SUNGROW
Clean power for all

# User Manual

## AC Charger

AC011E-01

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- We declare that the network account and password data stored in the equipment system are only used for remote control and monitoring of the equipment and will not be transmitted to any third-party data platform without the user's permission.

## Disposal

After the service life of the charger ends, please dispose of it in accordance with the applicable electrical waste disposal act at the installation location. It can also be returned to Sungrow Power Supply Co., Ltd., but the relevant expenses shall be borne by your party.

# About This Manual

The manual mainly contains product information, as well as guidelines for installation, operation, and maintenance.

## Target Group

This manual is intended for qualified technicians who are responsible for the installation, operation, and maintenance of the charger, and end users who need to check charger parameters.

A qualified technician is required to meet the following requirements:

- Knowledge of electronics, electricity, and machinery, and be familiar with electrical and mechanical schematic diagrams.
- Training in the installation and commissioning of electrical equipment.
- Be able to quickly respond to hazards or emergencies that occur during installation and commissioning.
- Be familiar with local standards and relevant safety regulations of electrical systems.
- Read this manual thoroughly and understand the safety instructions related to operations.

## EMC

In some cases, even if the equipment is in accordance with the standard emission limits, it can have an impact in certain application areas (some sensitive equipment is placed in the same location; the equipment is installed close to a radio or TV receiver), and the operator is obliged to take appropriate action to correct this situation.

## How to Use This Manual

Please read this manual carefully before using the product and keep it properly in a place for easy access.



Contents of this manual may be periodically updated or revised, and the actual product purchased shall prevail. Users can obtain the latest manual from **support.sungrowpower.com** or sales channels.

## Symbols

This manual contains important safety instructions, which are highlighted with the following symbols, to ensure personal and property safety during usage, or to help optimize the product performance efficiently.

**⚠ DANGER**

**Indicates high-risk potential hazards that, if not avoided, may lead to death or serious injury.**

**⚠ WARNING**

**Indicates moderate-risk potential hazards that, if not avoided, may lead to death or serious injury.**

**⚠ CAUTION**

**Indicates low-risk potential hazards that, if not avoided, may lead to minor or moderate injury.**

**NOTICE**

**Indicates potential risks that, if not avoided, may lead to device malfunctions or financial losses.**

“NOTE” indicates additional information, emphasized contents, or tips that may be helpful, e.g., to help you solve problems or save time.

# 1 Product Overview

## 1.1 Introduction

The AC011E-01 charger (hereinafter referred as "charger" or "AC-Charger") is used for AC charging of electric vehicles (BEV/PHEVs) and can be either wall-mounted or pole-mounted, with the following advantages.

### Ease of Use

EV drivers can start and stop charging via RFID charge card, iSolarCloud or iEnergyCharge. When the vehicle is fully charged, the charging will stop. The charger also supports plug&play, which means the charging starts automatically as soon as the charging connector is plugged into the vehicle.

### Smart and Easy Management

In addition to the LED lights on the charger that indicate charging status, EV drivers can visualize and control the charging session remotely via iSolarCloud or iEnergyCharge.

### Sustainability

With an IP65 rating, the charger is water and dust proof, allowing for outdoor use and maintenance.

## 1.2 Appearance and Dimensions

### Model and Nameplate

The charger comes with two versions to meet different energy-saving needs:

- AC011E-01 (hereinafter referred as "the advanced version")
- AC011E-01 L1 (hereinafter referred as "the standard version")

| Model | Nameplate |
| --- | --- |
| AC 011 E-0 1 L1<br>1 2 3 4 5 6 | SUNGROW<br>Product 11kW EV Charger<br>Model AC011E-01<br>S/N xxxxxx<br>Rated Voltage 3P+N+PE 400Vac<br>Rated Current 16A<br>Frequency 50/60Hz<br>Rated Power 11kW<br>Working Temp -30℃~+50℃<br>Date xxxxxx<br>IP Degree IP65<br>SUNGROW POWER SUPPLY CO.,LTD.<br>www.sungrowpower.com Made in China |

| Position | Description | Note |
| --- | --- | --- |
| 1 | AC Charger | - |
| 2 | Nominal power (kW) | - |
| 3 | European standard | - |
| 4 | Screen configuration | • 0: without screen |
| 5 | M1 card configuration | • 1: with card |
| 6 | Version (Optional) | • Default: version for usage together with SHRT for 3-phase combo-solution<br>• L1: version for usage as stand-alone AC Charger |

## Electrical Connection Ports

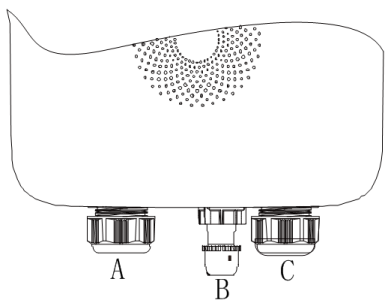



**figure 1-1** Ports

**table 1-1** Label Explanation

| Position | Description |
|---|---|
| A | Charging cable output (pre-assembled with charging cable) |
| B | RS485 communication interface (SHRT connection) |
| C | AC input (AC connection) |

### Dimensions

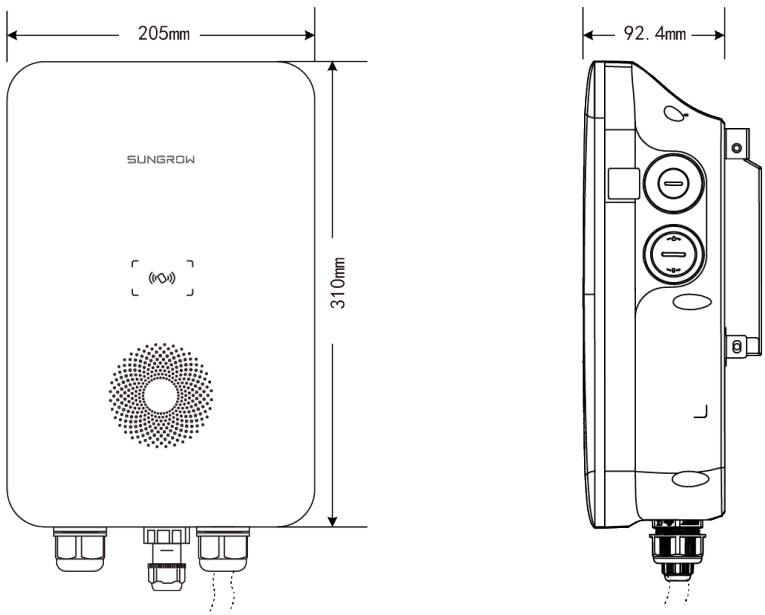



**figure 1-2** Dimensions (in mm)

## 1.3 LED Signals

**table 1-2** LED Signals

| LED Signal | Description |
|---|---|
| The blue LED blinks slowly (on for 1 s and off for 4 s) | Standby mode |
| The blue LED blinks (on for 1 s and off for 1 s) | Vehicle charging |
| The blue LED is glowing | Charging ended |
| The blue LED blinks quickly (on for 0.5 s and off for 0.5 s) | Vehicle plugged in |
| The blue LED blinks quickly for five times (on for 0.2 s and off for 0.2 s) | RFID charge card used |
| The blue LED blinks slowly (on for 2 s and off for 2 s) | No RS485 communication in standby mode under EMS |
| The blue LED is on for 1 s and the red LED is on for 1 s | Power-on self-test |

| LED Signal | Description |
|---|---|
| The blue indicator blinks quickly | Firmware upgrading |

## 1.4 System Overview

In both charging scenarios, with standard and advanced version, smart charging visualization via App is possible. In addition to charging from the grid, the advanced versions support intelligent energy consumption usage in combination with SUNGROW's 3-phase combo solution.

