Sigen EV AC Charger

User Manual

Sigen EVAC (7, 11, 22) 4G T2 WH

Sigen EVAC (7, 11, 22) 4G T2SH WH

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Revision History

Version	Date	Description
02	2024.06.20	Updated 2.4 Typical Networking. Updated 5.3 Instructions to Charging Modes. Updated 5.4 Networking of the Charger. Updated 5.5 PV Charging or PV Storage & Charging Networking.
01	2023.12.22	First official release.

Overview

Introduction

This document mainly introduces Sigen EVAC (7, 11, 22) 4G T2 WH and Sigen EVAC (7, 11, 22) 4G T2SH WH (hereafter referred to as Sigen EV AC Charger) and its networking configuration and operation & maintenance.

Readers

This document is suitable for product users and professionals

Sign Definition

The following signs may be used in the document to indicate security precautions or key information. Before installation and operation, familiarize yourself with signs and their definitions.

Signs	Definition
Danger	Danger. Failure to comply may result in death or serious personal injury.
Warning	Warning. Failure to comply may result in serious personal injury or property damage.
Caution	Caution. Failure to comply may result in property damage.
Tips	Important or key information, and supplementary operation tips.

Chapter 1 Safety Precautions

Basic Information

Before installing, operating, and maintaining the equipment, familiarize yourself with this document.

The "Danger ", "Warning", "Caution" items described in this manual are only supplementary to all precautions.

The Company shall not be liable for equipment damage or property loss caused by the following reasons:

- Failure to obtain approval from the national, regional power authority.
- The installation environment does not meet international, national, or regional standards.
- Failure to observe local laws, regulations and norms when operating and maintaining equipment.
- The installation area does not meet the requirements of the equipment.
- Failure to follow the instructions and precautions in this document.
- Failure to follow the warning labels on equipment or tools.
- Negligent, improper operation or intentional damage.
- Damage caused by your or a third party's replacement of our equipment.
- The equipment is damaged because the your or a third-party company fails to use the accessories supplied with the packing box or purchase and install accessories of the same specification.
- Equipment damage caused by improper operations such as disassembling, replacing, or modifying the software code without authorization.
- Equipment damage caused by force majeure (such as war, earthquake, fire, storm, lightning, flood, debris flow, etc.).
- Damage caused by the failure of the natural environment or external power parameters to meet the standard requirements of the equipment during actual operation (for example, the actual operating temperature of the equipment is too high or too low).
- The equipment was stolen.

- The equipment is damaged after the warranty period.

Safety Requirements

Danger

- Do not expose the equipment to high temperature or heat sources, such as ignition sources, heaters, etc.
- Do not clean or soak the equipment with water, alcohol, or oil to avoid power leakage or battery pack leakage.
- Do not leave liquid in the charging connector or socket.
- Do not knock or impact the equipment. In case of an accident, please stop using the equipment immediately and contact your sales agent, The equipment shall be inspected and evaluated by professional personnel before continuing to use.
- Do not use the equipment in bad weather, such as heavy rain or snowstorm, when installed outdoors.
- Do not extend sharp objects or fingers into the equipment.

Warning

After charging, put the charging connector and the charging cable back to their specified positions to prevent the charging connector from being contaminated or moistened and the charging cable from being crushed by heavy objects such as vehicles.

Caution

- Do not use the equipment with faults. If the equipment appears abnormal, contact your sales agent.
- Do not connect cables or adapters that are not required for installing this equipment.
- Do not use the equipment for any purposes other than vehicle charging.
- Do not use a private generator as the power source for the equipment.
- Do not forcedly bend parts on the equipment.
- Carbon dioxide fire extinguishers or ABC dry powder fire extinguishers are recommended at home.
- If the equipment cannot be charged, please contact your sales agent in time.
- The radio waves generated when using the equipment may affect the normal use of implantable medical devices or personal medical devices, such as pacemakers, implantable defibrillators, hearing AIDS, etc. Consult with your medical device manufacturer about the restrictions of using the equipment before use.

Do not use the equipment in the following situations:

- When connected to public infrastructure systems.
- When connected to emergency medical equipment.
- When connected to elevators and other control devices.
- Any other critical systems.

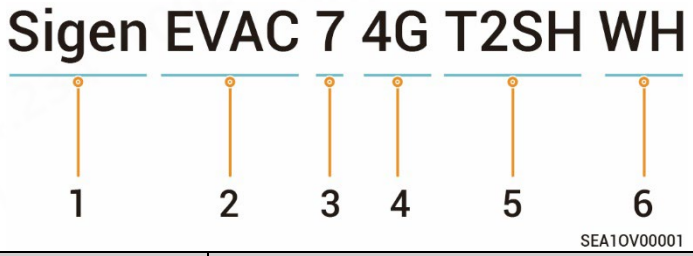
Chapter 2 Product Introduction

2.1 Model Designation

Model specifications of Sigen EV AC Charger include the followings:

- Sigen EVAC 7 4G T2 WH
- Sigen EVAC 11 4G T2 WH
- Sigen EVAC 22 4G T2 WH
- Sigen EVAC 7 4G T2SH WH
- Sigen EVAC 11 4G T2SH WH
- Sigen EVAC 22 4G T2SH WH

Fig.1-1 Model designation (example)

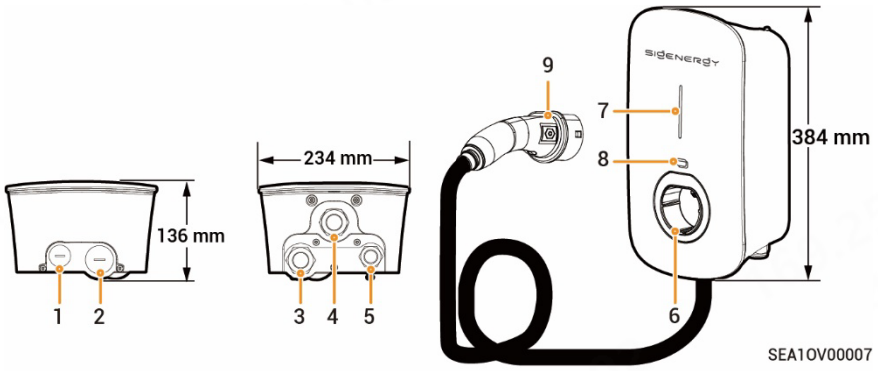


S/N	Definitions	Description
1	Brand name	-
2	Charger type	EVAC: EV AC charger
3	Power range (phase voltage is 230 V)	● 7: 7.36 kW ● 11: 11 kW ● 22: 22 kW
4	Features	➢ **Supported communication modes:** ● Ethernet communication ● 4G communication ● WLAN communication ➢ **Supported charging modes:** ● Fast Charging ● Solar Boost Charging ● 100% PV Charging ➢ **Supported charging methods:**

		● RFID card authenticated charging ● App authenticated charging ● Unauthenticated charging mode ● Scheduled charging ➢ **You can manually adjust the charging current or connect the Power Sensor. Dynamic load management (DLM) will automatically initiate to optimize the charging process.**
5	Output port	● T2: Type 2 charging connector complying with IEC 62196-2 ● T2SH: Type 2 charger socket with protective door complying with IEC 62196-2
6	Color	WH: White

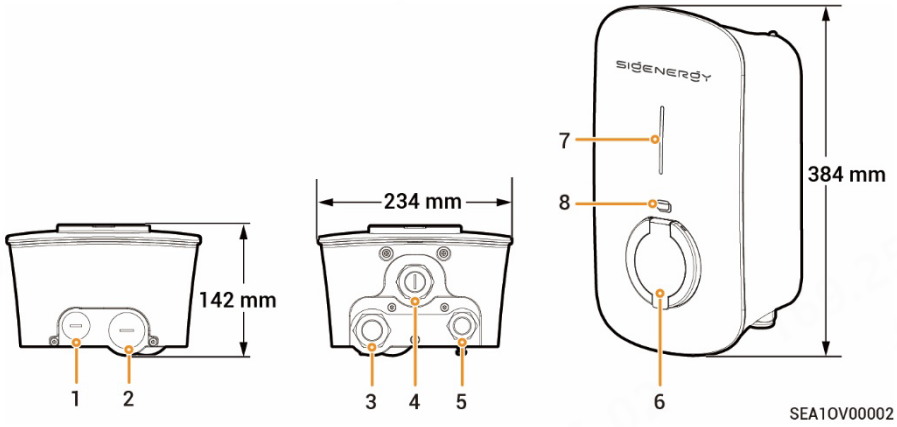
2.2 Product Appearance

Sigen EVAC 7/11/22 4G T2 WH



S/N	Description
1	Top routing hole for communication cable
2	Top routing hole for AC input cable
3	Bottom routing hole for AC input cable
4	Bottom routing hole for charging cable
5	Bottom routing hole for communication cable
6	Type 2 charging connector holder
7	Indicator
8	Sigen RFID Card reading area
9	Charging connector

Sigen EVAC 7/11/22 4G T2SH WH



S/N	Description
1	Top routing hole for communication cable
2	Top routing hole for AC input cable
3	Bottom routing hole for AC input cable
4	(Reserved) Bottom routing hole
5	Bottom routing hole for communication cable
6	Type 2 charger socket with protective door
7	Indicator
8	Sigen RFID Card reading area

