing 6s          | The inverter is in initialization or standby state. |
|               | Solid on              | The inverter is working properly.                   |
|               | Breathing 3s          | The inverter is upgrading.                          |
|               | Solid on              | The inverter is not working properly.               |
|               | Integer (example, 50) | Battery average SOC (for example, 50%)              |
|               | --                    | The battery communication is lost.                  |
|               | Solid on              | The battery is discharging.                         |
|               | On 1s, off 3s         | The battery is charging.                            |
|               | On 1s, off 1s         | The battery is not working properly.                |

|                                                                                                 |               |                                                            |
|-------------------------------------------------------------------------------------------------|---------------|------------------------------------------------------------|
|                                                                                                 | Off           | The battery is disconnected or inactive.                   |
| <br>GRID       | Solid on      | The grid is connected and working properly.                |
|                                                                                                 | On 1s, off 1s | The grid is not working properly.                          |
|                                                                                                 | Off           | No grid is detected.                                       |
| <br>PV         | Solid on      | The PV inverter is working properly.                       |
|                                                                                                 | On 1s, off 1s | The PV inverter is not working properly.                   |
|                                                                                                 | Off           | The PV inverter is not working.                            |
| <br>BACK-UP    | Solid on      | The AC-side load is working properly.                      |
|                                                                                                 | On 1s, off 1s | The AC-side load is overloaded.                            |
|                                                                                                 | Off           | The AC-side load is disconnected or off.                   |
| <br>COM        | Solid on      | In good communication with the meter, BMS, and cloud.      |
|                                                                                                 | On 1s, off 1s | Lost communication with the meter, BMS, or cloud.          |
|                                                                                                 | Off           | Lost communication with all the meter, the BMS, and cloud. |
| <br>EV charger | Solid on      | The EV charger is in standby mode and working properly.    |
|                                                                                                 | On 1s, off 1s | The EV charger is charging.                                |
|                                                                                                 | On 1s, off 3s | The EV charger is not working properly.                    |
|                                                                                                 | Off           | The EV charger is disconnected.                            |

Table 2.2. LED description

## 2.7. Ports on the battery

Each battery features one blind-mate connector at the top and another at the bottom, ensuring quick electrical connection and communication between the inverter and the battery or between the batteries. The following figures show the ports of the blind-mate connectors.

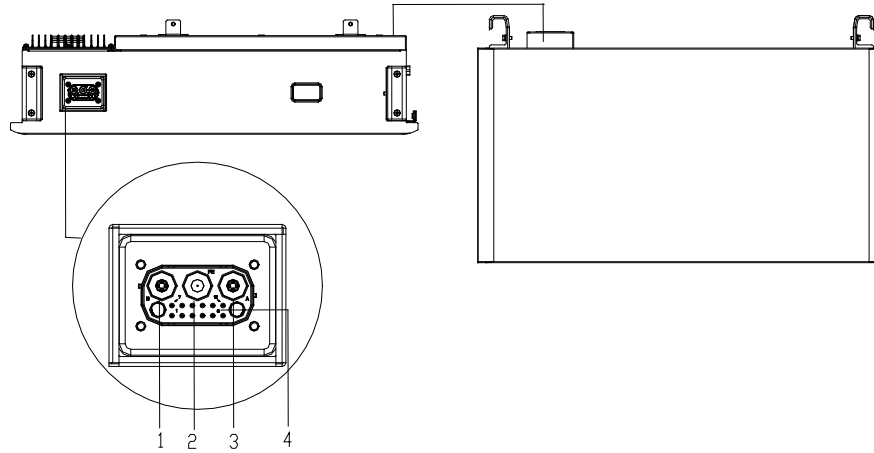


Figure 2.10. Ports of the blind-mate connector at the top of the battery

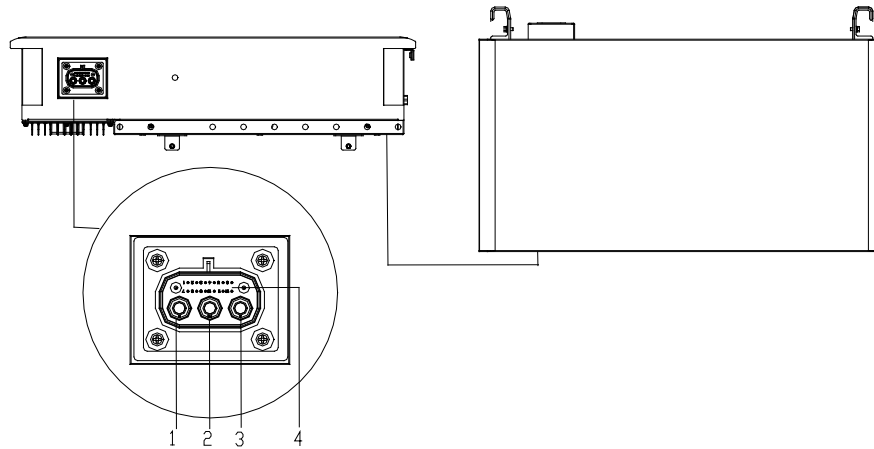


Figure 2.11. Ports of the blind-mate connector at the bottom of the battery

| Callout | Silkscreen | Description                                                 |
|---------|------------|-------------------------------------------------------------|
| 1       | B          | The negative pole port of the blind-mate connector.         |
| 2       | PE         | The protective earth (PE) port of the blind-mate connector. |
| 3       | A          | The positive pole port of the blind-mate connector.         |
| 4       | 1-12       | The communication ports of the blind-mate connector.        |

Table 2.3. Description of the blind-mate connector on the battery

3.

# **TRANSPORTATION AND STORAGE**



### 3.1. Transportation



Load or unload batteries with caution. Otherwise, the batteries may be short-circuited or damaged (such as leakage and crack), catch fire, or explode.

- Batteries have passed the test of UN38.3. This product meets the transportation requirements for dangerous goods for lithium batteries.
- The transportation service provider must be qualified to transport dangerous goods.
- Before transportation, check that the battery package is intact and that there is no abnormal odor, leakage, smoke, or sign of burning. Otherwise, the batteries must not be transported.
- Keep less than 4 cartons of battery in one stack.
- After the installation of the battery on site, the original packaging (contains the lithium battery identification) should be kept. When the battery needs to be returned to the factory for repair, use the original packing for battery transportation.

### 3.2. Storage

Store the device in a dry and well-ventilated environment and keep it away from heat sources.

#### **Inverter-specific:**

Storage environment requirements:

- Temperature range: -40 °C to +60 °C
- Relative humidity: 5% to 95% RH
- Corrosion protection level: C3

#### **Battery-specific:**

- Temporary storage environment requirements:
  - Temperature range: -10 °C to +40 °C
  - Relative humidity: 5% to 95% RH
- Long-term (>3 months) storage environment requirements:
  - Temperature range: -25 °C to +25 °C
  - Relative humidity: < 85% RH
- The battery should be installed within 6 months since delivered from the factory and used with

compatible inverters.

 **NOTICE**

- The battery remains 50% power when it is sent from the factory.
  - The longer the battery is stored, the lower the SOC. When the battery remaining voltage fails to reach the startup voltage requirement, the battery may be damaged.
  - Close the battery breaker switch and press the main switch.
- The battery cannot be disposed of as household refuse. When the service life of the battery reaches its limit, it is not required to return it to the dealer or SAJ, but it must be recycled to the special waste lithium battery recycling station in the area.

4.

# INSTALLATION



## 4.1. Precautions

For safety, be sure to read all the safety instructions carefully prior to any works and observe the appropriate rules and regulations of the country or region where you installed the energy storage system.

|                                                                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  <b>DANGER</b>                                                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>• Dangerous to life due to potential fire or electricity shock.</li> <li>• Do not install the inverter near any inflammable or explosive items.</li> </ul>                                                                                                                                                                |
|  <b>NOTICE</b>                                                                                                                                                                                                                                                                  |
| <ul style="list-style-type: none"> <li>• This equipment meets the pollution degree.</li> <li>• Inappropriate or the harmonized installation environment may jeopardize the life span of the inverter.</li> <li>• Installation directly exposed under intensive sunlight is not recommended.</li> <li>• The installation site must be well ventilated.</li> </ul> |

## 4.2. Determine the installation site

Read the following sections to cautiously determine the installation site.

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

### 4.2.1. Installation environment requirements

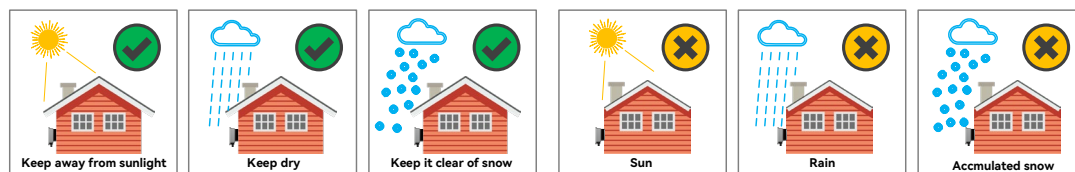


Figure 4.1. Installation location

- Do not expose the device to direct solar irradiation as this could cause power derating due to overheating.
- The installation environment must be free of inflammable or explosive materials.
- The device must be installed in a place at least 900mm away from any heat source.
- Do not install the device at a place where the temperature changes extremely. The ambient temperature of the installation site must not exceed 50°C.
- Keep the device away from children.
- Do not install the device in the bedroom, toilet, or bathroom. The installation site must be at least 1.2 meters away from the emergency exit.

- When installing the device at the garage, keep it away from the driveway.
- Keep the device from water sources such as taps, sewer pipes and sprinklers to prevent water seepage.
- Ensure the inverter is installed in a well-observed area where the LED display panel can be easily read for real-time status checks.

#### 4.2.2. Installation location requirements

- The device employs natural convection cooling, and it can be installed indoor or outdoor.
  - Indoor requirement: The battery CANNOT be installed in the habitable rooms.
  - Outdoor requirement: The height of the device from the ground should be considered to prevent the device from soaking in water. The specific height is determined by the site environment.
- Install the device vertically. Do not install it forward-tilted, horizontally or upside down.

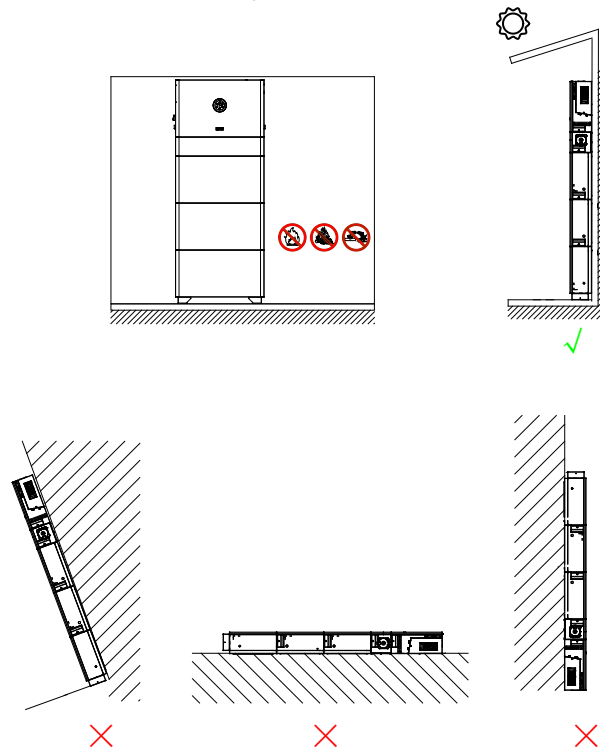


Figure 4.2. Installation limitations

In some restricted conditions, the allowable backward-tilted angle must not be greater than 3 degrees, and the allowable side-tilted angle must not be greater than 2 degrees.

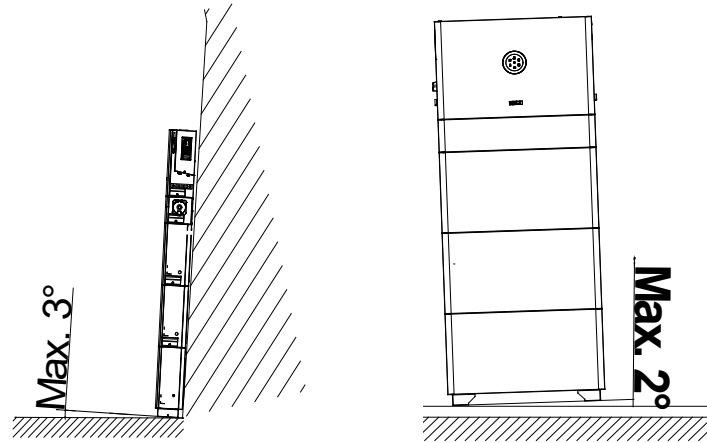


Figure 4.3. Installation angle

- Choose a solid and smooth wall to ensure that the inverter can be installed securely on the wall. Make sure that the wall can bear the weight of the inverter and accessories.
- Reserve enough clearance around the inverter to ensure a good air circulation at the installation area, especially when multiple inverters need to be installed in the same area.

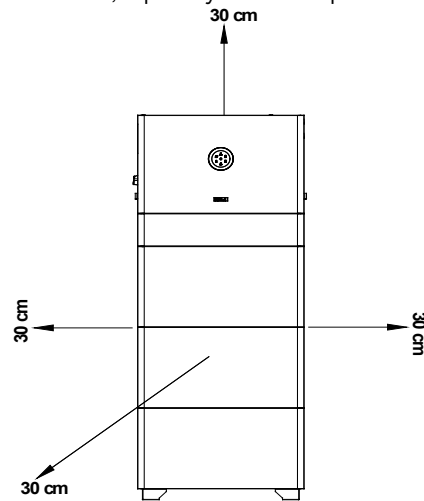


Figure 4.4. Installation clearance

## 4.3. Preparing installation tools

The tools illustrations are for your reference. Installation tools include but are not limited to the following recommended ones. Use other auxiliary tools based on site requirements.

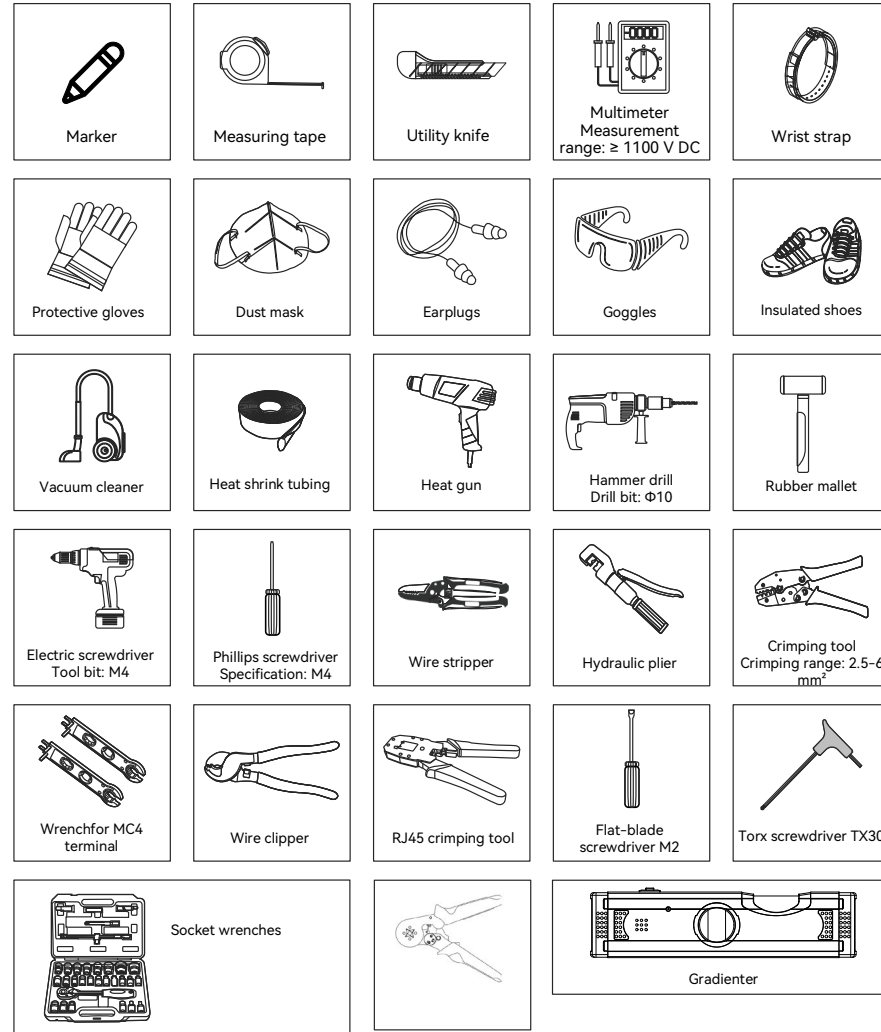


Figure 4.5. Suggested installation tools

## 4.4. Unpacking

### 4.4.1. Check the outer packing

Although SAJ's products have thoroughly tested and checked before delivery, there is possibility that the products may suffer damages during transportation.

1. Check the outer packing package for any damage, such as holes and cracks.
2. Check the equipment model.

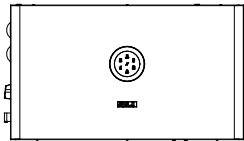
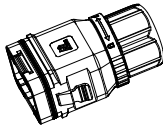
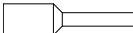
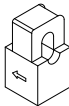
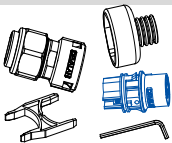
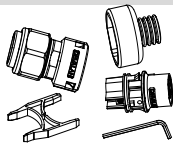
If any serious damage is found or the model is not what you requested, do not unpack the product, and contact your dealer as soon as possible.

### 4.4.2. Check the package contents

1. Verify that the shipment contains everything that you expected to receive. Contact after-sales if there are missing or damaged components.
2. Place the accessories separately after unpacking to avoid confusion for connection of cables.

Contents in your shipment are order-dependent. Not all packages listed below may be in your shipment.

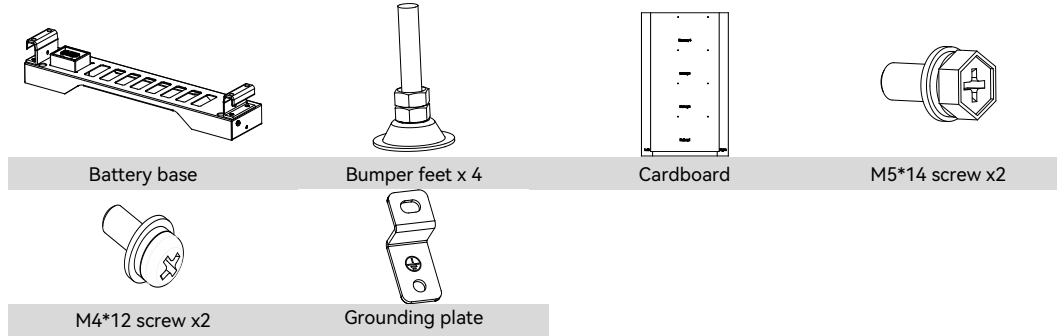
#### ■ AS3 inverter

|                                                                                     |                                                                                      |                                                                                       |                                                                                       |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|   |    |    |    |
| Inverter                                                                            | 24-pin communication cable connector                                                 | Insulated terminals x22                                                               | <sup>1</sup> Current transformer x2                                                   |
|  |  |  |  |
| <sup>2</sup> Backup load connector (blue) kit                                       | <sup>2</sup> Grid connector (black) kit                                              | Rubber plug x2                                                                        | Printed documents                                                                     |

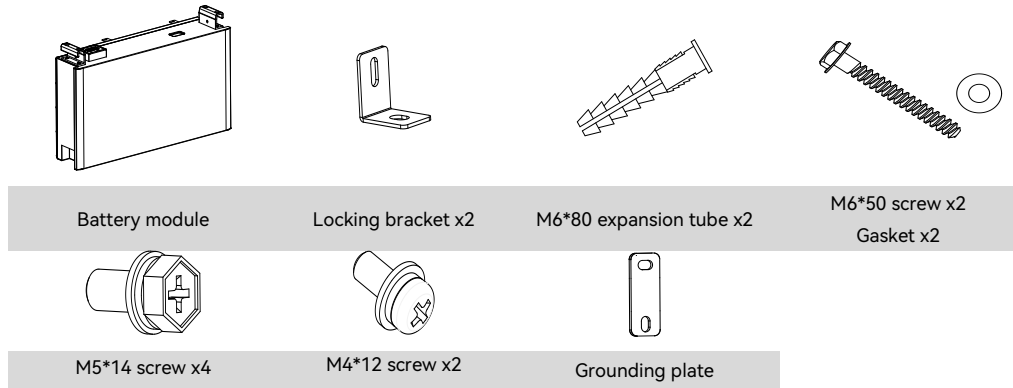
<sup>1</sup> A 10-meter cable is equipped for each CT.

<sup>2</sup> The waterproof cover is only available in some configurations.