### Stand-alone EV Charger

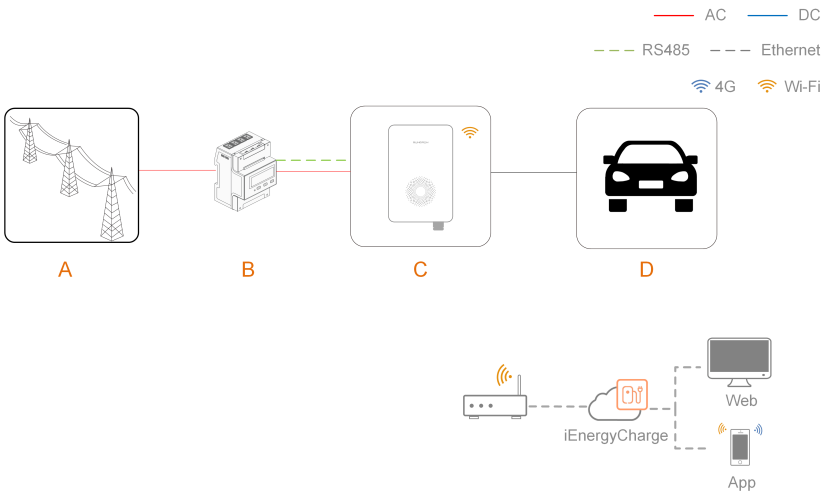



**figure 1-3** System topology diagram of EV charger

| Position | Description | Note |
|---|---|---|
| A | Utility grid | TT, TN-C, TN-S, TN-C-S. |
| B | DTSU666 Smart Energy Meter (optional) | A smart energy meter that monitors power usage and helps to avoid power outages caused by peak electricity during home charging. |
| C | Charger | • AC011E-01<br>• AC011E-01 L1 |
| D | Electric vehicle | - |

## Solar-Storage-Charging Solution

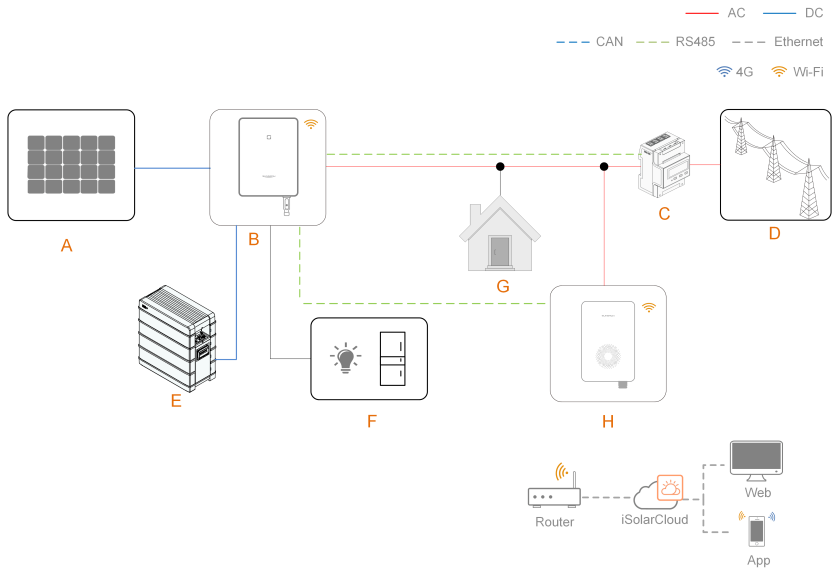



**figure 1-4** System topology diagram of the solar-storage-charging solution

| Position | Description | Note |
|---|---|---|
| A | PV strings | Compatible with monocrystalline silicon, polycrystalline silicon, and thin-film modules without grounding. |
| B | Inverter | SH5.0RT / SH6.0RT / SH8.0RT / SH10RT |
| C | Energy meter | A smart energy meter that monitors power usage and helps to avoid power outages caused by peak electricity during home charging. |
| D | Utility grid | TT, TN, TN-C-S, TN-S, TN-C. The type of grid grounding system depends on local regulations. |
| E | Battery | A Li-ion battery. |
| F | Backup loads | Protected house loads directly connected to the inverter. |
| G | Normal loads | Non-protected house loads. They will be disconnected in case of grid failure. |
| H | AC-Charger | AC011E-01 |

For SUNGROW's solar-storage-EV charging solution, please refer to the user manual of related inverter. See 8.2 Additional Information.

## 1.5 Load Management

Load management is supported by the AC-Charger. To enable load balancing function, see 5.3.2 Set Up Load Balancing via Web UI or 5.3.2 Set Up Load Balancing via iEnergyCharge.

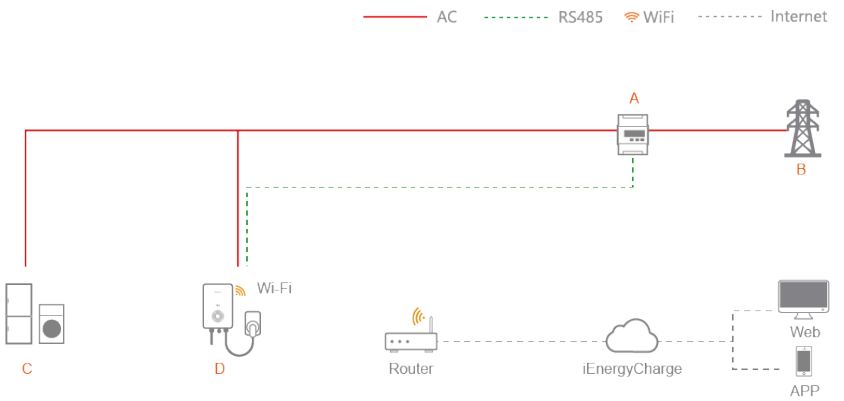



**figure 1-5** System topology diagram of Load Balancing

| Position | Description | Note |
|---|---|---|
| A | DTSU666 Smart Energy Meter (optional) | A smart energy meter that monitors power usage and helps to avoid power outages caused by peak electricity during home charging. |
| B | Utility grid | TT, TN-C, TN-S, TN-C-S. |
| C | House loads | Energy consumed by home appliances. |
| D | Charger | • AC011E-01<br>• AC011E-01 L1 |

# 2 Installation

**⚠ WARNING**

**Respect all local standards and requirements during mechanical installation.**

**⚠ CAUTION**

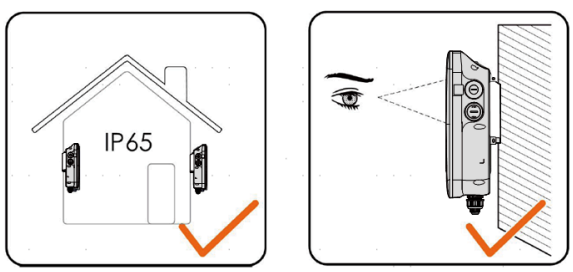
**Any damage or malfunction with the charger caused by negligence or improper use will not be eligible for service and replacement under the warranty.**

## 2.1 Installation Requirements

### Location Requirements

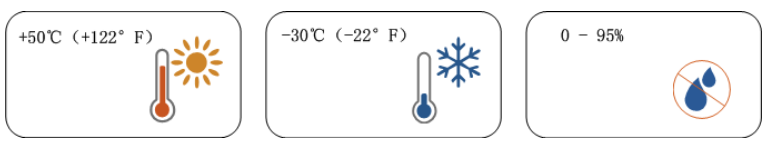
Select an optimal mounting location for safe operation, long service life and expected performance.

- The charger with protection rating IP65 can be installed both indoors and outdoors.
- The charger should be installed at a place where the LED signals can be easily seen, and is convenient for electrical connection, operation, and maintenance.




### Environment Requirements

- There must be no flammable hazards or ignition risks.
- The mounting location must be inaccessible to children.
- The ambient temperature and relative humidity must meet the following requirements.



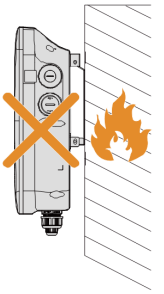
- Avoid exposure to direct sunlight, rainwater and snow.
- The charger should be well-ventilated for good air circulation.
- The mounting location must be away from living area. The charger will emit noises during operation that might be perceived as disturbing.

## Carrier Requirements

**NOTICE**

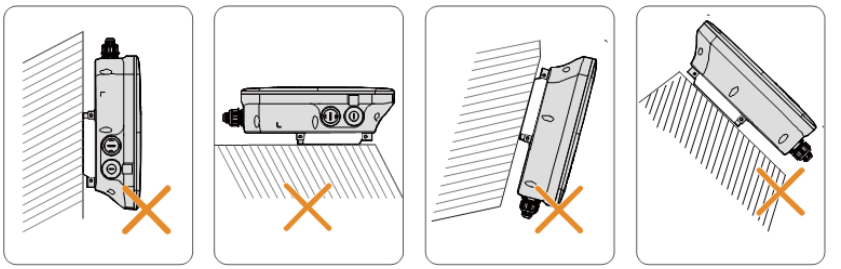
**The mounting structure where the charger is installed must comply with local/national standards and guidelines.**

- The carrier should be solid enough to bear 4.5 times the weight of the charger.
- The carrier should be suitable for the dimensions of the charger.
- The surface of the carrier must be fire-resistant.



## Angle Requirements

- Install the charger vertically.
- Do not install the charger horizontally, tilted or upside down.
- Do not install the charger on a tilted surface.