Caution

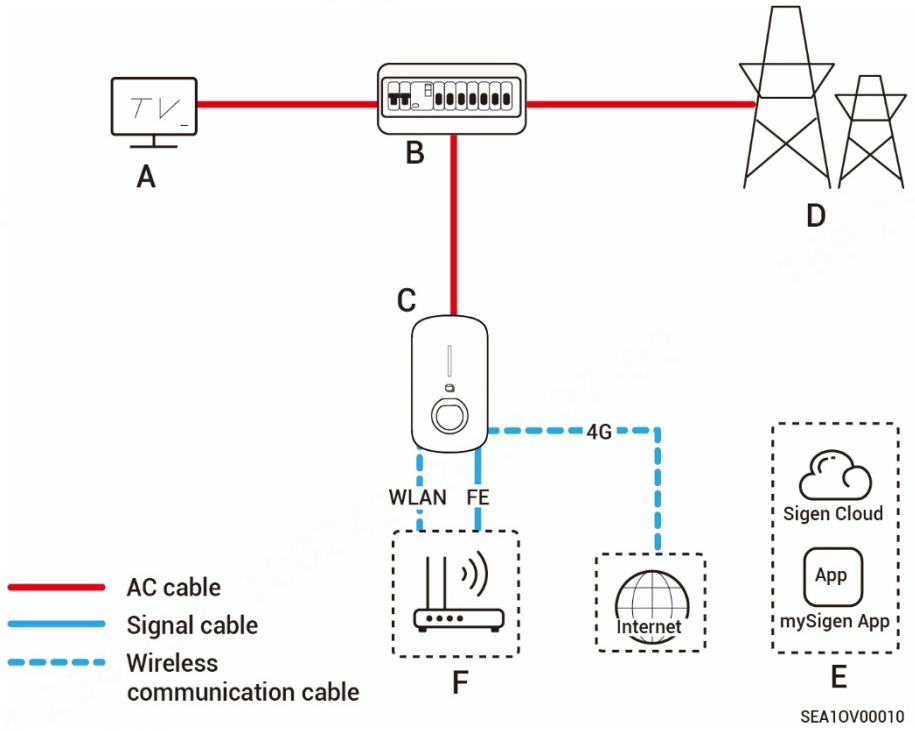
Cables are routed through the cable holes (No. 1 and No. 2) on the top. Please cover the top to avoid water ingress due prolonged water accumulation on the top.

2.3 Label Description

Symbol	Definitions
	Warning! Life-threatening Potential risks exist when the equipment is running. Please take protective measures before operating the equipment.
	Danger! High Voltage High voltage exists inside the equipment when powered on. Do not open the casing when the equipment is running. Any maintenance or servicing operations must be performed by trained and skilled electrical engineers.
	Operate the equipment by referring to the User Manual.
	GND symbol

2.4 Typical Networking

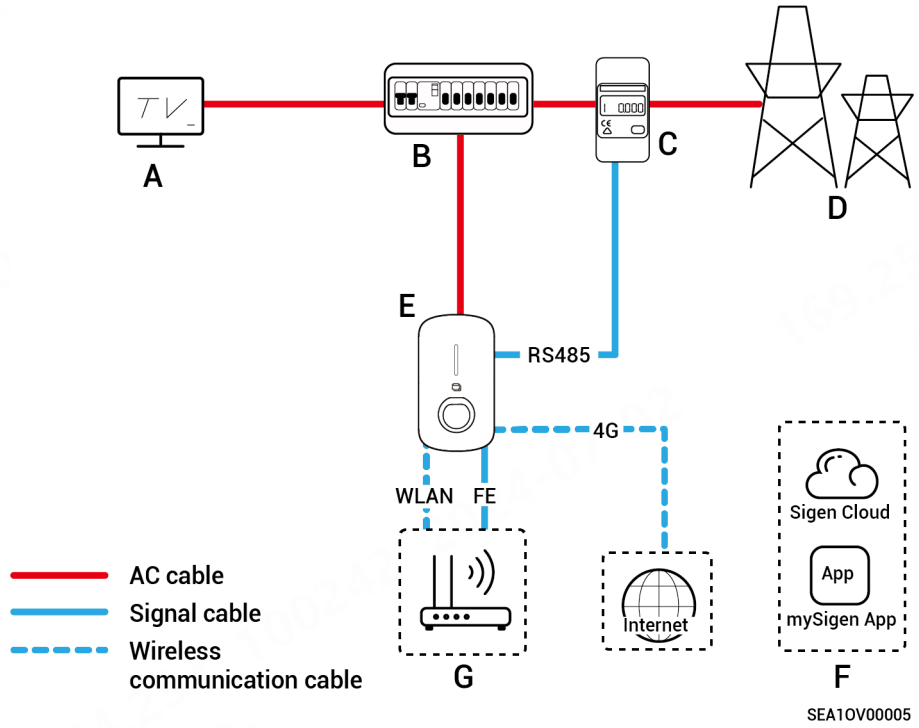
Networking configuration of the charger



A. Power equipment **B.** Distribution panel **C.** Sigen EV AC Charger

D. Power grid **E.** mySigen **F.** Router

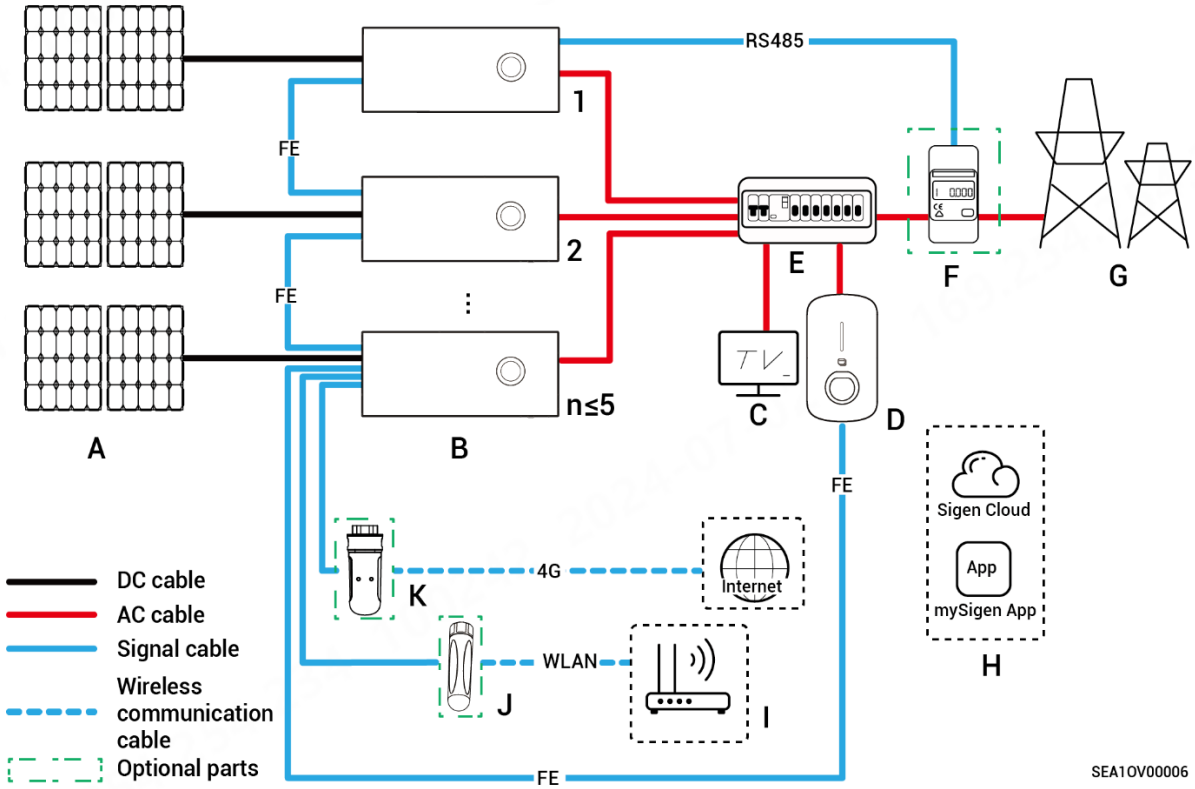
Networking of the charger (with DLM)



A. Power equipment **B.** Distribution panel **C.** Power Sensor

D. Power grid **E.** Sigen EV AC Charger **F.** mySigen **G.** Router

PV charging networking



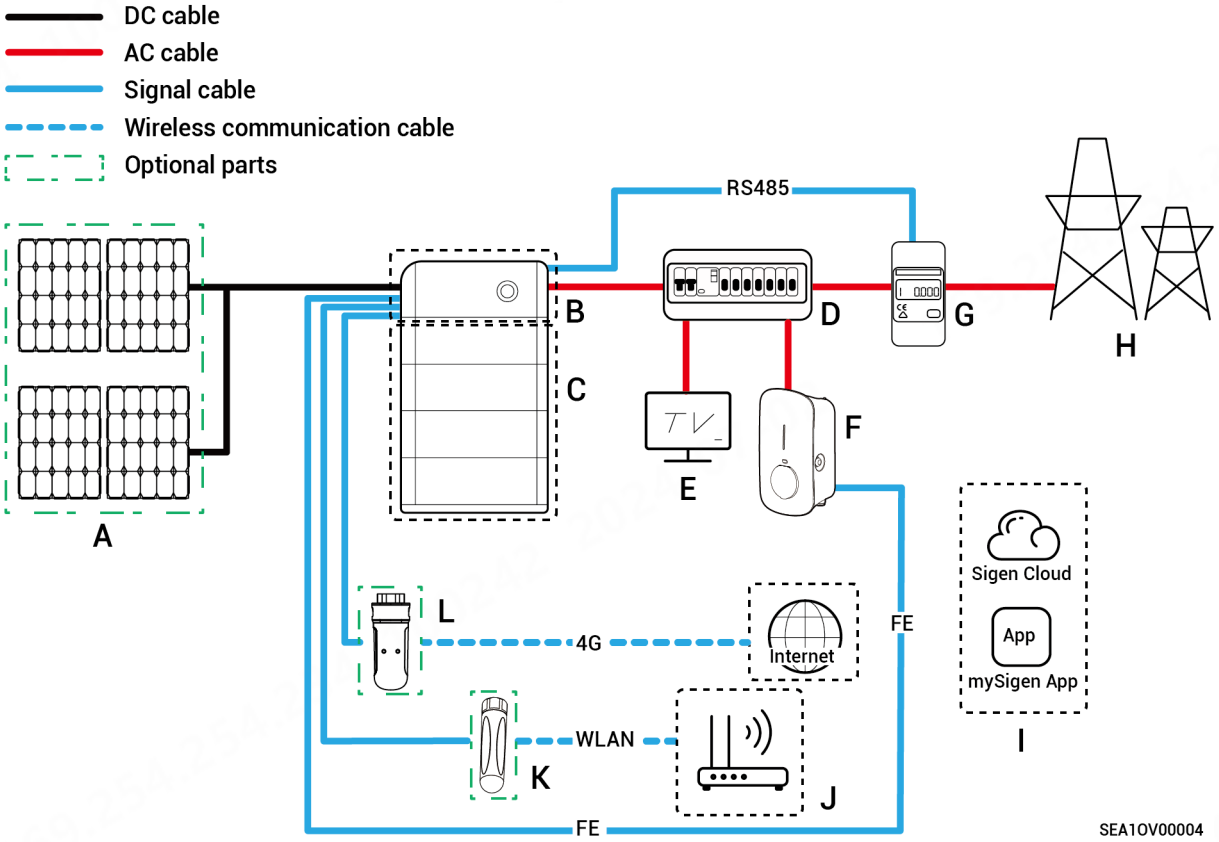
A. PV panel **B.** Sigen PV Max/Sigen Hybrid series inverter **C.** Power equipment

