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320101034210

X1/X3-EVC(Home)

7.2 kW / 11 kW / 22 kW

User Manual

Version 10.0

www.solaxpower.com



Manual in the QR code or at
<http://kb.solaxpower.com/>

Change History

Changes between document versions are cumulative. The latest version contains all updates made in previous versions.

Version 10 (Jan. 29, 2024)

Updated 2.3 Explanation of Symbols (Deleted UKCA)

Version 09 (Oct. 19, 2023)

Updated 4.1 General Data (Updated the data)
Updated 5 Installation (Added white inverter connector and updated contents about connecting inverter)
Updated 7 App Setting (Added descriptions about "Current_ChargeMax")
Added Appendix: Parallel Function

Version 08 (Jun. 20, 2023)

Updated 2.1 Appropriate Usage (Updated the diagrams and added RCBO)
Updated 2.3 Explanation of Symbols (Added UKCA)
Updated 4.1 General Data (Updated the data)
Updated 5 Installation (Updated the figures and descriptions)
Updated 7 App Setting (Updated the figures and descriptions)

Version 07 (Dec. 26, 2022)

Updated 2.1 Appropriate Usage (Added a note)
Updated 5.5 CT Connection (Modified notes about CT connection)

Version 06 (Oct. 27, 2022)

Updated 2.3 Explanation of Symbols (Added a note)
Updated 4.2 Security Protection (Modified Multiple Protection part)

Version 05 (Sep. 8, 2022)

Updated 2.3 Explanation of Symbols (Modified the TUV mark Logo)
Updated 7 APP Setting (Modified the descriptions and updated the screenshots)

Version 04 (May 18, 2022)

Updated 3.1 Basic Features (Modified the description)
Updated 4.2 Security Protection (Modified Multiple Protection part)
Updated 5.4 Installation Steps (Modified the strip length of PE wire)
Updated 6.3 Charging Modes (Modified the descriptions and diagrams)
Updated 7 APP Setting (Modified the Wi-Fi Connection part)

Version 03 (Mar. 31, 2022)

- Updated 6.2 Start-up Patterns (Added the card activation description)
- Updated 6.3 Charging Modes (Added a note to GREEN/ECO mode)
- Updated 7 APP Setting (Modified the descriptions and updated the screenshots)
- Updated 8.1 Troubleshooting (Modified the solution part)

Version 02 (Feb. 25, 2022)

- Updated 2.3 Explanation of Symbols (Added the TUV mark)
- Updated 4.1 General Data (Updated the details in the table)

Version 01 (Feb. 10, 2022)

- Updated 4.1 General Data (Updated Communication Info)
- Updated 5.2 Packing List (Added RFID card)
- Updated 5.4 Installation Steps (Added PIN definition in SETP 6)

Version 00 (Jan. 18, 2022)

- Initial release

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* Warranty Registration Form

1 Notes on this Manual

1.1 Scope of Validity

This manual is an integral part of the X1/X3-EVC Series EV-Charger. It describes the assembly, installation, commissioning, maintenance and failure of the product. Please read it carefully before operating.

X1-EVC-7.2K(SXH)	X3-EVC-11K(SXH)	X3-EVC-22K(SXH)
X1-EVC-7.2K(PXH)	X3-EVC-11K(PXH)	X3-EVC-22K(PXH)

Note:

“X1” means single-phase, “X3” means three-phase.

“EVC” means “EV-Charger”.

“7.2K” means 7.2 kW, “11K” means 11 kW, “22K” means 22 kW.

“S”: Socket Type, only socket outlet, “P”: Plug Type (also called Connector Type), with charging cable and connector.

“X”: without LCD screen.

“H”: home edition.

Keep this manual at where it is accessible all the time.

1.2 Target Group

This manual is for qualified electricians. The tasks described in this manual can only be performed by qualified electricians.

1.3 Symbols Used

The following types of safety instructions and general information appear in this document as described below:



DANGER!

“Danger” indicates a hazardous situation which, if not avoided, will result in death or serious injury.



WARNING!

“Warning” indicates a hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION!

“Caution” indicates a hazardous situation which, if not avoided, could result in minor or moderate injury.



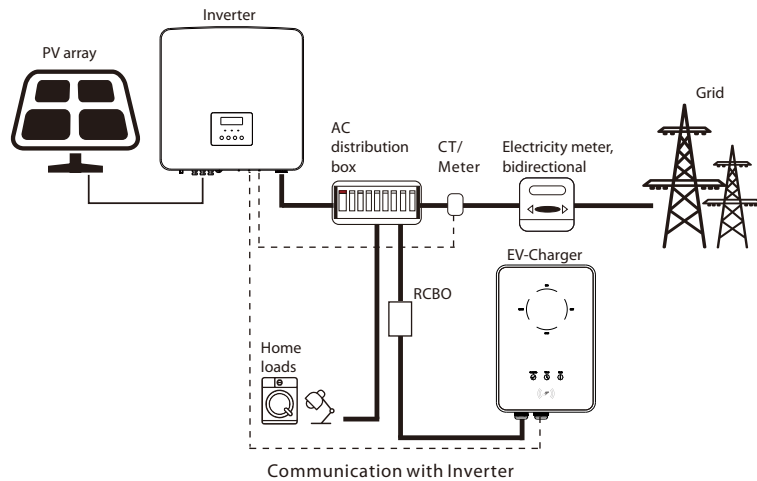
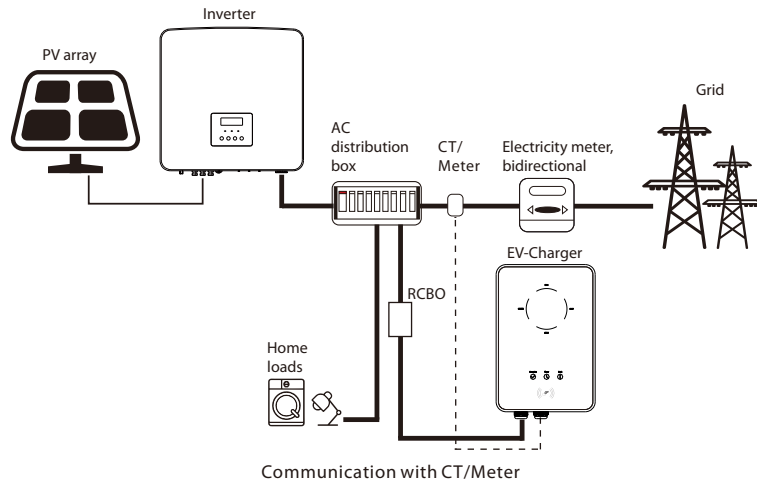
NOTE!

“Note” provides tips that are valuable for the optimal operation of your product.

2 Safety

2.1 Appropriate Usage

The series are AC EV charger, intended to be installed in a fixed location and connected to the AC supply.



NOTE!

If the system has zero injection requirement, the EV-charger must communicate with the inverter. For the details, please refer to <https://kb.solaxpower.com/data/detail/ff80808184a409170184c63a76b20027.html>.

2.2 Important Safety Instructions



DANGER!

- Danger to life due to output and input high voltages in this device!
- All work must be carried out by qualified electrician who has knowledge of and experience in dealing with electrical installations.
- The device is not to be used by children or persons with reduced physical sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Children should be supervised to ensure that they do not play with the device.



CAUTION!

- Danger of burn injuries due to hot enclosure parts!
- During operation, the EV-Charger may become hot.



CAUTION!

- Incorrect operation or misuse may result in:
- Injury or death to the operator or third parties.
 - Damage to the device and other property of the operator.
 - Inefficient operation of the device.



WARNING!







Risk of electric shock!

- Prior to the application, please read this section carefully to ensure correct and safe application. Please keep the user manual properly.
- Use only accessories recommended. Otherwise may result in a risk of fire, electric shock, or injury to person.
- Make sure that existing wiring is in good condition and that wire is not undersized.
- Do not disassemble any parts of the EV-Charger which are not mentioned in installation guide. It contains no user-serviceable parts. See Warranty for instructions on obtaining service. Attempting to maintain the EV-Charger by yourself may result in a risk of electric shock or fire and will void your warranty.
- Keep away from flammable, explosive materials to avoid fire disaster.
- The installation place should be away from humid or corrosive substance.

- Authorized service personnel must use insulated tools when installing or working with this equipment.
- Do not use the EV-Charger in case the device has defects, cracks, abrasion, bare leakage and so on. Please contact the working staff in case of above conditions.
- In case any emergency condition happens, please press the EMERGENCY STOP button immediately, cut off all input and output power supply.
- During charging, the electric vehicle is not allowed to drive. Charging only when the electric vehicle stays still. For hybrid car, charging only when switching the engine off.

2.3 Explanation of Symbols

This section gives an explanation of all the symbols shown on the EV-Charger type label.

Symbol	Explanation
	CE mark. The EV-Charger complies with the requirements of the applicable CE guidelines.
	TUV certification.
	Danger of high voltages. Danger to life due to high voltages in the EV-Charger!
	Danger. Risk of electric shock!
	The EV-Charger can be recycled.
	The EV-Charger can not be disposed together with household waste. Used electrical devices must be collected separately and recycled in an environmentally responsible manner. Ensure that you return your used device to your dealer or obtain information regarding a local, authorised collection and disposal system.

Note: The table is only used for the description of symbols which may be used on the EV-charger. Please be subject to the actual symbols on the device.

3 Introduction

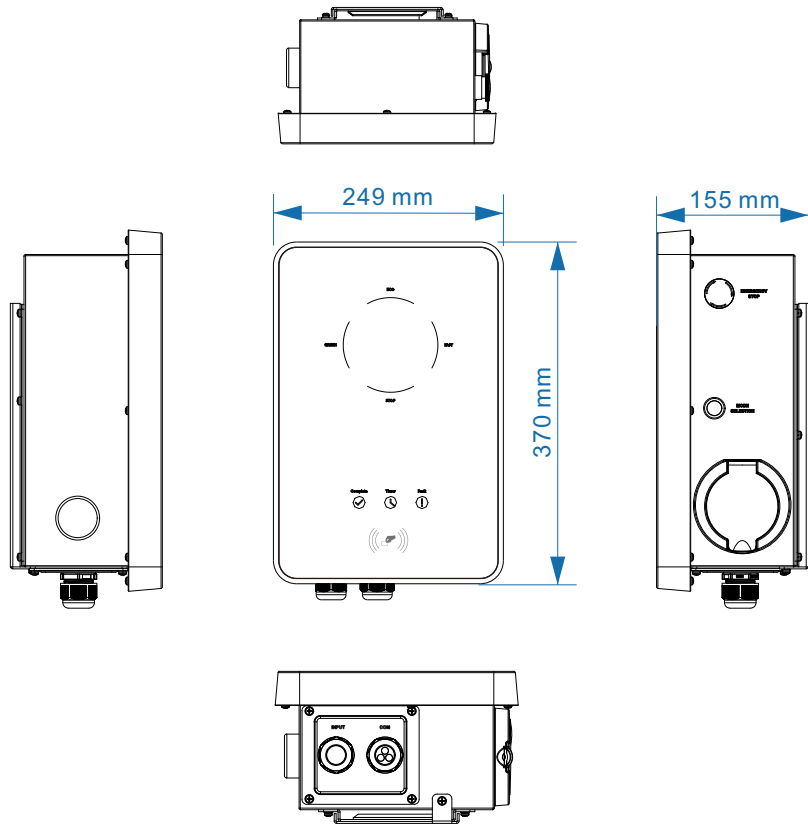
3.1 Basic Features

Thanks for purchasing with the series EV-Charger. The EV-Charger can be used for charging your electric vehicle in your home. Also you can choose single or three phase with plug or socket type, you can consult our salesmen for specific details. The features of the series are listed as below .