## 2.2 Unpacking and Inspection

After receiving the product, check whether the appearance and structural parts of the device are damaged, and check whether the packing list is consistent with the actual ordered product. If there are problems, do not install the device and contact your distributor first. If the problem persists, contact SUNGROW in time.

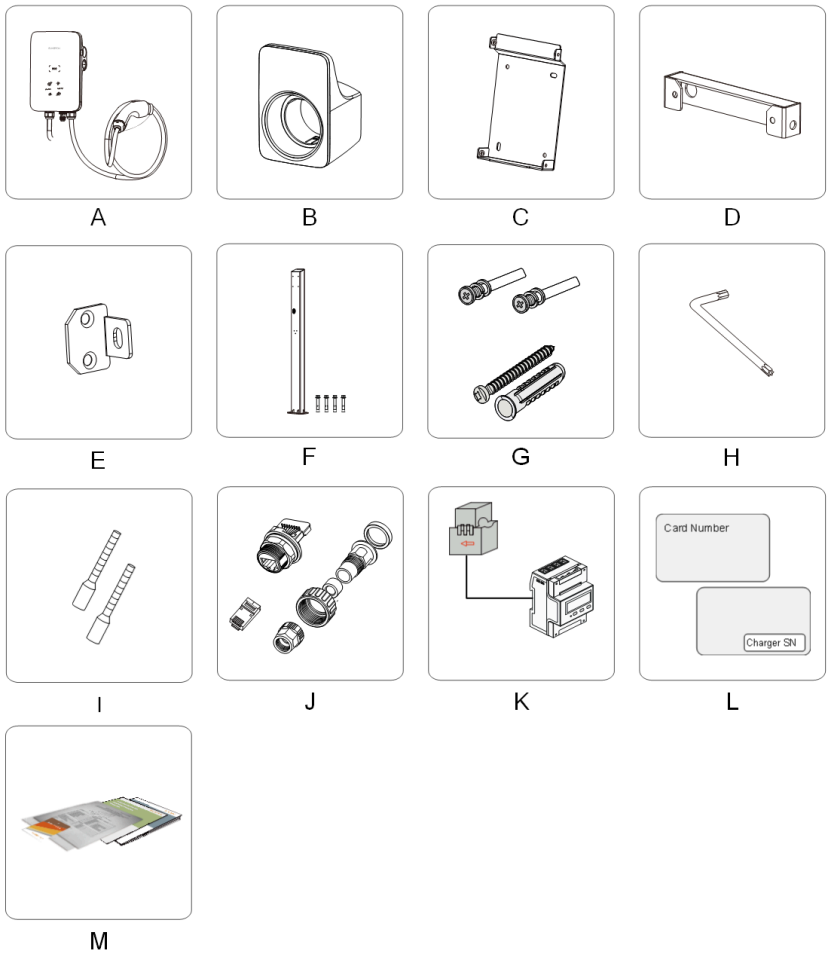



**table 2-1** Label Descriptions

| Item | Name | Quantity |
|---|---|---|
| A | AC-Charger | 1 |
| B | Charging cable bracket | 1 |
| C | Backplate | 1 |
| D | Upper mounting plate | 1 |

| Item | Name | Quantity |
|---|---|---|
| E | Lower mounting plate | 2 |
| F | Mounting pole (optional) | 1 |
| G | Combination screw and expansion screw | 4, 7 (wall-mounted); 11, 0 (pole-mounted) |
| H | L-shaped spanner | 1 |
| I | Wire end ferrule | 1~2 |
| J | RJ45 screw connector | 1 |
| K | DTSU666 Smart Energy Meter (optional) | 1 |
| L | RFID charge card | 2 |
| M | Quick Installation Guide, Warranty Card, and Certificate of Conformity | 1, 1, 1 |

The scope of delivery does not include the optional mounting pole (F) and energy meter (K). These items must be ordered separately. Contact customer service for details.

## 2.3 Installation Tools

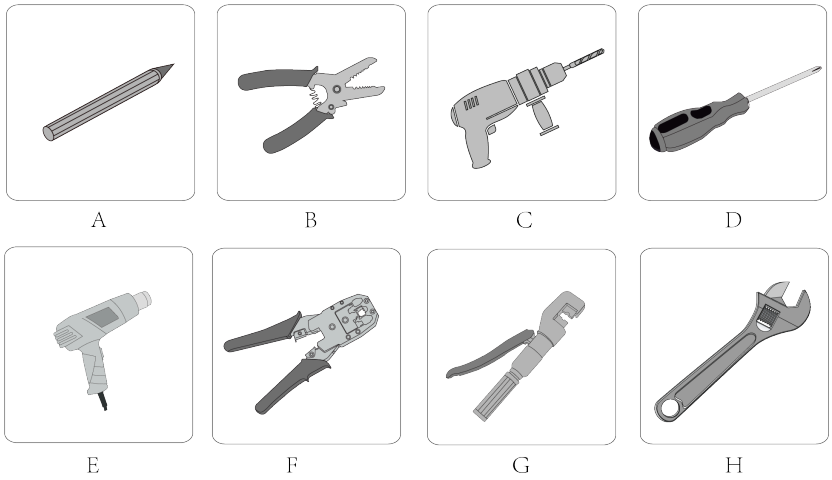



**table 2-2** Label Descriptions

| Item | Name | Specification |
|---|---|---|
| A | Marker | - |
| B | Wire stripper | - |
| C | Hammer drill | Ø6, Ø12 |

| Item | Name | Specification |
|---|---|---|
| D | Screwdriver | M3, M4 |
| E | Heat gun | - |
| F | RJ45 crimping tool | - |
| G | Hydraulic plier | 2.5-6 $mm^2$ |
| H | Adjustable spanner | - |

## 2.4 Electrical Connection

### 2.4.1 Circuit Diagram

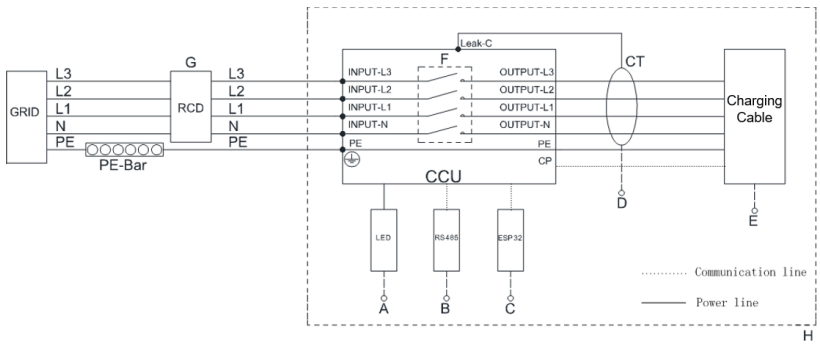



**figure 2-1** Circuit diagram

**table 2-3** Label Descriptions

| Label | Description |
|---|---|
| A | The LED lights that indicates the status of the charger |
| B | RS485, reserved for external communication |
| C | ESP32 module for Wi-Fi communication |
| D | CT for leakage current detection |
| E | Charging cable output (connected to the vehicle) |
| F | CCU internal relay |
| G | Type A residual-current device (Parameter: 25 A/400 V with a rated residual current of 30 mA; input cable cross-section: 2.5 $mm^2$) |
| H | The charger |

**NOTICE**

**The charger already integrates a DC residual-current device with a rated residual current of 6 mA. However, the charger also requires a type A RCD of 30 mA. Each charger in the system must be individually connected to the utility grid through an RCD and a miniature circuit breaker.**

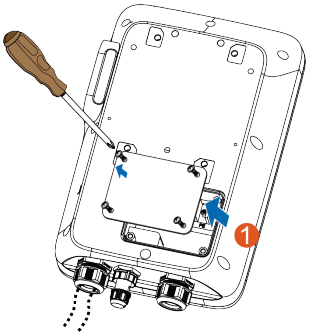
## 2.4.2 AC Cable Connection

### AC Cable Requirement

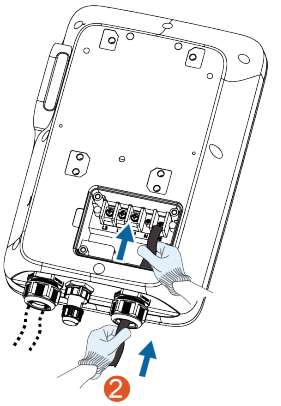
Cable cross-section: minimum 2.5mm$^2$ (5 x 2.5 mm$^2$)

**step 1** Place the charger face-down on a clean and flat surface.

**step 2** Loosen the screws that secure the back cover plate. (M3 screws, torque: 0.5 ± 0.1 N·m)




**step 3** Plug the cable into the port of the power supply which is at the leftmost.




**step 4** Adjust the cable to a suitable length, and strip off the insulation of the cable to prepare for cable connection terminals.