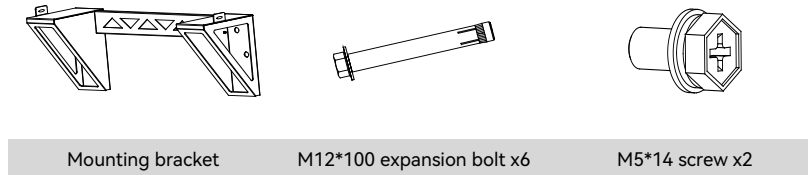
■ **BE3-TV battery base**



■ **BU3 battery pack**



■ **BT3-TV wall-mounting bracket (optional)**



### ■ BC3-TV battery junction box

This is an optional package, depending on your system configuration.



Battery junction box

Communication cable

Positive cable  
Negative cable

### ■ CU2 EV charger (optional)

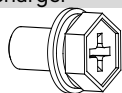


Charger

Holster

M4\*32 screw x4

Expansion bolt x4



M5\*14 screw x2



M4\*12 screw x2



Grounding plate

## 4.5. Installation

### 4.5.1. Plan the battery stacks

#### Quantity of battery stack

One inverter supports up to eight batteries.

- For ground-mounting, a maximum of four batteries can be installed in one stack.
- For wall-mounting, a maximum of three batteries can be installed in one stack.

Besides the four or three batteries installed in the same stack as the inverter, the other batteries in each stack must be installed with a battery junction box (BC3-TV)

#### Distance between battery stacks

For the installation distance between two battery stacks, make sure that the power and communication cables between two battery stacks are within 5 meters to ensure optimum performance of the system.

The cables delivered in the product package are of 2 meters. When longer cable connections are required, prepare the battery power and communication cables as follows:

- The power and communication cables are of the same length.
- For the communication cables, use the standard network cables.
- For the power cables, comply with the following specifications:

| Conductor cross-sectional area (mm <sup>2</sup> ) | Outer diameter (mm) | Conductor material                                | Terminal      |
|---------------------------------------------------|---------------------|---------------------------------------------------|---------------|
| 6-10                                              | 6-8                 | Copper wire (600VDC, working temperature ≤105 °C) | VP-D4B-CHDM8B |

## 4.5.2. Ground mounting manner

### Before you start

Make sure that the ground is flat and has no inclination.

In situations like uneven ground, install the bumper feet beneath the battery base to adjust the battery base horizontally.

### Procedure

Step 1. Install the battery base.

- a. Place the battery base on the ground horizontally.
  - Recommend using a gradienter.
  - The space between the battery base and the wall surface is 50–65 mm.
- b. (Optional) Install the bumper feet beneath the battery base to adjust the battery base horizontally.

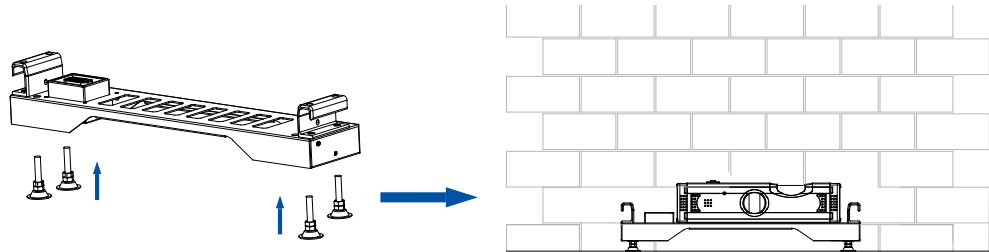


Figure 4.6. (Optional) Adjusting the battery base horizontally

- c. Get the cardboard from the battery base package and position it against the wall.

- d. Align the edges (marked in blue) of the cardboard with the edges of the battery base on both sides.

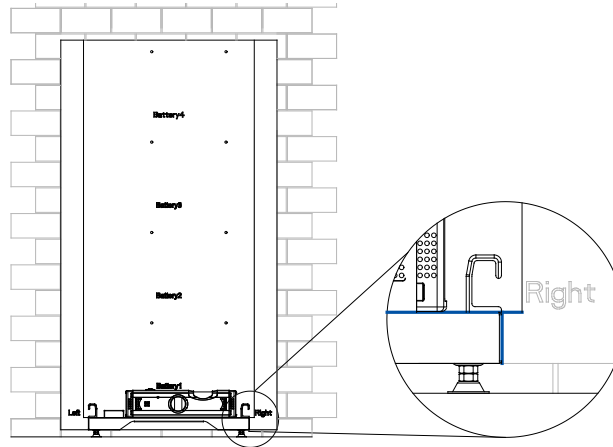


Figure 4.7. Aligning the cardboard with the battery base

- e. Drill holes (8mm in diameter and 55mm in depth) on the marked positions on the cardboard. Install the expansion tubes into the drilled holes.

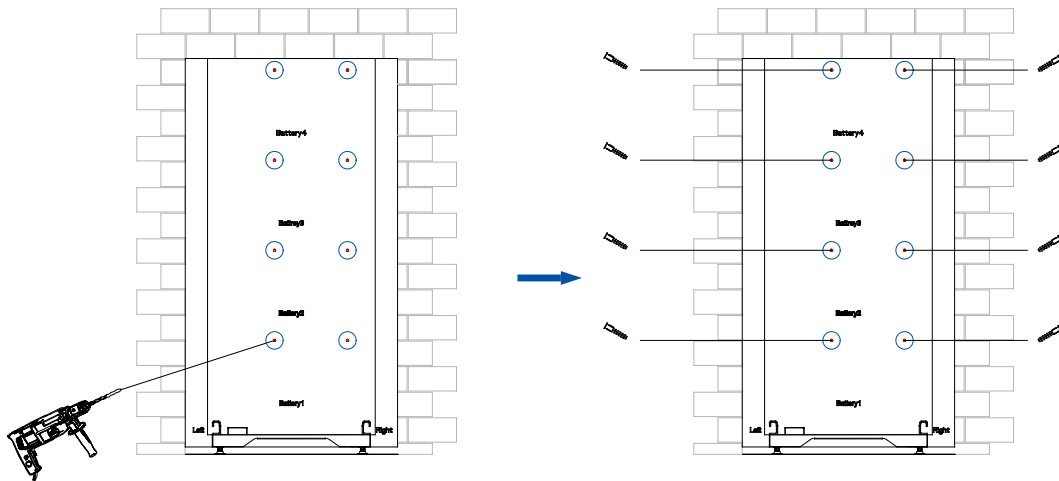


Figure 4.8. Marking and drilling holes on the wall

Step 2. Install the batteries.

- a. On the top of the first battery, use two M5\*14 screws to install two locking brackets to the mounting ears. Then place the battery onto the battery base and push it downwards.

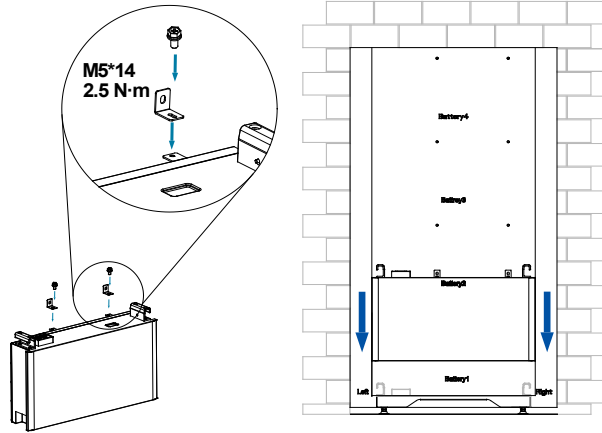


Figure 4.9. Installing the first battery

- b. On the top of the first battery, align the locking brackets to the drilled holes and install M6\*50 screws to secure the locking brackets to the wall. Then install M5\*14 screws to secure the battery to the battery base.
- c. On the right side of the battery base, secure the metal grounding plate with M4\*12 screws.

**Note:** When the battery is installed outdoors, it is suggested to remove the cardboard which is not waterproof.

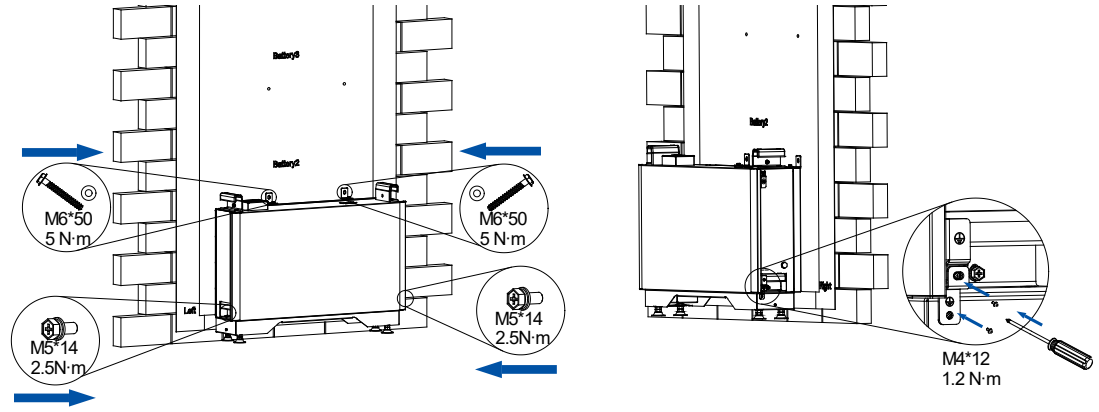


Figure 4.10. Securing the battery to the wall

- d. (Optional) On the top of the second battery, use two M5\*14 screws to install two locking brackets to the mounting ears. Place this battery onto the first battery and push it downward

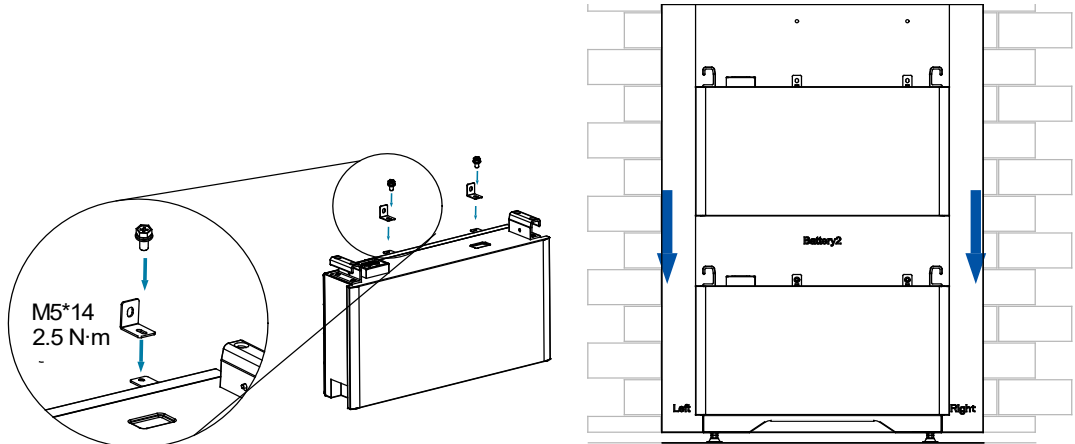


Figure 4.11. Installing the second battery

- e. (Optional) On the top of the second battery, align the locking brackets to the drilled holes and install the gaskets and M6\*50 screws to secure the battery to the wall.  
On the left and right bottom sides of the battery, secure two batteries with an M5\*14 screw.  
On the right bottom side of the battery, install and secure the metal grounding plate with two 4\*12 screws.

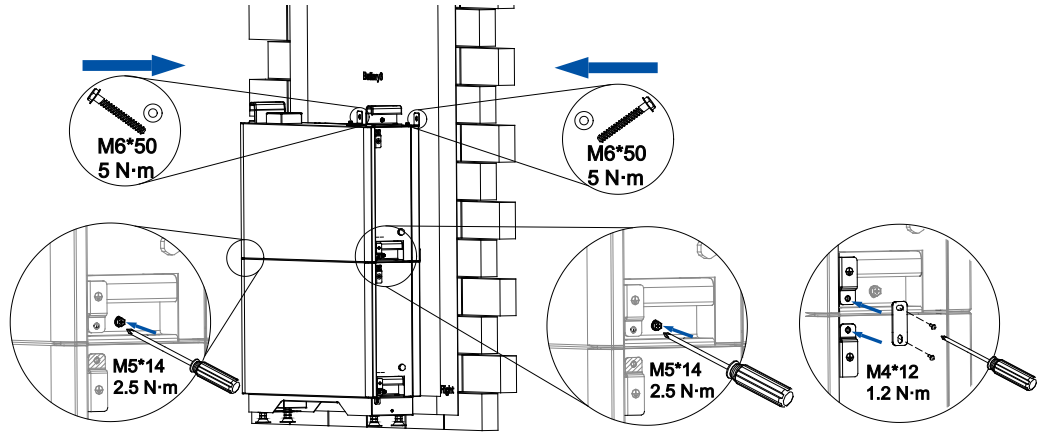


Figure 4.12. Securing the batteries

- f. (Optional) Install the third and fourth battery by taking the same steps as the second battery. The following figure takes 4 batteries as an example.

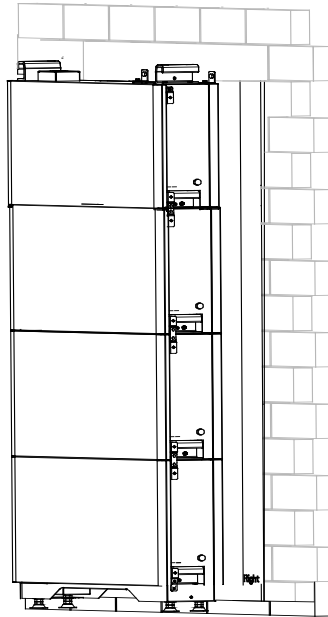


Figure 4.13. Installing the third battery

Step 3. (Optional) Install the EV charger.

- a. Get the holster from the charger package. Install the holster onto the right side of the charger.
  - b. Place the charger onto the battery. Push it downwards.
  - c. On the left and right bottom sides, secure the charger to the battery with screws.
- On the right bottom side, secure the metal grounding plate with screws.

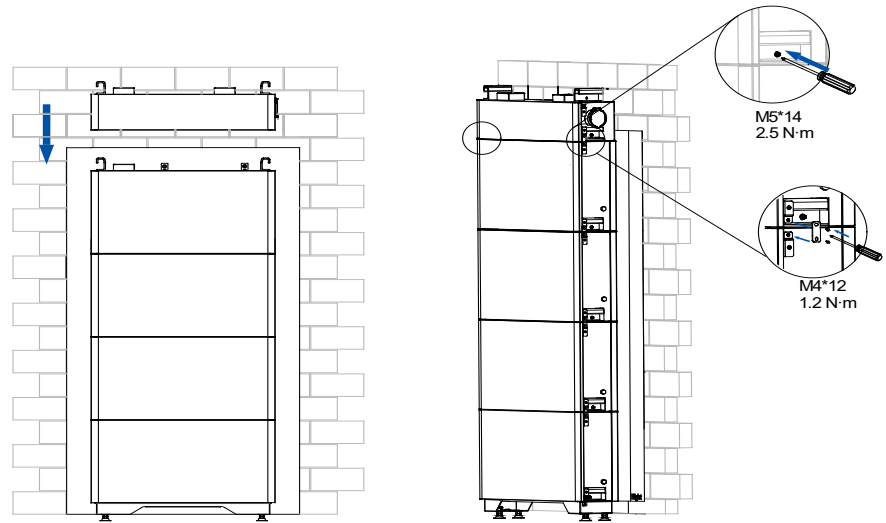


Figure 4.14. Installing the charger

- d. Install the holster on the wall by using three M4\*32 screws.

**Note:** The holster is used to secure the charger cable. You can connect the cable after all installation is completed. It is recommended that you purchase the cable from SAJ.

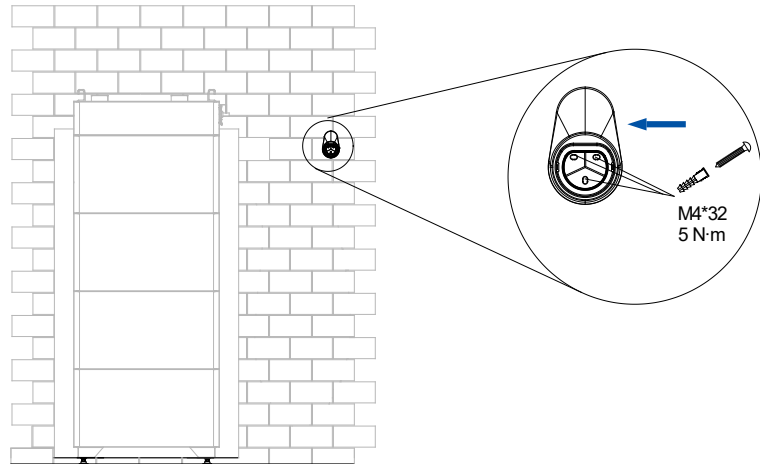


Figure 4.15. Installing the charger cable holster

- e. (Optional) Connect the charger cable.

**Notes:**

- It is recommended that you connect the cable after all device installation is completed.
- It is recommended that you purchase the cable from SAJ.
- For a long cable, you can wrap the cable on the holster.

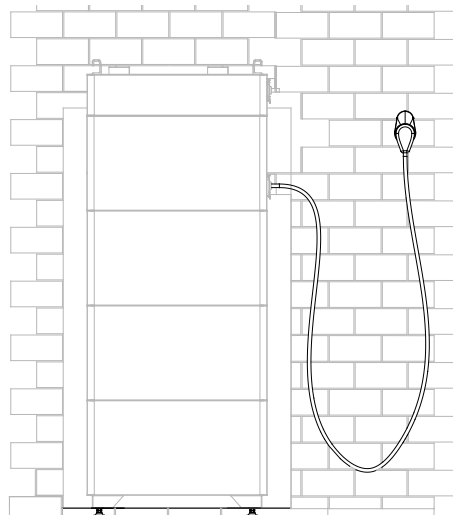


Figure 4.16. Connecting the charger cable

Step 4. Install the inverter.

- a. (Optional) If you have installed a charger, loosen the screws on the inverter, and remove the port cover, as shown below:

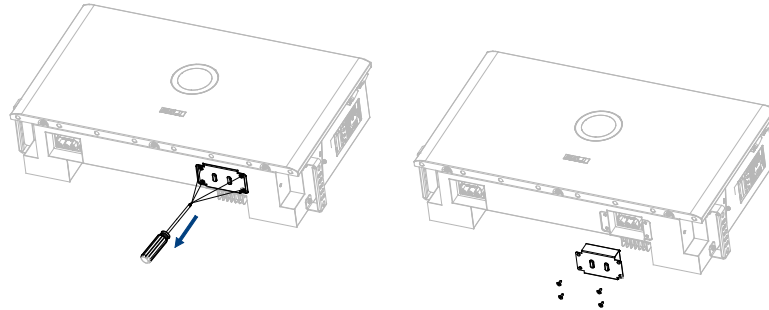


Figure 4.17. Removing the port cover

- b. Place the inverter onto the battery or charger (if available) and push it downwards.
- c. On the left and right bottom sides of the battery pack, secure the inverter to the device with screws (battery or charger; here takes a charger as an example).  
Secure the metal grounding plate with screws.