D. Sigen EV AC Charger **E.** AC distribution panel **F.** Power sensor

G. Power grid **H.** mySigen **I.** Router **J.** Antenna

K. CommMod

PV storage and charging networking (non-backup power scenario)



A. PV panel **B.** SigenStor EC/ Sigen Hybrid [1] **C.** SigenStor BAT

D. Distribution panel **E.** Household load **F.** Sigen EV AC Charger

G. Power Sensor **H.** Power grid **I.** mySigen **J.** Router[2]

K. Antenna[3] **L.** CommMod [4]

Tips

Note [1]: If Sigen Hybrid series inverters are configured with SigenStor BAT, users must purchase and activate the license to change the PV charging networking to the PV storage and charging networking.

Note [2]: Configure when Fast Ethernet or WLAN is used for communication with inverters.

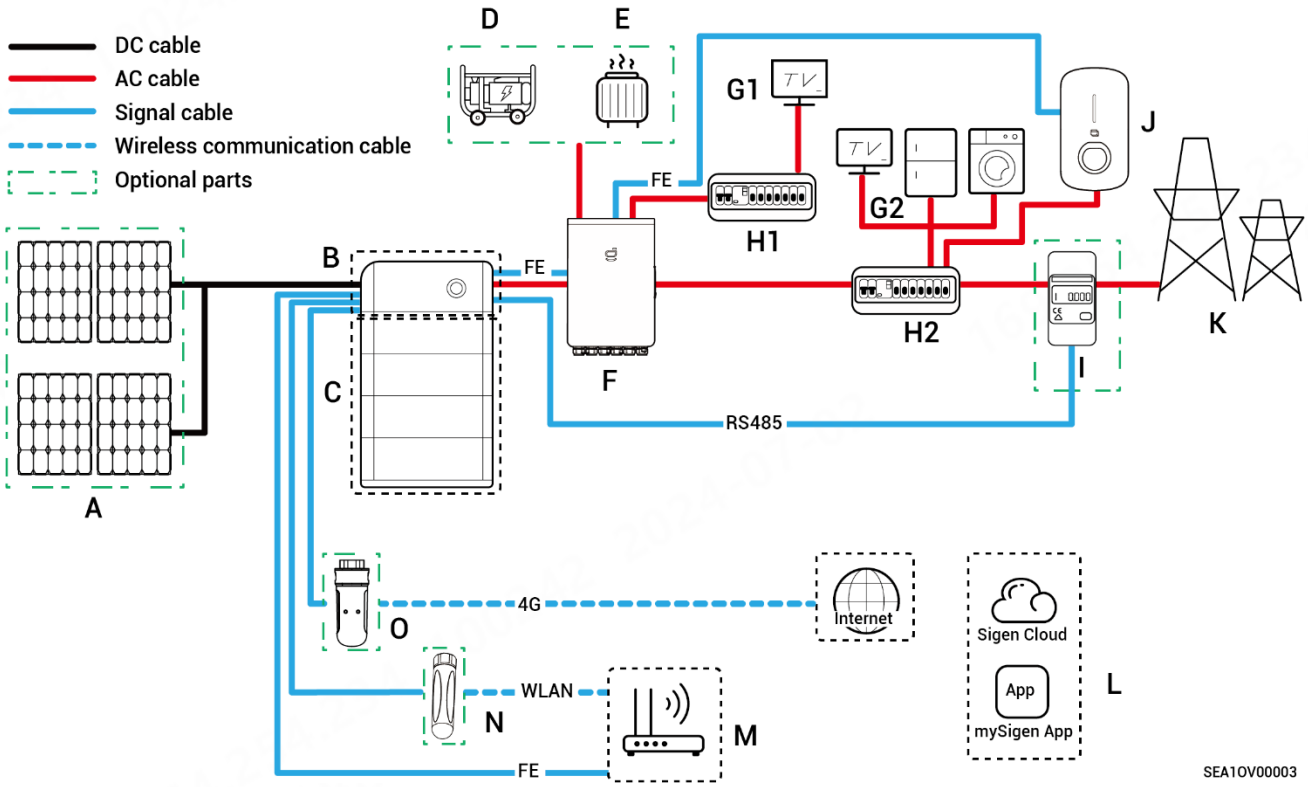
Note [3]: Configure when WLAN is used for communication with inverters.

Note [4]: Configure when 4G is used for communication with inverters.

It is recommended to use Fast Ethernet and WLAN for communication with inverters.

Sigen CommMod users must top up their own 4G data plan after a period of 2 years.

PV storage and charging networking (backup power scenario)



A. Solar panel **B.** SigenStor EC/ Sigen Hybrid **C.** SigenStor BAT

D. Diesel generator **E.** Smart load **F.** Gateway **G1.** Backup household load

H1. Backup power distribution panel **G2.** Non-backup home loads

H2. Non-backup power distribution panel **I.** Power Sensor [1]

J. Sigen EV AC Charger **K.** Power grid **L.** mySigen **F.** Router[2]

N. Antenna[3] **O.** CommMod [4]

Tips

Note [1]: Configure for partial backup power + zero-power grid-connected control networking.

Note [2]: Configure when Fast Ethernet or WLAN is used for communication with inverters.

Note [3]: Configure when WLAN is used for communication with inverters.

Note [4]: Configure when 4G is used for communication with inverters.

It is recommended to use Fast Ethernet and WLAN for communication with inverters.

Sigen CommMod users must top up their own 4G data plan after a period of 2 years.

Chapter 3 Location Requirements

> **Tips**
>
> The warranty applies when the equipment has been installed properly for its intended use and in accordance with the operating instructions.

Installation Environment Requirements

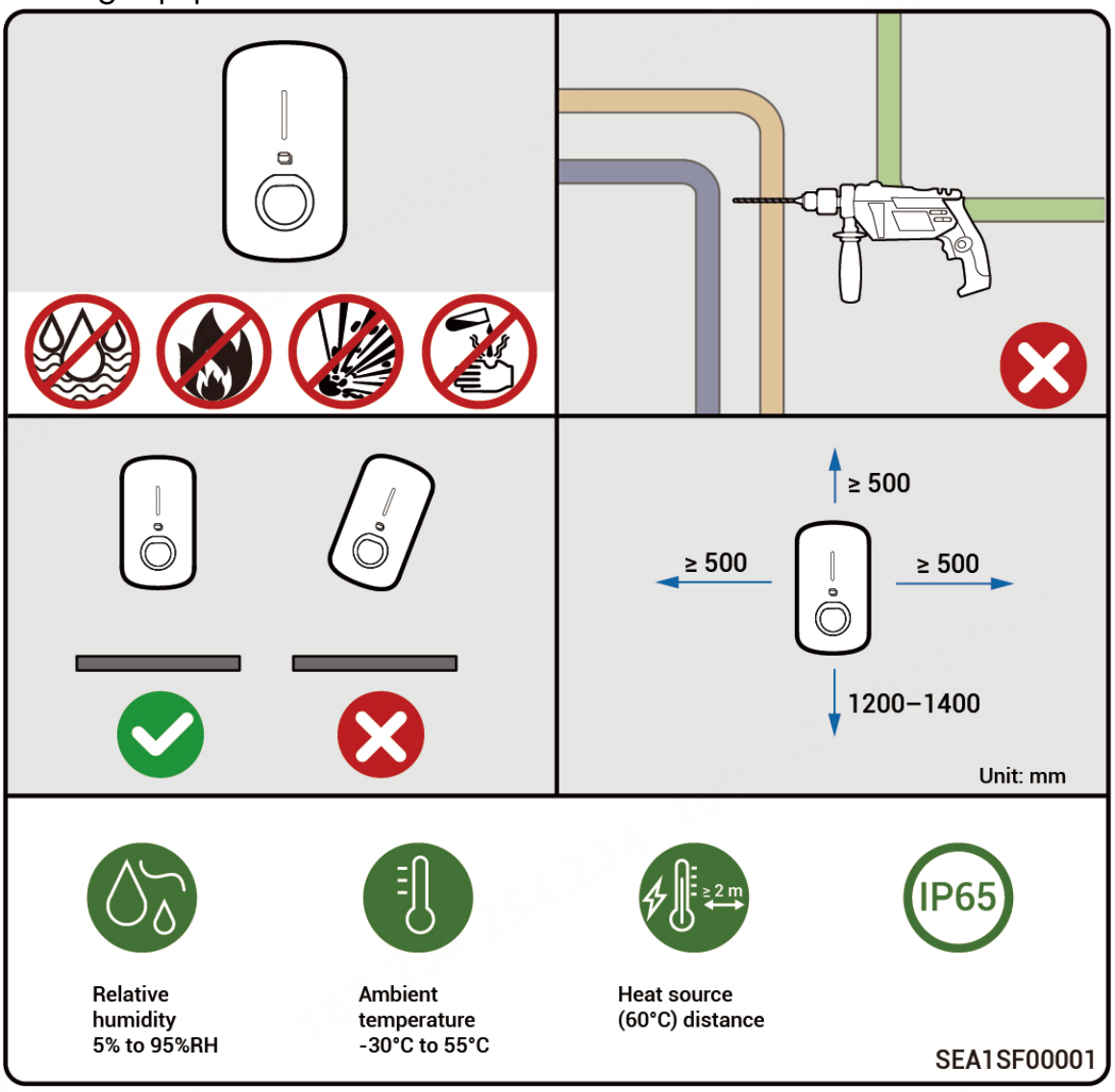
- Do not install the equipment in smoky, flammable, explosive, or corrosive environments.
- Avoid exposing the equipment to direct sunlight, rain, standing water, snow, or dust. Install the equipment in a sheltered place. Take preventive measures in operating areas prone to natural disasters such as floods, mudslides, earthquakes, and typhoons.
- Do not install the equipment in an environment with strong electromagnetic interference.
- Ensure that the temperature and humidity of the installation environment comply with the equipment's requirements.
- The equipment should be installed in an area that is at least 500 m away from corrosion sources that may result in salt damage or acid damage (corrosion sources include but are not limited to seaside, thermal power plants, chemical plants, smelters, coal plants, rubber plants, and electroplating plants).