1 Strip off the insulation from the end of each wire.

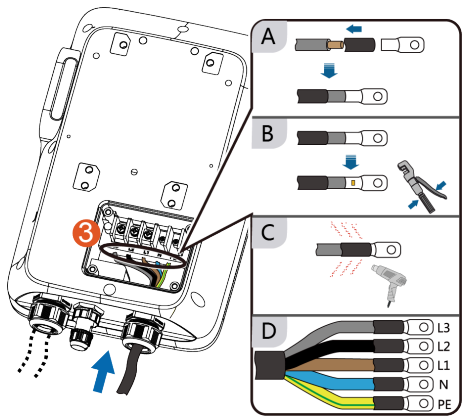
2 Insert the copper core of the stripped end of the wire into the copper lug.

3 Tighten the copper lug using a hydraulic plier.

4 Select a heat-shrink tubing that matches the diameter of the wire.
The length of the tubing should be about 2 cm longer than the length of the copper lug's wire tube.

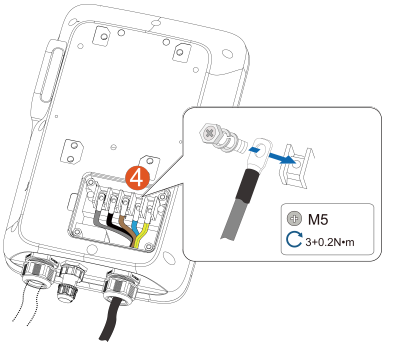
5 Place the heat-shrink tubing on the copper lug until it completely covers the copper lug's wire hole.

6 Activate heat-shrink tubing using a heat gun.

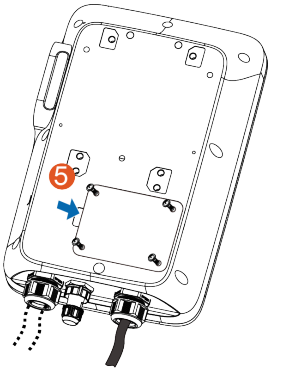



| Color | Terminal |
|---|---|
| Brown | L1 |
| Black | L2 |
| Gray | L3 |
| Blue | N |
| Yellow-green | PE |

**step 5** Connect each crimped terminal (OT2.5-5) and tighten them using a screwdriver. (Torque: 3 ± 0.2 N·m)




**step 6** Put the back cover plate back in place and tighten the screws to secure it.




**- - End**

### 2.4.3 RS485 Communication Connection

To connect the charger to a energy meter, see the related user manual.

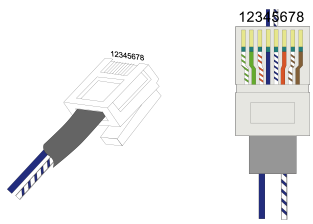
For the Residential Hybrid + AC Charging Solution, the RS485 communication connection is needed to connect the AC Charger to SUNGROW's 3-phase inverter (SHRT).

**figure 2-2** RJ45 screw connector

**step 1** Crimp both ends of the Ethernet cable using a crimping tool.

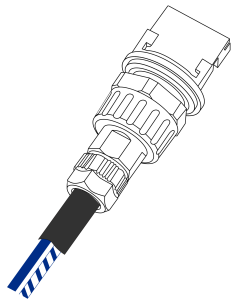
Ensure that the blue wire and the blue-white wire is correctly crimped.

The blue wire (PIN 4) connects to 485B, and the blue-white wire (PIN 5) connects to 485A.




**step 2** Insert the RJ45 connector to the RJ45 jack.

**step 3** Install seals for the Ethernet cable in sequence.



Ensure that the cable is secured.

**step 4** Connect the charger to an the SUNGROW Hybrid inverter or other monitoring system.

**- - End**

## 2.5 Wall-Mounted Installation

**Prerequisites**

Install the charger on the wall using the provided wall-mounting bracket and expansion screw sets.

The load-bearing capacity of the installation carrier must be at least 4.5 times the weight of the charger.

**step 1** Install the backplate.

1 Hold the backplate in the desired position on the wall and mark the positions of the drill holes.

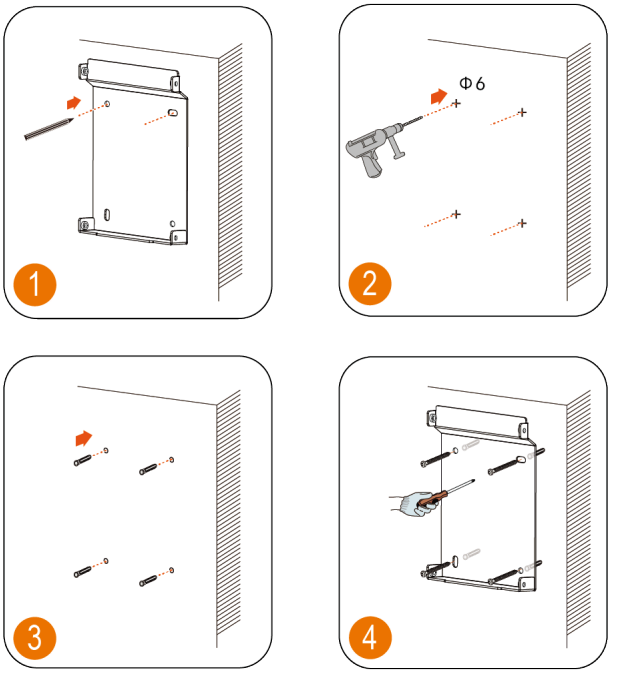
**NOTICE**

**Before drilling the hole for the backplate, locate and avoid water pipes and electrical wires in the wall.**

2 Drill holes at the marked positions using a hammer drill. (Diameter: 6 mm; depth: 45 mm)

3 Insert the dowel into the holes.

4 Place the backplate on the wall and tighten the screws using a screwdriver to secure the backplate.



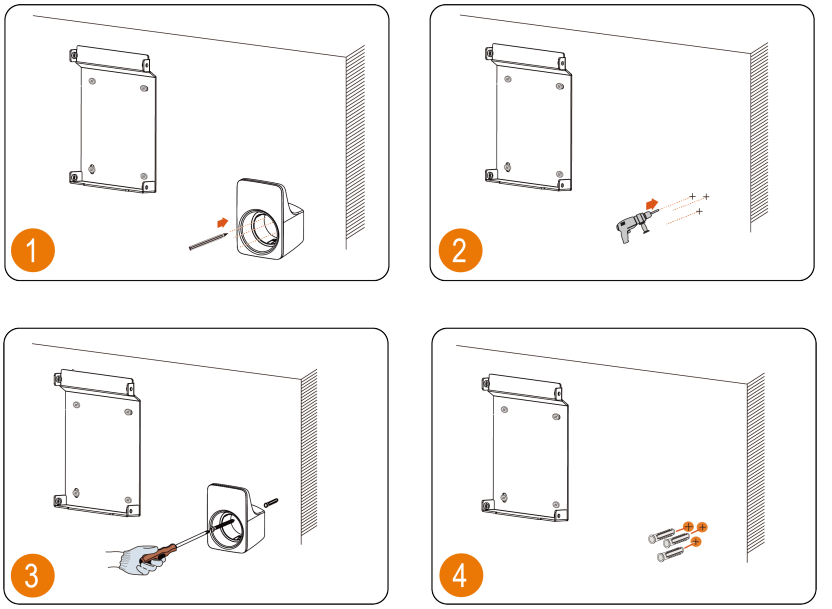

**step 2** Install the charging cable bracket.

1 Hold the charging cable bracket in the desired position on the wall and mark the positions of the drill holes.

2 Drill holes at the marked positions using a hammer drill.

3 Insert the dowel into the hole.

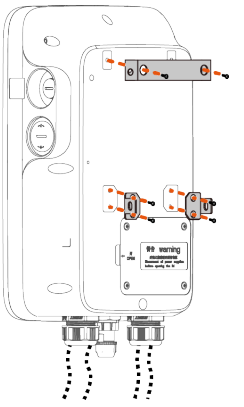
4 Place the charging cable bracket on the wall, and tighten the screws to secure the charging cable bracket using a screwdriver.