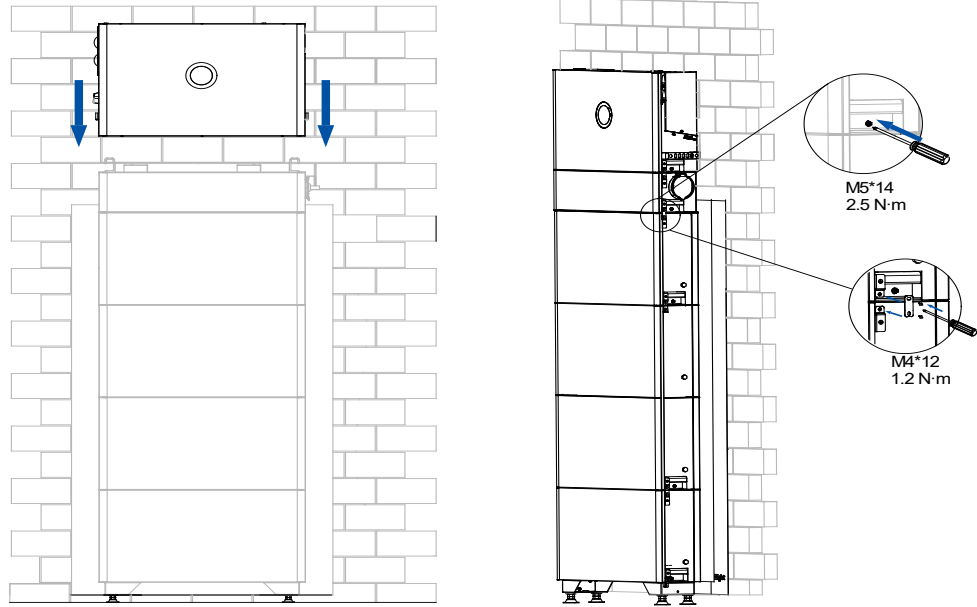
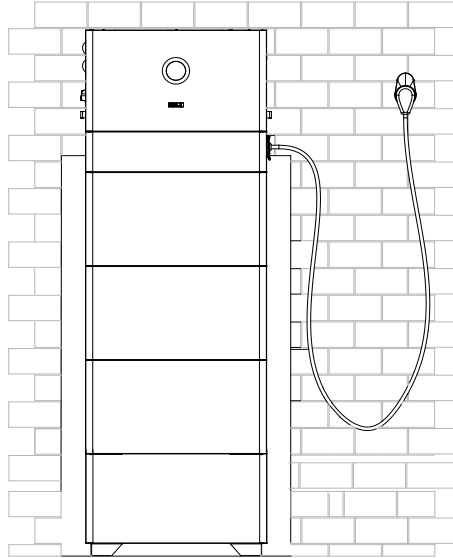


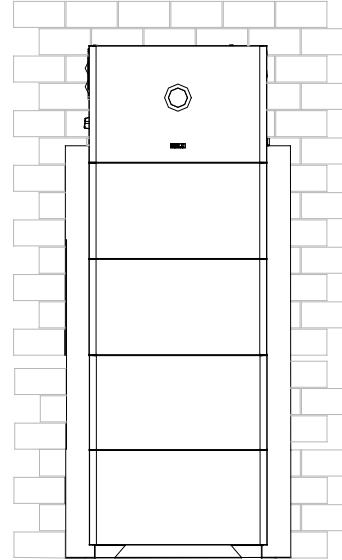
Figure 4.18. Installing the inverter

**Installation completion view**

Example of 4 batteries:  
Inverter + charger + batteries



Inverter + batteries



### 4.5.3. Wall mounting manner

**Before you start**

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

**Procedure**

Step 1. Install the wall-mounting bracket.

- a. Place the mounting bracket onto the wall. Mark six holes. Remove the bracket.

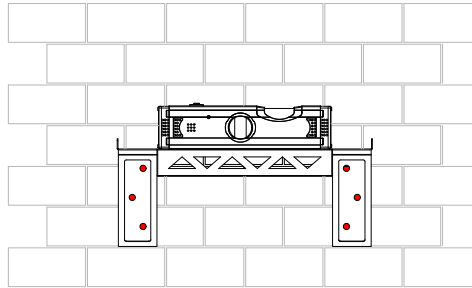


Figure 4.19. Marking the hole positions

- b. Drill six holes according to the marked positions on the wall.

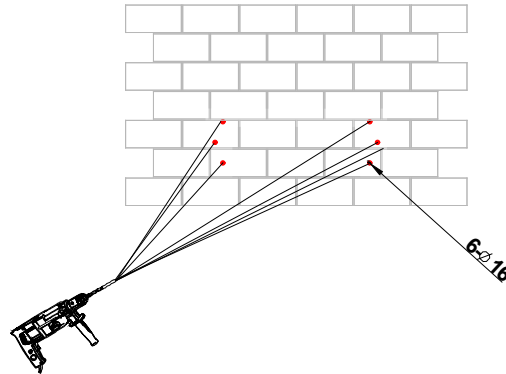


Figure 4.20. Drilling holes

- c. Install the mounting bracket onto the wall.

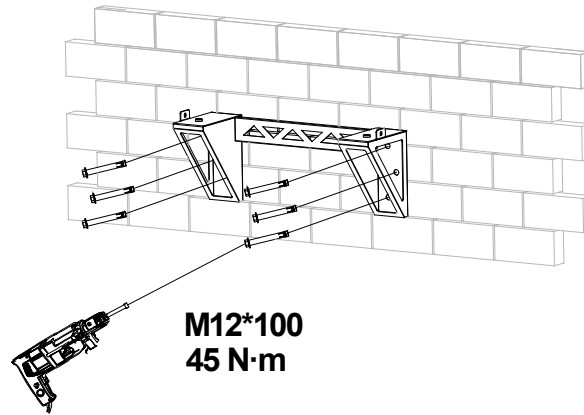


Figure 4.21. Installing the mounting bracket

Step 2. Install the battery base.

- a. Get the cardboard from the battery base package. Place the cardboard onto the wall and align the vertical lines on the cardboard with the bracket edges.

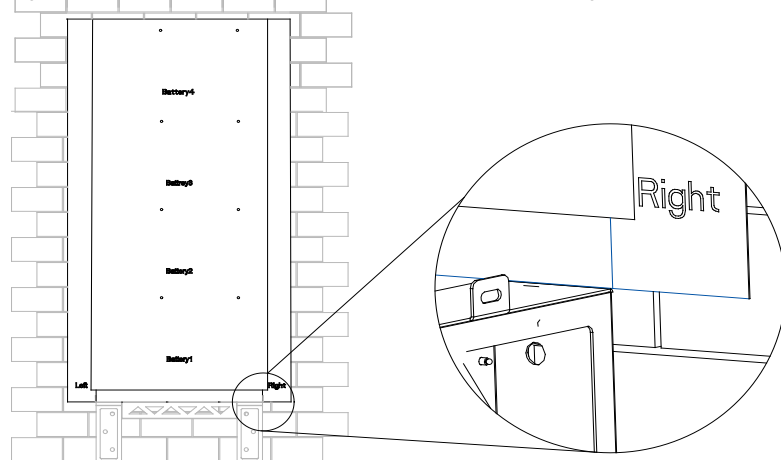


Figure 4.22. Aligning the cardboard with the bracket

- b. Drill holes (8mm in diameter and 55mm in depth) on the marked positions on the cardboard. Install the provided expansion tubes into the drilled holes.

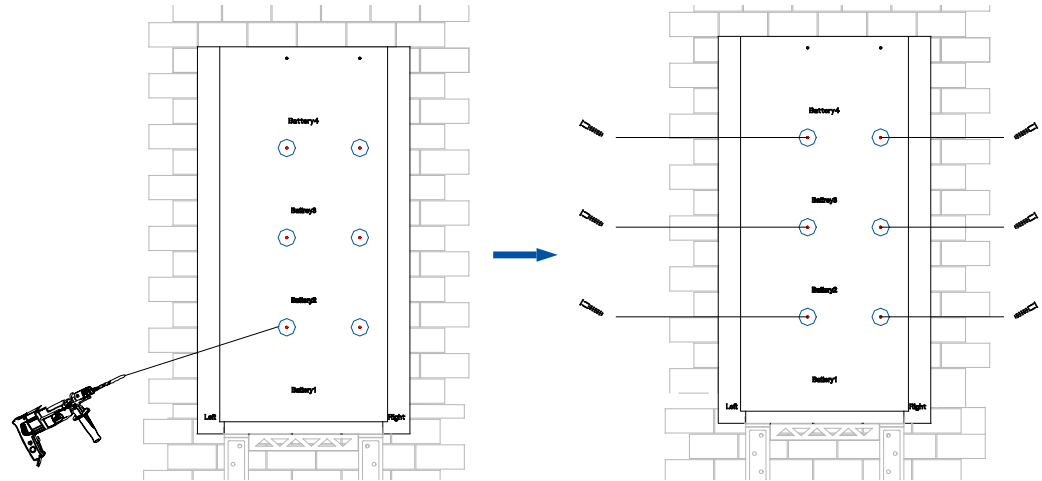


Figure 4.23. Drilling holes

- c. Place and secure the battery base onto the bracket. Make sure that:
- The left and right of the battery base are aligned with the vertical black lines on the cardboard.
  - The battery pack is placed horizontally. (It is recommended that a gradienter be used.)
  - The space between the battery back and the wall surface is 50–65 mm.

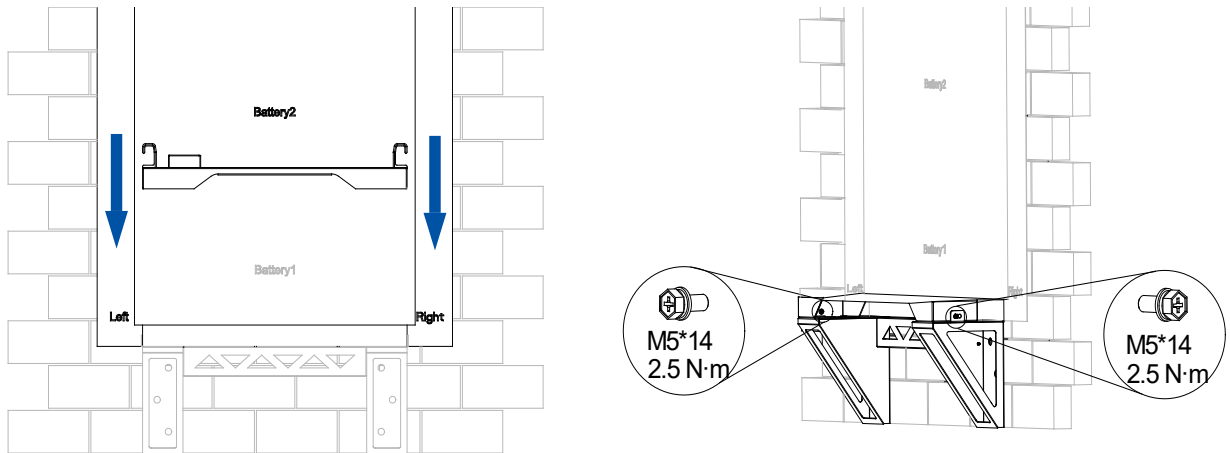


Figure 4.24. Installing the battery base

Step 3. Install the batteries.

- a. Use two M5\*14 screws to install two locking brackets to the mounting ears on the top of the first battery. Then place the battery onto the battery base and push it downwards.

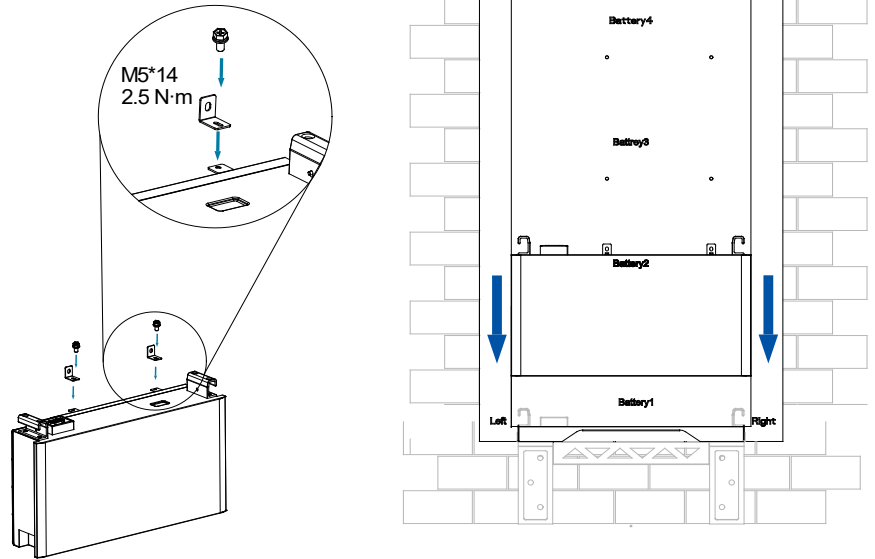


Figure 4.25. Installing the first battery

- b. On the top of the battery, align the locking brackets to the drilled holes and install M6\*50 screws to secure the locking brackets to the wall. Then install M5\*14 screws to secure the battery to the battery base.
- c. On the right side of the battery base, secure the metal grounding plate with M4\*12 screws.

**Note:** When the battery is installed outdoors, it is suggested to remove the cardboard which is not waterproof.

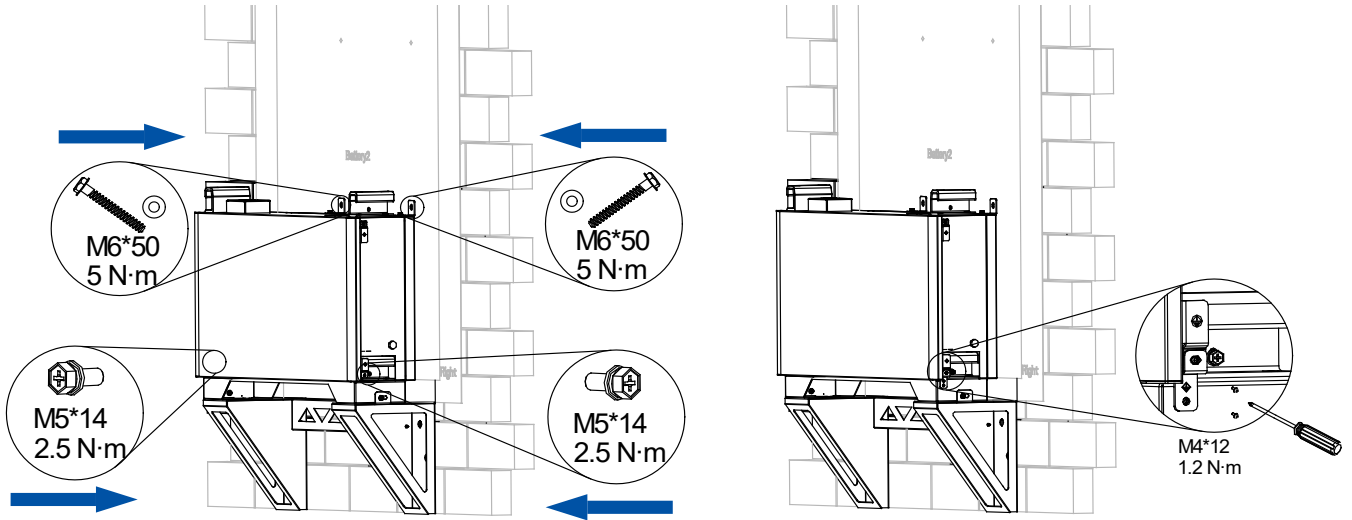


Figure 4.26. Securing the battery to the wall

- d. (Optional) On the top of the second battery, use two M5\*14 screws to install two locking brackets to the mounting ears. Place this battery onto the first battery and push it downwards.

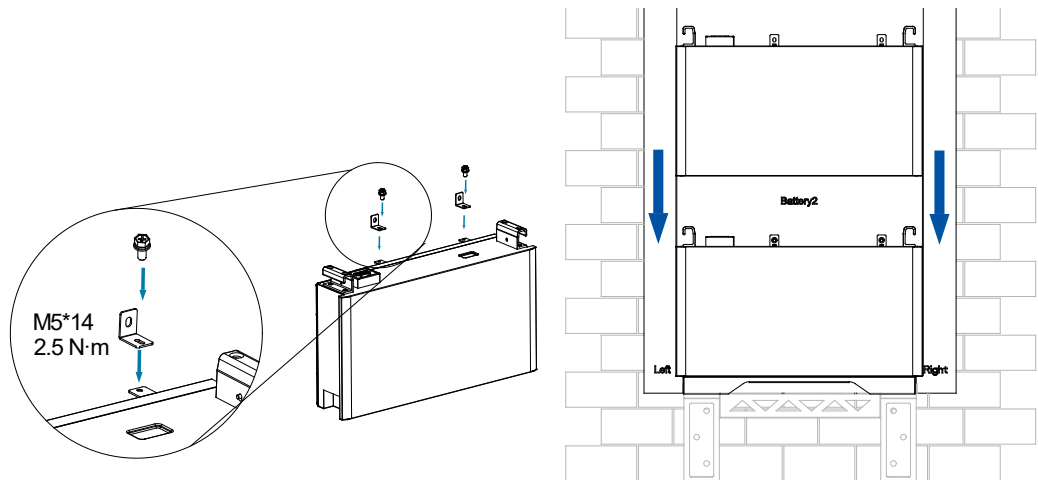


Figure 4.27. Installing the second battery

- e. (Optional) On the top of the second battery, align the locking brackets to the drilled holes and install the gaskets and M6\*50 screws to secure the battery to the wall.

On the left and right bottom sides of the battery, secure two batteries with an M5\*14 screw.

On the right bottom side of the battery, install and secure the metal grounding plate with two M4\*12 screws.

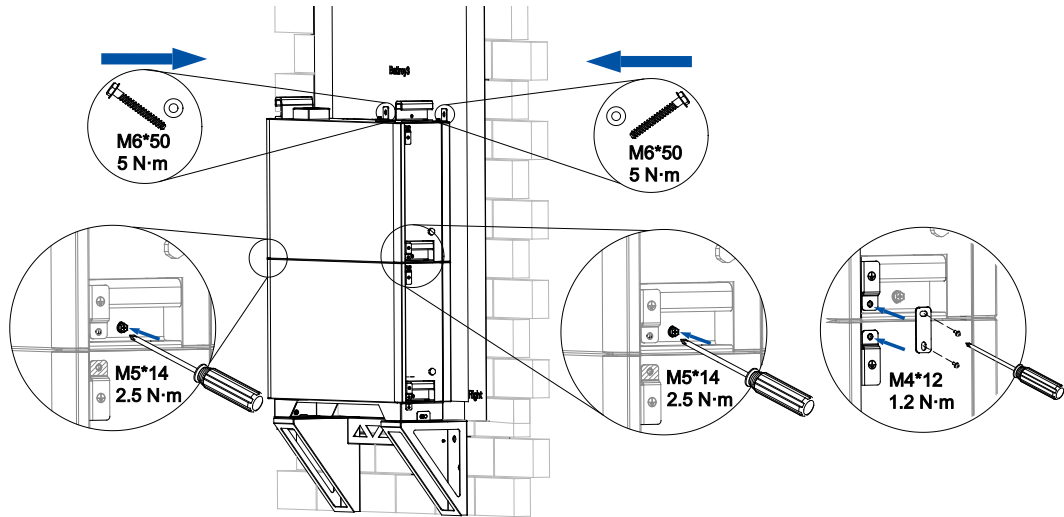


Figure 4.28. Securing the batteries

- f. (Optional) Install the third battery by taking the same steps as the second battery.

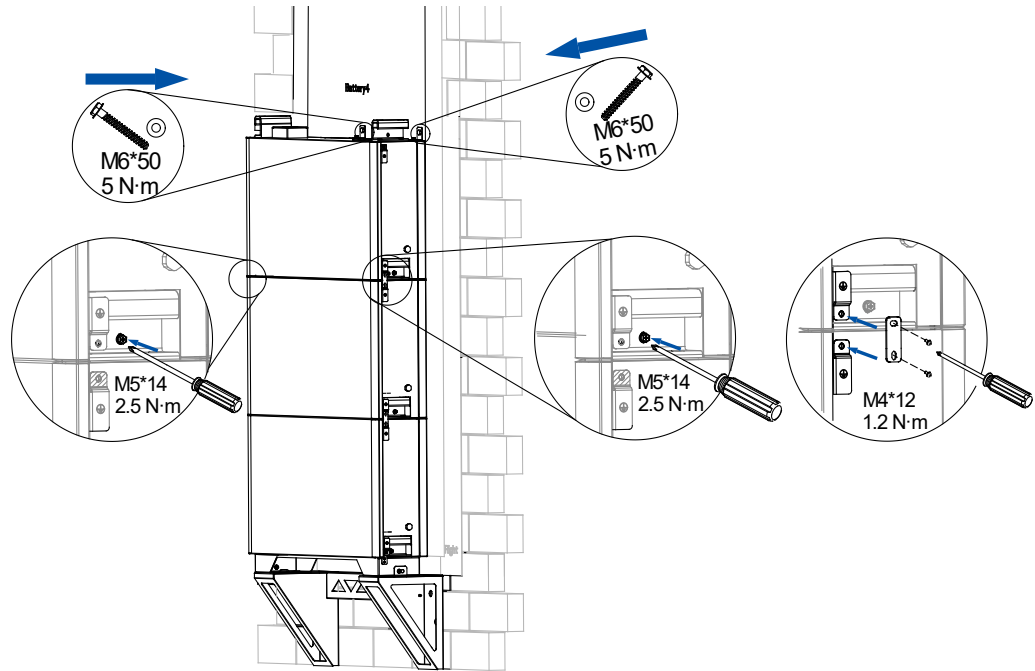


Figure 4.29. Installing the third and fourth battery

Step 4. (Optional) Install the EV charger.

- Get the holster from the charger package. Install the holster onto the right side of the charger.
- Place the charger onto the battery. Push it downwards.
- On the left and right bottom sides of the battery pack, install M5\*14 screws to secure the charger to the battery.