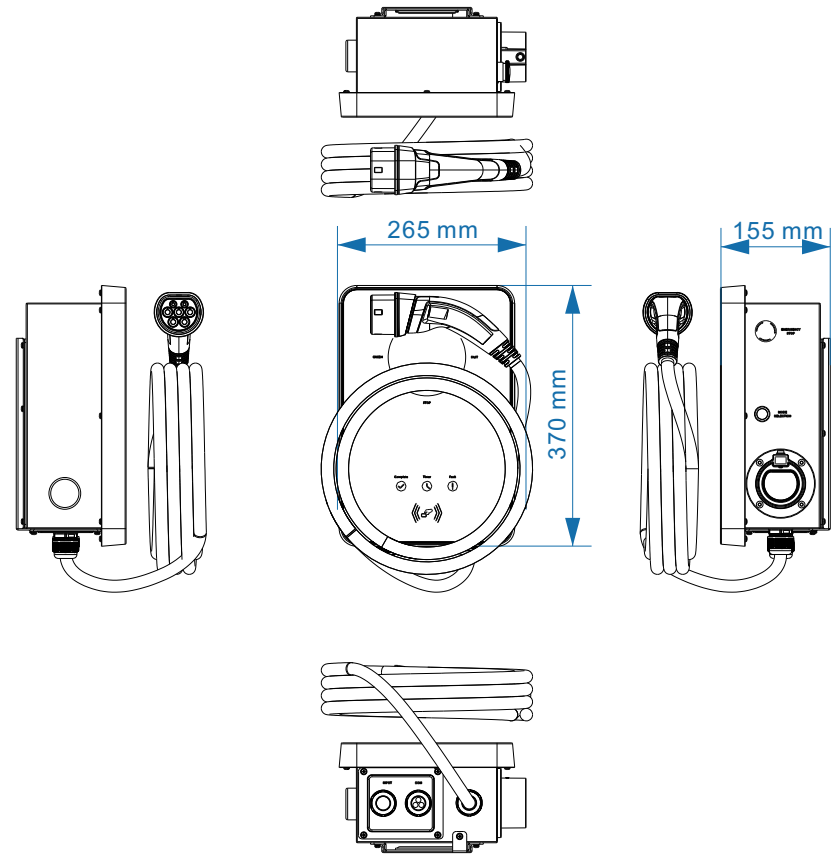
- Plug or socket outlet selectable
- Integrated current failure monitoring (30mA AC & 6mA DC)
- Integrated with PEN protection and no earth rod
- Encrypted communication based on TLS
- Indoor and outdoor easy installation
- Form an intelligent photovoltaic, storage and EV charging energy system through the communication between the smart EV charger and SolaX inverter
- Capable with 100% green energy generated from your solar generation
- Multiple work modes to fit different situations
- Integrated RFID function
- Remote setting and monitoring with APP and website
- Smart dynamic load balance control
- Set timers to reduce your cost during peak and valley price

3.2 Dimension

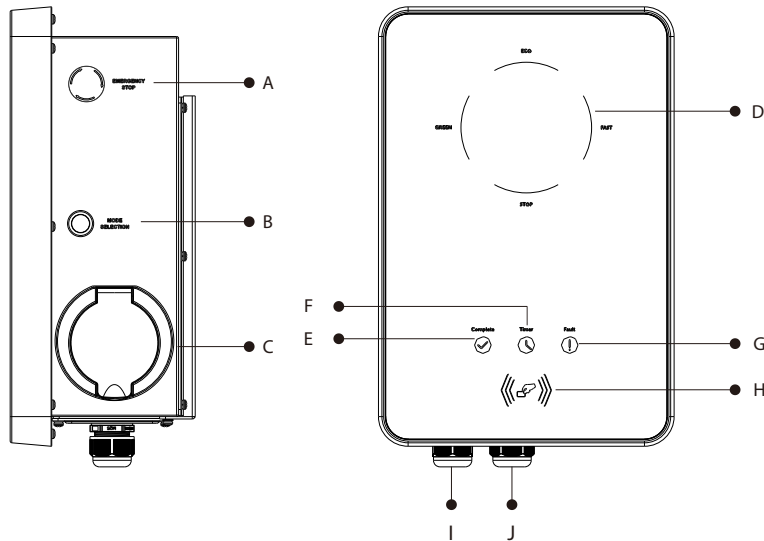
➤ Socket Type



➤ Plug Type (Connector Type)



3.3 Product Description



Object	Name	Description
A	Button	EMERGENCY STOP: Press in emergency, the EV-Charger will stop operating.
B		MODE SELECTION: Press to select certain mode.
C	Charging connector base	Socket outlet (for Socket Type)/Connector holder (for Plug Type)
D	LED indicator	Operating status: The corresponding mode light will be on when operating.
E		Complete: When the light is on the EV-Charger completes charging or is in idle state.
F		Timer: When the light is on, the boost mode is running.
G		Fault: The red light will be on when error occurs.
H	Card swiping position	Swipe card here.
I	Connector	INPUT: For AC input connection.
J		COM: For communication connection.

4 Technical Data

4.1 General Data

Model	X1-EVC-7.2K(SXH) X1-EVC-7.2K(PXH)	X3-EVC-11K(SXH) X3-EVC-11K(PXH)	X3-EVC-22K(SXH) X3-EVC-22K(PXH)
AC Nominal Input			
Phases/Lines	L+N+PE	3P+N+PE	3P+N+PE
Voltage [V]	230	400	400
Frequency [Hz]	50/60; ±5	50/60; ±5	50/60; ±5
AC Nominal Output			
Voltage [V]	230	400	400
Current [A]	32	16	32
Power [W]	7200	11000	22000
Interface			
RS485	Yes		
RFID Frequency [MHz]	13.56		
LCD Screen	Optional		
CT Clamps	x1	x3	x3
Housing Material	Plastic/Metal		
Installation Method	Wall-mounted (Optional: pedestal-mounted)		
Wall-mount Bracket	Yes		
Charging Outlet	Socket Type (Socket-outlet) / Plug Type (Charging cable with connector)		
Cable Length [m]	6.5 (for Plug Type)		
Operating Temperature [°C]	-30 to +50		
Working Humidity	5%~95% without condensation		
Working Altitude [m]	<2000		
Degree of Protection	IP65		
Impact Resistant	IK08		
Protection Class	Class I		
Application Site	Indoor/Outdoor		
Cooling Method	Natural cooling		
Dimension (W×H×D)[mm]	249×370×155 (for Socket Type) / 265×370×155 (for Plug Type)		
Net Weight [kg]	5.5 for Socket Type, 8 for Plug Type	6 for Socket Type, 8 for Plug Type	6 for Socket Type, 9.5 for Plug Type
Communication Info			
Communication Mode	WiFi		
EIRP Power	17.41 dBm (Measured Max. Average)		
Frequency	2412~2484 MHz		
Antenna Gain	4 dBi		
Antenna Type	IPEX		
Wireless Mode	802.11 b/g/n		

4.2 Security Protection

Model	X1-EVC-7.2K(SXH)	X3-EVC-11K(SXH)	X3-EVC-22K(SXH)
	X1-EVC-7.2K(PXH)	X3-EVC-11K(PXH)	X3-EVC-22K(PXH)
Multiple Protection			
Over/Under voltage protection	Yes		
Overload protection	Yes		
Current leakage monitoring	Integrated current failure monitoring (30 mA AC & 6 mA DC) *		
Grounding protection	Yes		
Surge protection	Yes		
Over temperature protection	Yes		
Safety Standard	IEC61851-1; IEC62196-2		
Built-in PEN fault technology	Yes		
Warranty	3 years		

* This document does not replace any regional, state, provincial or national laws, regulations or standards that apply to the installation, electrical safety and use of the product. Always observe the local regulations as well.

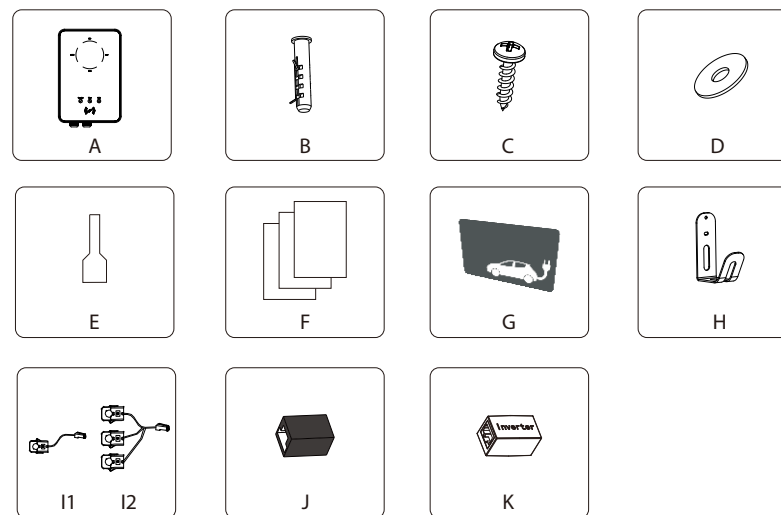
5 Installation

5.1 Check for Transport Damage

Make sure the EV-Charger is intact during transportation. If there are some visible damages, such as cracks, please contact your dealer immediately.

5.2 Packing List

Open the package and fetch out the product, check the accessories at first. The packing list is shown as below.