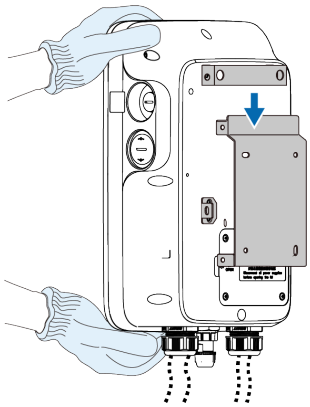

It is recommended that the charging cable bracket be positioned at the lower right side of the charger, about 20 cm away from the charger. The distance shall be adjusted according to the actual situation.

**step 3** Mount the charger.

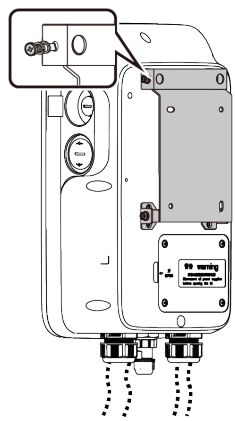
1 Secure the upper mounting plate and the lower mounting plate on the back of the charger using a screwdriver. (Torque: 1.2 ± 0.1 N·m)



2 Hang the charger onto the backplate.



3 Secure the upper and lower mounting plates to the backplate with screws. (Torque: 1.2 ± 0.1 N·m).



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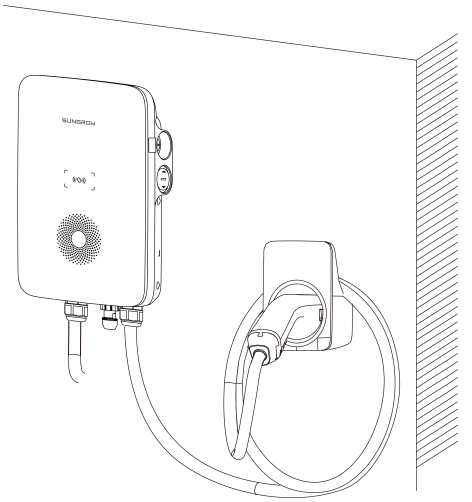


**figure 2-3** Wall-mounted charger

## 2.6 Pole-Mounted Installation

It is recommended to install the pole on a solid support surface (such as concrete or tarmac). If conditions do not permit, install the foundation first, and then install the mounting pole.

### 2.6.1 Foundation Installation

The base should be 100 mm above the ground, and the exterior dimensions of the front, back, left, and right side columns should be greater than 100 mm. Ensure that there are openings for cables.

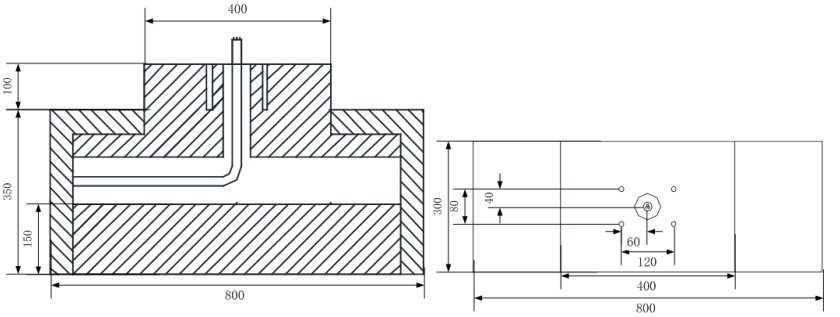



**figure 2-4** Front view and top view (unit: mm)

## 2.6.2 Pole Installation

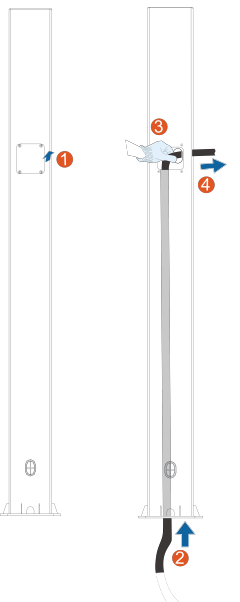
**step 1** Connect the AC cable.

1 Remove the cover plate on the back of the pole using a cross screwdriver.

2 Lead the AC cable through the bottom into the pole.

3 Grab the AC cable when it reaches the cover plate and take out the end of the cable from the AC cable outlet.

4 Pull the cable out to an appropriate length and close the cover plate.



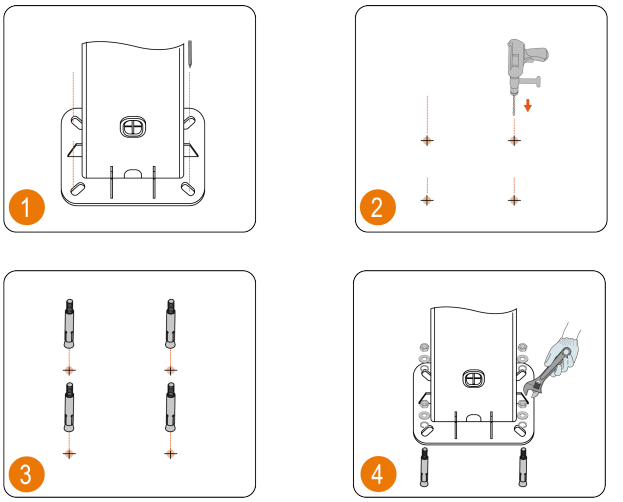

**step 2** Mount the charger.

1 Place the pole on a solid and flat surface, and mark the positions of the drill holes.

2 Drill holes at the marked positions using a hammer drill. (Diameter: 12 mm; depth: 85 mm)

3 Insert the dowel into the holes.

4 Tighten the expansion screw using a screwdriver.




5 Check whether the pole is firmly installed.

**step 3** Install the backplate and the charging cable bracket.

1 Align the holes in the backplate with the holes drilled in the pole, and secure the backplate to the pole with screws.

2 Align the holes in the bracket with the holes drilled in the pole, and secure the bracket to the pole with screws.

3 Check whether the backplate and the charging cable bracket are firmly installed.

**step 4** Install the upper mounting plate and lower mounting plate.

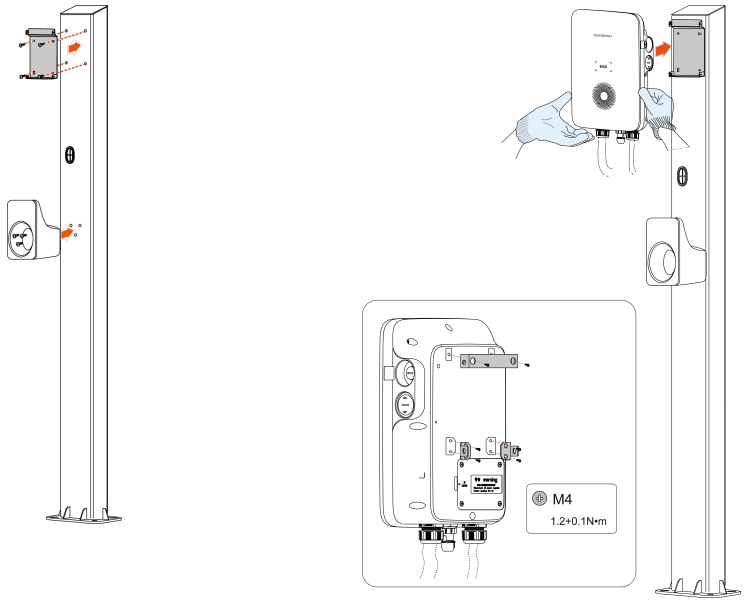
1 Place the charger face-down on a clean and flat surface, and secure the upper and lower mounting plates to the pole using a screwdriver.

2 Ensure that the upper mounting plate and the lower mounting plate are firmly installed.

3 Hang the charger onto the backplate.

4 Secure the upper and lower mounting plates to the backplate.

5 Check whether the charger is correctly installed on the pole.




**- - End**

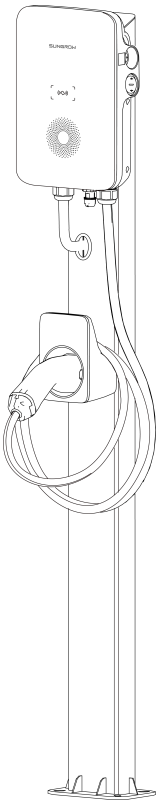


**figure 2-5** Pole-mounted charger

# 3 Inspection before Commissioning

**table 3-1** Requirements before commissioning

| Item | Description |
|---|---|
| Location | The charger is correctly mounted at a place that is convenient for operation and maintenance. |
| Charger | The charger is firmly and securely installed. |
| Cable | Cables are correctly and firmly connected, and are adequately protected from damage. |
| Current leakage protection | The AC input's current leakage protection switch is reasonable. |
| Clearance | The charger has sufficient cooling space and there is no other stuff or components are left on the top of the charger. |

It is recommended to update the firmware of the charger to the latest version before charging to ensure optimal charging performance. For details, see 5.3.3 Update the Firmware On-site or 6.3.2 Update the Firmware Remotely.