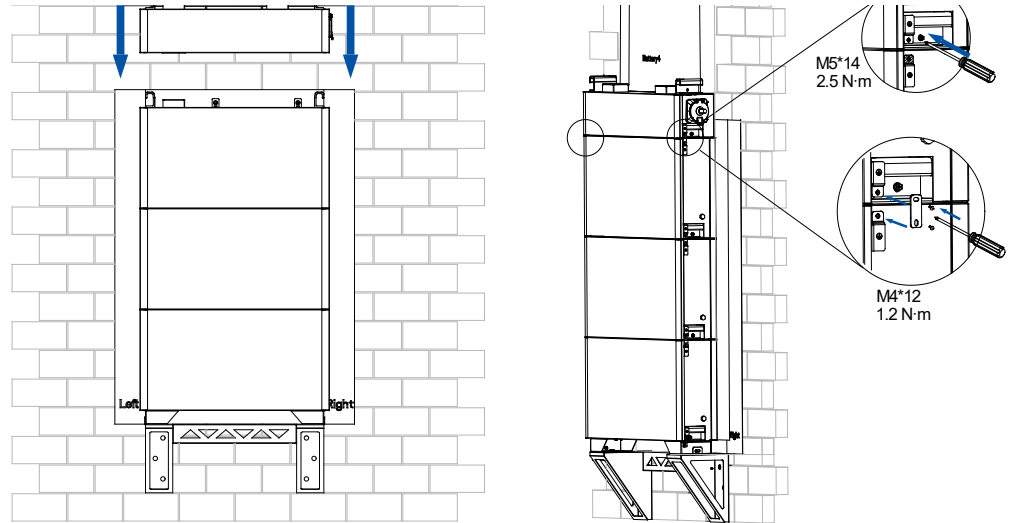


Figure 4.30. Installing the charger

- f. Install the holster on the wall by using three M4\*32 screws.

**Note:** The holster is used to secure the charger cable. It is recommended that you purchase the cable from SAJ and connect the cable after all devices are installed.

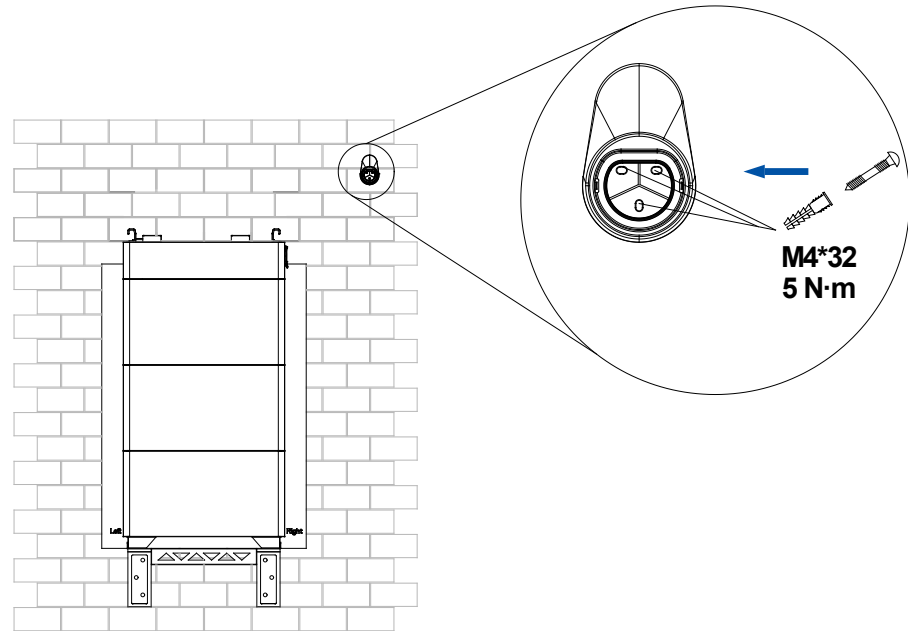


Figure 4.31. Installing the charger cable holster

- g. (Optional) Connect the charger cable.

**Notes:**

- It is recommended that you connect the cable after all device installation is completed.
- It is recommended that you purchase the cable from SAJ.
- For a long cable, you can wrap the cable on the holster.

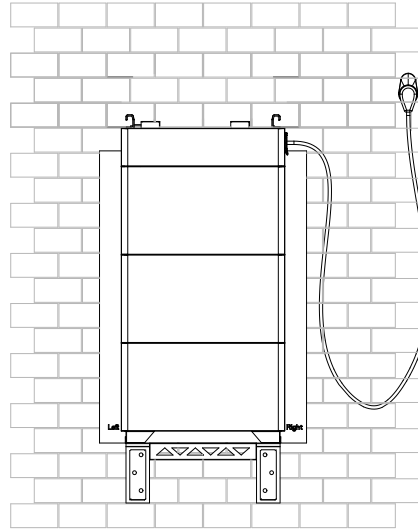


Figure 4.32. Connecting the charger cable

Step 5. Install the inverter.

- a. (Optional) If you have installed a charger, loosen the screws on the inverter, and remove the port cover, as shown below:

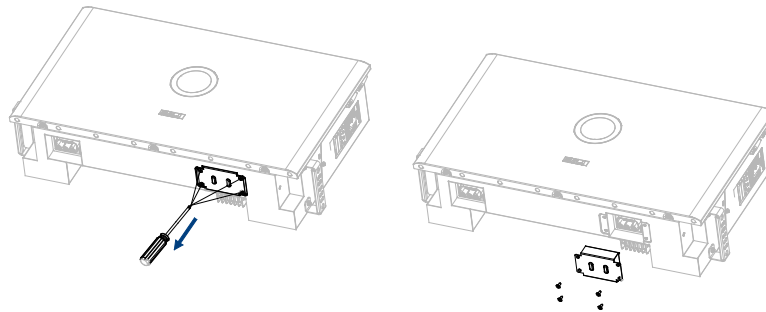


Figure 4.33. Removing the port cover

- b. Place the inverter onto the battery or charger (if available) and push it downwards. On the left and right bottom sides of the battery pack, install M5\*14 screws to secure the inverter to the beneath device (battery or charger; here takes a charger as an example).

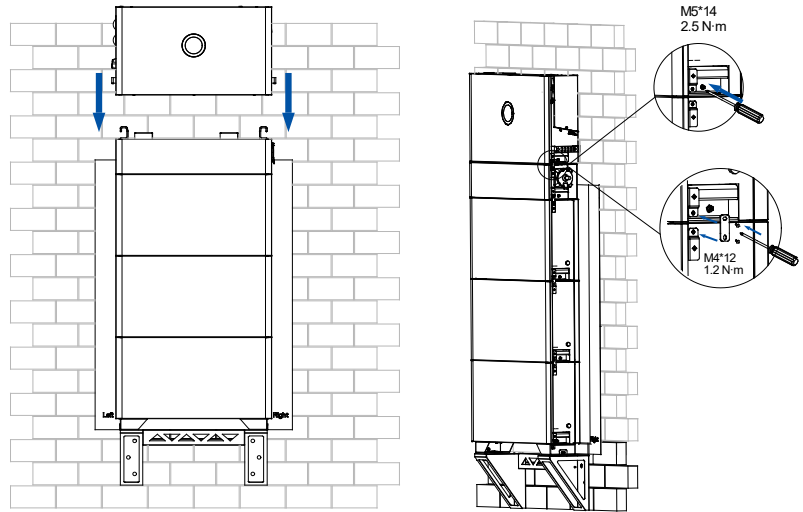
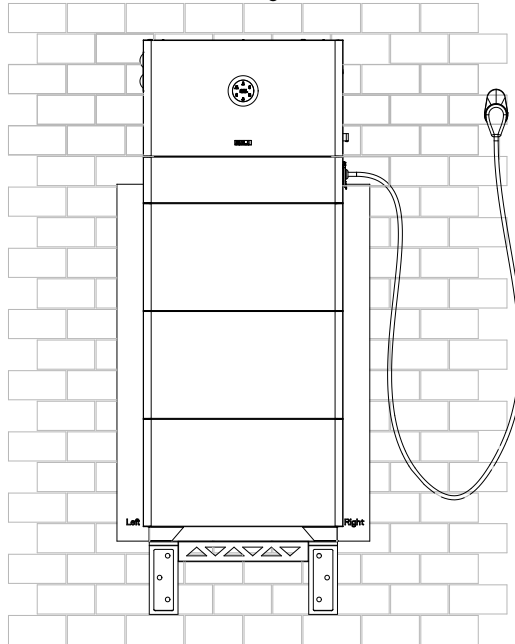


Figure 4.34. Installing the inverter

**Installation completion view**

Example of 3 batteries:  
Inverter + charger + batteries



Inverter + batteries

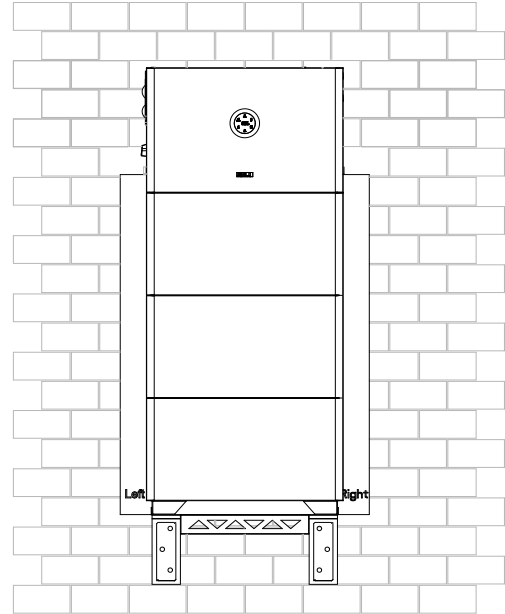


Figure 4.35. Completion view of a single stack

#### 4.5.4. (Optional) Installation of multiple battery stacks

The installation of the conjunction box is similar for ground-mounting and wall-mounting

##### Procedure

Step 1. Place the junction box onto the battery. Push it downwards.

Step 2. Install screws on both lower sides of the junction box to secure the junction box to the last battery.  
Install and secure the metal grounding plate.

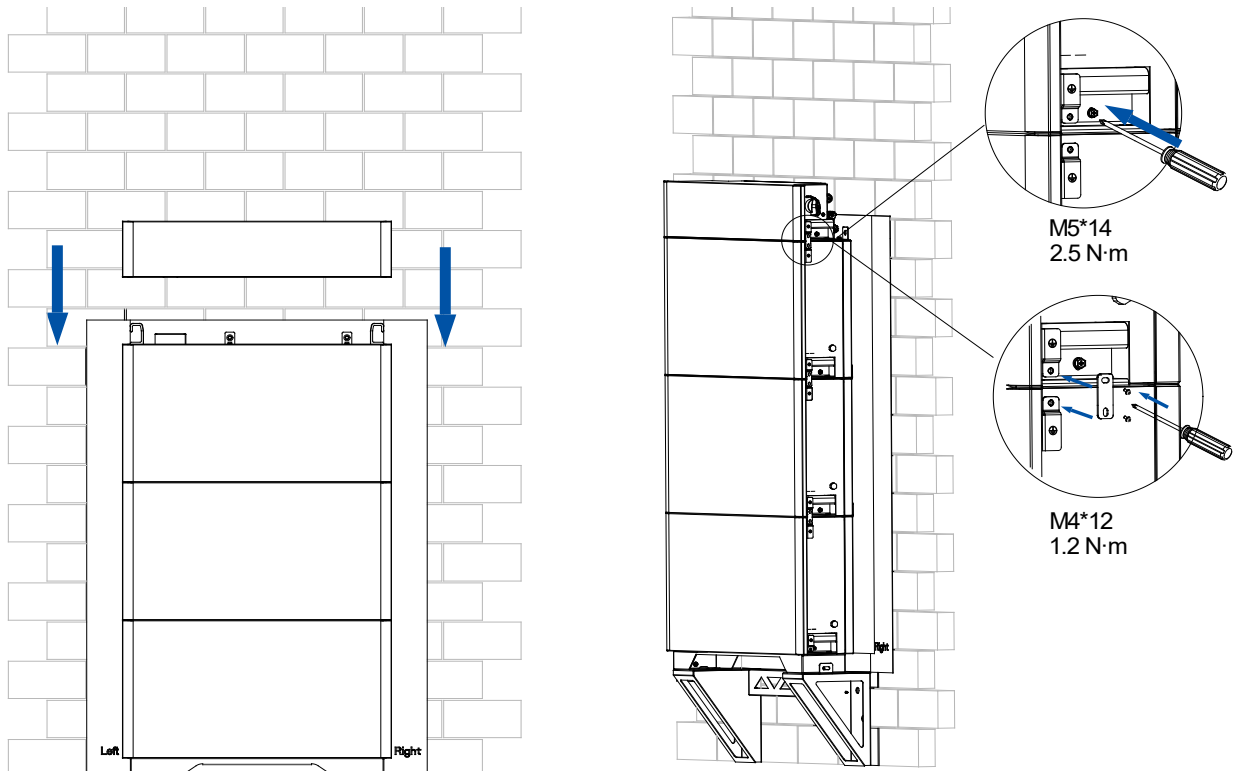


Figure 4.36. Installing a battery junction box

**Installation completion view**

Take 6 batteries as an example:

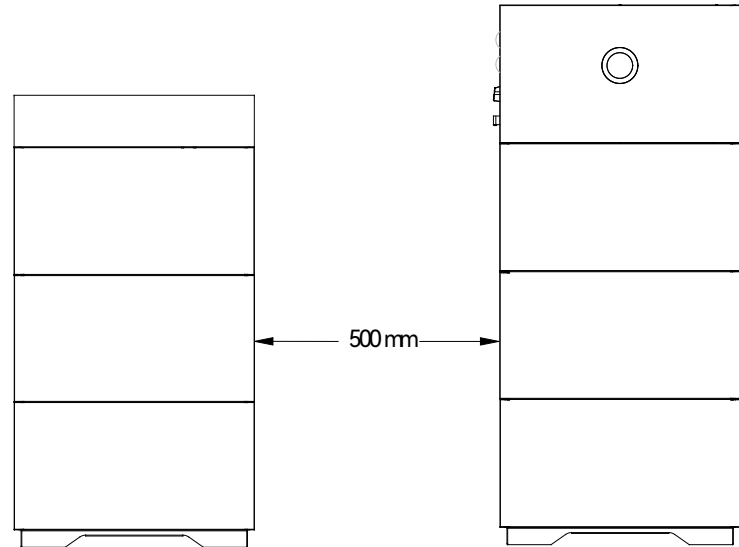


Figure 4.37. Completion view of two battery stacks

# 5.

## **ELECTRICAL CONNECTION**



## 5.1. Safety instructions

Electrical connection must only be operated on by professional technicians. Operators must be aware that the inverter is a bi-power supply equipment. Before connection, necessary protective equipment must be employed by technicians including insulating gloves, insulating shoes, and safety helmet.

### DANGER

- Dangerous to life due to potential fire or electricity shock.
- Do not install the inverter near any inflammable or explosive items.
- Dangerous to life due to potential fire or electricity shock.
- When it is powered on, the equipment should in conformity with national rules and regulations.
- The direct connection between the inverter and high voltage power systems must be operated by qualified technicians in accordance with local and national power grid standards and regulations.

### NOTICE

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

## 5.2. Assemble the AC-side connection

### 5.2.1. Open the AC-side cover

Loosen the screw that locks the cover. Then, lift the cover upwards.

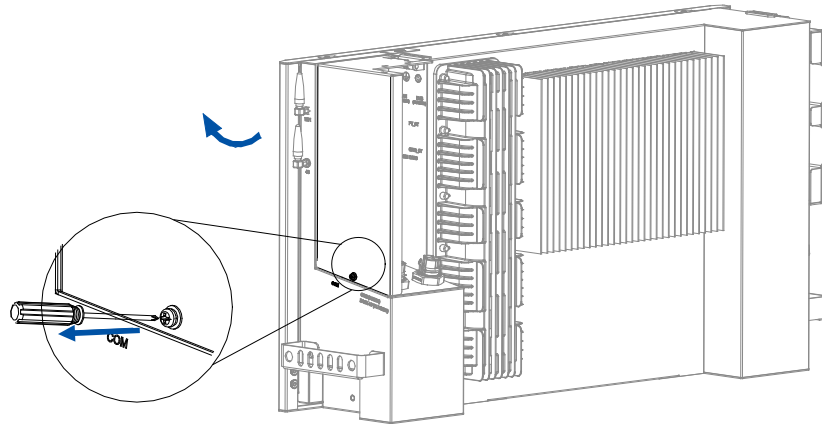


Figure 5.1. Opening the AC-side cover

## 5.2.2. Connect the grounding cable

### About this task

This grounding cable must be connected before other electrical connection.

This inverter complies with IEC 62109-2 clause 13.9 for earth fault alarm monitoring. After system startup and commissioning, if a grounding error occurs, the ring light on the inverter LED panel will be lit up in red and an error code <44> can be viewed on the elekeeper App.

The cable needs to be prepared by the user. It is recommended that a 6-mm<sup>2</sup> conductor cross-sectional area of cable be used.

You can use the grounding point on either AC-side or DC side. Here takes the grounding point on the AC-side as an example.

### Procedure

Step 1. Assemble the cable and OT/DT terminal.

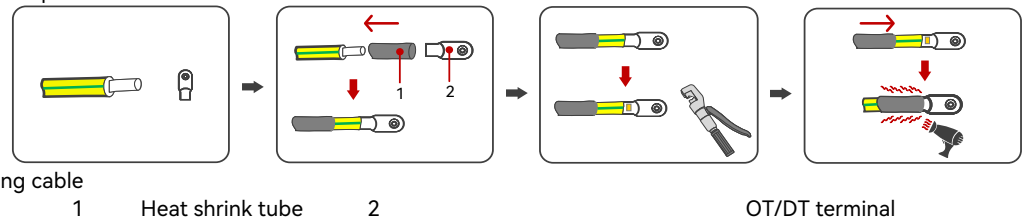


Figure 5.2. Preparing the grounding cable

Step 2. Remove the M4\*10 screw from the grounding port. Connect and secure the grounding cable.

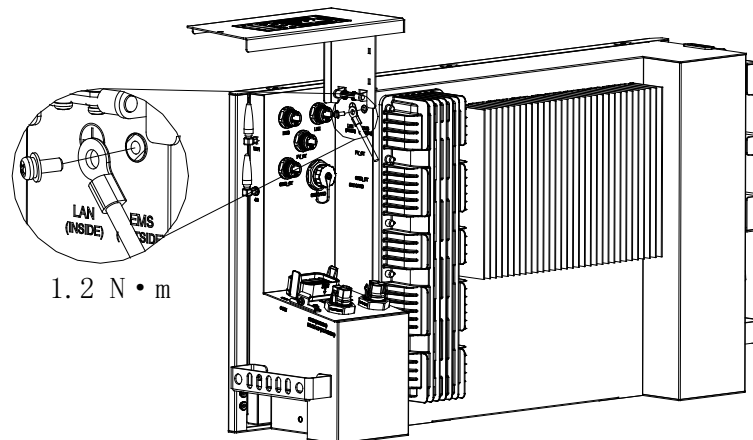


Figure 5.3. Connecting the additional grounding cable

### 5.2.3. (Optional) Install a SIM card

Only the 4G model provides the SIM card slot. For 4G model, the LAN port is not equipped.

Step 1. Loosen the cover of the SIM card slot. Then, insert the SIM card into the slot.

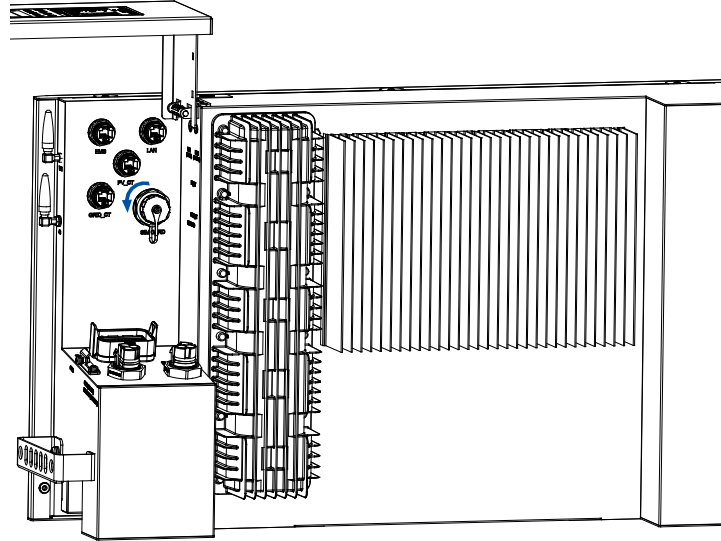


Figure 5.4. Loosening the cover on the SIM card slot

Step 2. Insert the SIM card into the slot.