Object	Quantity	Description
A	1	EV-Charger
B	3/5	Expansion tube (3 for Socket Type, 5 for Plug Type)
C	3/5	Self-tapping screw (3 for Socket Type, 5 for Plug Type)
D	3/5	Washer (3 for Socket Type, 5 for Plug Type)
E	3/5	Ferrule (3 for single-phase; 5 for three-phase)
F	/	Documents
G	2	RFID card
H	1	Cable hook (only for Plug Type)
I	1	CT (I1 for single-phase; I2 for three-phase)
J	1	RJ45 connector (black) : for extension connection of CT
K	1	Inverter connector (white) : for connecting inverter

5.3 Installation Precaution

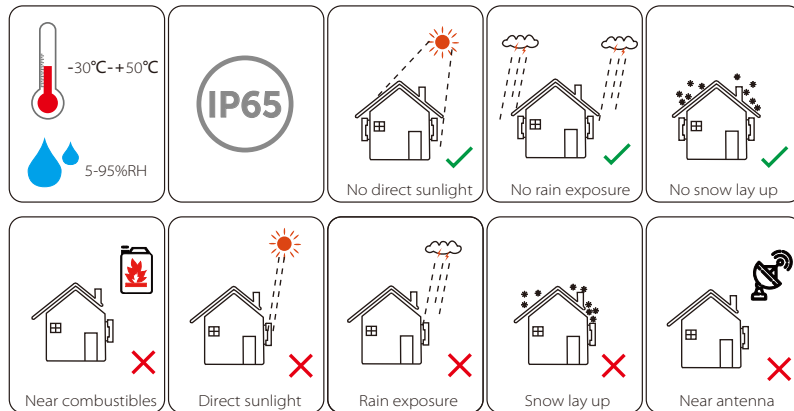
The EV-Charger is designed for wall-mounted/pedestal-mounted installation (IP65).

Make sure the installation site meets the following conditions:

- Not exposed to sunlight directly.
- Not in areas where highly flammable materials are stored.
- Not in potential explosive areas.
- Not near the television antenna or antenna cable.
- Not higher than altitude of about 2000 m above sea level.
- Not in environment of precipitation or humidity (5%~95%) .
- Make sure that the ventilation is good enough.
- The ambient temperature in the range of -30°C~ +50°C.
- The slope of the wall should be within $\pm 5^\circ$.

The wall on which the EV-Charger will be installed should meet the conditions below:

- 1) Solid brick/concrete, or strength equivalent mounting surface;
- 2) The EV-Charger must be supported or strengthened if the wall's strength isn't enough (such as wooden wall, the wall covered by thick layer of decoration).



➤ Available Space Size

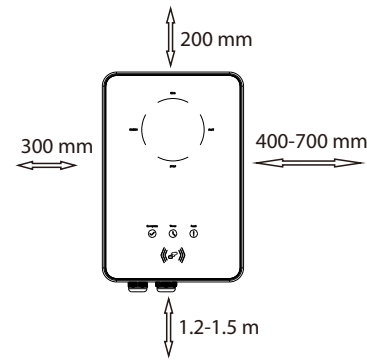


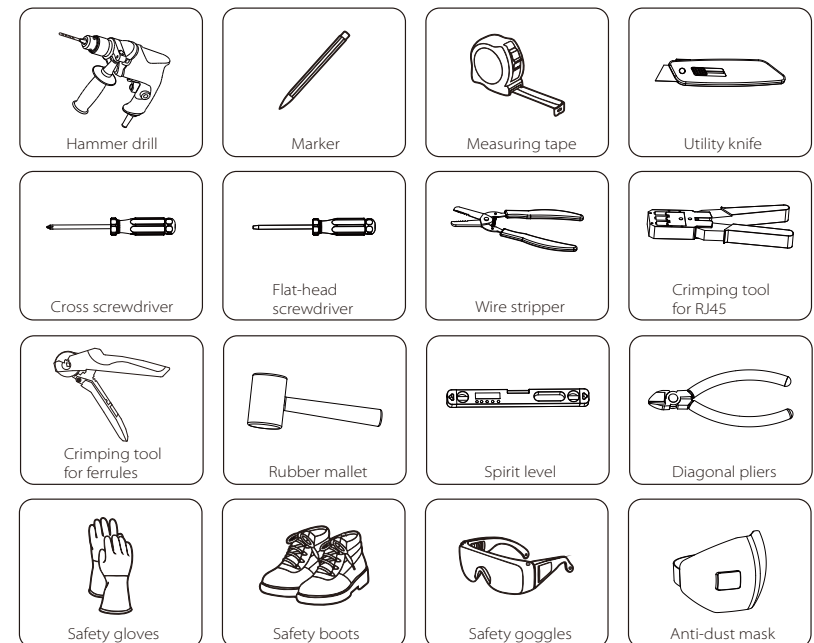
Table: Available Space Size

Position	Min. size
Left	300 mm
Right	400-700 mm
Top	200 mm
Bottom	1.2-1.5 m
Front	300 mm

5.4 Installation Steps

➤ Preparation

- Below tools are needed before installation.



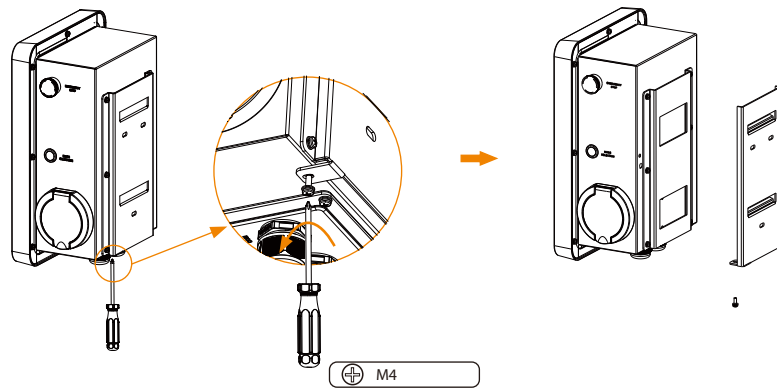
• Additionally Required Materials

No.	Required Material	Type
1	RCBO*	Type A RCD with a trip current of ≤ 30 mA; 2P and rated current ≥ 40 A for 7 kW, 4P and rated current ≥ 20 A for 11 kW, 4P and rated current ≥ 40 A for 22 kW
2	AC input cable	Three-core copper wire for single-phase, five-core copper wire for three-phase; Outer diameter: 12.5-18 mm; Conductor Cross-section for copper wire: ≥ 6 mm ² for 7 kW and 22 kW, ≥ 4 mm ² for 11 kW
3	Communication cable	Network cable CAT5 with RJ45 or two-core cable; Conductor cross-section: 0.2 mm ²
4	RJ45 terminal(s)	/
5	Meter (Optional)	Contact with the installer for type recommendation

* Please choose appropriate RCBO according to local regulations.

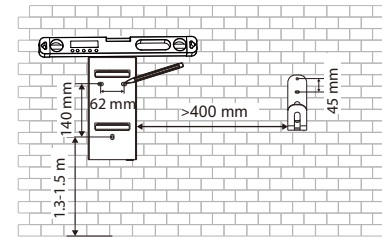
➤ Steps

STEP 1: Remove the screw from the EV-Charger with the cross screwdriver. Then remove the back bracket away carefully.

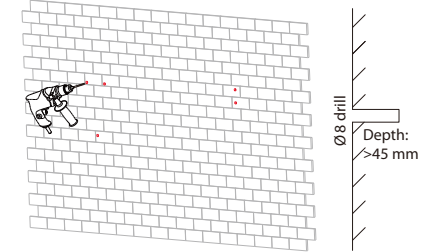


STEP 2: Fix the back bracket and the cable hook (only for Plug Type) to the wall.

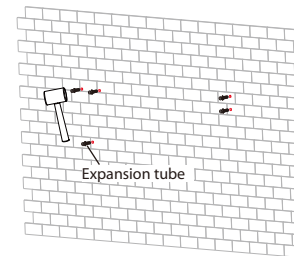
a. Use the back bracket as a template to mark the position of the holes on the wall.



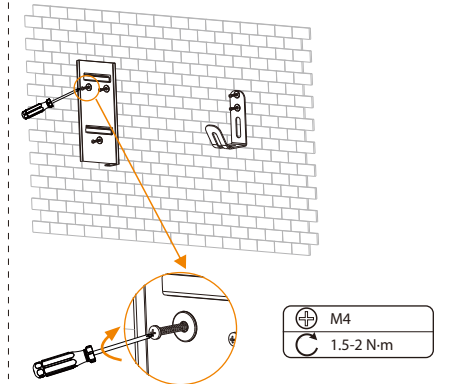
b. Drill holes with $\varnothing 8$ drill, make sure the holes are deep enough for the installation (Depth: at least 45 mm).



c. Insert the expansion tubes in the holes.

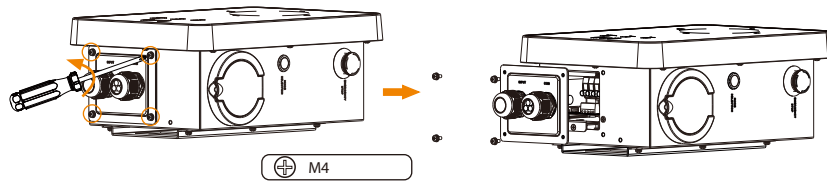


d. Align the bracket and the cable hook (only for Plug Type) with the holes, and screw the self-tapping screws with the cross screwdriver.

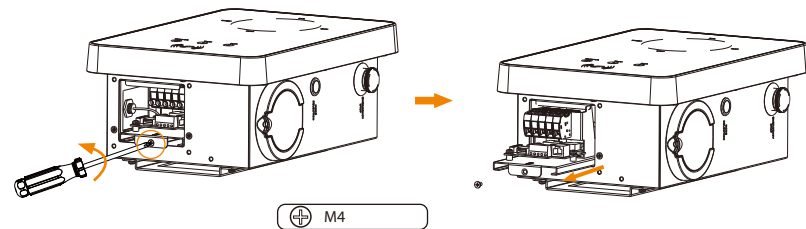


STEP 3: Hang the EV-Charger on the wall for trial, then estimate the required length of AC input cable and communication cable. After that, take the EV-Charger down.

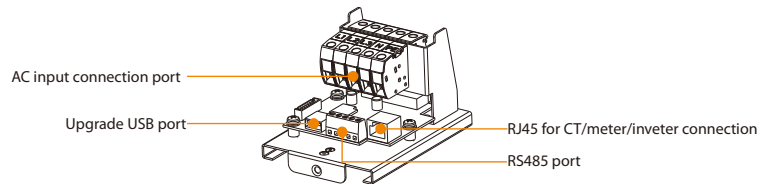
STEP 4: Unscrew the EV-Charger's rear cover with the cross screwdriver and take it down. Then undo the fastening heads and take the waterproof materials away as shown below.



STEP 5: Unscrew the countersunk screw of the base plate of communication board with the cross screwdriver. Then pull the base plate of communication board out.

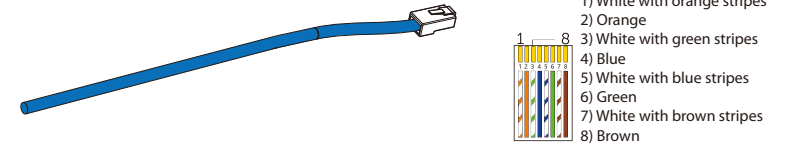


The connection ports inside are shown as below.