Installation Position Requirements

- Do not tilt or overturn the equipment to ensure that it is installed horizontally.
- Do not install the equipment in a place easily touched by children.
- Do not install the equipment in mobile scenarios such as RVS, cruise ships, and trains.
- You are advised to install the equipment in a position that is easy to operate, maintain, and view indicator status.
- When installing the equipment in the garage, do not install the equipment in the position where the vehicle passes through to avoid collision.

Mounting surface

- Do not install the equipment on a flammable carrier.
- The installation carrier must meet load-bearing requirements. Solid brick-concrete structure, concrete walls are recommended.
- The surface of the installation carrier must be smooth and the installation area must meet the installation space requirements.
- No water or electricity is routed inside the carrier to prevent drilling hazards during equipment installation.

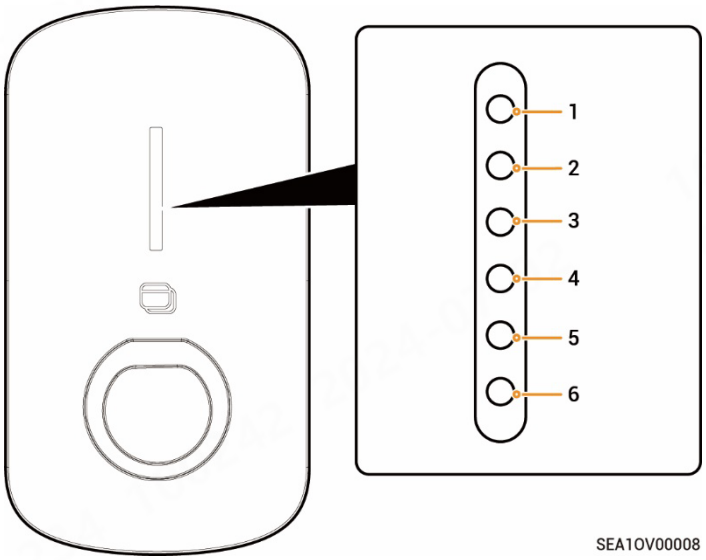


Chapter 4 Equipment Installation and Connection

Equipment installation and connection must only be completed by the installer certified by the Company. For more information, refer to *Sigen EV AC Charger Installation Guide*.

Chapter 5 How to Use

5.1 LED Indicator Status



Illuminated Indicator	Color	Status	Meaning
All	Multicolored	Steady on	Starting, initializing configuration.
1		Steady on	In standby mode. Not connected to the internet, charging connector not inserted into the vehicle.
1		Breathing blink	In standby mode. Connected to the internet, charging connector not inserted into the vehicle.
All		Steady on	● Sigen RFID Card not read. The charging connector is connected to the vehicle. ● Charging completed.
All		Breathing blink	You have registered the charging time, and the charging connector has already been connected to your vehicle.

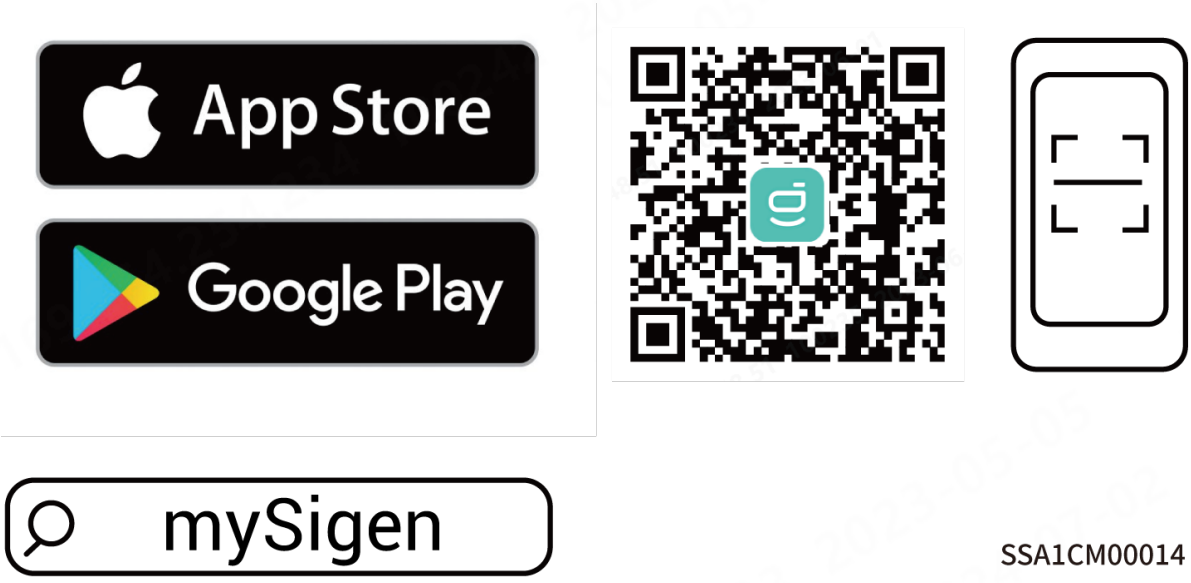
Illuminated Indicator	Color	Status	Meaning
All		Blink	Sigen RFID Card read. Get ready to charge vehicles.
All		Flowing blink	Charging.
None	-	-	Not powered on or low voltage.
1		Blink	Equipment electrical leakage.
1		Steady on	Relays within the equipment getting stuck.
1, 2		Blink	Overvoltage or undervoltage protection.
1–3		Blink	Overcurrent protection.
1–4		Blink	Overtemperature protection.
1–5		Blink	Grounding fault.
All		Blink	Communication failure between the equipment and the vehicle.
1, 2		Steady on	Other malfunctions.

5.2 mySigen App Download and Login

Tips

- **This document takes version 1.9.4 as an example to introduce relevant operations. The actual screen display shall prevail.**
- **The screen differs slightly between PV charging and PV storage & charging networking, but the operations are the same. The illustrations here are for reference only. The actual screen display shall prevail.**

1. Download the app.



2. Provide your email account to the installer for signing up.
3. After signing up your account, the installer will ask you to activate your account.
4. Please check the email sent from the "sigencloud" account in your inbox, set your initial password, and activate your account.
5. Log in to the app.