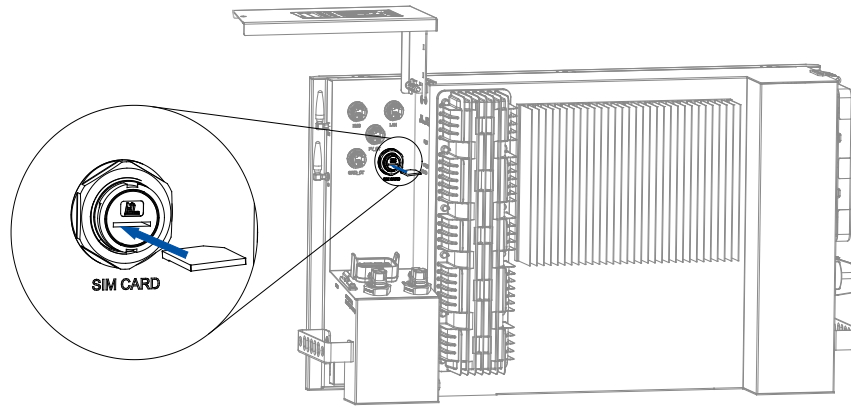


Figure 5.5. Inserting the SIM card

Step 3. Rotate the cover 90° clockwise until it stops at the limit.

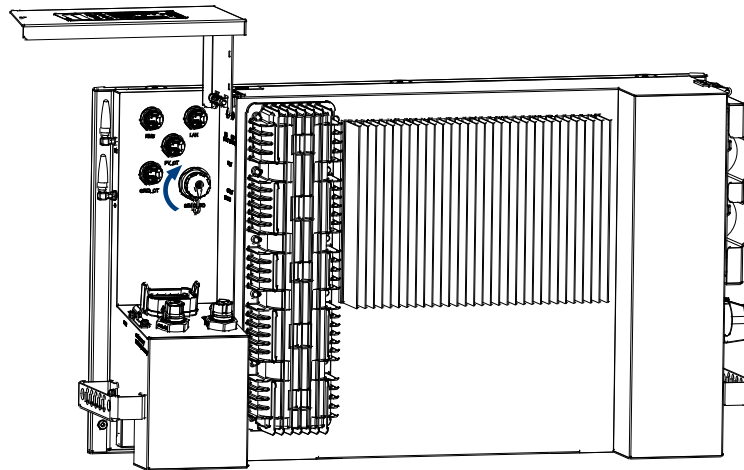


Figure 5.6. Tighten the cover on the SIM card slot

### 5.2.4. (Optional) Assemble the LAN electrical connection

**About this task**

Only the W (Wi-Fi) model provides the LAN port. For W model, the SIM card slot is not equipped.

If you choose to use Wi-Fi connection manner or has an EMS connected in the ESS, no need to connect the LAN cable. If you choose to use Ethernet connection manner, perform as follows:

**Procedure**

Step 1. Remove the RJ45 cable fastener from the LAN port.

Step 2. Use a standard RJ45 cable. Insert the cable through the cable fastener as shown below. Assembly the cable fastener.

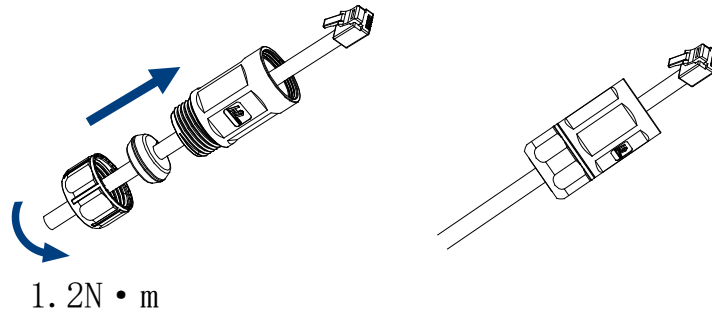


Figure 5.8. Preparing the LAN cable

Step 3. Connect the LAN cable from the LAN port on the inverter to the router.

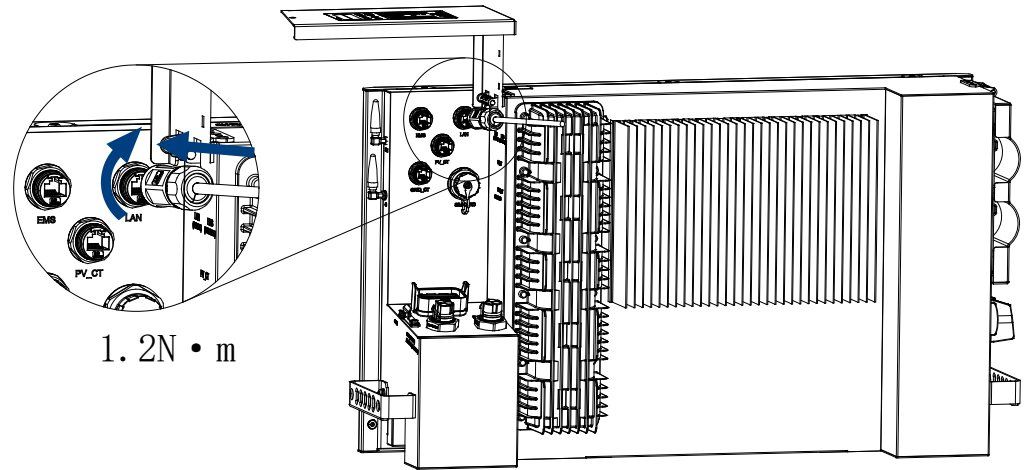


Figure 5.9. Connecting the LAN cable

### 5.2.5. Assemble the EMS electrical connection

Step 1. Remove the RJ45 cable fastener from the EMS port.

Step 2. Use a standard RJ45 cable. Insert the cable through the cable fastener as shown below. Assemble the cable fastener.

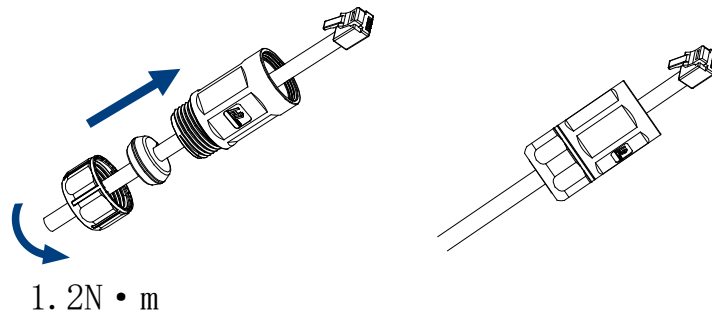


Figure 5.10. Preparing the EMS cable

Step 3. Connect the cable from the EMS port on the inverter to the EMS port on SAJ eManager (EMS).

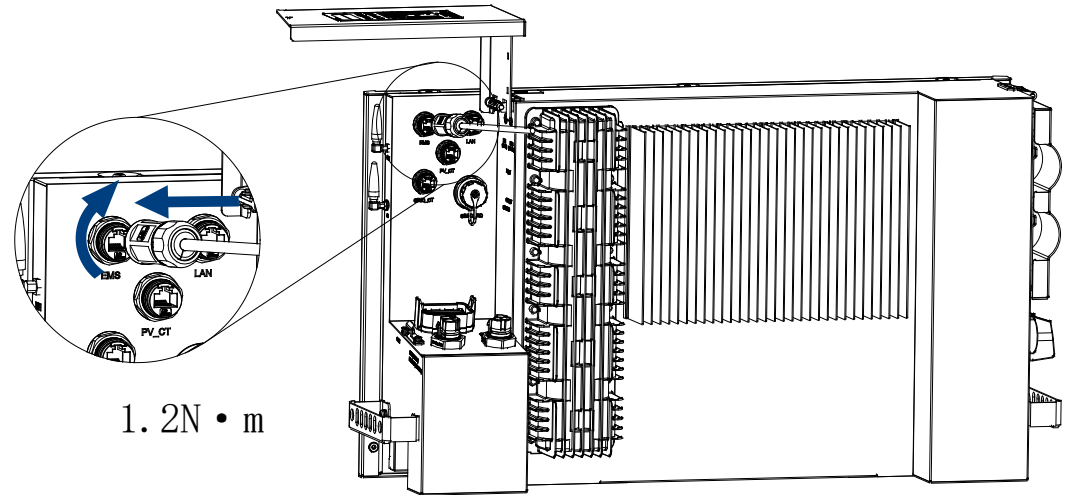


Figure 5.11. Connecting the EMS cable

### 5.2.6. Connect the CT cable on the grid side

Step 1. Remove the RJ45 cable fastener from the GRID\_CT port.

Step 2. Insert the CT cable through the cable fastener as shown below.

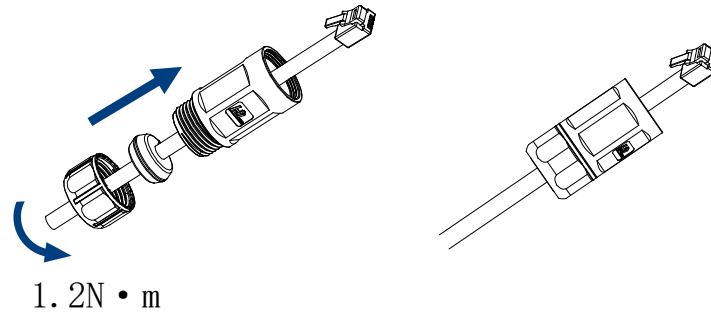


Figure 5.12. Preparing the CT cable

Step 3. Insert the RJ45 connector of the CT cable to the GRID\_CT port on the inverter.

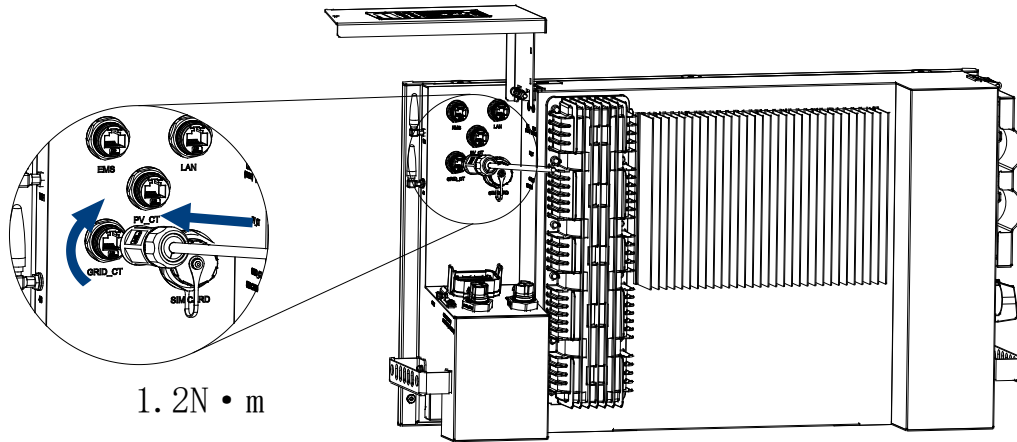


Figure 5.13. Connecting the CT cable

Step 4. Install the CT on the grid side.

### 5.2.7. (Optional) Connect the CT cable on the solar inverter side

#### About this task

This task is only applicable to the AC-coupling scenario in which the hybrid inverter and one or more solar inverters are installed in one ESS.

#### Procedure

Step 1. Remove the RJ45 cable fastener from the PV\_CT port.

Step 2. Insert the CT cable through the cable fastener as shown below.

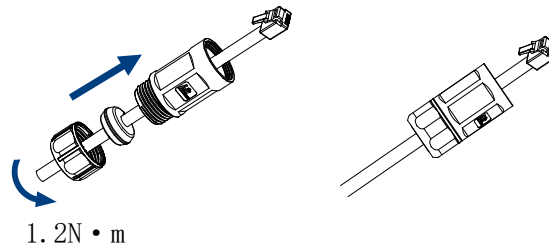


Figure 5.14. Preparing the CT cable

Step 3. Insert the RJ45 connector of the CT cable to the PV\_CT port on the inverter.

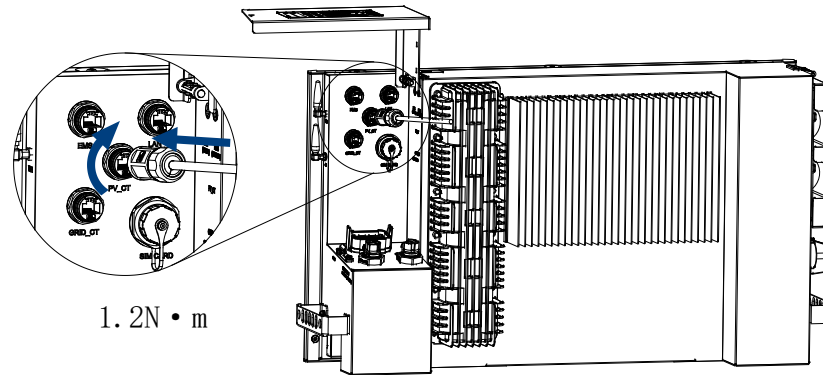


Figure 5.15. Connecting the CT cable

Step 4. Install the CT on the solar inverter side.

### 5.2.8. Install a circuit breaker

For safety operation and regulation compliance, install a 63 A or higher air circuit breaker between the grid and the inverter.

By installing a circuit breaker, the inverter can be disconnected from the grid quickly and safely when the leakage current detector embedded in the inverter detects that the leakage current exceeds the limitation.

**Notice:** In parallel scenario, do NOT connect multiple inverters to one AC circuit breaker.

### 5.2.9. (Optional) Install an RCD

An external residential current device (RCD) is not mandatory since the inverter is integrated with a residential current monitoring unit (RCMU). However, if the external RCD must be installed according to the local regulations, either type A or type B RCD can be installed with the action current 300 mA or higher.

### 5.2.10. (Optional) Connect a smart meter

If you need to connect a smart meter, contact SAJ for consultation.

## 5.2.11. Connect the grid and backup loads

### About this task

- Depending on your system configuration, the grid and backup load ports on the inverter are different. Accordingly, the grid and backup load connector kits are different in the accessory bags.
- Each connector kit provides a one-hole rubber plug (in the connector body) and a three-hole rubber plug (in the accessory bag). This task takes the one-hole rubber plug as an example. The three-hole rubber plug is used when you choose to use three separated cables for connection.

### Before you start

Select cables according to the below recommended specification:

| Cable type             | Conductor cross-sectional area of cables |                             | Conductor material | Cable diameter (with insulation)             |
|------------------------|------------------------------------------|-----------------------------|--------------------|----------------------------------------------|
|                        | Range                                    | Recommended value           |                    |                                              |
| One three-wire cable   | 10–13.3 mm <sup>2</sup> or 7–6 AWG       | 10 mm <sup>2</sup> or 6 AWG | Copper             | Range: 15–19 mm                              |
| Three separated cables | /                                        | 10 mm <sup>2</sup>          |                    | Range: 6.5–8.5 mm<br>Double-layer insulation |

Table 5.1. Recommended AC cable specification

### Procedure

Step 1. On the cable end, strip off the insulation as shown below.

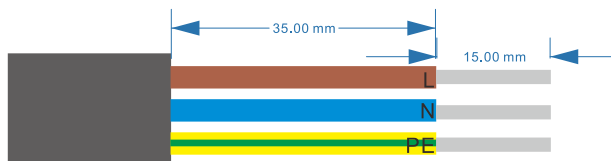


Figure 5.16. Stripping off the double-layer insulation

Step 2. Connect the cable to the grid or backup load connector.

**Note:** Depending on the configurations, the waterproof gland nut (callout 4 in the following illustration) may not be provided.

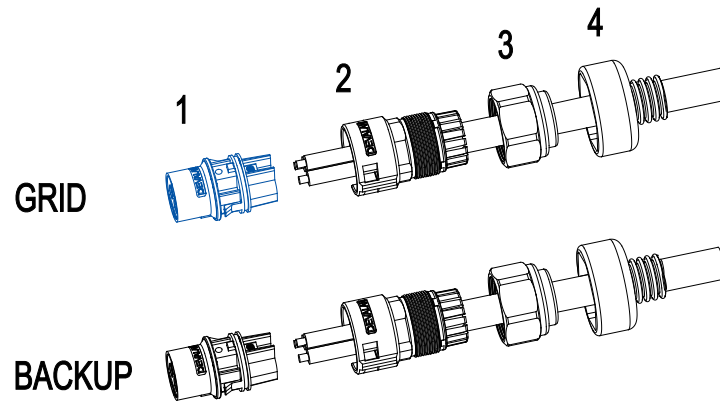


Figure 5.17. Preparing the cable

Step 3. Secure the cable to the connector. Then, assemble the connector.

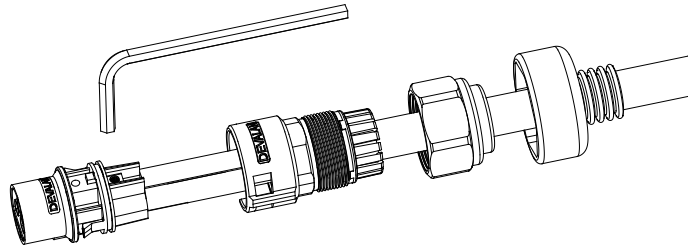


Figure 5.18. Assembling the connector

- Step 4. Remove the dustproof covers from the GRID and BACK-UP ports.
- Use a flathead screwdriver to press down the tab in the cover.
  - Rotate the cover anti-clockwise and pull it upwards.

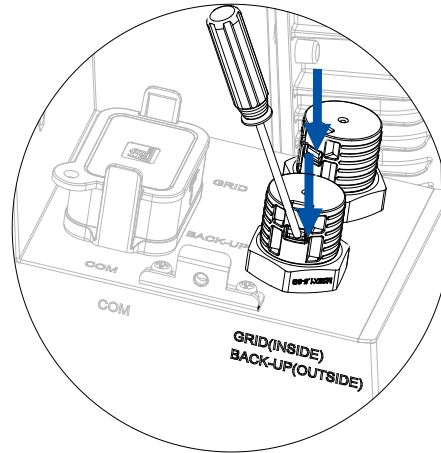


Figure 5.19. Removing the dustproof cover

Step 5. Use a flathead screwdriver to remove the dustproof covers from the GRID and BACK-UP ports. Then, connect the cables to the GRID and BACKUP ports on the inverter.

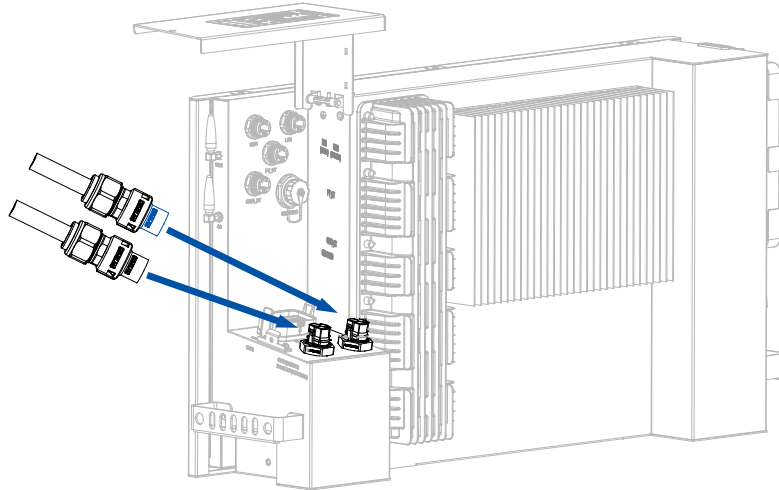


Figure 5.20. Connecting the grid and backup load cables

## 5.2.12. Assemble the communication connection

Step 1. Disassemble the communication cable connector.

- ① Press the tabs on two sides of the connector terminal inwards and pull out the terminal from the connector body.
- ② Rotate the nut anti-clockwise and remove it from the connector body.
- ③ Remove the rubber plugs out of the seals.

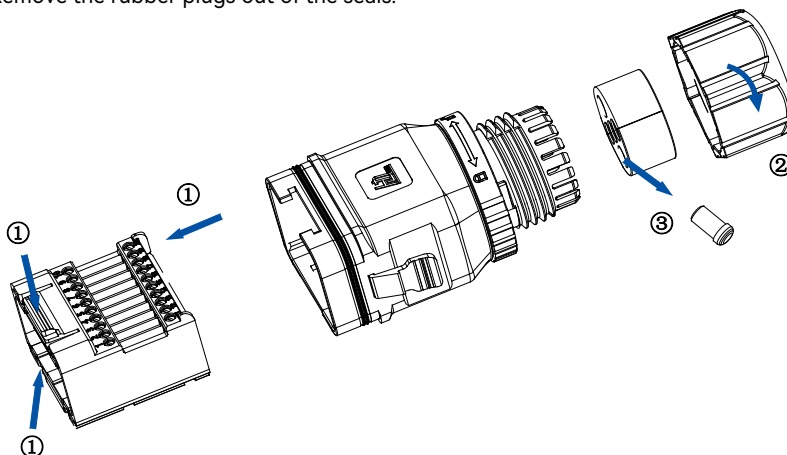


Figure 5.21. Disassembling the 24-pin communication cable connector

Step 2. Prepare cables according to the following suggested specifications:

| Terminals | Cable cross-sectional area (mm <sup>2</sup> ) | Cable outer Diameter (mm) | Insulation off (mm)       |                 |
|-----------|-----------------------------------------------|---------------------------|---------------------------|-----------------|
|           |                                               |                           | External protective layer | Wire insulation |
| 1-10      | 0.5-0.75                                      | 4.5-6.5                   | 55                        | 7.5             |
| 11-20     | 0.2-0.5                                       |                           | 33                        | 7.5             |

Step 3. Strip the insulation off and install the insulated crimp terminals on the cable ends.