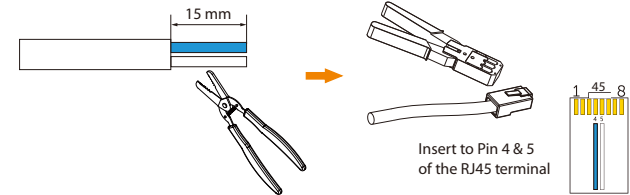
STEP 6: Choose and prepare communication cable based on actual need:

- Eight-core cable
If the cable is self-made, pay attention to pin order of RJ45 terminal and make sure the wires are firmly crimped with the RJ45 terminal.

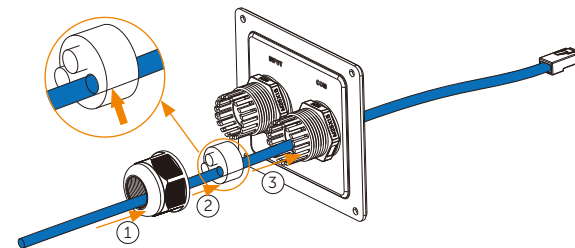


* When using eight-core cable to connect inverter, it should be used with the white inverter connector.

- Two-core cable (Recommended for connecting inverter)
Strip 15 mm of the cable insulation jacket and insert the stripped part into Pin 4 & 5 of the RJ45 terminal, then crimp the RJ45 terminal with the crimping tool for RJ45.



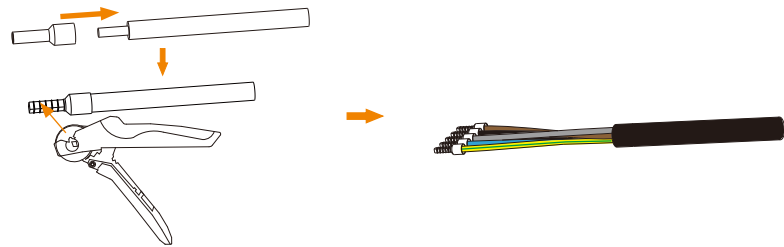
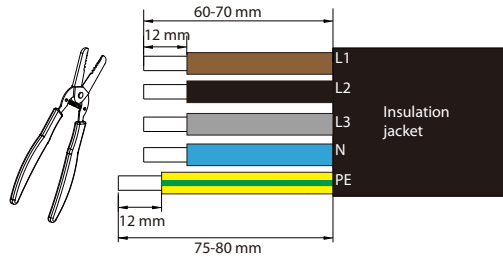
STEP 7: Insert the prepared communication cable through the waterproof connector in sequence as shown below.



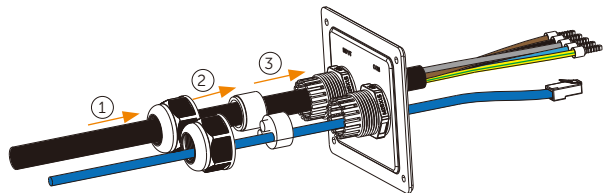
PIN	1	2	3	4	5	6	7	8
Definition	L1_CT+	L1_CT-	L2_CT+	A1	B1	L2_CT-	L3_CT+	L3_CT-

* PIN 3, 6, 7, 8 is null for single-phase. Pin 4 & 5 are for connecting inverter or meter.

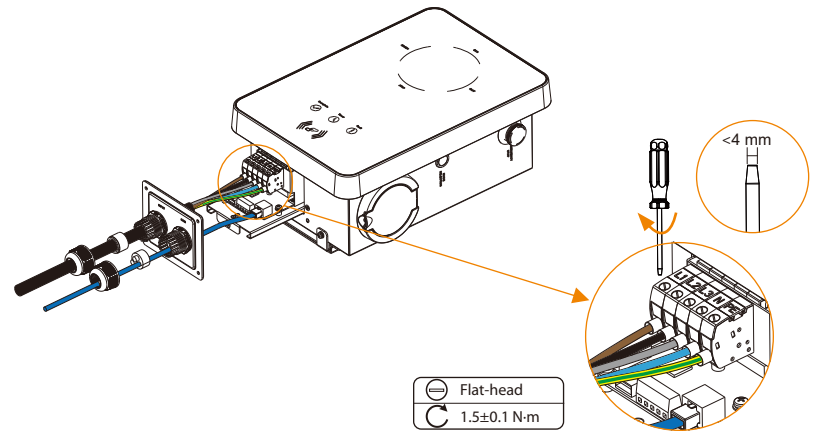
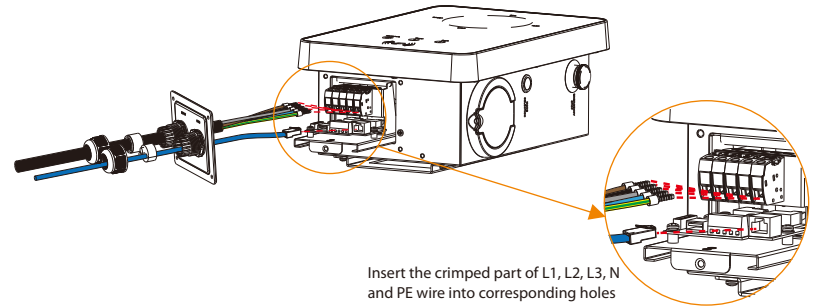
STEP 8: Strip the insulation jacket of the AC input cable as below, ensuring all the wires can reach the terminal blocks with a little excessive length. Use the wire stripper to strip approximately 12 mm of insulation from the end of all the coloured wires as below. Then place the ferrules on the stripped parts of the wires, and crimp the ferrules on L1, L2, L3, N and PE wire respectively.



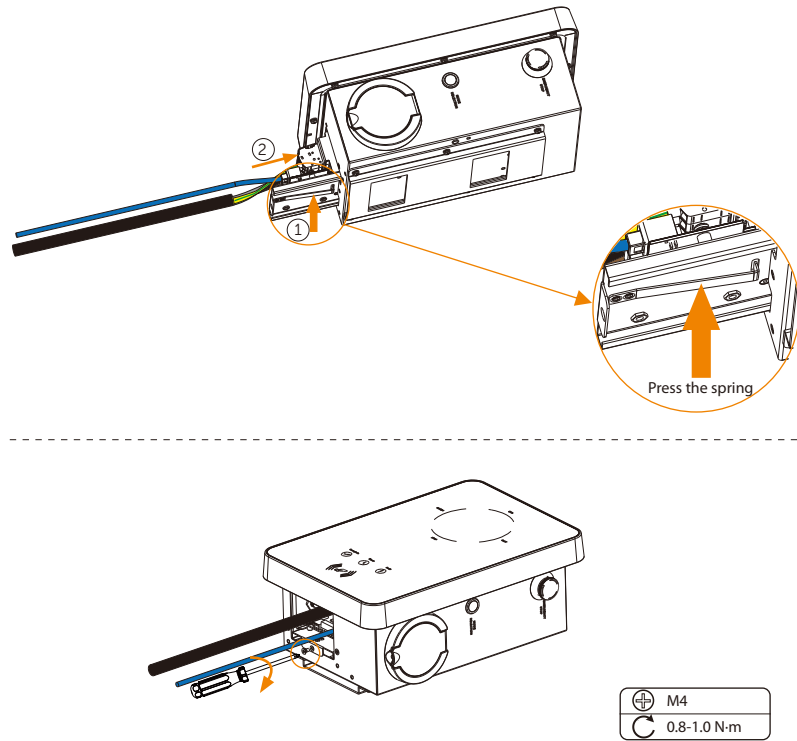
STEP 9: Insert the AC input cable through the waterproof connector in sequence as shown below.



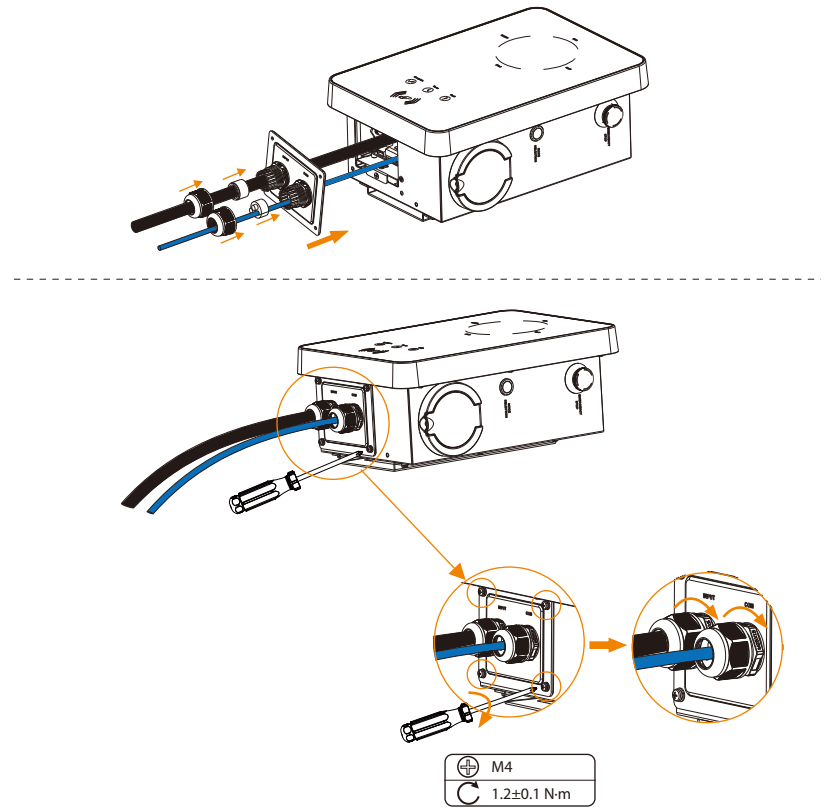
STEP 10: Insert the wires into the appropriate holes of the terminal blocks, then block the terminals with the straight screwdriver.



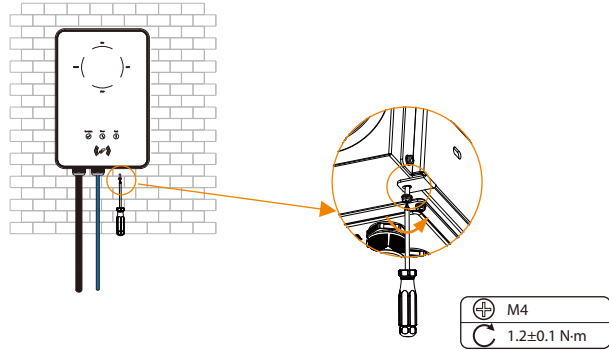
STEP 11: Press the spring upward and push the base plate of communication board in. Then screw the countersunk screw.



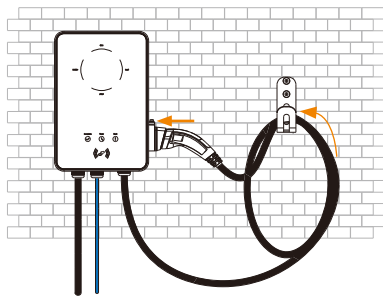
STEP 12: Push the rear cover to appropriate position of the cables. Then screw the self tapping screws with the cross screwdriver and tighten the waterproof fastening heads.