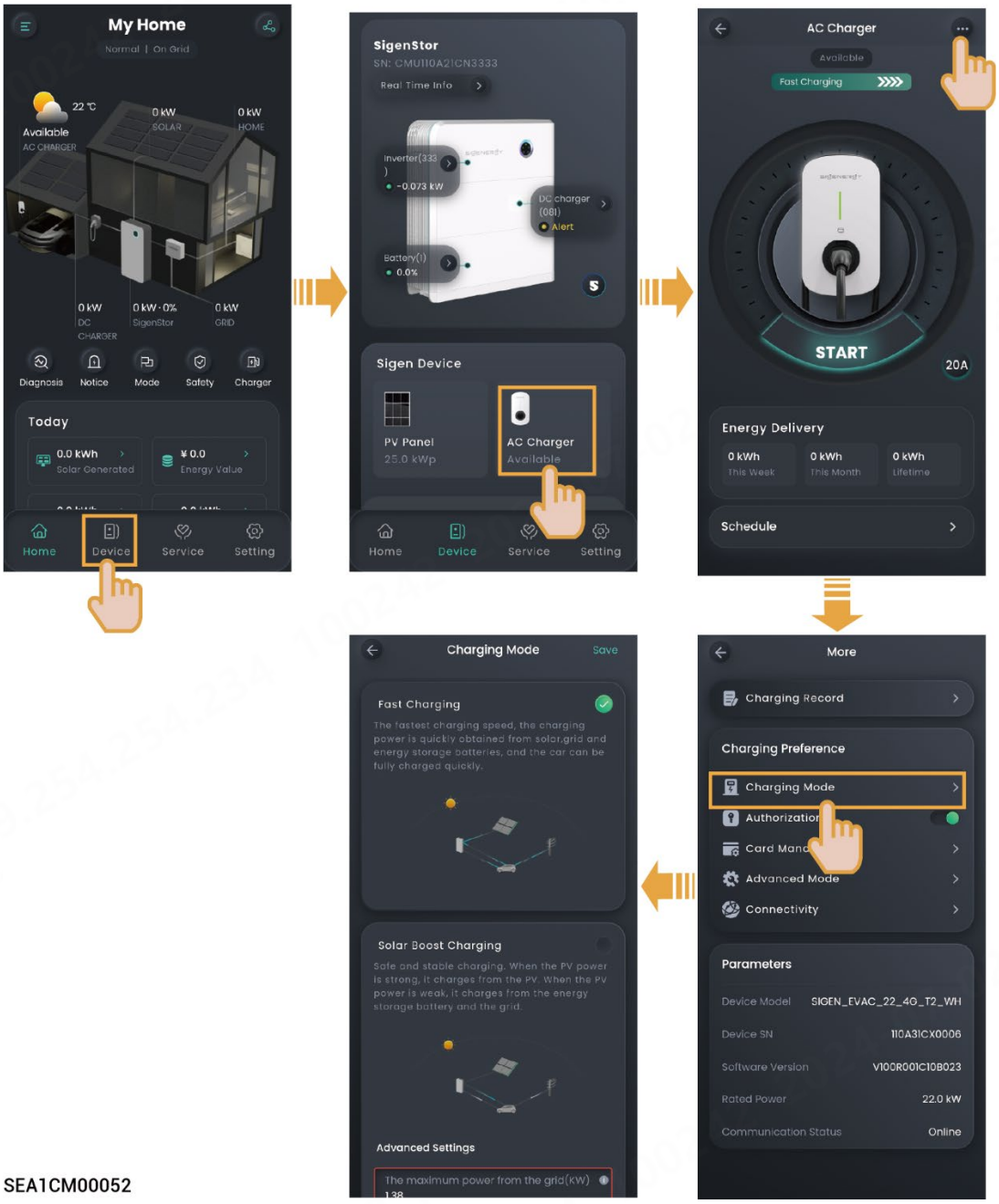
5.3 Instructions to Charging Modes

After Sigen EV AC Charger is connected to our inverters, Fast Charging, Solar Boost Charging, and 100% PV Charging modes are supported to adapt to different networking applications.

Tips

- **Networking of the charger:** Fast Charging is used by default, and no manual setting is required.
- **PV charging or PV storage & charging networking:** The options for charging modes include Fast Charging, Solar Boost Charging, and 100% PV Charging. You must set the charging mode in your App before charging.

The charging mode setting method is the same for PV charging and PV storage & charging networking. Here, one setting method is taken as an example. The actual screen display shall prevail.



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5.3.1 Fast Charging

Charging at the maximum available power and the maximum charging speed. The charging power can be quickly sourced from the power grid, solar power, or battery pack.

- **Networking of the Charger**

  The charging power is sourced from the power grid.

- **PV charging networking**

  Daytime: When the PV power meets the load, the surplus PV power is supplied to charge the Sigen EV AC Charger. In this case, if the Sigen EV AC Charger cannot reach the maximum available power, the charging power is sourced from the power grid.

  Nighttime: The charging power is sourced from the power grid.

- **PV storage & charging networking**

  Daytime: When the PV power meets the load, both the surplus PV power and the discharging power of the battery pack are supplied to charge the Sigen EV AC Charger. In this case, if the Sigen EV AC Charger cannot reach the maximum available power, the charging power is sourced from the power grid.

  Nighttime: When the discharging power of the battery pack meets the load, the surplus discharging power is supplied to charge the Sigen EV AC Charger. In this case, if the Sigen EV AC Charger cannot reach the maximum available power, the charging power is sourced from the power grid.

Use of Sigen EV AC Charger in PV charging or PV storage & charging networking in daytime

Model: Sigen EVAC 11 4G T2 WH; output mode: three-phase; specification of **Household Circuit Breaker** in the connected distribution panel: 44 kW (63 A)

A	**B**	C	**D**
Generated power of PV system or generated power of PV system + discharging power of battery pack (kW)	**Consumed power of load (kW)**	**Compensating power of power grid (kW)** **C=（D—（A—B））**	**Actual charging power (max. available power) (kW)**
20	15	6	11
10	40	41	11
5	40	44	9[1]
0	40	40	4 (not starting[2])

Note [1]: When C is not greater than the maximum power of **Household Circuit Breaker** and DLM is enabled, the maximum available power (D) of Sigen EV AC Charger = (A + maximum power of **Household Circuit Breaker)** - B.

Note [2]:

- When C is not greater than the maximum power of **Household Circuit Breaker**, DLM is enabled, and D is lower than the minimum starting power of Sigen EV AC Charger, **Sigen EV AC Charger** do not start.
- The minimum starting charging power of Sigen EV AC Charger is 4.14 kW for three-phase output and 1.38 kW for single-phase output.

5.3.2 Solar Boost Charging

- **PV charging networking**

  Daytime: When the PV power meets the load, the surplus PV power is supplied to charge the Sigen EV AC Charger. In this case, the charging power of Sigen EV AC Charger = surplus PV power + setting of "The maximum power from the grid."

  Nighttime: The charging power is sourced from the power grid.

- **PV storage & charging networking**

  Daytime: When the PV power and the discharging power of the battery pack meet the load, the surplus power is supplied to charge Sigen EV AC Charger. In this case, the charging power of Sigen EV AC Charger = surplus PV power + discharging power of battery pack + setting of "The maximum power from the grid."

  Nighttime: The charging power is sourced from the power grid and battery pack.

> **Tips**
>
> In this mode, the "maximum power from the grid" value is set to limit the amount of electricity purchased from the power grid, saving you electricity costs.

5.3.3 100% PV Charging

The charging power is sourced from solar energy.

- PV charging networking

  When the PV power meets the load, the surplus PV power is supplied to charge the Sigen EV AC Charger. In this case, if the surplus power cannot meet the minimum starting charging power[3] for Sigen EV AC Charger, Sigen EV AC Charger stops charging.

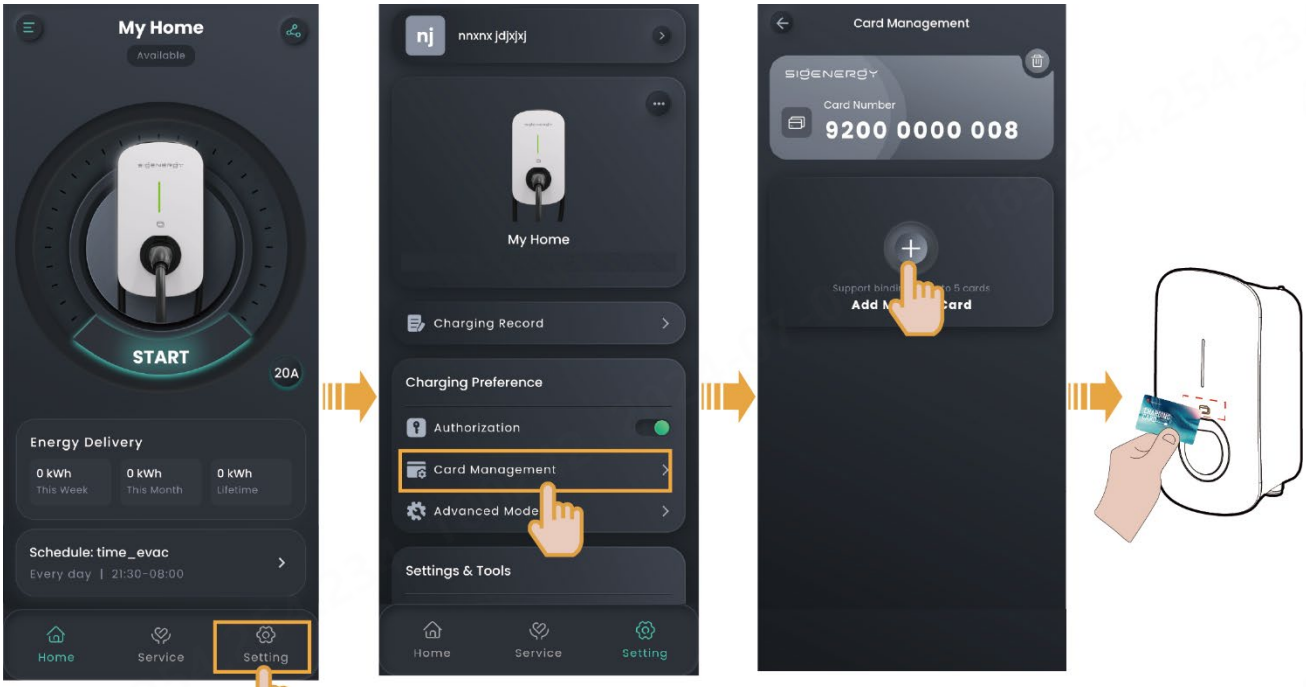
- PV storage & charging networking

  After the PV power meets the load, the PV power charges the battery pack first and the surplus PV power is then supplied to charge Sigen EV AC Charger. In this case, if the surplus power cannot meet the minimum starting charging power[3] for Sigen EV AC Charger, Sigen EV AC Charger stops charging.

Note [3]: The minimum starting charging power of Sigen EV AC Charger is 4.14 kW for three-phase output and 1.38 kW for single-phase output.

5.4 Networking of the Charger

5.4.1 Binding Sigen RFID Card



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Tips

If an error occurs when you bind the Sigen RFID Card, you can click  and delete the Sigen RFID Card on the "Card Management" page.

5.4.2 Use of Equipment

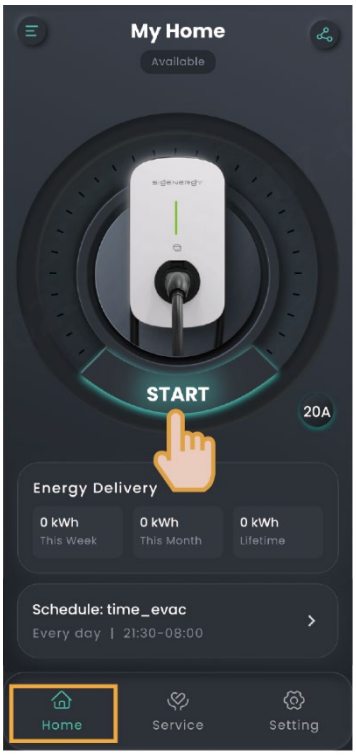
Sigen EV AC Charger supports App authenticated charging, RFID card authenticated charging, unauthenticated charging, and scheduled charging.