**step 1** Ensure that all requirements are met before commissioning.

**step 2** Turn on the current leakage protection switch of the AC input.

**step 3** Power on the charger.

The blue LED blinks slowly which indicates the charger is in standby mode.

**- - End**

# 4 Commissioning via iSolarCloud

This section only applies to use cases with the advanced version of the charger.

For commissioning procedure, refer to the user manual of related inverter. See 8.2 Additional Information.

# 5 Commissioning via Web UI

The charger has a built-in access point for commissioning and connection to other devices.

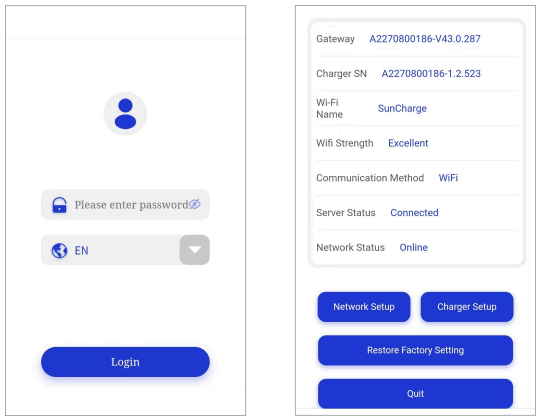



**figure 5-1** Web UI

## 5.1 Establish a Connection

Once the charger is powered on, you need to establish a wireless connection between the charger and your mobile device or laptop.

- The charger is powered on.
- A Wi-Fi network is available.

The charger's Wi-Fi network will only broadcast for 15 minutes. When the network is turned off, restart the charger and connect to the network again.

To avoid potential interference, it is recommended to enable airplane mode when connecting to the charger's Wi-Fi network.

Charger's Wi-Fi network (SSID), IP address, and passwords

- Charger's SSID in WLAN: See the charger's serial number.
- WLAN password:admin123 or no password required (depending on the firmware version of the charger).
- IP address of the web UI: 192.168.4.1
- Web UI password: SGC666 or see the 4-digit PIN on the RFID charge card (depending on the firmware version of the charger).

**step 1** Connect to the charger's Wi-Fi network.

1 On your mobile device or laptop, turn on the WLAN option.

2 In the WLAN settings, select the SSID of the charger.

**step 2** Log in to the web UI.

1 Open your browser and enter the IP address to navigate to the **Login** page.

2 Enter the password and click **Login**.

**step 3** Set up the network.

For proper functionality of the charger, it is necessary to configure the network and connect the charger to the SUNGROW's network server. This ensures server connectivity for software upgrades and remote services.

1 On the **Home** page, select **Network Settings**.

2 Click **Wi-Fi Name**to select your router Wi-Fi network from the list, and enter the password of the router network below.

If the SSID of your router Wi-Fi network is not displayed in the list, manually add the network and enter the name and password.

3 Click **Confirm** to apply the changes.
The web UI will navigate to the **Login** page.

**step 4** Log in to the web UI again.
The server status changes to "**Connected**" to confirm the connection.

**- - End**

## 5.2 Configure Network

If the router's Wi-Fi network has changed, update the network settings accordingly.

Your phone has connected to the charger’s Wi-Fi network.

To avoid potential interference, it is recommended to enable airplane mode when connecting to the charger's Wi-Fi network.

**step 1** Log in to the web UI.

**step 2** On the **Home** page, select **Network Settings**.

**step 3** Modify network settings as needed.

| Option | Description |
| --- | --- |
| **Wi-Fi Name** | Select a Wi-Fi network from the list. |
| **Server Address** | Enter the server address provided by the operator. The serial number will be captured automatically. |

**step 4** Click **Confirm** to apply the changes.

**- - End**

## 5.3 Manage the Charger

### 5.3.1 Change the Charging Mode

Your phone has connected to the charger's Wi-Fi network.

**step 1** Log in to the web UI.

**step 2** On the **Home** page, select **Charger Settings**.

**step 3** On the **Charger Settings** page, select **Switch Charging Modes**.

**step 4** In the pop-up dialog box, change the charging mode as needed.

| No. | Mode | Description | Note |
| --- | --- | --- | --- |
| 1 | **Network** | Start a charging session via RFID charge cards or iEnergyCharge. | The default mode for AC011E-01 L1. |
| 2 | **Plug&Play** | Start a charging session once the charging connector is plugged into the vehicle. | - |
| 3 | **EMS** | Start a charging session via RFID charge cards or iSolarCloud. | The default mode for AC011E-01. |

By default, AC011E-01 L1 does not support EMS charging. Contact customer service for assistance if you require EMS charging.

The EMS charging mode requires a 4-digit PIN. Depending on the version of the charger, the device-specific PIN is obtained in different ways.

- The standard version: contact the installer or SUNGROW for assistance.
- The advanced version: see the sticker on the RFID charge card.

**- - End**

### 5.3.2 Set Up Load Balancing

Only SUNGROW's energy meter is supported for load balancing on AC011E-01 and AC011E-01 L1. Contact customer service for details.

- The charger is online.
- The charger is not in use.
- The charger has connected to a power-controlling device. See 2.4.3 RS485 Communication Connection.

**step 1** Log in to the web UI

**step 2** On the **Home** page, select **Charger Settings**.

**step 3** On the **Charger Settings** page, select **Load Balancing**.

**step 4** Select the device you have for power-controlling, and click **Next**.

**step 5** Based on the devices you select, you can modify the following:

| Option | Description |
|---|---|
| **CT Ratio** | The default value is set to 3:100. |
| **Maximum Available Current** | Range: 10-100 A |

**step 6** Click **Confirm** to apply the changes.

**- - End**

### 5.3.3 Update the Firmware

You can update the firmware of the charger on-site via the AP mode.

- Your phone and the charger have connection to the Internet.
- The charger is available.
- There is a new version of the firmware.

It is recommended to update the firmware via iEnergyCharge. See 6.3.2 Update the Firmware Remotely.

It is recommended to use Safari or Chrome browsers only because other browsers might cause an unexpected error when upgrading.

Contact customer service for available firmware packages if needed.

**step 1** Log in to the Web UI.

**step 2** On the **Home** page, select **Charger Settings**.

**step 3** On the **Charger Settings** page, select **Upgrade Firmware**.

**step 4** Click **Browse** and select the firmware package.

Currently, only .enfs format is supported.

**step 5** Click **Upgrade** to update the charger.
The process might take 3 to 5 minutes.

**- - End**

# 6 Commissioning via iEnergyCharge

## 6.1 Access iEnergyCharge

iEnergyCharge connects charge point operators and EV drivers and aims to provide a seamless and integrated charging experience.

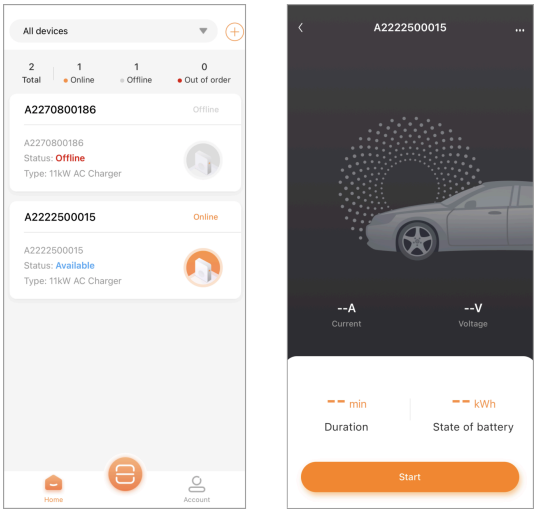



**figure 6-1** iEnergyCharge

Depending on the version of iEnergyCharge you are using, the user interface might be slightly different.

### 6.1.1 Download and Install

Operating system:

- Android 6.0 and above
- iOS 11 and above

#### Method 1

Search for “iEnergyCharge” in the following application stores, and follow the on-screen instructions to install.

- App Store
- Google Play Store

#### Method 2

Scan the QR code to download and install iEnergyCharge.

### 6.1.2 Sign up and Log in

Sign up to use iEnergyCharge.