STEP 13: Hang the EV-Charger up carefully and steady the EV-Charger with the self tapping screw and the cross screwdriver.



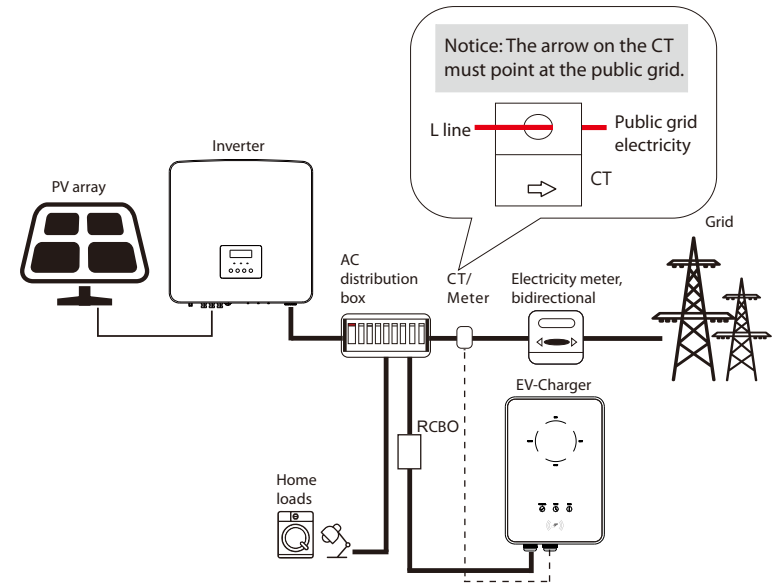
For Plug Type, connect the charging connector with the EV-Charger and hang the connecting cable on the hook.



5.5 Communication Connection

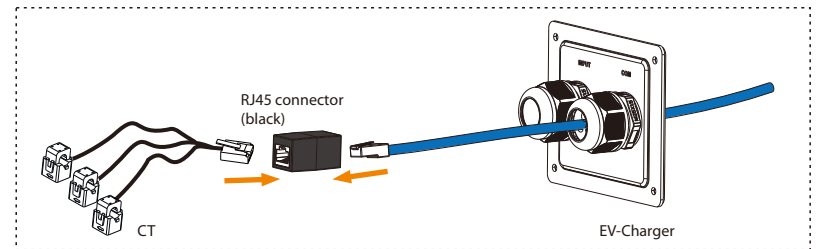
➤ Communication with CT/Meter

Diagram:



For CT side:

- Steady the CT on the public grid.
- Insert the other end of the communication cable and the terminal of CT into each side of the RJ45 connector.



NOTE!



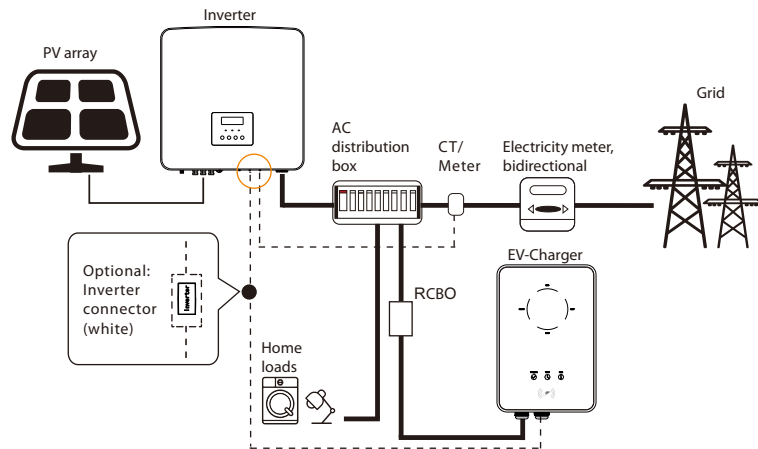
- Do not place the CT on the N Wire or the PE wire.
- Do not place the CT on the N and L wire simultaneously.
- Do not place the CT on the non-insulated wires.
- When using the three-phase CT, please clip the CT clamps on the corresponding phases (CT-R must be connected to grid L1, CT-S connected to grid L2, CT-T connected to grid L3).

For Meter side:

For the installation of the meter, please refer to the relative quick installation guide or user manual for details.

➤ Communication with Inverter

Diagram:



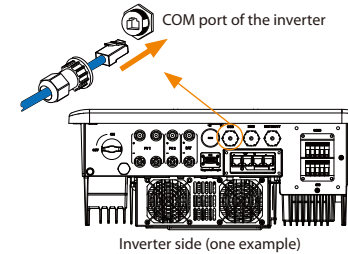
NOTE!



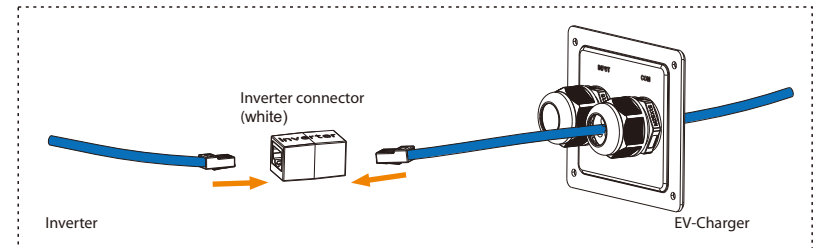
- If the system has zero injection requirement, the EV-Charger must communicate with the inverter.
- When communicating with the inverter, it is recommended to use a two-core cable as the communication cable since it is more waterproof. If users use eight-core cable as the communication cable, the white inverter connector must be used to allow the system to work normally.

For inverter side:

Connect the other end of the communication cable to the COM or RS485 port of the inverter according to the definitions of the communication ports of the specific inverter.



* If eight-core cable is used when connecting with the inverter, please use the white inverter connector to connect the communication cable connected with the EV-Charger and the other one connected with the inverter to allow the system to work normally.



5.6 Run the EV-Charger

➤ Power on the EV-Charger after checking all below steps:

- a) Check that the device is fixed well on the wall.
- b) AC cable is connected to grid correctly.

- Power on the EV-Charger
- Check the status of LED indicators, the Complete light should be on when the EV-Charger starts normally.
 - If the Fault light is on, please check if it is correctly installed and connected.



WARNING!

Power to the unit must be turned on only after installation work has been completed. All electrical connections must be carried out by qualified personnel in accordance with legislation in force in the country concerned.



NOTE!

Equipment only to be used for the purpose outlined by us.

6 Operation Method

6.1 States

There are six states of the series EV-Charger(home edition), i.e. Idle, Stop, Charge, Complete, Fault and Unavailable.

States	Indicator Light & Description
Idle	The Complete light is on and the MODE SELECTION button is invalid. The connector is not inserted.
Stop	The STOP light is on. The EV-Charger is connected with EV but not charging.
Charge	The corresponding charging mode light is on. The EV-Charger is charging.
Complete	The Complete light and the STOP light are on at the same time. The EV-Charger has completed charging and the MODE SELECTION button is invalid.
Fault	The Fault light is on. The EV-Charger is in fault state.
Unavailable	The four charging mode lights are on at the same time. The EV-Charger is remote upgrading.

6.2 Start-up Patterns

The series EV-Charger(home edition) has two start-up patterns, namely plug & charge and card-swiping pattern. The plug & charge pattern is the default pattern, and the card-swiping pattern needs to “enable” the “RFID Function” in the APP advanced settings.

1) Plug & charge pattern

For Socket Type, the electronic lock will be locked when the EV-Charger starts charging and unlocked when the charging stops.

For Plug Type, there is no electronic lock.

2) Card-swiping pattern

For Socket Type, the electronic lock will be locked when the EV-Charger starts charging after swiping the card, and unlocked after swiping the card when the charging stops.

For Plug Type, there is no electronic lock.

Note:


The charging can be stopped from the vehicle end or the charger end (by long pressing “MODE SELECTION” button, by APP setting or by swiping card). In card-swiping pattern, the electronic lock will not unlock automatically when the charging stops, and users need to swipe the card again to unlock it.

* RFID Function Operation

If the user wants to switch to the card-swiping pattern from the default pattern, the user needs to enable RFID function and do card activation operation in APP advanced settings. Please follow the instructions below:

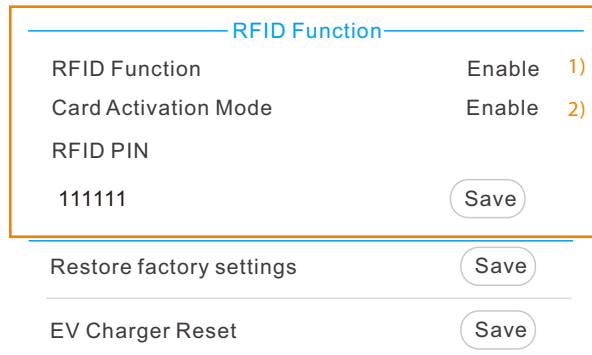
- 1) Touch "RFID Function" to enable the function as below (Disable by default).
- 2) Activate the RFID card:
 - a. **Enable** the Card Activation Mode of Advanced Settings in the APP (Disable by default). Once enabled, the four operating LED indicator lights on the EV-Charger will light up in sequence and cycle.

NOTE!



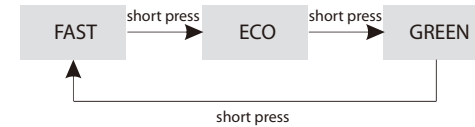
The default RFID PIN is 111111, the user can modify the RFID PIN before activation, and the password of the RFID card will be updated to the RFID PIN after activation. The password of the RFID card must be consistent with the one set in the APP. The RFID PIN is 6 digits.

- b. Swipe the RFID card at the EV-Charger.
- c. If successfully activated, the EV-Charger will beep.
- d. **Disable** the Card Activation Mode in the APP or wait for 1 minute after activation, the EV-Charger will turn to standby state.

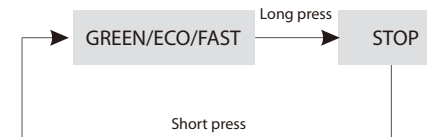


6.3 Charging Modes

Short press the "MODE SELECTION" button, the charging mode will switch among FAST, ECO and GREEN Modes.



Long press the "MODE SELECTION" button, the current charging mode will switch to STOP mode. When the EV-Charger is in STOP mode, short press the "MODE SELECTION" button, the EV-Charger will switch back to the previous charging mode.(Only available in plug & charge pattern.)