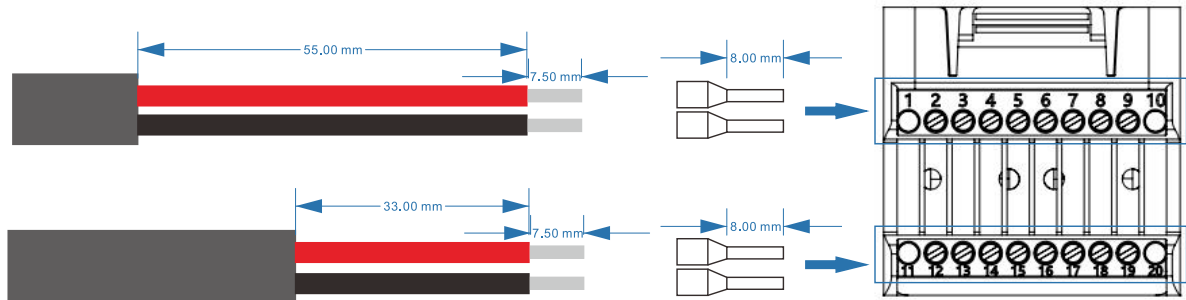


Figure 5.22. Stripping insulation off and installing the insulated crimp terminals on the cable ends

Step 4. Insert all communication cables through the nut, seals, and connector body.

Example:

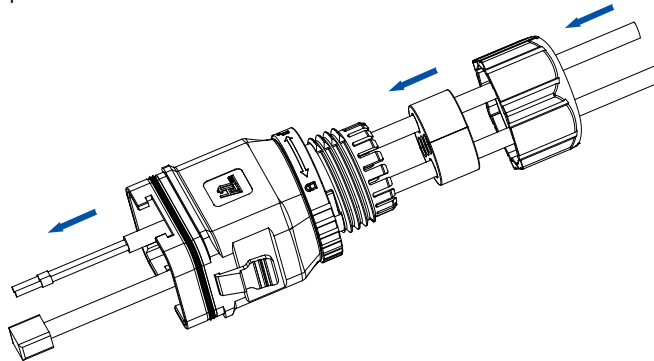


Figure 5.23. Inserting the cables through the connector

Step 5. Locate the ports and terminals on the connection terminal block according to their silkscreens.

Connect all communication cables to the communication cable connector.

| Name             | Number | Pin definition                             | Description                      |
|------------------|--------|--------------------------------------------|----------------------------------|
| PORT (RJ45 port) | /      | 1: CAN-H<br>(with a 120 $\Omega$ resistor) | For parallel connection scenario |
|                  |        | 2: CAN-L                                   |                                  |
|                  |        | 3: GND_W                                   |                                  |
|                  |        | 4: SYN                                     |                                  |
|                  |        | 5: GND_W                                   |                                  |
|                  |        | 6: HOST                                    |                                  |
|                  |        | 7: GND_W                                   |                                  |
|                  |        | 8: TRF                                     |                                  |
| DRMs (RJ45 port) | /      | 1: DRM1/5                                  | For RCR                          |
|                  |        | 2: DRM2/6                                  | For RCR                          |
|                  |        | 3: DRM3/7                                  | For RCR                          |
|                  |        | 4: DRM4/8                                  | For RCR                          |
|                  |        | 5: REF D/0                                 | /                                |
|                  |        | 6: COM D/0                                 | /                                |
|                  |        | 7: NC                                      | /                                |
|                  |        | 8: NC                                      | /                                |
| Terminals        | 4      | DO1+                                       | Dry contact output 1             |
|                  | 5      | DO1-                                       | Dry contact output 1             |
|                  | 6      | DO2+                                       | Dry contact output 2             |
|                  | 7      | DO2-                                       | Dry contact output 2             |
|                  | 11     | RS485-A<br>(with a 120 $\Omega$ resistor)  | For external RS485 communication |
|                  | 12     | RS485-B                                    |                                  |
|                  | 13     | MET-A<br>(with a 120 $\Omega$ resistor)    | For meter communication          |
|                  | 14     | MET-B                                      |                                  |
|                  | 15     | DI1+                                       | Dry contact input 1              |
|                  | 16     | DI1-                                       | Dry contact input 1              |
|                  | 17     | DI2+                                       | Dry contact input 2              |
|                  | 18     | DI2-                                       | Dry contact input 2              |
|                  | 19     | CAN_H<br>(with a 120 $\Omega$ resistor)    | For external CAN communication   |
|                  | 20     | CAN_L                                      |                                  |

Table 5.2. Ports and terminals on the connection terminal block

Step 6. Connect and secure the cables to the connection terminal block. Then, assemble the communication cable connector.

- a. Connect cables to corresponding terminals and RJ45 ports based on your needs.
- b. Use a screwdriver to secure the cables connected to the terminals.

**Note:** If any terminal that has been equipped with a 120  $\Omega$  resistor, such as METER-A, needs to be connected by a cable with the length longer than 20 meters, switch the resistor to ON status.

- c. Insert the connection terminal block back to the connector body until you hear a click sound.
- d. Insert the seals and nut back to the connector body.
- e. Rotate the nut clockwise until it is secured to the connector body.

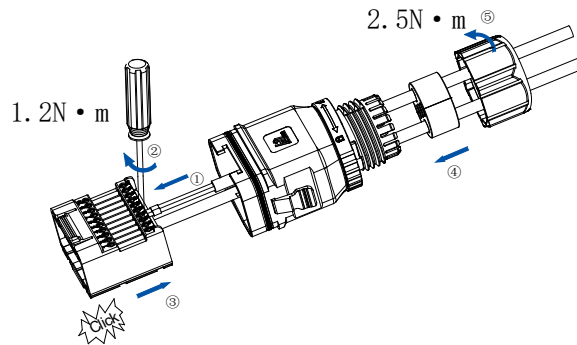


Figure 5.24. Assembling the connector

Step 7. Connect the assembled communication terminal connector to the COMM port on the inverter.

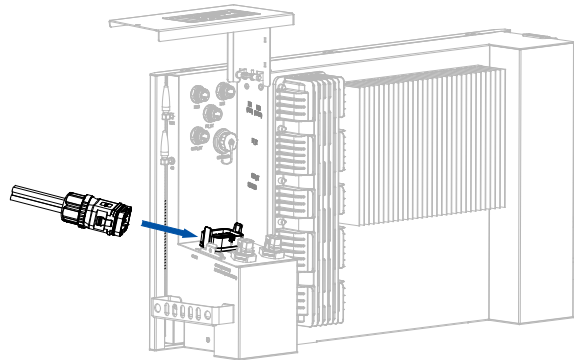


Figure 5.25. Connecting the connector to the inverter

Step 8. Connect the other end of the cables to external devices.

### 5.2.13. Close the AC-side cover

Push the cover downwards. Use a screwdriver to tighten the screw to lock the cover securely.

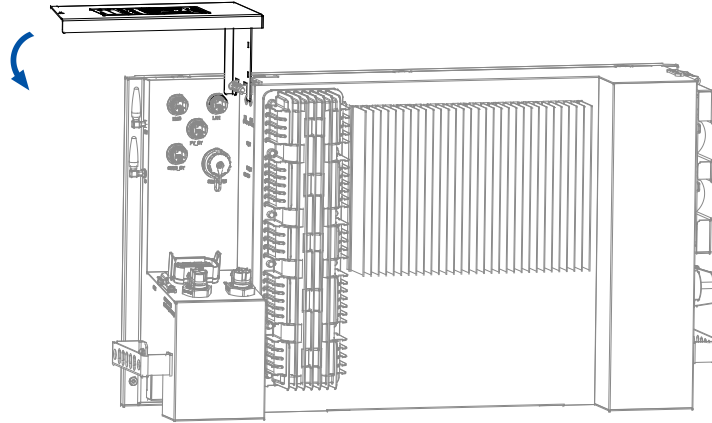


Figure 5.26. Closing the AC-side cover

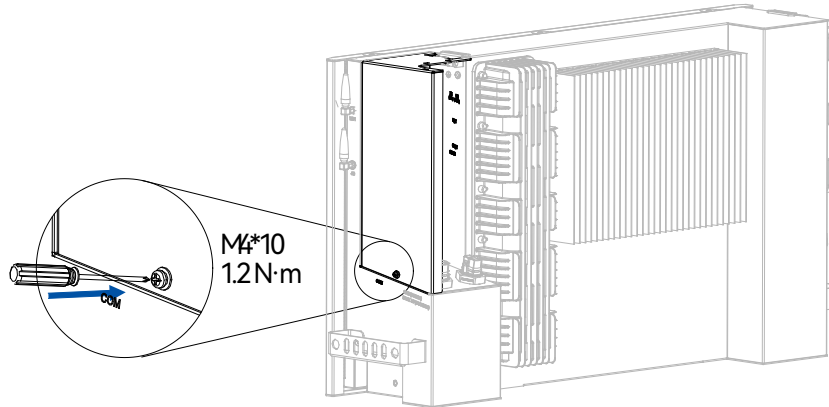


Figure 5.27. Securing the screw

### 5.3. (Optional) Connect the battery cables between multiple stacks

Follow this procedure to connect multiple battery stacks to one inverter.

The following figure shows the cable connection of two battery stacks connecting to the inverter:

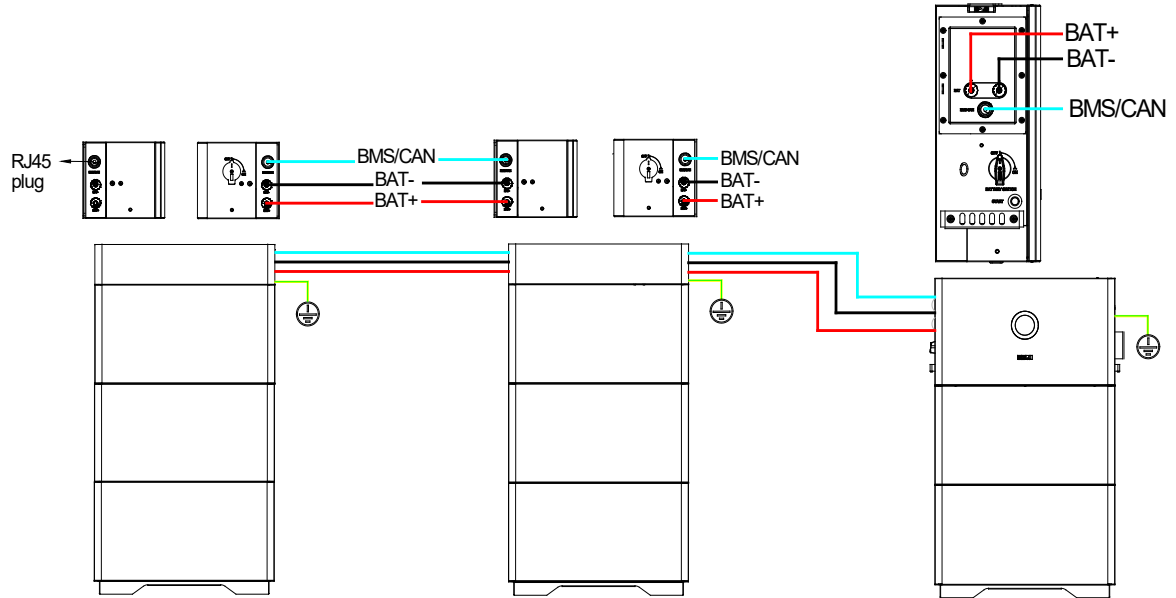


Figure 5.28. Connection of two battery stacks to inverter

#### Prerequisite

On top of the first stack, an inverter is installed; while on top of other stacks, a battery junction box has been installed.

#### Procedure

Step 1. Loosen the screw that locks the cover. Then, lift the cover upwards.

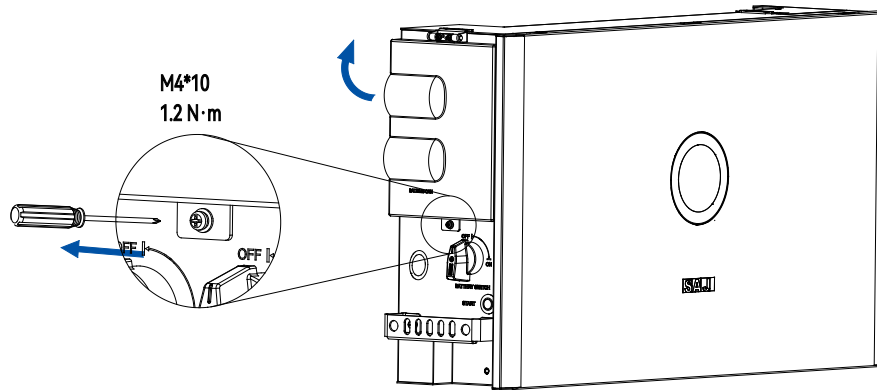


Figure 5.29. Opening the DC-side cover

Step 2. Prepare and connect the grounding cable to either side of the battery junction box.

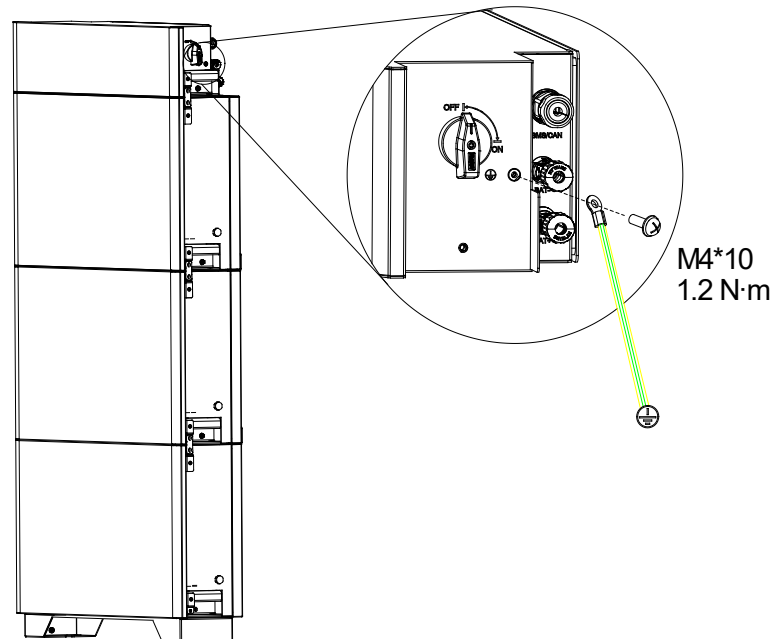


Figure 5.30. Connecting the grounding cable

Step 3. Assemble the battery power cable ends.

- a) Strip off the insulation of the power cable end by 8-10 mm.

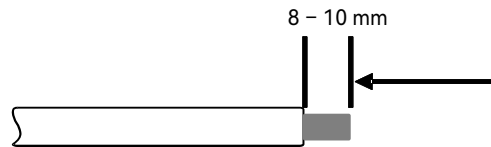


Figure 5.31. Stripping off the insulation

- b) Insert the cable ends to the corresponding sleeves. Use a crimping plier to assemble the cable ends.

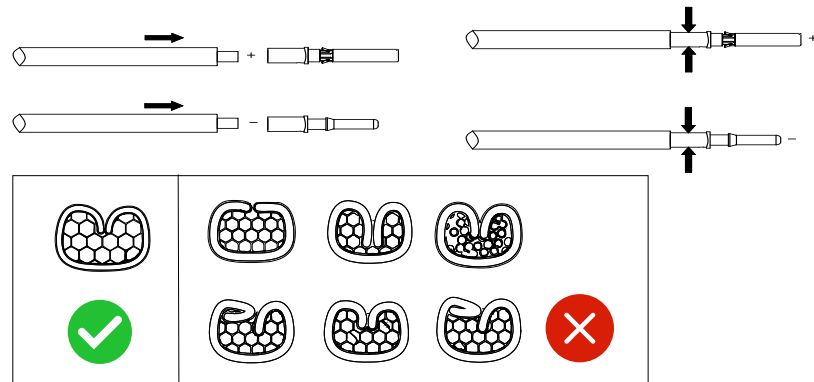


Figure 5.32. Inserting to the sleeves

- c) Insert the assembled cable ends into the positive and negative battery connectors. Then, gently pull the cables backwards to ensure that they are firmly connected.

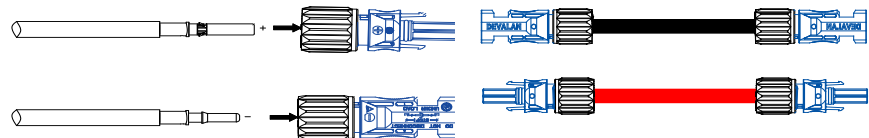


Figure 5.33. Connecting the cable ends to connectors

d) Tighten the nuts on the positive and negative cable connectors.

**Tightening torque:  $2.9\text{N}\cdot\text{m}$**

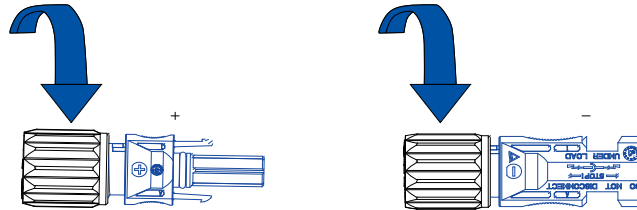


Figure 5.34. Tightening the connectors

Step 4. Remove the waterproof covers on the **BAT+** and **BAT-** ports on the inverter and battery junction box.

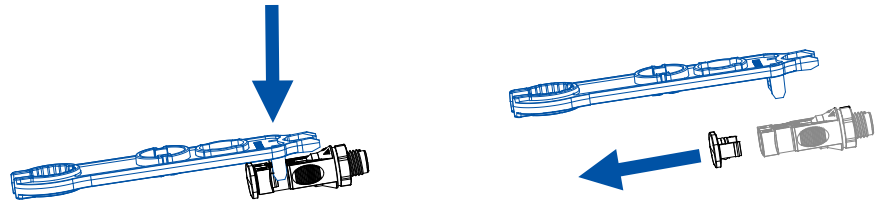


Figure 5.35. Removing waterproof covers

Step 5. Connect the positive and negative power cables from the junction box to the inverter or the junction box of the other B3 battery stack.

| Cable                | From the junction box | To the inverter |
|----------------------|-----------------------|-----------------|
| Positive power cable | BAT+                  | BAT+            |
| Negative power cable | BAT-                  | BAT-            |

Table 5.1. Power cable connection between multiple stacks

Step 6. Remove the RJ45 connector plug that is installed on the **BMS CAN** port on the HS3 inverter. Insert the plug into the **BMS/CAN** port on the battery junction box on the furthest left stack.

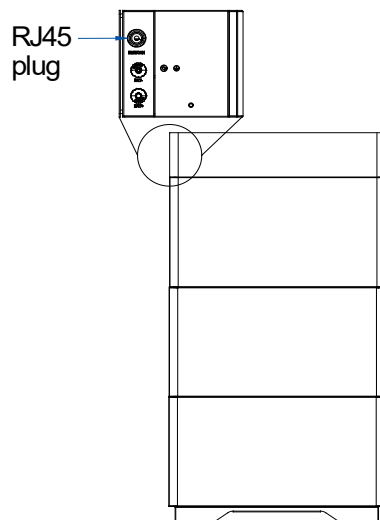


Figure 5.36. Installing the RJ45 plug

Step 7. Connect the communication cable from the junction box to the inverter or the junction box of the other B3 battery stack.

| Cable               | From the junction box | To the inverter |
|---------------------|-----------------------|-----------------|
| Communication cable | BMS/CAN               | BMS CAN         |

Table 5.2. Communication cable connection between multiple stacks

Pin definitions of the BMS CAN port are as follows:

| BMS CAN |      |
|---------|------|
| 1       | NC   |
| 2       | NC   |
| 3       | NC   |
| 4       | CANH |
| 5       | CANL |
| 6       | NC   |
| 7       | NC   |
| 8       | NC   |

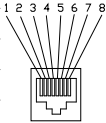


Table 5.3. BMS CAN pin definitions

Step 8. Push the cover downwards. Use a screwdriver to tighten the screw to lock the cover securely.