Caution

- **Please carefully read vehicle-related precautions and requirements before charging vehicles.**
- **Before charging, please check that you have set the charging mode to your desired one. For details, refer to 5.3 Instructions to Charging Modes.**

5.4.2.1 App authenticated or RFID card authenticated charging (Recommended)

1. Install the charging connector in place.
2. Start charging on the equipment.
   - **Method 1: App authenticated charging**



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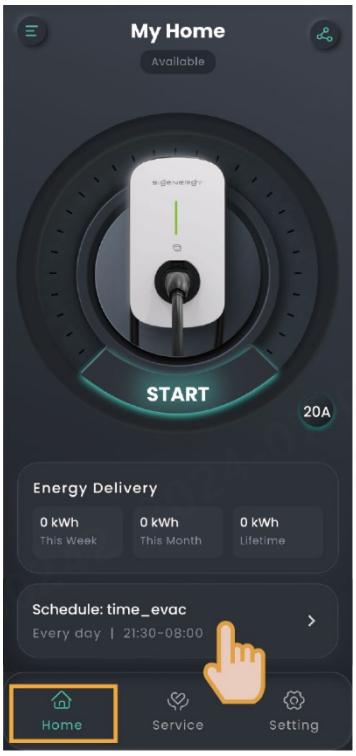
   - **Method 2: RFID card authenticated charging**

Swipe the Sigen RFID Card.

5.4.2.2 Scheduled Charging



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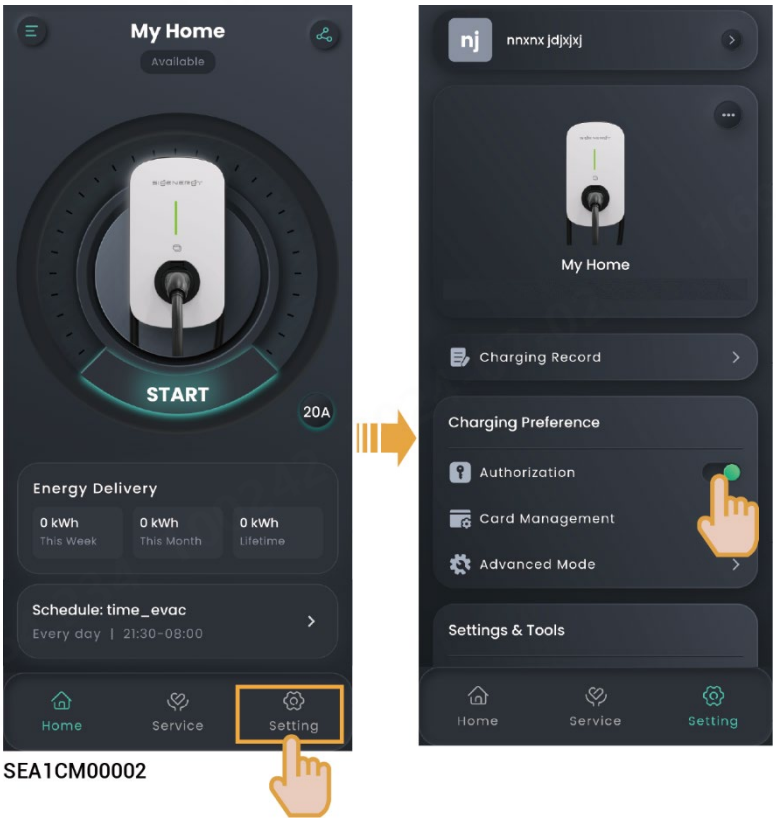
Tips

- **Add the time range available for charging, during which the system will automatically start charging when a vehicle meets charging conditions (the charging connector is installed, and the vehicle is ready to be charged).**
- **The system will not start charging or will automatically stop charging if the current time is not within the set time range. To start charging, use the App authenticated charging mode or RFID card authenticated charging mode, or change the time range available for charging.**

5.4.2.3 Unauthenticated Charging Mode

1. Turn "Authorization" off, that is,  .



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2. Install the charging connector in place.

Tips

It should be noted that when the unauthenticated charging mode is enabled, any vehicles can use this equipment for charging.

5.4.2.4 Stop Charging

Charging completed

The equipment will automatically stop charging when the vehicle is fully charged.

During charging

- **Method 1: RFID card authenticated**

Read your Sigen RFID Card to stop charging.

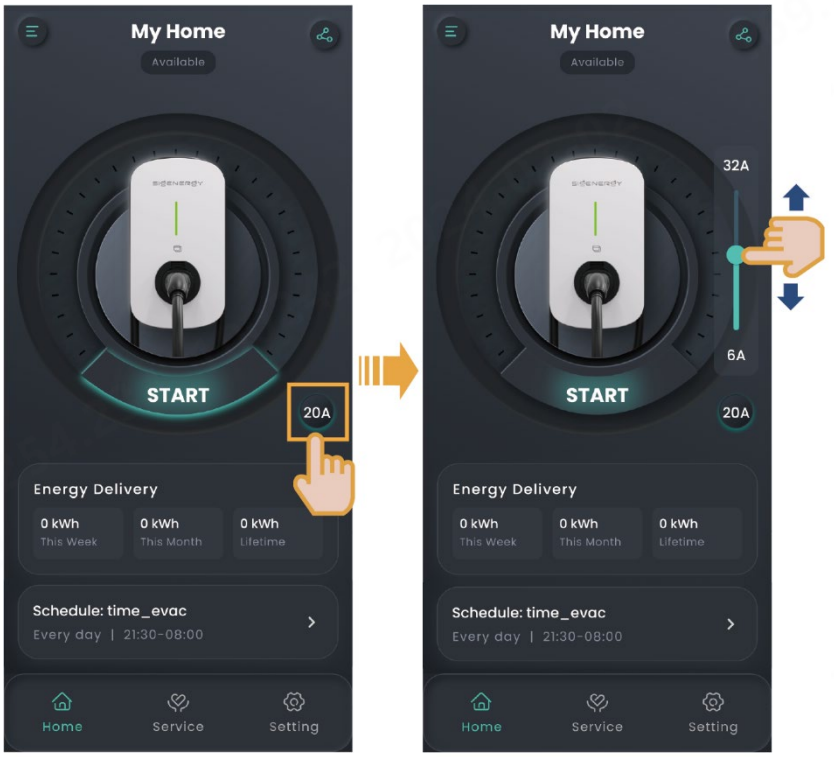
- **Method 2: App authenticated**

Click "STOP" on the "Home" page to stop charging.

5.4.3 Charging Current Adjustment

> Tips
>
> **The higher the output current is, the higher the charging power is.**

Manual adjustment



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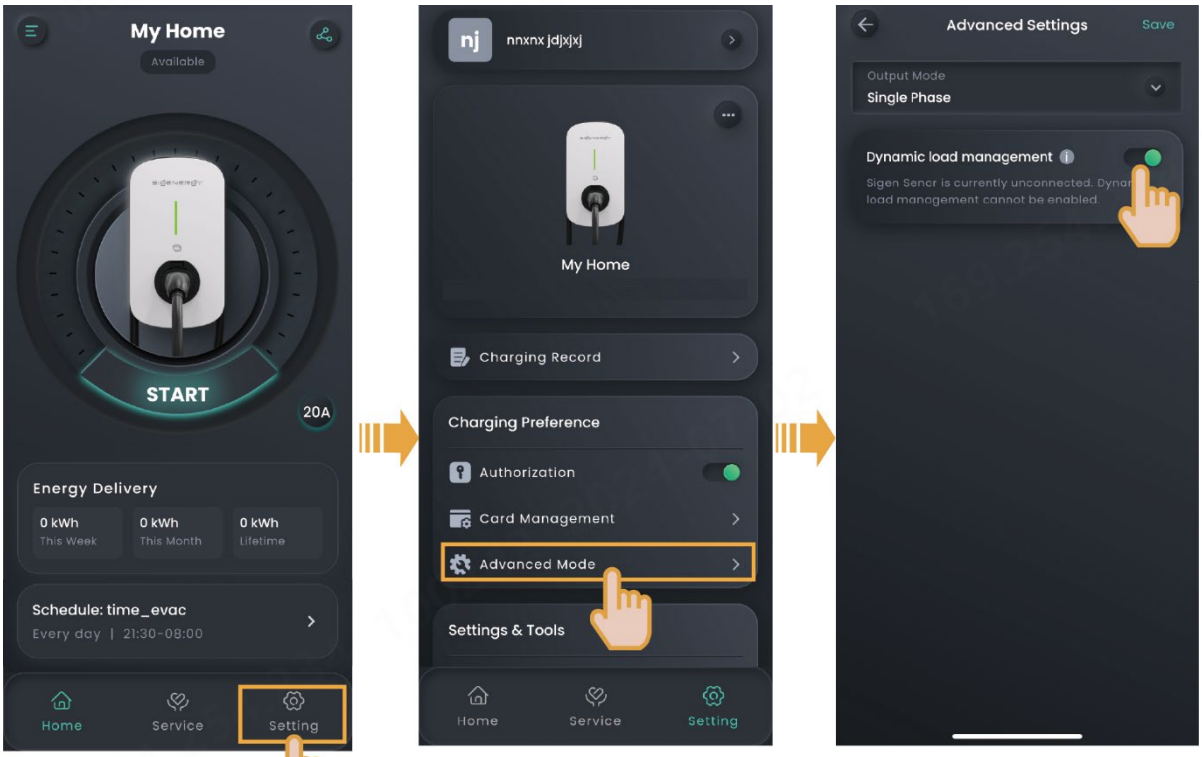
Adjustment by DLM

When Power Sensor is installed in the networking and is not in off-grid state, Sigen EV AC Charger will support dynamic load management (DLM). Sigen EV AC Charger quickly and intelligently adjusts the charging current (power) by comparing the power at the grid-connection point reported by the Power Sensor with the "Rated Household Circuit Breaker Current" set by the installer when creating new systems. This prevents the household circuit breaker (inside the distribution panel) from being disconnected.