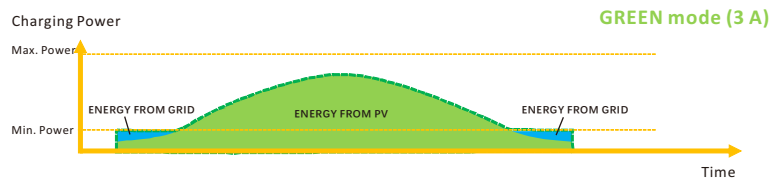
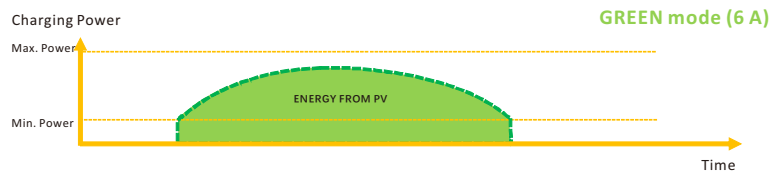


6.3.1 GREEN Mode

In GREEN Mode, the EV-Charger will maximize the use of surplus power generated from the inverter. According to the minimum start-up charging power, the charging current can be divided into two levels as 3 A and 6 A. The default level is 3 A.

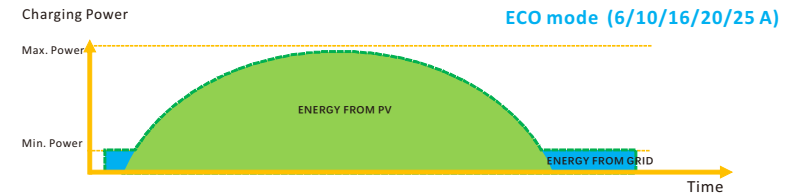
In the 6 A level, the EV-Charger won't use the power generated from grid at all.

In the 3 A level, the EV-Charger would start charging only when photovoltaic power supply is more than 3 A. Meanwhile, if the photovoltaic power supply is less than 6 A, the EV-Charger needs to buy extra electricity from grid for minimum start-up charging power (1.4 kW for single-phase, 4.2 kW for three-phase).



6.3.2 ECO mode

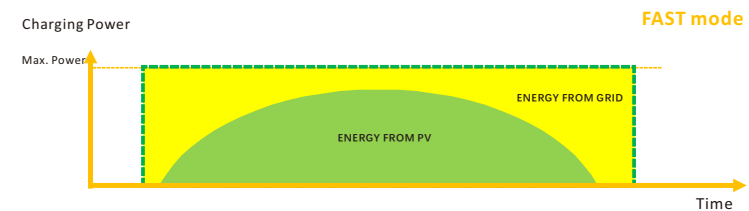
In ECO Mode, the charging power is continuously adjusted according to changes in generation or power consumption elsewhere in the house, thereby minimizing the use of grid power. In this mode, users can set charging current at five different levels, i.e. 6 A, 10 A, 16 A, 20 A and 25 A [Only 6 A & 10 A for X3-EVC-11K(SXH) & X3-EVC-11K(PXH)]. If at any time, the available surplus power falls below the fixed value of power, such as 1.4 kW (4.2 kW for three-phase), the shortfall will be drawn from the grid.



NOTE!
 When the series EV-Charger is charging in GREEN or ECO mode:
 The charging electric vehicle must comply with the IEC61851 standard, otherwise the EV-Charger won't work.
 If there is a zero injection requirement for the system, the EV-Charger must communicate with the inverter in order to charge normally.

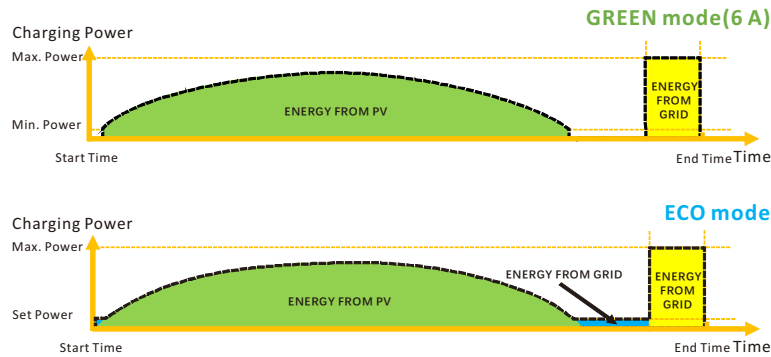
6.3.3 FAST mode

In FAST Mode, the EV-Charger will charge the EV at the fastest rate regardless of whether the power generated by PV is sufficient and import grid electricity if the power generated by PV is insufficient.



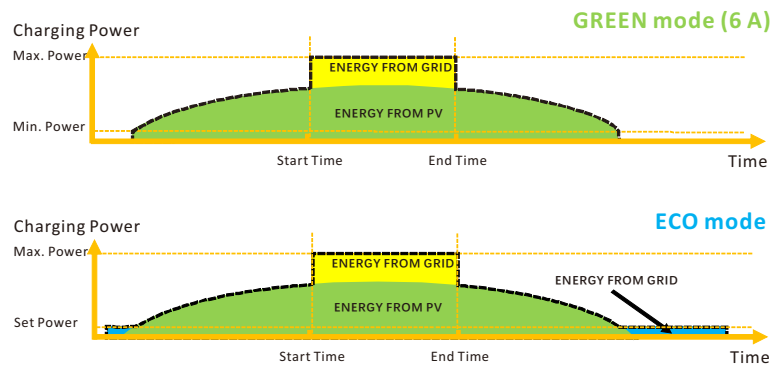
6.3.4 Smart Boost

Before using the Smart Boost function, set the desired charging energy(kWh) and end time for the vehicle charging on the APP. The EV-Charger will complete the charging of the EV with desired energy before the preset end time at maximum charging power and will use the photovoltaic power supply as much as possible and minimize the use of grid power. (E.g.: The user needs to charge the EV to 40 kWh before 10:00 AM, then the Charging power is depended on the surplus power generated by the inverter.)



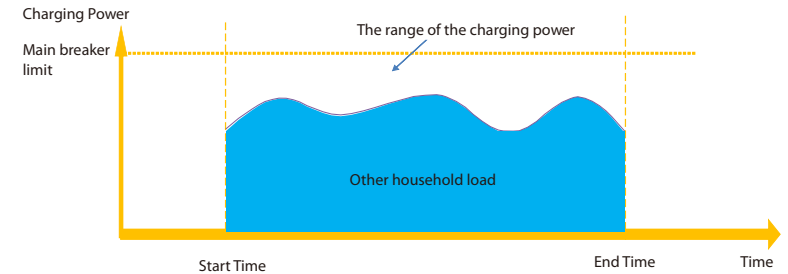
6.3.5 Timer Boost

When using ECO or GREEN charging modes, the EV-Charger can be programmed to 'boost' the current charge in a certain period. In timer boost mode, the charging rate is set to maximum (just like FAST mode), regardless of the amount of available surplus power. This means that the power may be drawn from the mains grid supply during boost times. If the EV is fully charged, the EV-Charger will stop charging.



6.4 Dynamic Load Balance

The series EV-Charger has default dynamic load balancing function. During the charging period, no matter in which work mode, the total power of the house will not exceed the main grid capacity. To ensure the total power of the house doesn't exceed the grid capacity, the charging power will be adjusted in real time following the total load power.



7 App Setting

The screen shots here are for reference only and the actual interfaces may differ. Users can update their APP as needed.

➤ APP account login

- If you don't have the app or monitoring cloud's account yet, you can operate as below:

➤ Monitoring Cloud Registration

Step 1: Use your smart phone to scan below QR code or search for the keyword "SolaXCloud" in browser to download the Monitoring App.



IOS

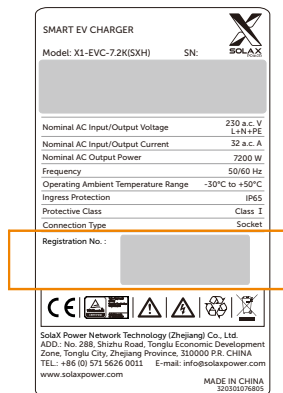


Google

Step 2: Touch the Setting button at upper left corner of the Monitoring App to choose language.

Step 3: Touch "Create a new account" at the bottom of Monitoring App and fill in the information to create the account.

Step 4: For the first login, click "+" to create site. Fill in site information and type in or scan the Registration No. and follow the instructions to complete the site creation and WiFi connection.



(Example for Registration No.)

- If you already have the account, you can operate as below:

➤ Add Device

Step 1: Login your account and turn to Device page in the app.

Step 2: Touch the "+" icon on the upper right corner and fill in the information to add the EV-Charger.

Site*
Default Site v

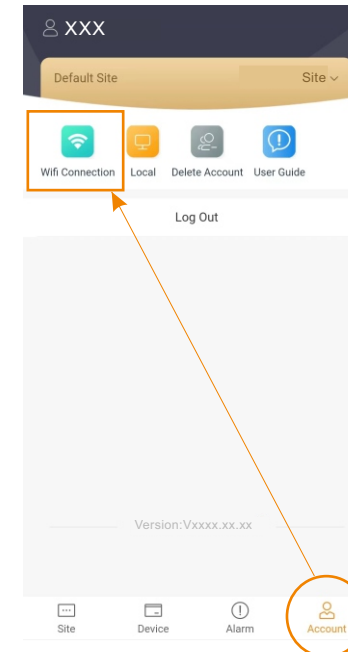
Registration No.*

OK


➤ Wi-Fi Connection

Step 1: Login your account and turn to Account page in the app.

Step 2: Click "Wifi Connection".




Step 3: Type in or scan the Registration No. of the EV-Charger. Then touch Next and agree to join the network of the EV-Charger.


Registration No. 

Next

Step 4: Type in or choose your home Wi-Fi SSID and password, then touch "Next".

*5GHz Wi-Fi is unavailable for now.

WIFI Network* 

Password* 

Back **Next**

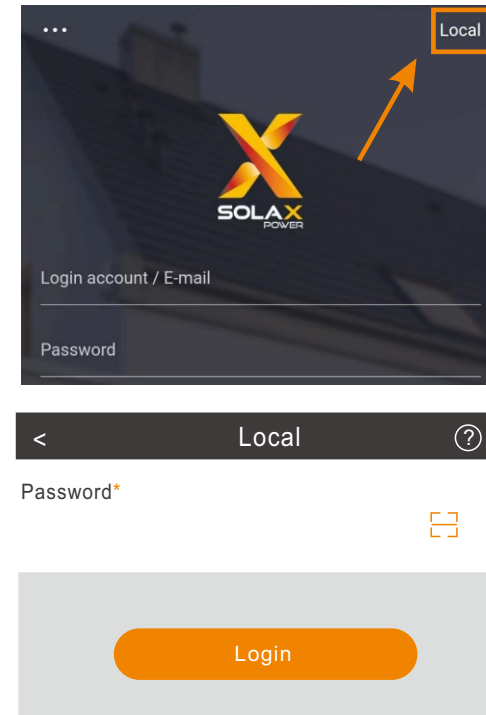
Step 5: Follow the instructions to complete Wi-Fi setting, there will be a note when the setting successes.