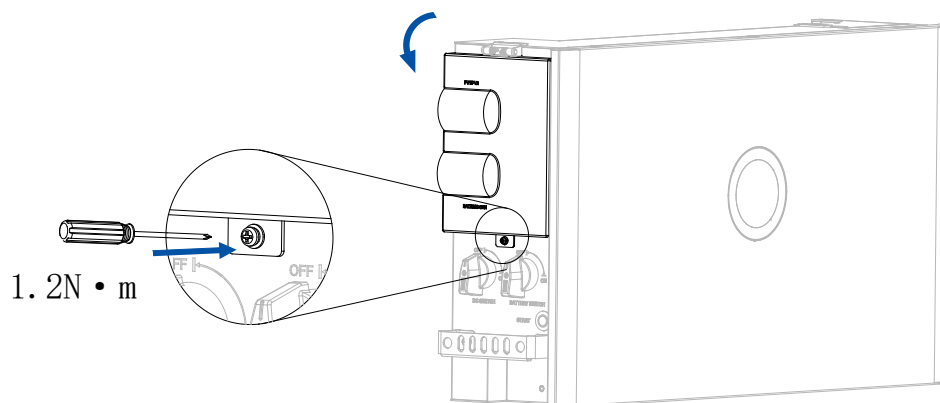


Figure 5.37. Closing the DC-side cover

## 5.4. System connection

The system connection for the grid system is as below:

**Note:**

- The backup PE line and earthing bar must be grounded properly. Otherwise, the backup function may be inactive during blackout.
- Connect the CT to the GRID-CT port on the inverter.

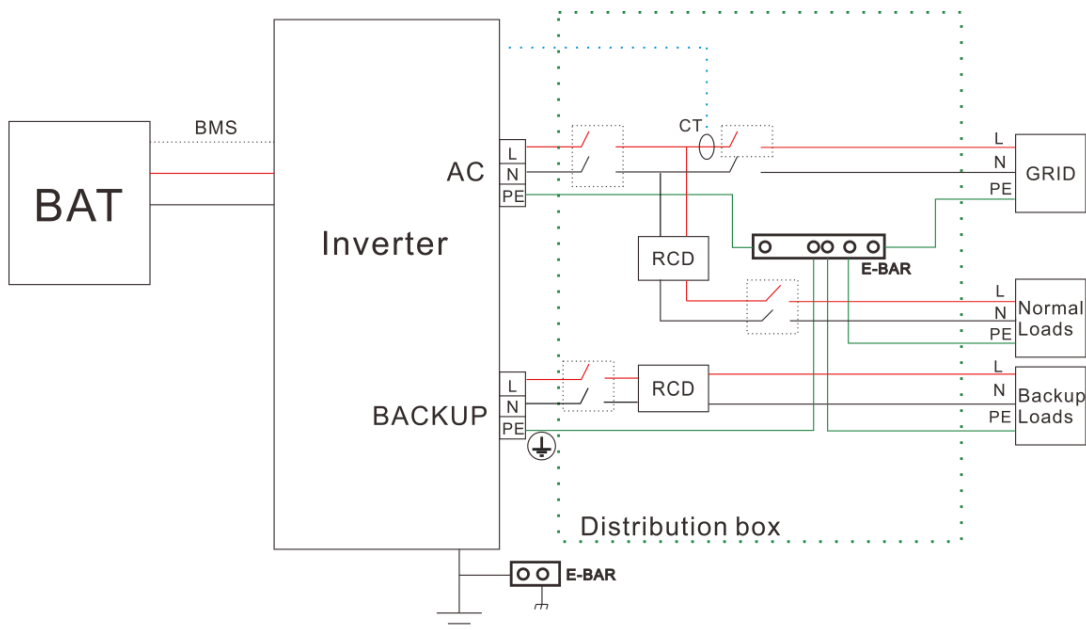


Figure 5.38. System connection

## 5.5. System connection diagram

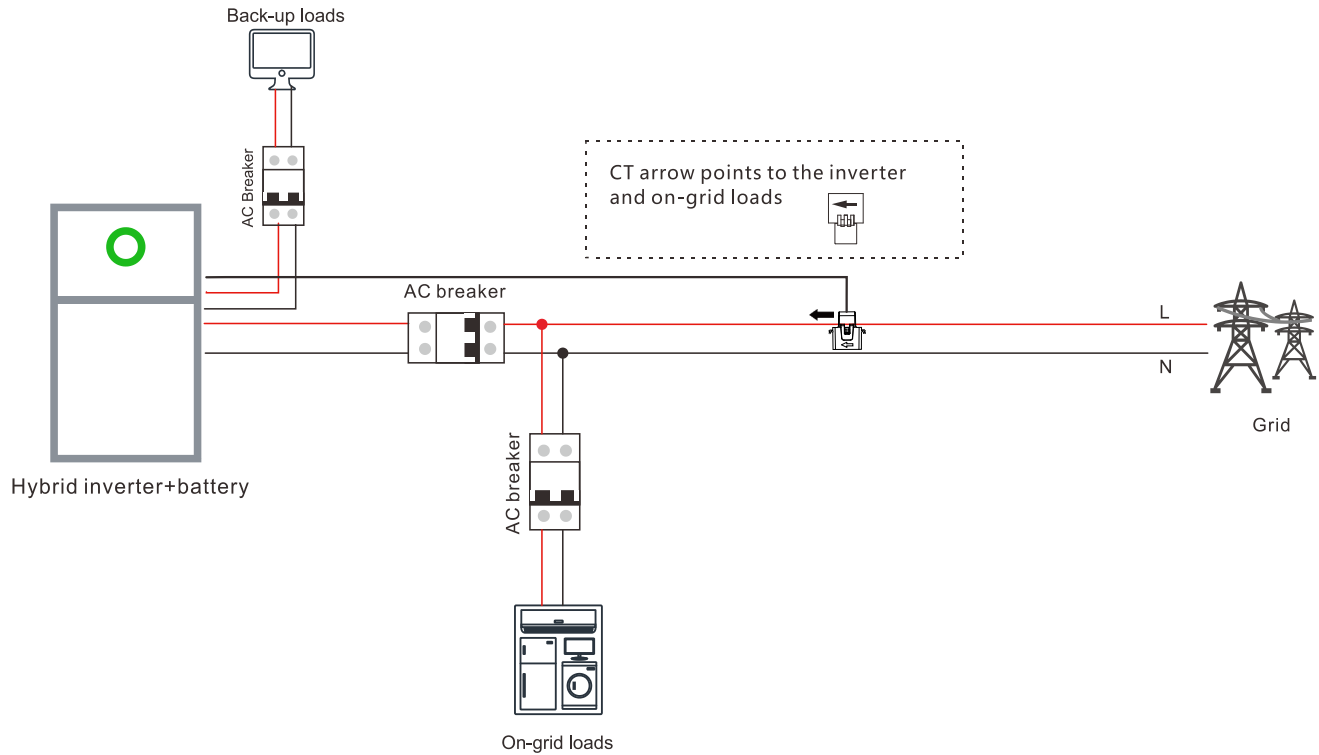
The section describes the scenario in which only one AS3 hybrid inverter is used in the ESS.

For other scenarios, refer to Chapter "System Connection: Single-phase hybrid inverter" in the *Configuration Instructions*.

- Multiple AS3 inverters (parallel scenario)
- One AS3 inverter working with a solar inverter (AC coupling scenario)
- Multiple AS3 inverters working with a solar inverter (AC coupling + parallel scenario)

■ One AS3 in the single-phase grid

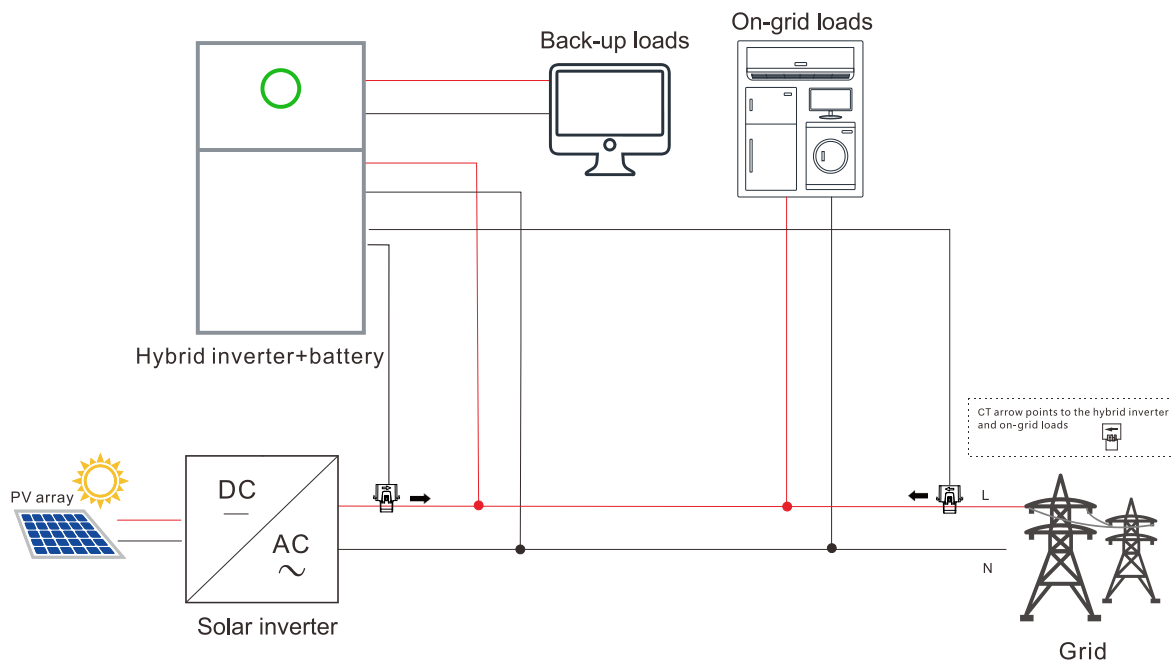
**Note:** Connect the CT to the GRID-CT port on the inverter.



■ One AS3 and a solar inverter (AC coupling) in the single-phase grid

**Note:**

- Connect the CT on the inverter side to the PV-CT port on the inverter.
- Connect the CT on the grid side to the GRID-CT port on the inverter.



6.

**STARTUP AND  
SHUTDOWN**

## 6.1. Startup

Step 1. Open the AC distribution box. Turn on the circuit breakers of the backup loads and grid.

Step 2. (Optional) If there are multiple battery stacks, turn on the battery switch on the right side of the battery junction box.

Step 3. On the left side of the inverter, perform as follows:

- a. Turn on BATTERY SWITCH.
- b. Press and hold the START button for five seconds until the LED indicator on the front panel is

on .

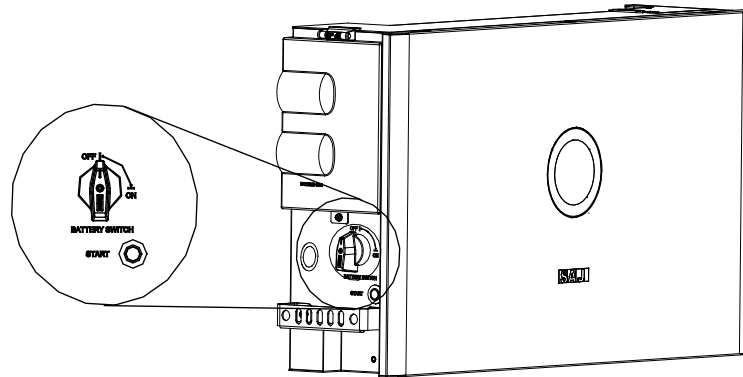


Figure 6.1. Switches on the left side of the inverter

Step 4. Check the LED indicator status on the inverter panel to ensure that the inverter is running properly.

**Note:** The LED indicator status label is on the left side of the inverter.

## 6.2. Shutdown

Step 1. Open the AC distribution box. Turn off the circuit breakers of the backup loads and grid.

Step 2. On the left side of the inverter, perform as follows:

- a. Press and hold the START button around five seconds. Then, release the button and wait until the LED indicator on the front panel is off .
- b. Turn off BATTERY SWITCH.

7.

**COMMISSIONING**



## 7.1. About the elekeeper App

The elekeeper App can be used for both nearby and remote monitoring.

Depending on the communication module used, it supports Bluetooth/4G or Bluetooth/Wi-Fi to communicate with your energy storage system (ESS).

## 7.2. Download the App

On your mobile phone, search for “elekeeper” in the App store and download the App.

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



## 7.3. Use the App

To perform commissioning operations on the App, refer to the *SAJ Configuration Instructions*.

**Note:** The detailed operations on the App might vary, depending on the version you are using.

8.

**SYSTEM  
MAINTENANCE**



## 8.1. Routine maintenance

To ensure that the system can operate properly for a long term, routine maintenance is recommended.

### **Danger of electric shock**

**Before operating on the system for cleaning, cable inspection, component maintaining, power off the whole system. Do not open any product cover until 5 minutes after disconnecting all sources of supply.**

To purchase the routine maintenance service, contact the installer, distributor, or SAJ after-sales.

| Check item                                | Check method                                                                                                                                                                                                                                                                                           | Maintenance interval                                                                                           |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| System cleanliness                        | Check periodically whether the heat sinks are blocked or dirty.                                                                                                                                                                                                                                        | Once every 6 to 12 months                                                                                      |
| Cleanness of air intake and exhaust vents | Check periodically whether there is dust or foreign objects at the air intake and exhaust vents.<br><br>Detailed operations are as follows:<br><br>Power off the system and remove dust and foreign objects. If necessary, remove the baffle plates from the air intake and exhaust vents for cleaning | Once every 6 to 12 months (or once every 3 to 6 months based on the actual dust conditions in the environment) |
| Fan                                       | Check whether the fan generates abnormal noise during operation<br><br>Detailed operations are as follows:<br><br>Remove foreign objects from the fan. If the abnormal noise persists, replace the fan.                                                                                                | Once every 6 to 12 months                                                                                      |
| System running status                     | <ol style="list-style-type: none"> <li>1. Check whether the inverter is damaged or deformed.</li> <li>2. Check whether the inverter generates abnormal sound during operation.</li> <li>3. Check whether all inverter parameters are correctly set during operation.</li> </ol>                        | Once every 6 months                                                                                            |
| Electrical                                | <ol style="list-style-type: none"> <li>1. Check whether cables are</li> </ol>                                                                                                                                                                                                                          | 6 months after the first                                                                                       |

|                       |                                                                                                                                              |                                                                                 |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|
| connection            | disconnected or loose.<br>2. Check whether cables are damaged, especially whether the cable sheath that contacts a metal surface is damaged. | commissioning and once every 6 to 12 months after that                          |
| Grounding reliability | Check whether the PE cable is securely connected.                                                                                            | 6 months after the first commissioning and once every 6 to 12 months after that |
| Sealing               | Check whether all terminals and ports are properly sealed.                                                                                   | Once a year                                                                     |

## 8.2. Troubleshooting

For any errors reported as below, contact the after-sales for service support. The operations and maintenance must be performed by authorized technicians.

The following table lists the error codes and corresponding messages:

| Error code | Error message                   |
|------------|---------------------------------|
| 1          | Master Relay Error              |
| 2          | Master EEPROM Error             |
| 3          | Master Temperature High Error   |
| 4          | Master Temperature Low Error    |
| 5          | Master Lost Communication M<->S |
| 6          | Master GFCI Device Error        |
| 7          | Master DCI Device Error         |
| 8          | Master Current Sensor Error     |
| 9          | Master Phase1 Voltage High      |
| 10         | Master Phase1 Voltage Low       |
| 15         | Master Voltage 10Min High       |
| 16         | Master OffGrid Voltage Low      |
| 17         | Master Output_Shorter           |
| 18         | Master Grid Frequency High      |
| 19         | Master Grid Frequency Low       |

| Error code | Error message                                      |
|------------|----------------------------------------------------|
| 21         | Master Phase1 DCV Error                            |
| 24         | Master No Grid Error                               |
| 25         | DC ReverseConnect Error                            |
| 26         | Parallel machine CAN Com Error                     |
| 27         | Master GFCI Error                                  |
| 28         | Master Phase1 DCI Error                            |
| 31         | Master ISO Error                                   |
| 33         | Master Bus Voltage High                            |
| 34         | Master Bus Voltage Low                             |
| 37         | Master Islanding Error                             |
| 38         | Master HW Bus Voltage High                         |
| 40         | Master SelfTestFailed                              |
| 41         | Master HW Inv Current High                         |
| 44         | Master Grid NE Voltage Error                       |
| 45         | Master Fan1 Error                                  |
| 49         | Lost Communication between DSP and PowerMeter      |
| 50         | Lost Communication between M<->S                   |
| 51         | Lost Communication between inverter and Grid Meter |
| 52         | HMI EEPROM Error                                   |
| 53         | HMI RTC Error                                      |
| 55         | BMS Lost.Conn Warn                                 |
| 59         | Lost Communication between inverter and PV Meter   |
| 60         | EV_Lost.Conn Warn                                  |
| 61         | Slave Phase1 Voltage High                          |
| 62         | Slave Phase1 Voltage Low                           |
| 67         | Slave Frequency High                               |
| 68         | Slave Frequency Low                                |
| 69         | DCDC_Lost.Conn Warn                                |
| 70         | DCDC_ Device Error                                 |
| 73         | Slave No Grid Error                                |
| 78         | Grid Power Emergency Disconnect                    |

| Error code | Error message                                  |
|------------|------------------------------------------------|
| 81         | Lost Communication D<->C                       |
| 85         | Authority expires                              |
| 86         | DRM0 Error                                     |
| 89         | Master Battery Voltage High                    |
| 90         | Master Battery Current High                    |
| 91         | Master Battery Charge Voltage High             |
| 92         | Master Battery OverLoad                        |
| 93         | Master Battery SoftConnet TimeOut              |
| 94         | Master Output OverLoad                         |
| 95         | Master Battery Open Circuit Error              |
| 96         | Master Battery Discharge Voltage Low           |
| 97         | BMS Internal Communication Error               |
| 98         | Bat Sequence Error                             |
| 99         | Discharge Over Current Protect                 |
| 100        | Charge Over Current Protect                    |
| 101        | Module Under Voltage Protect                   |
| 102        | Module Over Voltage Protect                    |
| 103        | Single Cell Under Voltage Protect              |
| 104        | Single Cell Over Voltage Protect               |
| 105        | BMS Hardware Error                             |
| 106        | Charge Cell Under Temperature Protect          |
| 107        | Charge Cell Over Temperature Protect           |
| 108        | Discharge Cell Under Temperature Protect       |
| 109        | Discharge Cell Over Temperature Protect        |
| 110        | Relay Error                                    |
| 111        | Pre-charge Error                               |
| 112        | Insulation Error                               |
| 113        | BMS supplier Incompatibility                   |
| 114        | Battery cell supplier Incompatibility          |
| 115        | Battery cell Incompatibility                   |
| 116        | Battery pack models or grades are inconsistent |

| Error code | Error message                                 |
|------------|-----------------------------------------------|
| 117        | Circuit Breaker Is Open                       |
| 118        | Temperature Difference Is Too Wide            |
| 119        | Voltage Difference Is Too Wide                |
| 120        | Voltage Difference Is Too Wide                |
| 121        | BMS Over Temperature Protect                  |
| 122        | Short Circuit Protect                         |
| 123        | Total voltage match failed                    |
| 124        | The system is locked                          |
| 125        | FUSE error protection                         |
| 126        | Battery Port Voltage Abnormal Protection      |
| 127        | Heating Film Overtemperature Protection       |
| 128        | Abnormal Temperature Increases                |
| 225        | Battery Software Overvoltage Fault            |
| 226        | Battery Software Undervoltage Fault           |
| 227        | Battery Discharge Software Overcurrent Fault  |
| 228        | Battery Charge Software Overcurrent Fault     |
| 229        | Battery Discharge Overpower Fault             |
| 230        | Battery Charge Overpower Fault                |
| 233        | Battery Hardware Overvoltage Fault            |
| 234        | Battery Hardware Overcurrent Fault            |
| 237        | Battery Voltage Exceeds BMS Upper Limit Fault |
| 238        | Battery Voltage Exceeds BMS Lower Limit Fault |
| 239        | Battery Side Precharge Fault                  |
| 241        | Bus Voltage Overvoltage Fault                 |
| 242        | Bus Voltage Undervoltage Fault                |
| 243        | Bus Discharge Overcurrent Fault               |
| 244        | Bus Charge Overcurrent Fault                  |
| 245        | Bus Discharge Overpower Fault                 |
| 246        | Bus Charge Overpower Fault                    |
| 247        | Bus Hardware Overvoltage Fault                |
| 248        | Bus Hardware Overcurrent Fault                |

| Error code | Error message                                 |
|------------|-----------------------------------------------|
| 249        | Hardware Resonant Chamber Overcurrent Fault   |
| 250        | Auxiliary Power Source Fault                  |
| 251        | Hardware Protection Signal Fault              |
| 252        | Bus Voltage Differential Fault                |
| 253        | BMS Protection Signal Fault                   |
| 254        | Software Resonant Chamber Overcurrent Fault   |
| 255        | Soft Start Abnormal Fault                     |
| 257        | Heatsink High Temperature Fault               |
| 258        | Heatsink Low Temperature Fault                |
| 259        | PCB High Temperature Fault                    |
| 260        | PCB Low Temperature Fault                     |
| 261        | Fan Fault                                     |
| 262        | Heating Film Fault                            |
| 263        | Heatsink Temperature Sensor Line Faulty       |
| 264        | PCB Temperature Sensor Line Faulty            |
| 274        | Inverter CAN communication failure            |
| 275        | Battery pack internal CAN communication fault |
| 276        | Memory fault                                  |
| 278        | Button failure fault                          |
| 289        | Relay over temperature                        |
| 290        | Overload                                      |
| 291        | AC over voltage                               |
| 292        | AC under voltage                              |
| 293        | AC over current                               |
| 294        | AC over frequency                             |
| 295        | AC under frequency                            |
| 296        | DC residual current exception A               |
| 297        | Emergency Stop                                |
| 298        | Under temperature                             |
| 299        | AC residual current                           |
| 300        | Input terminal over temperature               |

| Error code | Error message                   |
|------------|---------------------------------|
| 301        | Bluetooth fault                 |
| 302        | DC residual current exception B |
| 303        | Relay exception                 |
| 304        | Grounding error                 |
| 305        | Phase twisted                   |
| 306        | RCD circuit exception           |
| 307        | RS485 Com time out              |
| 308        | Electricity exception           |
| 311        | Meter fault                     |
| 312        | cp exception, cp lower than 2V  |
| 318        | Connector lock exception        |
| 319        | Connector current exception     |
| 320        | DC residual current exception C |

9.