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5.5 PV Charging or PV Storage & Charging Networking

5.5.1 Binding Sigen RFID Card

Tips

If an error occurs when you bind the RFID Card, you can click and delete the RFID Card on the "Card Management" page.

5.5.2 Use of Equipment

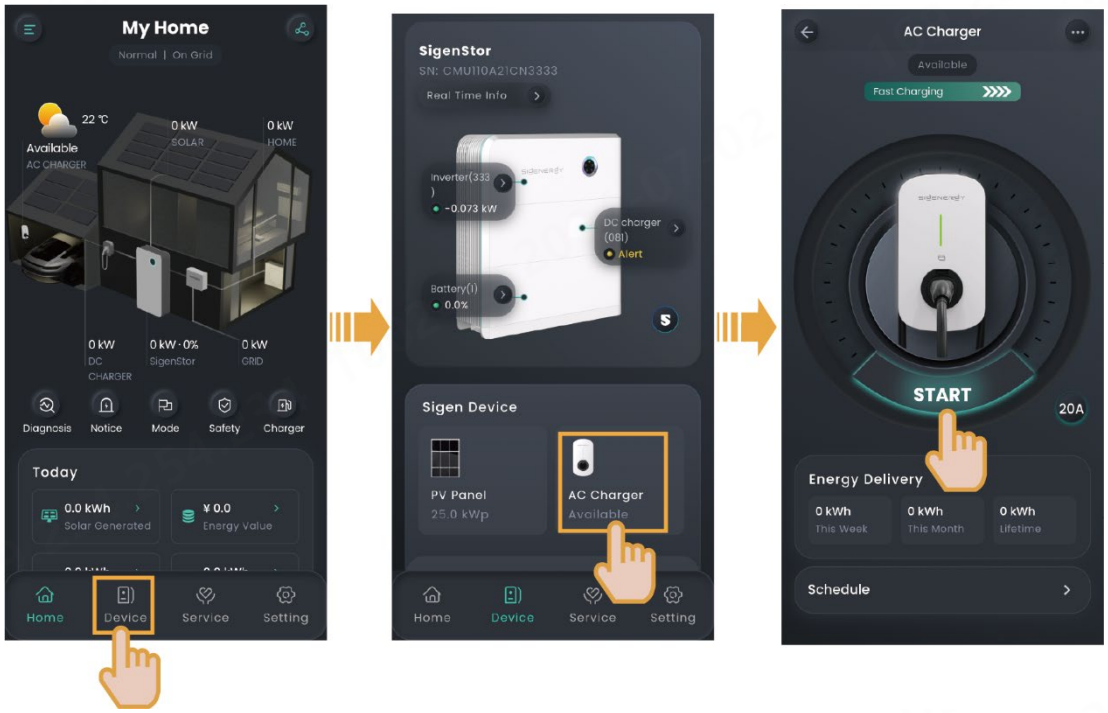
Sigen EV AC Charger supports App authenticated charging, RFID card authenticated charging, unauthenticated charging, and scheduled charging.

Caution

- **Please carefully read vehicle-related precautions and requirements before charging vehicles.**
- **Before charging, please check that you have set the charging mode to your desired one. For details, refer to 5.3 Instructions to Charging Modes.**

5.5.2.1 App authenticated or RFID card authenticated charging (Recommended)

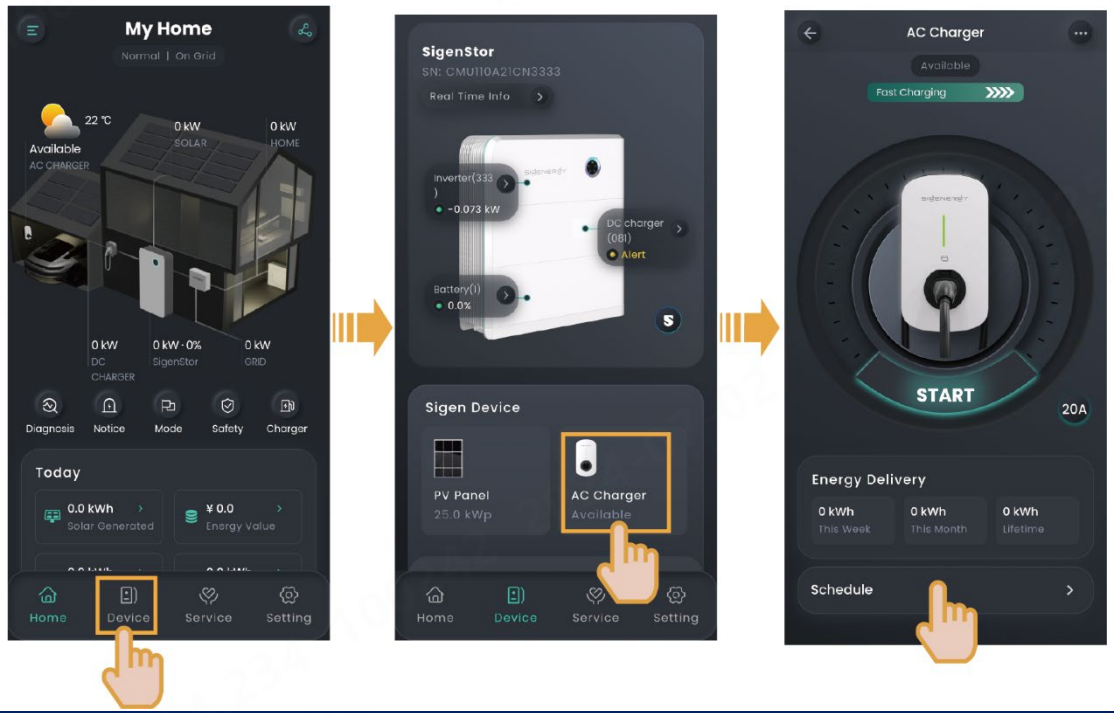
1. Install the charging connector in place.
2. Start charging on the equipment.
   - **Method 1: App authenticated charging**



   - **Method 2: RFID card authenticated charging**

     Swipe the RFID Card.

5.5.2.2 Scheduled Charging

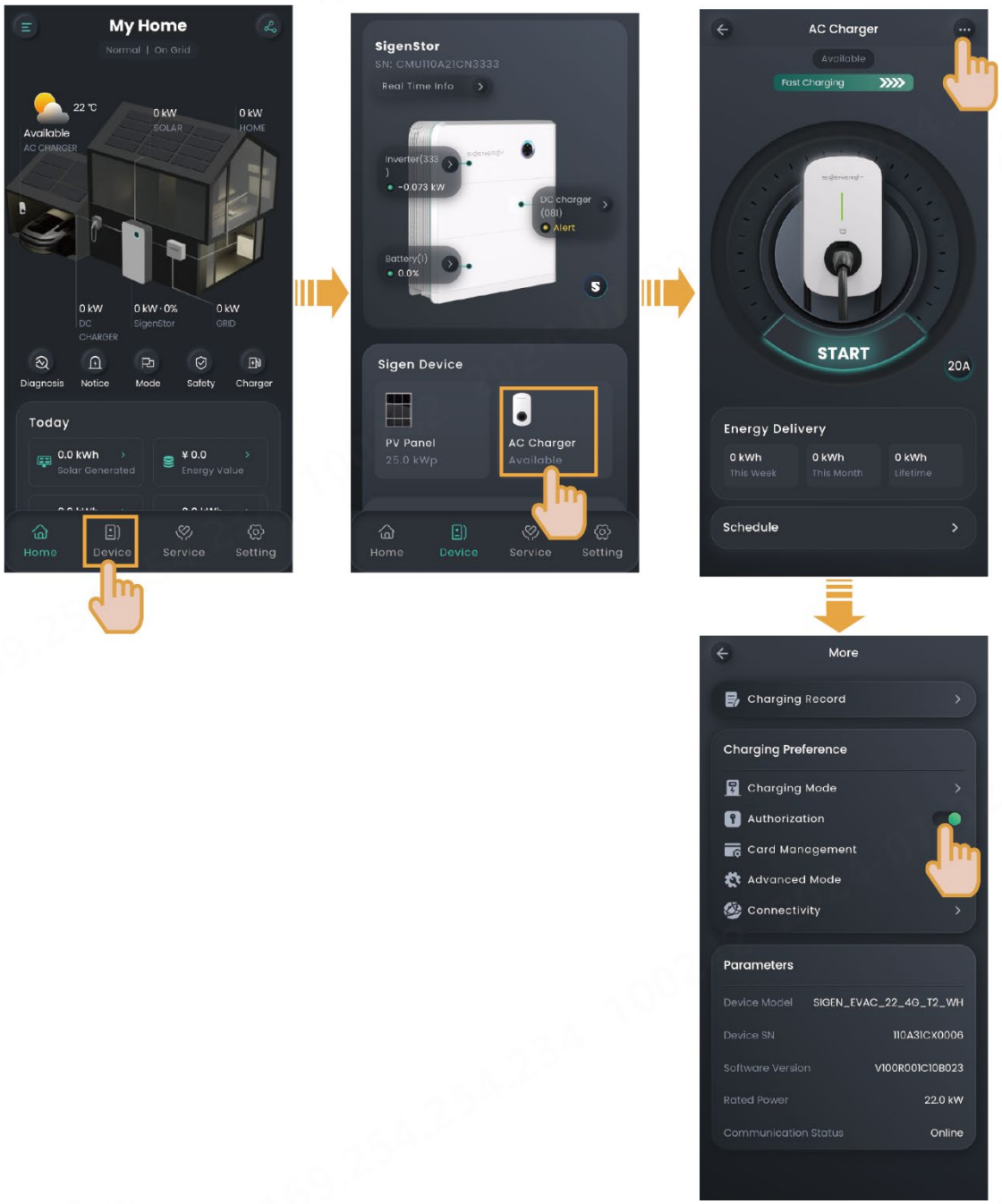


Tips

- **Add the time range available for charging, during which the system will automatically start charging when a vehicle meets charging conditions (the charging connector is installed, and the vehicle is ready to be charged).**
- **The system will not start charging or will automatically stop charging if the current time is not within the set time range. To start charging, use the App authenticated charging mode or RFID card authenticated charging mode, or change the time range available for charging.**

5.5.2.3 Unauthenticated Charging Mode

1. Turn "Authorization" off, that is,  .



2. Install the charging connector in place.

Tips

It should be noted that when the unauthenticated charging mode is enabled, any vehicles can use this equipment for charging.