*Check more Wi-Fi setting information on www.solaxcloud.com/wifiSetting/

➤ Local Mode

Use your smart phone to connect the SolaX Wi-Fi signal (Wifi_Sxxxxxxx). Then touch Local and type in password (initially same as the Registration No.) to access the Local Mode in the Monitoring App.

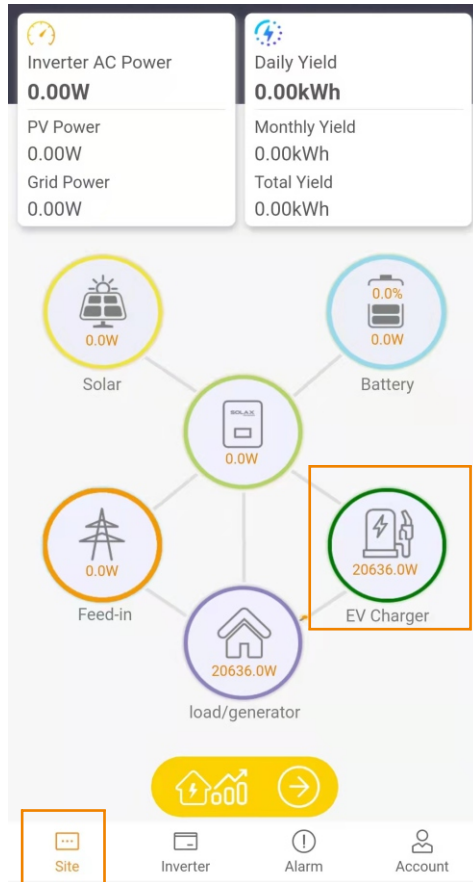
*Visit the local password setting instruction on www.solaxcloud.com/wifiSetting/



*If manual WiFi configuration is required, the IP address is <http://192.168.10.10/>.

➤ Settings for the EV-Charger

1. Select "Site" at the bottom and then touch the "EV Charger" icon.



2. Select your EV-Charger on the list and then touch the setting button to enter the setting page.



* You can set the max charging current for the EV-Charger based on actual need here by touching "Current_ChargeMax". It will only take effect in FAST mode. The range is 6 A to 32 A for X1-EVC-7.2K(SXH), X1-EVC-7.2K(PXH), X3-EVC-22K(SXH) & X3-EVC-22K(PXH), 6 A to 16 A for X3-EVC-11K(SXH) & X3-EVC-11K(PXH).

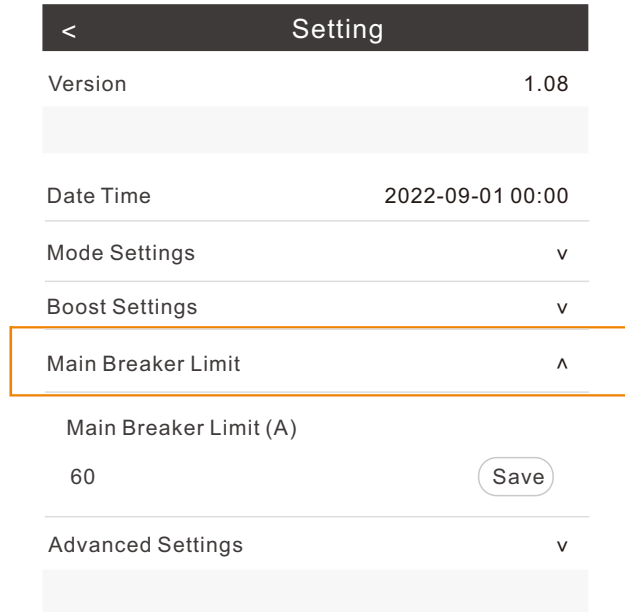
3. Select "Mode Settings" and a drop-down list will appear. Set the levels of Green Mode (2 levels) and ECO Mode [5 levels for X1-EVC-7.2K(SXH), X1-EVC-7.2K(PXH), X3-EVC-22K(SXH) & X3-EVC-22K(PXH), 2 Levels for X3-EVC-11K(SXH) & X3-EVC-11K(PXH)] as you want.

Setting	
Version	1.08
Date Time	2022-09-01 00:00
Mode Settings	^
Green Mode	Level1 3A
ECO Mode	Level1 6A
Boost Settings	v
Main Breaker Limit	v
Advanced Settings	v

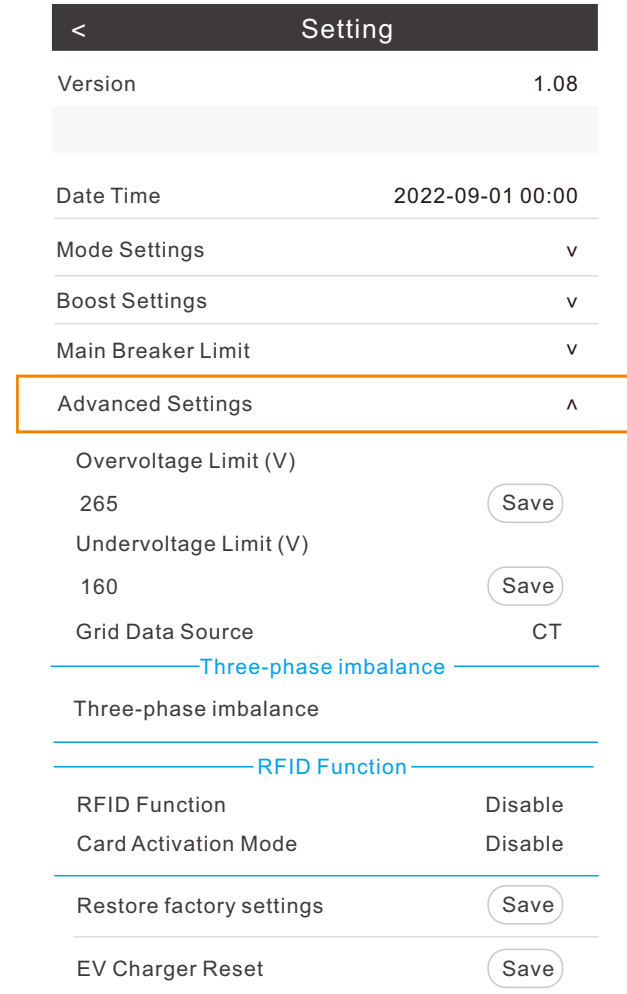
4. Select "Boost Settings" and a drop-down list will appear. Set the Start Time and End Time for Timer Boost, the Charge(kWh) energy and End Time for Smart Boost as you want.

Setting	
Version	1.08
Date Time	2022-09-01 00:00
Mode Settings	v
Boost Settings	^
.....Timer Boost	
Start time	00:00
End time	00:00
.....Smart Boost	
Charge (kWh)	0
	<input type="button" value="Save"/>
End time	00:00
Main Breaker Limit	v
Advanced Settings	v

5. Select "Main Breaker Limit" and set the value. With the dynamic load balance function, when the power consumption approaches the preset max value, the EV-Charger will reduce charge power so that the main breaker current will reduce to the preset value minus 5 A, thus avoid the situation of main breaker trip due to overload.



6. Select "Advanced Settings" and a drop-down list will appear.



1) Set and save the value of "Overvoltage Limit" and "Undervoltage Limit".

Overvoltage Limit (V)	265	Save
Undervoltage Limit (V)	160	Save

2) Touch "Grid Data Source" to select the source according to the actual application.

Undervoltage Limit (V)	160	Save
Grid Data Source	CT	

3) Settings for "Three-phase imbalance"(Only for single-phase EV-Chargers). In some countries, there are some special regulations that the power differences between the phases must not be bigger than 4.6 kW or 3.7 kW. Therefore, when using single-phase EV-Charger, the charging power must be limited.(This setting item is not available for three-phase EV-Chargers.) If required by local regulations, please enable this function and complete the relative settings:

- Select the correct "Charge phase" after consulting with the technical electrician.
- Set the value for "Unbalanced power (W)" according to local regulations. The default value is 4600.

Three-phase imbalance	
Three-phase imbalance	Enable
Charge phase	L1
Unbalanced power (W)	4600
	Save



NOTE!

To achieve the three-phase imbalance function, the single-phase EV-Charger should be connected with a three-phase meter or communicate with an inverter. If achieved by communicating with an inverter, the inverter must be connected with a three-phase meter or three-phase CT.

4) Touch "RFID Function" to enable or disable the function. Touch "Card Activation Mode" for the activation of the RFID card as described in "RFID Function Operation" of section "Operation Method".

RFID Function	
RFID Function	Disable
Card Activation Mode	Disable

5) The default setting can be restored and the EV-Charger can be reset by touching correspondent option.

Restore factory settings	Save
EV Charger Reset	Save

8 Troubleshooting

8.1 Troubleshooting

This section contains information and procedures for solving possible problems with the series EV-Charger, and provides you with troubleshooting tips to identify and solve most problems that could occur with the EV-Charger.

This section will help you narrow down the source of any problems you may encounter. Please read the following troubleshooting steps.

Check warnings or fault messages on System Control Panel or Fault codes on the EV-Charger information panel. If a message is displayed, record it before doing anything further.

Attempt the solution indicated in troubleshooting lists.

No.	Faults	Solution
0	PowerSelect_Fault	Contact installers for help
1	EmStop_Fault	1.Release the Emergency button; 2.Contact installers for help
2	OverVoltL1_Fault	1.Confirm that the Grid Voltage is within the working range; 2.If the "Fault" indicator is off, try charging EV again; 3.If not, set the value of "Overvoltage Limit" to a proper range, the buzzer will beep after the value is saved; 4.repeat step 2; 5.Contact installers for help
3	UnderVoltL1_Fault	1.Confirm that the Grid Voltage is within the working range; 2.If the "Fault" indicator is off, try charging EV again; 3.If not, set the value of "Undervoltage Limit" to a proper range, the buzzer will beep after the value is saved; 4.repeat step 2; 5.Contact installers for help
4	OverVoltL2_Fault	Same as ErrorCode 2
5	UnderVoltL2_Fault	Same as ErrorCode 3
6	OverVoltL3_Fault	Same as ErrorCode 2
7	UnderVoltL3_Fault	Same as ErrorCode 3
8	ElecLock_Fault	Contact installers for help
9	OverLoad_Fault	1.Unplug the connector from the EV; 2.If the "Fault" indicator is off, re-plug in and try charging EV again; 3.If the "Fault" indicator persists, try another EV; 4.Contact installers for help

No.	Faults	Solution
10	OverCurr_Fault	1.Unplug the connector from the EV; 2.If the "Fault" indicator is off, re-plug in and try charging EV again; 3.Contact installers for help
11	OverTemp_Fault	1.Unplug the connector from the EV; 2.If the "Fault" indicator is off, re-plug in and try charging EV again; 3.If not, confirm that the conditions for installation are proper and waiting for cooling down, then re-plug in and try charging EV again when the indicator turns off; 4.Contact installers for help
12	PEGround_Fault	1.Unplug the connector from the EV; 2.If the "Fault" indicator is off, check the EV whether it is normal; 3.If not, confirm that all the cables and wires are intact; 4.Contact installers for help
13	PELeakCurr_Fault	1.Unplug the connector from the EV; 2.If the "Fault" indicator is off, check the EV whether it is normal; 3.If not, confirm that all the cables and wires are intact; 4.If the "Fault" indicator is off, re-plug in and try charging EV again; 5.Contact installers for help
14	OverLeakCurr_Fault	Same as ErrorCode 12
15	MeterCom_Fault	Contact installers for help
16	485Com_Fault	1.If the "Fault" indicator is off, try charging EV again; 2.If not, confirm that all the communication wires are intact and confirm the selection of "Grid Data Source"; 3.Restart; 4.Contact installers for help
17	CPVolt_Fault	Same as ErrorCode 12
18	ParallelCom_Fault	1.Check whether the connection between the primary and secondary EV-Chargers is in good condition; 2.Contact installers for help

* When your EV-Charger needs to be upgraded by the service personnel, please make sure to unplug the connector from the EV.