#### Sign up

**step 1** Open iEnergyCharge and click **Sign up** on the **Login** page.

**step 2** Enter your email, and follow the on-screen instructions to sign up for an account.

**- - End**

#### Log in

**step 1** Open iEnergyCharge, and enter your email and password.

**step 2** Click **Log in**.

You can change the language preference on the **Login** page.

When logged in, you can update your email and password on the **Account > Settings** page.

**step 3** **Optional:** Check **Remember me** to save the latest login credentials.

**- - End**

## 6.2 Operation

### 6.2.1 Establish a Connection

Once the charger is powered on, you need to establish a wireless connection between the charger and your mobile device.

- The charger is powered on.
- A Wi-Fi network is available.

The charger's Wi-Fi network will only broadcast for 15 minutes. When the network is turned off, restart the charger and connect to the network again.

To avoid potential interference, it is recommended to enable airplane mode when connecting to the charger's Wi-Fi network.

Charger's Wi-Fi network (SSID) and password

- Charger's SSID in WLAN: See the charger's serial number.
- WLAN password:admin123 or no password required.

**step 1** Connect to the charger's Wi-Fi network.

1 Open iEnergyCharge and click  to navigate to the **Scan** page.

2 Scan the QR code on the charger and select **Add charger**.
iEnergyCharge automatically connects to the charger's Wi-Fi network.

3 **Optional:** If iEnergyCharge fails to connect to the charger, follow the on-screen instructions to complete the process.

**step 2** Set up the charger.

1 Select the charger's charging mode and click **Continue**.

| No. | Mode | Description | Note |
|---|---|---|---|
| 1 | **Network** | Start a charging session via RFID charge cards or iEnergyCharge. | The default mode for AC011E-01 L1. |
| 2 | **Plug&Play** | Start a charging session once the charging connector is plugged into the vehicle. | - |
| 3 | **EMS** | Start a charging session via RFID charge cards or iSolarCloud. | The default mode for AC011E-01. |

By default, AC011E-01 L1 does not support EMS charging. Contact customer service for assistance if you require EMS charging.

The EMS charging mode requires a 4-digit PIN. Depending on the version of the charger, the device-specific PIN is obtained in different ways.

- The standard version: contact the installer or SUNGROW for assistance.
- The advanced version: see the sticker on the RFID charge card.

1 Confirm the server address and click **Continue**.

Default server address: wss://europe.suncharger.cn:20038

If you want to add a non-SUNGROW charger, enter the server address provided by the operator.

2 On the **Add device** page, select your router's Wi-Fi network, and enter the password.

If the SSID of your router Wi-Fi network is not displayed in the list, manually add the network and enter the name and password.

You can change the network settings later on the **Account > Network settings** page.

iEnergyCharge applies the settings and connects to the router's Wi-Fi network.

3 **Optional:** If iEnergyCharge fails to apply the settings, follow the on-screen instructions to complete the process.

**step 3** Add the charger to your iEnergyCharge account.

Disconnect from the charger first, and connect to the router's Wi-Fi network.

1 On the **Device status** page, select **Add device**.

2 Confirm the connection on the **Add charger result** page and click **Complete**. iEnergyCharge automatically adds the charger to your account.

**- - End**

### 6.2.2 Add the Charger to Your Account

Scan the QR code or manually enter Charger SN to add the charger to your iEnergyCharge account.

- Your phone has connected to the charger's Wi-Fi network.
- The charger is online.

**step 1** Open iEnergyCharge and click  to navigate to the **Scan** page.

**step 2** Scan the QR code on the charger and select **Add charger**.

**step 3** On the **Device status** page, select **Add device**.

**step 4** Confirm the connection on the **Add charger result** page and click **Complete**.

**step 5** If iEnergyCharge fails to connect to the router's Wi-Fi network, follow the on-screen instructions to complete the process.

**step 6** **Optional:** To delete the charger, select  **> Delete device**.

**- - End**

### 6.2.3 Scan the QR Code to Charge

- The charger has been added to your account.
- The vehicle is plugged in.

**step 1** Open iEnergyCharge, click  or select the charger on the **Home** page to check details.
You can see the rated current and rated voltage of this charger.

**step 2** Click **Start** to start charging.
You can see the real-time current and voltage of this charger.

**step 3** When the charging finishes, you can **Confirm** the time and energy used.

During charging, you can track charging progress or remotely stop charging on iEnergyCharge.

**step 4** **Optional:** Select  **> Device name** to rename this charger for easier recognition.

**- - End**

### 6.2.4 Add RFID Charge Cards

You can directly start charging via RFID charge cards.

At least one RFID charge card is available.

**step 1** Open iEnergyCharge and navigate to the **Account** page.

**step 2** Select **Charge cards > Add card**.

**step 3** Add a card.

Use one of the following methods:

- Manually enter card name and card number.
- Click  to capture the card number via scanning.

**step 4** Click **Save** to apply the changes.

**- - End**

### 6.2.5 Regulate Current During Charging

Controlled charging is not enabled for the charger.

Charging at a regulated current only applies to the current charging session.

**step 1** Open iEnergyCharge and select the charger.

**step 2** Click  **> Charge current** to navigate to the **Charge current** page.

**step 3** Set the current range.

**step 4** Click **Set** to apply the changes.

**- - End**

### 6.2.6 Set Up Load Balancing

Only SUNGROW's energy meter is supported for load balancing on AC011E-01 and AC011E-01 L1. Contact customer service for details.

- The charger is online.
- The charger is not in use.
- The charger has connected to a power-controlling device. See 2.4.3 RS485 Communication Connection.

**step 1** Open iEnergyCharge and select the charger to be used for load balancing.

**step 2** Click  **> Load balancing** to navigate to the **Load balancing** page.

**step 3** Select the **Monitoring method**.

| Option | Description |
|---|---|
| **Smart meter** | Use electricy meter only. |
| **CT** | Use CT only. |

| Option | Description |
| --- | --- |
| **Smart meter+CT** | Use both electricity meter and CT. |

**step 4** Based on the devices you select, you can modify the following:

| Label | Description |
| --- | --- |
| **CT ratio** | The default value is set to 3:100. |
| **Meter type** | - |
| **Max. load current (A)** | Range: 10-100 A |

**step 5** Click **Set** to apply the changes.

**step 6** **Optional:** To disable load balancing, select **Disable** in the **Monitoring method** list.

**- - End**

### 6.2.7 Enable Offline Charging

When offline charging is enabled, you can start charging via RFID charge cards even if the charger is offline.

- Your phone and the charger have connection to the Internet.
- The charger is available.
- At least one RFID charge card is available.

**step 1** Open iEnergyCharge and select the charger to be used for offline charging.

**step 2** Click  **> Offline charging** to navigate to the **Offline charging** page.

**step 3** Click  on the top left and click **Confirm** in the pop-up dialog box.

**step 4** Select one or multiple RFID charge cards.

If you have not added an RFID charge card, or you need to add a new RFID charge card, click **Add card** on the top right and follow the on-screen instructions to complete the process.

If you switch off offline charging, the respective RFID charge cards must be associated with the charger once again for recognition.

**- - End**

## 6.3 Configuration

### 6.3.1 Configure Network

If the router's Wi-Fi network has changed, update the network settings accordingly.

To avoid potential interference, it is recommended to enable airplane mode when connecting to the charger's Wi-Fi network.

**step 1** Open iEnergyCharge and navigate to the **Account > Network settings** page.

**step 2** Scan the QR code on the charger and select **Add charger**.
iEnergyCharge automatically connects to the charger's Wi-Fi network.

**step 3** If iEnergyCharge fails to connect to the charger, follow the on-screen instructions to complete the process.

**step 4** On the **Add device** page, select your router's Wi-Fi network, and enter the password.

**step 5** Click **Confirm** to apply the changes.

**step 6** **Optional:** If iEnergyCharge fails to apply the settings, follow the on-screen instructions to complete the process.

**- - End**

### 6.3.2 Update the Firmware

To ensure proper functionality of the charger, it is recommended to keep the firmware up to date.

- Your phone and the charger have connection to the Internet.
- The charger is available.
- There is a new version of the firmware.