5.5.2.4 Stop Charging

Charging completed

The equipment will automatically stop charging when the vehicle is fully charged.

During charging

- **Method 1: RFID card authenticated**

Read your Sigen RFID Card to stop charging.

- **Method 2: App authenticated**

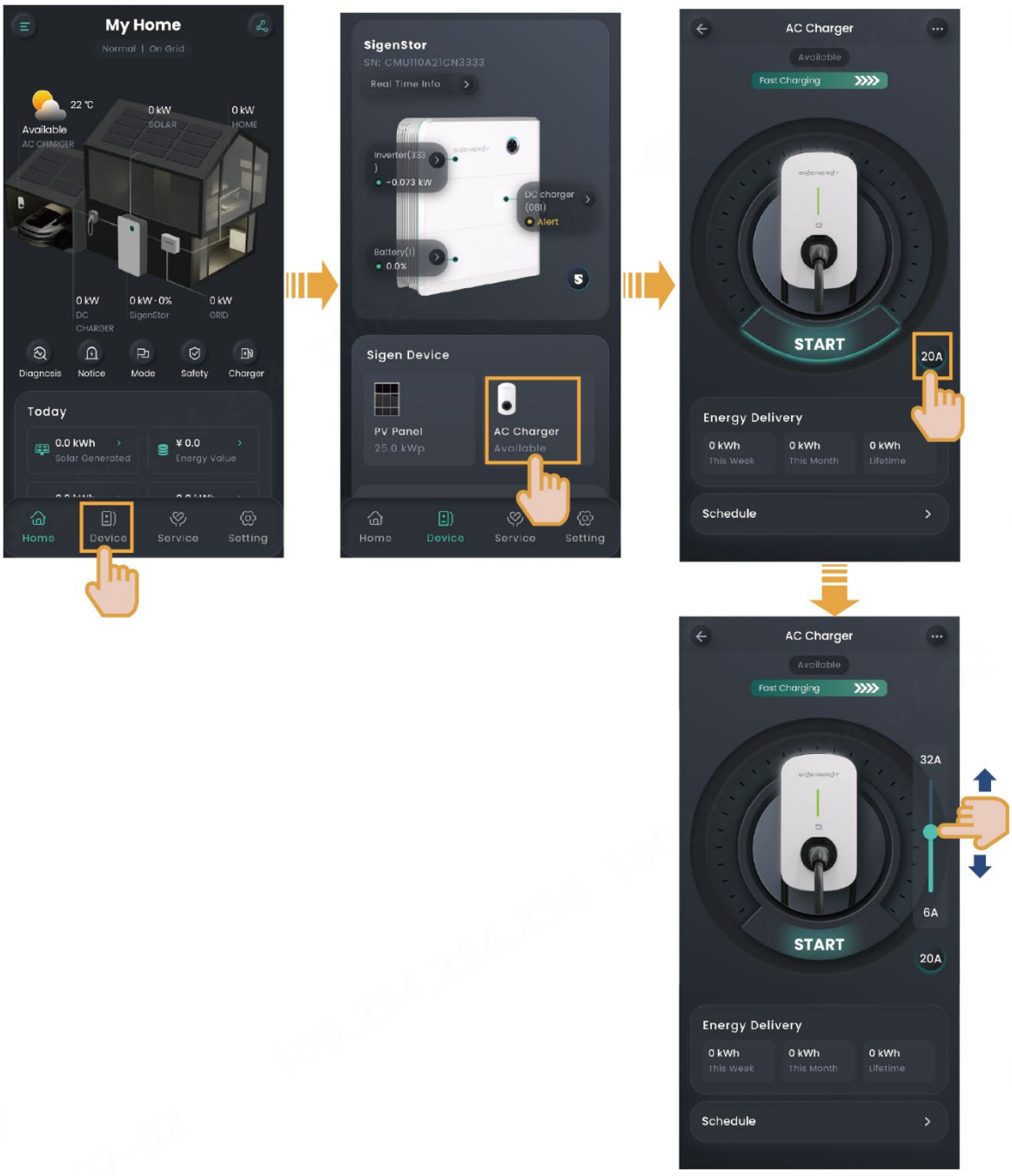
Stop charging from "Device" → "AC Charger" → "STOP."

5.5.3 Charging Current Adjustment

Tips

The higher the output current is, the higher the charging power is.

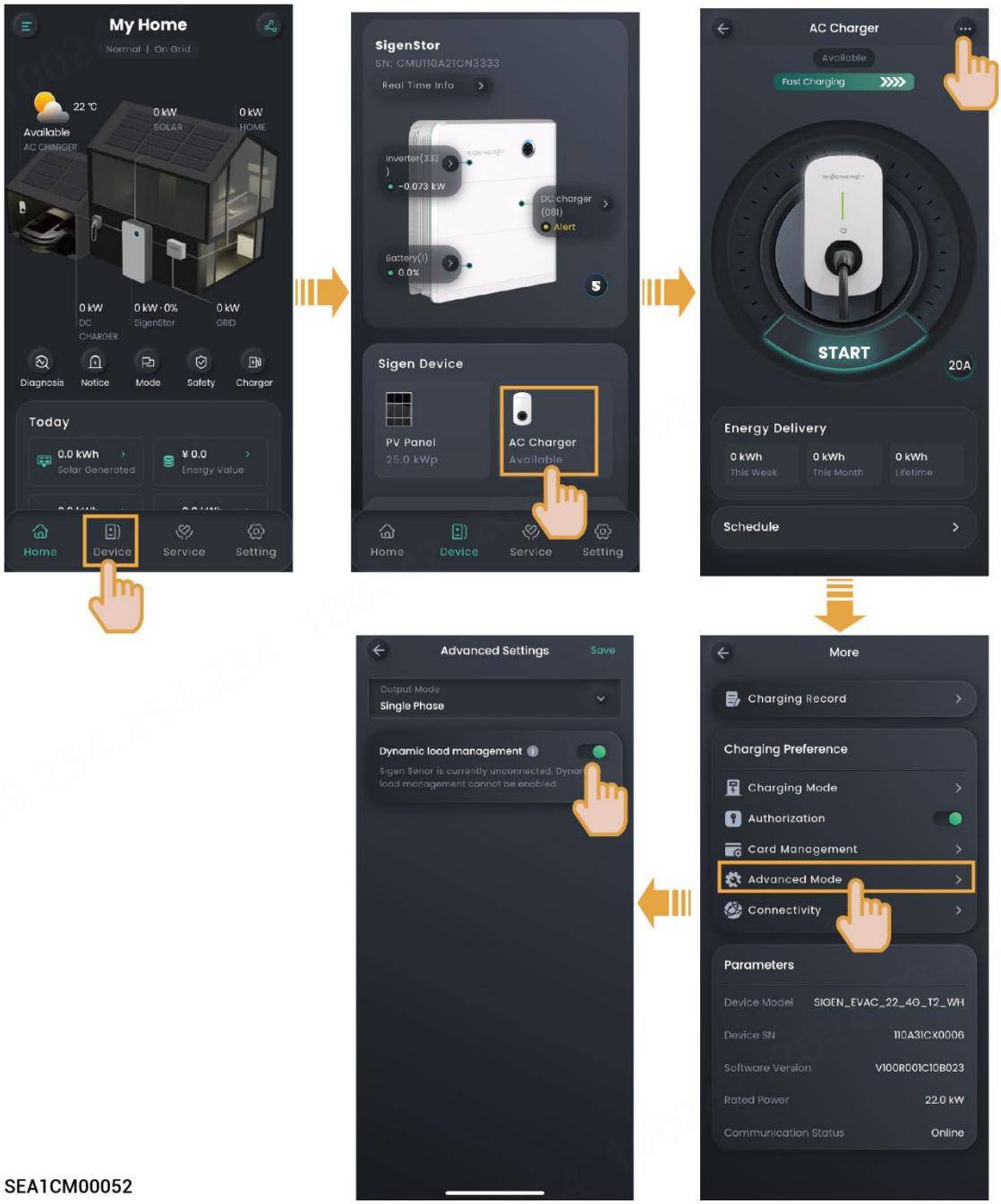
Manual adjustment



Adjustment by DLM

When Power Sensor is installed in the networking and is not in off-grid state, Sigen EV AC Charger will support dynamic load management (DLM). Sigen EV AC Charger quickly and intelligently adjusts the charging current (power) by comparing the power at the grid-connection point reported by the Power Sensor with the "Rated Household Circuit Breaker Current" set by the installer when creating new systems. This prevents the household circuit breaker (inside the distribution panel) from being disconnected.

In this case, you cannot manually adjust the charging current.



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5.6 Other Settings of mySigen App

For more information about the app settings, refer to *mySigen App User Manual*.

Chapter 6 Routine Maintenance

To ensure the long-term running of the equipment, you are advised to perform routine maintenance according to this section.

Inspection content	Inspection method	Power off or not	Maintenance cycle
System cleaning	Regularly check the equipment for blocking out or dust contamination. If so, clean it up. Do not use tools that may cause electric shock or insulation damage, such as wire brushes and wet towels during the cleaning process.	Yes	Once every three months.
System running state	• Check whether the equipment is damaged or deformed. • Listen for any abnormal noises during the operation of the equipment. • When the equipment is running, check whether the equipment parameters are correctly set.	No	Once every six months.

Chapter 7 Appendix

7.1 Technical Parameter

For details about equipment parameters, see the Data sheets of the product.