- If your EV-Charger's information panel is not displaying a Fault light, check the following list to make sure that the present state of the installation allows proper operation of the unit.
 - Is the EV-Charger located in a clean, dry, adequately ventilated place?
 - Are the specification and length of the cables suitable?
 - Are the input connections and wiring in good condition?
 - Are the configuration settings correct for your particular installation?
 - Are the display panel and the communication cable properly connected and undamaged?

Contact our Customer Service for further assistance. Please be prepared to describe details of your system installation and provide model and serial number of the unit.

8.2 Routine Maintenance

The EV-Charger do not need any maintenance or correction in most condition. To ensure that the EV-Charger can operate properly for a long term, you are advised to perform routine maintenance on it.

Only trained and authorized professional personnel who are familiar with the requirements of safety was allowed to perform servicing and maintenance work.

► *Safety checks*

Safety checks should be performed at least every 12 months by manufacturer's qualified person who has adequate training, knowledge, and practical experience to perform these tests. The data should be recorded in an equipment log. If the device is not functioning properly or fails any of the tests, the device has to be repaired. For safety check details, refer to section 2 Safety instruction in this manual.

► *Maintain periodically*

Only qualified personnel may perform the following works.

During the process of using the EV-Charger, the manage person shall examine and maintain the machine regularly. The concrete operations are as follows.

- 1) Check that if the indicators of the EV-Charger are in normal state, check if the buttons of the EV-Charger are in normal state, check if the display of the EV-Charger is normal. This check should be performed at least every 6 months.
- 2) Check that if the input cable and the connector are damaged or aged. This check should be performed at least every 6 months.
- 3) Check whether the ground terminal and ground cable are securely connected every 12 months.
- 4) Clean the outer shell of the EV-Charger and check its security at least every 6 months.

9 Decommissioning

9.1 Dismantling the EV-Charger

- Disconnect the EV-Charger from the inverter and the grid.
- Wait for 5 minutes for de-energizing.
- Remove the EV-Charger from the bracket.
- Remove the bracket if necessary.

9.2 Packaging

If possible, please pack the EV-Charger with the original packaging.

If it is no longer available, you can also use an equivalent carton that meets the following requirements.

- Suitable for loads more than 10 kg.
- With handle.
- Can be fully closed.

9.3 Storage and Transportation

Store the EV-Charger in dry place where ambient temperatures are always between $-30^{\circ}\text{C} \sim +50^{\circ}\text{C}$. Take care of the EV-Charger during the storage and transportation, keep less than 4 cartons in one stack.

9.4 Disposing of the EV-Charger

When the EV-Charger or other related components need to be disposed, have it carried out according to local waste handling regulations. Please be sure to deliver the wasted EV-Charger and packing materials to certain site where can assist relevant department to dispose and recycle.

10 Disclaimer

The EV-Chargers shall be transported, used and operated under restricted conditions. We will not provide any service, technical support or compensation in case of the following conditions, including but not limited to:

- The EV-Charger is damaged by force majeure (such as earthquake, flooding, thunderstorm, lighting, fire hazard, volcanic eruption etc.);
- The EV-Charger's warranty is expired, but not extended;
- The EV-Charger's SN, warranty card or invoice cannot be provided;
- The EV-Charger is damaged by man-made cause;
- The EV-Charger is used or operated against any items in local policy;
- The EV-Charger's installation, configuration, commissioning doesn't meet the requirements mentioned in this manual;
- The EV-Charger is installed, refitted or operated in improper ways;
- The EV-Charger is installed, operated under improper environment or electrical condition;
- The EV-Charger is changed, updated or disassembled on hardware or software without authority from us;
- The communication protocol from other illegal channels is used; and
- The monitoring or control system is used without authority from us.

SolaX reserves the right for the final explanation.

Appendix: Parallel Function

1 Introduction

For the users who like to install two EV-Chargers under same circuit, they can use the parallel function. One EV-Charger can be distinguished as primary EV-Charger and the other secondary. The primary EV-Charger takes the responsibility to collect PV feed in information and grid energy consumption information together and to allocate the PV energy and remaining load capacity for the system according to allocation ratio. The secondary EV-Charger's work mode setting will be copied from the primary EV-Charger.

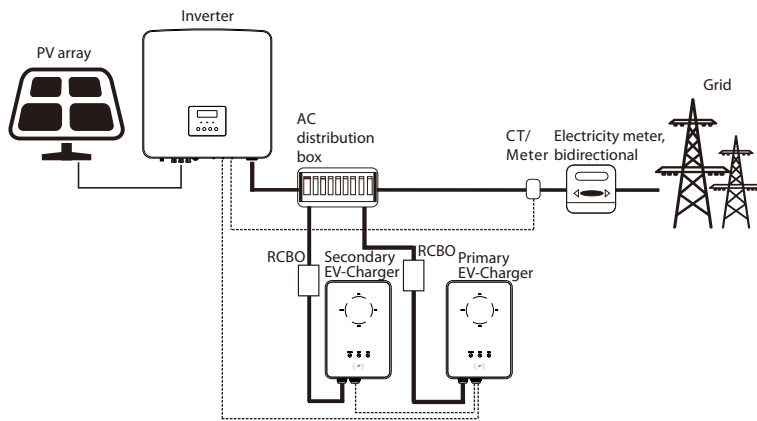
NOTE!

- The two EV-Chargers used in parallel function should be the same model.
- The firmware version of the two EV-Chargers should both support parallel function.

2 Connection

➤ Communication with Inverter

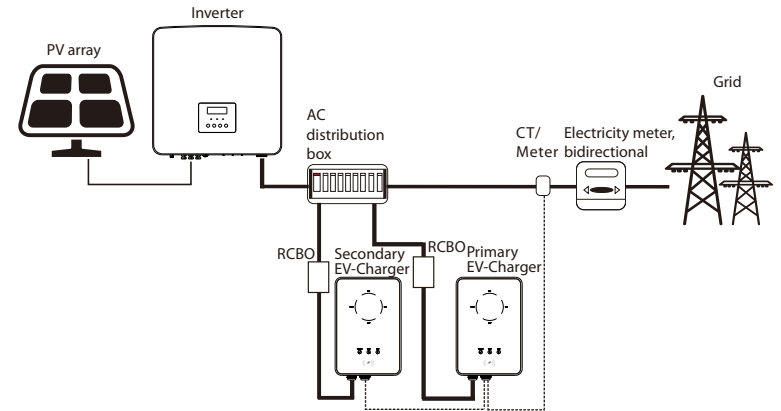
Diagram:



- 1) Use two-core cable to connect the primary EV-Charger's A1 & B1 of RS485 port or RJ45 port to the inverter's COM or RS485 port according to the definitions of the communication ports of the specific inverter. (Please refer to the user manual of the specific inverter for details.)
- 2) Use two-core cable to connect the primary EV-Charger's A2 & B2 to the secondary EV-Charger's A1 & B1.

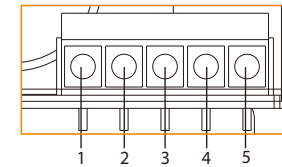
➤ Communication with CT/Meter

Diagram:



- 1) Connect CT/meter to the primary EV-Charger's RJ45 port (Please refer to section "5 Installation" for details).
- 2) Use two-core cable to connect the primary EV-Charger's A2 & B2 to the secondary EV-Charger's A1 & B1.

Note:
A2 & B2 is located on the RS485 port.



PIN	1	2	3	4	5
Definition	A1	B1	GND	A2	B2

3 Settings

Do the APP settings on the primary EV-Charger, the settings relating to work mode will be synchronized to the secondary EV-Charger.

- 1) Enable "Parallel Function" of "Parallel Setting" in "Advanced Settings".
- 2) Set the "Power allocation ratio". The default is 1:1, and supported ratio is 1:1, 1:2, 2:1. This feature is to allocate the PV energy and remaining load capacity for the two EV-Chargers if user needs.

Parallel Setting	
1) Parallel Function	Disable
2) Power allocation ratio	

- 3) Set the value for "Main Breaker Limit" as needed on the primary EV-Charger.

Main Breaker Limit	^
Main Breaker Limit (A)	
60	Save



NOTE!

When parallel function is enabled, any work mode setting of the secondary EV-Charger should be done via the primary EV-Charger, no matter whether the primary EV-Charger is working or not; the settings done on the secondary EV-Charger are invalid.



NOTE!

- When the two EV-Chargers work together, the primary EV-Charger will allocate the PV energy and remaining load capacity for two EV-Chargers.
- When the primary EV-Charger or the secondary EV-Charger works alone, each can use full PV energy and remaining load capacity.

Warranty Registration Form



For Customer (Compulsory)

Name Country

Phone Number Email

Address

State Zip Code

Product Serial Number

Date of Commissioning

Installation Company Name

Installer Name Electrician License No.

For Installer

Module (If Any)

Module Brand

Module Size(W)

Number of String Number of Panel Per String

Battery (If Any)

Battery Type

Brand

Number of Battery Attached

Date of Delivery Signature

Please visit our warranty website: <https://www.solaxcloud.com/#/warranty> to complete the online warranty registration or use your mobile phone to scan the QR code to register.

For more detailed warranty terms, please visit SolaX official website: www.solaxpower.com to check it.





PLEASE REGISTER THE WARRANTY IMMEDIATELY AFTER INSTALLATION!
GET YOUR WARRANTY CERTIFICATE FROM SOLAX!
KEEP YOUR INVERTER ONLINE & WIN SOLAX POINTS!

1

Open your camera app and point your device at the QR code



2

Wait for the camera to recognize the QR code



3

Click banner or notification when it appears on the screen



4

Warranty registration page will be loaded automatically