**step 1** Open iEnergyCharge and select the charger to be upgraded.

**step 2** Select ••• **> Update firmware** to navigate to the **Update firmware** page.

**step 3** Click **Update** to download the firmware.
The charger restarts when the upgrading process is completed.

**- - End**

# 7 Troubleshooting

**table 7-1** Fault Resolution

| Problem | Possible Cause | Solution |
|---|---|---|
| Overvoltage | 1 The grid voltage at the input end of the charger exceeds 276 V.<br>2 The grid voltage is still above 265 V after overvoltage. | Usually, the charger will be reconnected to the grid once the grid returns to normal. If the problem occurs repeatedly:<br>1 Measure the actual grid voltage, and contact local power company for solutions if the grid voltage is above 265 V.<br>2 Contact Sungrow Customer Service if the problem persists. |
| Undervoltage | 1 The grid voltage at the input end of the charger is below 184 V.<br>2 The grid voltage is still below 196 V after undervoltage. | Usually, the charger will be reconnected to the grid once the grid returns to normal. If the problem occurs repeatedly:<br>1 Measure the actual grid voltage, and contact the local power company for solutions if the grid voltage is below 196 V.<br>2 Check if the AC cables are firmly connected.<br>3 Contact Sungrow Customer Service if the problem persists. |

| Problem | | Possible Cause | Solution |
|---|---|---|---|
| Overfrequency | | 1 The mains AC frequency exceeds 64 Hz.<br>2 The grid frequency is still above 61 Hz after overfrequency. | Usually, the charger will be reconnected to the grid once the grid returns to normal. If the problem occurs repeatedly:<br>1 Measure the actual grid frequency, and contact the local power company for solutions if the grid frequency is above 61 Hz.<br>2 Contact Sungrow Customer Service if the problem persists. |
| Underfrequency | | 1 The mains AC frequency is below 47 Hz.<br>2 The grid frequency is still below 49 Hz after underfrequency. | Usually, the charger will be reconnected to the grid once the grid returns to normal. If the problem occurs repeatedly:<br>1 Measure the actual grid frequency, and contact the local power company for solutions if the grid frequency is below 49 Hz.<br>2 Contact Sungrow Customer Service if the problem persists. |
| EV | Leakage current | The DC leakage current is above 6 mA | 1 Stop charging and pull out the charging connector. When the charger returns to normal, try charge again. If the problem occurs repeatedly, contact the EV manufacturer's customer service.<br>2 Stop charging and pull out the charging connector. Contact Sungrow Customer Service if the problem persists. |
| | Overcurrent | Output current exceeds the threshold (formula: the actual current corresponding to the duty cycle + 2 A) | |

| Problem | | Possible Cause | Solution |
|---|---|---|---|
| Charger | Stuck relay | The relay is stuck and cannot be disconnected. | Restart the charger and try again. If the problem occurs repeatedly, contact Sungrow Customer Service. |
| | Leakage current detection circuit failure | 1 The CT terminal has bad connection or the CT is malfunctioning.<br>2 The RCD circuit is abnormal. | |
| | Relay overtemperature | The temperature of the main relay is too high. It might be a hardware problem. | |
| | CP failure | Abnormal CP loop circuit on the main board | |
| Wiring | Input terminal overtemperature | 1 The input terminal is loosely connected which causes bad connection.<br>2 The cable's current-carrying capacity does not meet the requirements. | 1 Ensure that the AC cable is tightly connected, that the cable used meets requirements, and L and N wires are correctly connected.<br>2 Contact Sungrow Customer Service if the problem persists. |
| | Reverse polarity | L and N wires are connected reversely. | |
| Communication error with the smart meter | | When load balancing is enabled, there is no communication between the energy meter and the charger for 1 minute continuously. | 1 Check the RS485 wiring between the energy meter and the charger.<br>2 Disable the load balancing function.<br>3 Contact Sungrow Customer Service if the problem persists. |
| CT error | | The total current collected by the CT is less than the actual output current of the charger. | 1 Replace the CT.<br>2 Disable the load balancing function.<br>3 Contact Sungrow Customer Service if the problem persists. |

**table 7-2** LED Signals that indicates abnormal conditions

| Charger Status | LED Signals |
|---|---|
| Reverse polarity | The red LED is glowing |
| Leakage current | The red LED blinks for 4 times (on for 0.5 s, off for 0.5 s) |
| CP failure | The red LED blinks for 5 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Overcurrent | The red LED blinks for 6 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Stuck replay | The red LED blinks for 7 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Abnormal leakage current loop | The red LED blinks for 8 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Input terminal overtemperature | The red LED blinks for 9 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Relay overtemperature | The red LED blinks for 10 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Undervoltage | The red LED blinks for 11 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Overvoltage | The red LED blinks for 12 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Overfrequency | The red LED blinks for 13 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Underfrequency | The red LED blinks for 14 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| CT error in the smart meter | The red LED blinks for 15 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |
| Communication error with the smart meter | The red LED blinks for 16 times (on for 0.5 s, off for 0.5 s) and then off for 3 s |

If the above faults cannot be removed, contact customer service.

# 8 Appendix

## 8.1 Technical Data

**table 8-1** Technical Data

| Specification | AC011E-01 |
|---|---|
| **AC Input and Output** | |
| Max. charge power | 11 kW |
| Nominal Voltage | 400 V |
| Nominal grid frequency | 50/60 Hz |
| Max. current | 16 A three-phase |
| Charge connector | Plug Type 2 |
| Cable cross-section | 5*2.5 $mm^2$ |
| Cable Length | 7 m |
| Protection Devices | 6mA DC |
| **Integrated DC fault detection** | |
| Over/Under voltage protection | Yes |
| Over load protection | Yes |
| Over temperature protection | Yes |
| Surge protection | II |
| Overvoltage category | III (grid)/II (car) |
| **General Data** | |
| Dimensions (W*H*D) | 205*310*92 mm |
| Weight | 3.8 kg |
| Mounting method | Wall-Mounting/Pole-Mounting (optional) |
| Degree of protection | IP65 |
| Operating ambient temperature range | -30 to 50 °C |
| Allowable relative humidity range (non-condensing) | 5 % to 95 % |
| Cooling method | Natural convection |
| Max. operating altitude | 2000 m |
| Grid type | TN/TT |
| Display | LED indicator |

| Specification | AC011E-01 |
| --- | --- |
| Monitoring | iSolarCloud App (with Sungrow inverter), iEnergy-Charge App |
| Communication | RS485 / WLAN |
| Charging protocol | OCPP 1.6 |
| Power consumption for standby | < 5 W |
| Start Mode | RFID card/APP/EMS/Plug&Play |
| Standard compliance | EN/IEC 61851-1:2019; IEC 61851-21-2:2018 |
| Warranty | 2.5 years (standard), 5 years (optional) |

## 8.2 Additional Information

For more information, visit support.sungrowpower.com.

| Title and Content | Refer to |
| --- | --- |
| "PV Storage and EV-Charging System"<br>Information on PV storage and charging system with chargers. | SH5.0/6.0/8.0/10RT&SH5.0/6.0/8.0/10RT-20 User Manual |
| "EV-Charger (Optional)"<br>Information on commissioning AC011E-01 via iSolarCloud to work with SUNGROW's three-phase Hybrid and SBR storage system. | SH5.0/6.0/8.0/10RT&SH5.0/6.0/8.0/10RT-20 User Manual |

## 8.3 Quality Assurance

In the event of a defect during the warranty period, SUNGROW will provide free of charge service or replace the product with a new one.

### Evidence

During the warranty period, the customer shall provide the product purchase invoice and date. In addition, the trademark on the product shall be undamaged and legible. Otherwise, SUNGROW has the right to refuse to honor the quality guarantee.

### Conditions

- After replacement, unqualified products shall be processed by SUNGROW.
- The customer shall give SUNGROW a reasonable period to repair the faulty device.

### Exclusion of Liability

In the following circumstances, SUNGROW has the right to refuse to honor the quality guarantee:

- The free warranty period for the whole machine/components has expired.
- The device is damaged during transport.
- The device is incorrectly installed, refitted, or used.
- The device operates in harsh conditions beyond those described in this manual.
- The fault or damage is caused by installation, repairs, modification, or disassembly performed by a service provider or personnel, not from SUNGROW.
- The fault or damage is caused by the use of non-standard or non-SUNGROW components or software.
- The installation and use range are beyond the stipulations of relevant international standards.
- The damage is caused by unexpected natural factors.

For faulty products in any of the above cases, if the customer requests maintenance, paid maintenance service may be provided based on the judgment of SUNGROW.

## 8.4 EU Declaration of Conformity

within the scope of the EU directives:

Radio Equipment Directive (RED) 2014/53/EU

## 8.5 Contact Information

In case of questions about this product, please contact us.

We need the following information to provide you with the best assistance:

- Model of the device
- Serial number of the device
- Fault code/name
- Brief description of the problem

For detailed contact information, please visit **https://en.sungrowpower.com/contactUS**.

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www.sungrowpower.com