# PRODUCT SPECIFICATIONS



**NOTICE**

Depending on the countries or regions, the specifications of the products might vary due to local regulations.

## 9.1. System

**Note:** *X* is the quantity of the battery modules, ranging from 1 to 8.

| Model<br>Parameter                    | AS3-3K-S-(W, G)-PX                                                                    | AS3-3.6K-S-(W, G)-PX | AS3-4K-S-(W, G)-PX | AS3-4.6K-S-(W, G)-PX | AS3-5K-S-(W, G)-PX, AS3-5K-S-(W, G)-PX- BE                                       | AS3-6K-S-(W, G)-PX, AS3-6K-S-(W, G)-PX- IE                                       |      |      |  |
|---------------------------------------|---------------------------------------------------------------------------------------|----------------------|--------------------|----------------------|----------------------------------------------------------------------------------|----------------------------------------------------------------------------------|------|------|--|
| Battery Port Connection               |                                                                                       |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Battery Type                          | LiFePO4                                                                               |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Rated Voltage [V]                     | 450                                                                                   |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Battery Voltage Range [V]             | 380–500                                                                               |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Max. Charging Current [A]             | 7.9                                                                                   | 9.5                  | 10.5               | 12.1                 | 13.2                                                                             | <ul style="list-style-type: none"><li>• 15.8</li><li>• 15.1 (IE model)</li></ul> |      |      |  |
| Max. Discharging Current [A]          | 9.2                                                                                   | 10                   | 12.4               | 12.9                 | <ul style="list-style-type: none"><li>• 15.2</li><li>• 13.9 (BE model)</li></ul> | <ul style="list-style-type: none"><li>• 16.8</li><li>• 16 (IE model)</li></ul>   |      |      |  |
| Scalability                           | Quantity of batteries connecting to one inverter: 1 to 8                              |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Battery Rated Energy [kWh]            | X=1                                                                                   | X=2                  | X=3                | X=4                  | X=5                                                                              | X=6                                                                              | X=7  | X=8  |  |
|                                       | 5.0                                                                                   | 10.0                 | 15.0               | 20.0                 | 25.0                                                                             | 30.0                                                                             | 35.0 | 40.0 |  |
| Battery Usable Energy [kWh]           | X=1                                                                                   | X=2                  | X=3                | X=4                  | X=5                                                                              | X=6                                                                              | X=7  | X=8  |  |
|                                       | 4.8                                                                                   | 9.6                  | 14.4               | 19.2                 | 24                                                                               | 28.8                                                                             | 33.6 | 38.4 |  |
| AC Output [On-grid]                   |                                                                                       |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Rated AC Power [W]                    | 3000                                                                                  | 3600                 | 4000               | 4600                 | 5000                                                                             | <ul style="list-style-type: none"><li>• 6000</li><li>• 5750 (IE model)</li></ul> |      |      |  |
| Rated Apparent Power [VA]             | 3000                                                                                  | 3600                 | 4000               | 4600                 | 5000                                                                             | <ul style="list-style-type: none"><li>• 6000</li><li>• 5750 (IE model)</li></ul> |      |      |  |
| Max. Apparent Power [VA]              | 3300                                                                                  | 3600                 | 4400               | 4600                 | <ul style="list-style-type: none"><li>• 5500</li><li>• 5000 (BE model)</li></ul> | <ul style="list-style-type: none"><li>• 6000</li><li>• 5750 (IE model)</li></ul> |      |      |  |
| Rated Output Current [A] @230 V AC    | 13.0                                                                                  | 15.7                 | 17.4               | 20.0                 | 21.7                                                                             | <ul style="list-style-type: none"><li>• 26.1</li><li>• 25 (IE model)</li></ul>   |      |      |  |
| Max. Continuous Current [A]           | 14.3                                                                                  | 15.7                 | 19.1               | 20.0                 | <ul style="list-style-type: none"><li>• 23.9</li><li>• 21.7 (BE model)</li></ul> | <ul style="list-style-type: none"><li>• 26.1</li><li>• 25 (IE model)</li></ul>   |      |      |  |
| Current Inrush [A]                    | 75                                                                                    |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Max. AC Fault Current [A]             | 95                                                                                    |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Max. AC Over-Current Protection [A]   | 26.7                                                                                  | 32.2                 | 35.7               | 41                   | 44.5                                                                             | 53.5                                                                             |      |      |  |
| Connection Manner                     | L+N+PE                                                                                |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Rated AC Voltage and Range [V AC]     | 220, 230, 240<br>180–280                                                              |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Rated Output Frequency and Range [Hz] | <ul style="list-style-type: none"><li>• 50 Hz, 45–55</li><li>• 60 Hz, 55–65</li></ul> |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |
| Total Harmonic Distortion [THDi]      | <3%                                                                                   |                      |                    |                      |                                                                                  |                                                                                  |      |      |  |

| Model<br>Parameter                        | AS3-3K-S-(W, G)-PX                                                                                                     | AS3-3.6K-S-(W, G)-PX                  | AS3-4K-S-(W, G)-PX                    | AS3-4.6K-S-(W, G)-PX     | AS3-5K-S-(W, G)-PX, AS3-5K-S-(W, G)-PX- BE                                                                                                     | AS3-6K-S-(W, G)-PX, AS3-6K-S-(W, G)-PX- IE                                                                                                     |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------|---------------------------------------|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Power Factor [cos ϕ]                      | 0.8 leading to 0.8 lagging                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| AC Input [On-grid]                        |                                                                                                                        |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Connection Manner                         | L+N+PE                                                                                                                 |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Rated AC Voltage / Range [V AC]           | 220, 230, 240<br>180–280                                                                                               |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Rated Input Frequency [Hz]                | <ul style="list-style-type: none"><li>• 50</li><li>• 60</li></ul>                                                      |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Max. Input Current [A]                    | 28.1 <sup>①</sup> / 13.7 <sup>②</sup>                                                                                  | 32.1 <sup>①</sup> / 16.5 <sup>②</sup> | 37.4 <sup>①</sup> / 18.3 <sup>②</sup> | 41.1 <sup>①</sup> / 21.1 | <ul style="list-style-type: none"><li>• 46.8<sup>①</sup> / 22.9<sup>②</sup></li><li>• 44.6<sup>①</sup> / 22.9<sup>②</sup> (BE model)</li></ul> | <ul style="list-style-type: none"><li>• 53.5<sup>①</sup> / 27.5<sup>②</sup></li><li>• 51.3<sup>①</sup> / 26.3<sup>②</sup> (IE model)</li></ul> |
|                                           | <sup>①</sup> Working for both battery charging and the bypass mode.<br><sup>②</sup> Working for battery charging only. |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Max. Input Current (Inrush) [A]           | 75                                                                                                                     |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Power Factor [cos ϕ]                      | 0.8 leading to 0.8 lagging                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| AC Output [Back-up]                       |                                                                                                                        |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Max. Apparent Power [VA]                  | 3300                                                                                                                   | 3600                                  | 4400                                  | 4600                     | <ul style="list-style-type: none"><li>• 5500</li><li>• 5000 (BE model)</li></ul>                                                               | <ul style="list-style-type: none"><li>• 6000</li><li>• 5750 (IE model)</li></ul>                                                               |
| Max. Continuous Current [A]               | 14.3                                                                                                                   | 15.7                                  | 19.1                                  | 20                       | <ul style="list-style-type: none"><li>• 23.9</li><li>• 21.7 (BE model)</li></ul>                                                               | <ul style="list-style-type: none"><li>• 26.1</li><li>• 25 (IE model)</li></ul>                                                                 |
| Peak Output Apparent Power [VA]           | 3600, 60s                                                                                                              | 4320, 60s                             | 4800, 60s                             | 5520, 60s                | 6000, 60s                                                                                                                                      | 7200, 60s                                                                                                                                      |
| Connection Manner                         | L+N+PE                                                                                                                 |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Rated AC Voltage and Range [V AC]         | 220, 230, 240<br>180–280                                                                                               |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Rated Output Frequency/Range [Hz]         | <ul style="list-style-type: none"><li>• 50 Hz, 45–55</li><li>• 60 Hz, 55–65</li></ul>                                  |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Output THDv (@ Linear Load)               | <3%                                                                                                                    |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Max. Output Current (Inrush) [A]          | 75                                                                                                                     |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Power Factor [cos ϕ]                      | 0.8 leading to 0.8 lagging                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Efficiency                                |                                                                                                                        |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Max. Efficiency                           | 97.6%                                                                                                                  |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Protection                                |                                                                                                                        |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Battery Input Reverse Polarity Protection | Integrated                                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Overload Protection                       | Integrated                                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| AC Short Circuit Current Protection       | Integrated                                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| AC Surge Protection                       | Integrated                                                                                                             |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Anti-islanding Protection                 | Integrated (AFD)                                                                                                       |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Connection and Communication              |                                                                                                                        |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| AC Connection                             | Plug-in connector (Permanently connected equipment which requires a tool for disassembling)                            |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |
| Battery Connection                        | Quick connector                                                                                                        |                                       |                                       |                          |                                                                                                                                                |                                                                                                                                                |

| Parameter \ Model                  | AS3-3K-S-(W, G)-PX                                                                                                                                                                                                                                | AS3-3.6K-S-(W, G)-PX | AS3-4K-S-(W, G)-PX | AS3-4.6K-S-(W, G)-PX | AS3-5K-S-(W, G)-PX, AS3-5K-S-(W, G)-PX- BE | AS3-6K-S-(W, G)-PX, AS3-6K-S-(W, G)-PX- IE |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------|----------------------|--------------------------------------------|--------------------------------------------|
| Display                            | LED + App                                                                                                                                                                                                                                         |                      |                    |                      |                                            |                                            |
| Communication                      | <ul style="list-style-type: none"><li>• Bluetooth (Bluetooth low energy, BLE)</li><li>• Wi-Fi and Ethernet (W models using the AIO3 module)</li><li>• 4G (4G models using the 4G module)</li></ul>                                                |                      |                    |                      |                                            |                                            |
| Communication Port                 | <ul style="list-style-type: none"><li>• LAN</li><li>• CAN</li><li>• RS485</li><li>• Dry contact</li><li>• CT</li></ul>                                                                                                                            |                      |                    |                      |                                            |                                            |
| General Parameters                 |                                                                                                                                                                                                                                                   |                      |                    |                      |                                            |                                            |
| Topology                           | Transformer-less                                                                                                                                                                                                                                  |                      |                    |                      |                                            |                                            |
| Operating Temperature Range        | -30°C to +50°C<br>>45 °C derating                                                                                                                                                                                                                 |                      |                    |                      |                                            |                                            |
| Storage Temperature Range          | -10°C to +40°C                                                                                                                                                                                                                                    |                      |                    |                      |                                            |                                            |
| Cooling Method                     | Natural convection                                                                                                                                                                                                                                |                      |                    |                      |                                            |                                            |
| Relative Humidity (non-condensing) | 5–95% RH                                                                                                                                                                                                                                          |                      |                    |                      |                                            |                                            |
| Altitude [m]                       | 0–3000                                                                                                                                                                                                                                            |                      |                    |                      |                                            |                                            |
| Noise [dBA]                        | <35                                                                                                                                                                                                                                               |                      |                    |                      |                                            |                                            |
| Overvoltage Category               | II (DC), III (AC)                                                                                                                                                                                                                                 |                      |                    |                      |                                            |                                            |
| Protective Class                   | I                                                                                                                                                                                                                                                 |                      |                    |                      |                                            |                                            |
| Ingress Protection (IP) Rating     | IP65                                                                                                                                                                                                                                              |                      |                    |                      |                                            |                                            |
| Dimensions [H*W*D] [mm]            | Inverter: 400*695*170<br>Battery: 370*695*170                                                                                                                                                                                                     |                      |                    |                      |                                            |                                            |
| Weight [kg]                        | Inverter: 23.9<br>Battery: 52                                                                                                                                                                                                                     |                      |                    |                      |                                            |                                            |
| Warranty [Year]                    | Refer to the warranty policy.                                                                                                                                                                                                                     |                      |                    |                      |                                            |                                            |
| Battery System Designation         | <ul style="list-style-type: none"><li>• <b>BU3-5.0-TV1-PRO:</b> IFpP52/161/120/[(1P16S)XP]M/-30+50/90(X=1, 2, 3, 4, 5, 6, 7, or 8)</li><li>• <b>BU3-5.0-TV2-PRO:</b> IFpP51/161/120/[(1P16S)XP]M/-30+50/90(X=1, 2, 3, 4, 5, 6, 7, or 8)</li></ul> |                      |                    |                      |                                            |                                            |

## 9.2. Battery Pack

| Model<br>Parameter     | BU3-5.0-(TV1, TV2)-PRO |
|------------------------|------------------------|
| Rated Capacity [Ah]    | 100                    |
| Rated Energy [kWh]     | 5.0                    |
| Usable Energy [kWh]    | 4.8                    |
| Dimension (H*W*D) [mm] | 370*695*170            |
| Weight [kg]            | 52                     |

|                                    |                                                                                                                                                                                 |
|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Nominal Voltage [V]                | 450                                                                                                                                                                             |
| Operating Voltage [V]              | 380–500                                                                                                                                                                         |
| Max. Charging Current [A]          | 7.9                                                                                                                                                                             |
| Max. Discharging Current [A]       | 7.9                                                                                                                                                                             |
| Battery Designation                | <ul style="list-style-type: none"><li>• <b>BU3-5.0-TV1-PRO:</b> IFpP52/161/120/(1P16S)M/-30+50/90</li><li>• <b>BU3-5.0-TV2-PRO:</b> IFpP51/161/120/(1P16S)M/-30+50/90</li></ul> |
| Ingress Protection                 | IP65                                                                                                                                                                            |
| Mounting                           | <ul style="list-style-type: none"><li>• Ground-mounting</li><li>• Wall-mounting</li></ul>                                                                                       |
| Operating Temperature Range        | -30°C to +50°C                                                                                                                                                                  |
| Storage Temperature Range          | -10°C to +40°C                                                                                                                                                                  |
| Relative Humidity (non-condensing) | 5–95%                                                                                                                                                                           |
| Max. Operating Altitude [m]        | 3000                                                                                                                                                                            |
| Cooling Method                     | Natural convection                                                                                                                                                              |
| Communication                      | CAN                                                                                                                                                                             |
| Warranty [Year]                    | Refer to the warranty policy.                                                                                                                                                   |

### 9.3. Battery junction box

| Parameter              | Model | BC3-TV      |
|------------------------|-------|-------------|
|                        |       |             |
| Communication Port     |       | CAN         |
| Dimension [mm] (H*W*D) |       | 150*695*170 |
| Weight [kg]            |       | 5.3         |

## 9.4. Charger

| Model                           | CU2-7.4K-S(-I)                                                                                                                                                                                                                                                                          |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Parameter</b>                |                                                                                                                                                                                                                                                                                         |
| <b>Input</b>                    |                                                                                                                                                                                                                                                                                         |
| Power supply                    | 1P+N+PE                                                                                                                                                                                                                                                                                 |
| Rated Voltage [V AC]            | 230, ± 20%                                                                                                                                                                                                                                                                              |
| Rated Current [A]               | 32                                                                                                                                                                                                                                                                                      |
| Frequency [Hz]                  | 50/60                                                                                                                                                                                                                                                                                   |
| <b>Output</b>                   |                                                                                                                                                                                                                                                                                         |
| Output Voltage [V AC]           | 230, ± 20%                                                                                                                                                                                                                                                                              |
| Max. Current [A]                | 32                                                                                                                                                                                                                                                                                      |
| Rated Output Power [kW]         | 7                                                                                                                                                                                                                                                                                       |
| Power Consumption (standby) [W] | 7                                                                                                                                                                                                                                                                                       |
| <b>Efficiency</b>               |                                                                                                                                                                                                                                                                                         |
| Euro Efficiency                 | ≥99%                                                                                                                                                                                                                                                                                    |
| <b>Power Metering</b>           |                                                                                                                                                                                                                                                                                         |
| Precision                       | 2%                                                                                                                                                                                                                                                                                      |
| <b>User Interface</b>           |                                                                                                                                                                                                                                                                                         |
| Charging Outlet                 | Type 2                                                                                                                                                                                                                                                                                  |
| Housing Material                | <ul style="list-style-type: none"> <li>Chassis: SGCC (T=1.2 mm)</li> <li>Cover: SGCC (T=2 mm)</li> </ul>                                                                                                                                                                                |
| Startup Mode                    | Plug and Play (PnP) + App                                                                                                                                                                                                                                                               |
| <b>Communication</b>            |                                                                                                                                                                                                                                                                                         |
| Max. RF Output Power            | <20 dBm (-10 dBW)                                                                                                                                                                                                                                                                       |
| <b>Safety</b>                   |                                                                                                                                                                                                                                                                                         |
| Ingress Protection              | IP54                                                                                                                                                                                                                                                                                    |
| Electrical Protection           | <ul style="list-style-type: none"> <li>Over-current protection</li> <li>Residual current protection</li> <li>Surge protection</li> <li>Over-current and under-voltage protection</li> <li>Over-frequency and under-frequency protection</li> <li>Over-temperature protection</li> </ul> |
| Certification                   | <ul style="list-style-type: none"> <li>EN IEC 61851-1: 2019</li> <li>IEC 62955: 2018</li> <li>EN IEC 61851-21-2: 2021</li> </ul>                                                                                                                                                        |

|                                 |                                                                                                   |
|---------------------------------|---------------------------------------------------------------------------------------------------|
|                                 | <ul style="list-style-type: none"><li>• EN 61000-6-1: 2019</li><li>• EN 61000-6-3: 2021</li></ul> |
| Warranty                        | Refer to the warranty policy.                                                                     |
| <b>Environment</b>              |                                                                                                   |
| Working Temperature             | -30°C to +50°C                                                                                    |
| Storage Temperature             | -40°C to +60°C                                                                                    |
| Ambient Humidity                | 5-95% non-condensing                                                                              |
| Max. Operating Altitude [m]     | 2000                                                                                              |
| Cooling Method                  | Natural convection                                                                                |
| <b>Package for CU2-7.4K-S-I</b> |                                                                                                   |
| Dimension [mm] (H*W*D)          | 160*695*170                                                                                       |
| Weight [kg]                     | 6.9                                                                                               |
| <b>Package for CU2-7.4K-S</b>   |                                                                                                   |
| Dimension [mm] (H*W*D)          | 180*695*170                                                                                       |
| Weight [kg]                     | 7.5                                                                                               |

# 10.

## APPENDIX



## 10.1. Recycling and disposal

This device should not be disposed as a residential waste.

An inverter that has reached the end of its operation life is not required to be returned to your dealer; instead, it must be disposed by an approved collection and recycling facility in your area.

## 10.1. Warranty

Check the product warranty conditions and terms on the SAJ website: <https://www.saj-electric.com/>.

## 10.2. Contacting Support

**Online technical support:** Go to <https://www.saj-electric.com/services-support-technical> to check FAQs or send your message or product enquiry.

**Call for assistance:** For SAJ support telephone numbers, see <https://www.saj-electric.com/locations> for your region support details.

**Headquarter:** Guangzhou Sanjing Electric Co., LTD.

**Address:** SAJ Innovation Park, No.9, Lizhishan Road, Guangzhou Science City, Guangdong, P.R.China.

**Tel:** +86 20 6660 8588

**E-mail:** [service@saj-electric.com](mailto:service@saj-electric.com)

**Website:** <https://www.saj-electric.com/>

## 10.3. Trademark

SAJ is the trademark of Sanjing.



**GUANGZHOU SANJING ELECTRIC CO.,LTD**



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**V2**