X1/X3-HAC

4.6 kW / 7.2 kW / 11 kW / 22 kW

Installation Manual

Version 1.0

www.solaxpower.com

eManual in the QR code or
at http://kb.solaxpower.com/

Safety

General Notice

1. Contents may be periodically updated or revised. SolaX reserves the right to make improvements or changes in the product(s) and the program(s) described in this manual without the prior notice.
2. The installation, maintenance and grid-related setting can only be performed by qualified personnel who:
   - Are licensed and/or satisfy state and local jurisdiction regulations;
   - Have good knowledge of this manual and other related documents.
3. Before installing the device, carefully read, fully understand and strictly follow the detailed instruction of the user manual and other related regulations. SolaX shall not be liable for any consequences caused by the violation of the storage, transportation, installation, and operation regulations specified in this document and the user manual.
4. Use insulated tools when installing the device. Individual protective tools must be worn during installation, electrical connection and maintenance.
5. Please visit the website www.solaxpower.com of SolaX for more information.

Descriptions of Labels

	UKCA mark of conformity		Caution, risk of electric shock
	Caution, risk of danger		The EV-Charger can be recycled.
	Do not dispose of the EV-Charger 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.

DANGER!

- Danger to life due to output and input high voltages in this device.
- Do not open the enclosure in any case without authorization from SolaX. Unauthorized opening will void the warranty and can cause lethal danger or serious injury due to electric shock.
- Do not use an extension cord on the EV-Charger, or it may cause a risk of fire or electric shock.
- Do not use the EV-Charger if the device has defects, cracks, abrasion, or shows other signs of damage.
- Disconnect the power supply to the EV-Charger before installation, maintenance and other operations.

WARNING!

- Keep away from flammable, explosive materials and humid or corrosive substance.
- The device is intended only for charging electric vehicles. Do not charge other devices.
- In case any emergency condition happens, 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.
- Do not touch live electrical parts of the EV-Charger, especially when during charging.

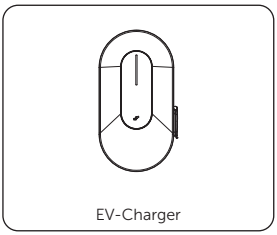
CAUTION!

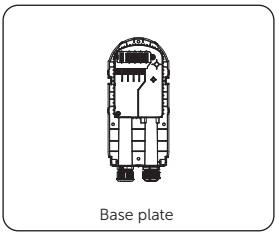
- Keep children away from the EV-Charger.
- During operation, the EV-Charger may become hot. There may be burn injuries caused by hot surface.
- Incorrect operation or misuse may result in: Injury or death to the operator or third parties; Damage to the device and other property of the operator; Inefficient operation of the device.

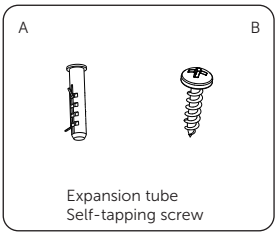
NOTICE!

- All operations shall be in compliance with local laws and regulations.
- Do not use cleaning solvents to clean any part of the EV-Charger. Clean the device with a clean, dry cloth to remove dust and dirt.
- All the product labels and nameplate on the EV-Charger shall be maintained clearly visible.

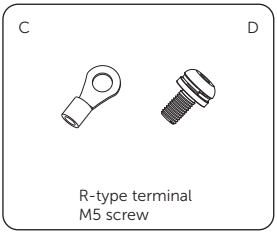
Packing List


EV-Charger

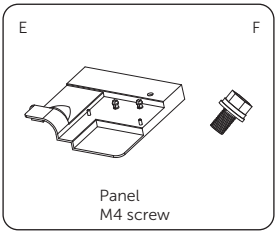

Base plate



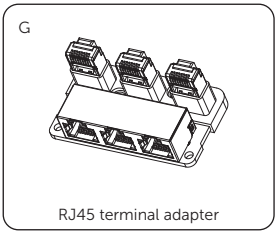
Expansion tube
Self-tapping screw



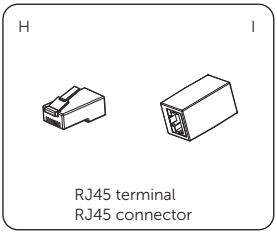
R-type terminal
M5 screw



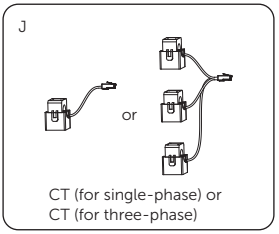
Panel
M4 screw



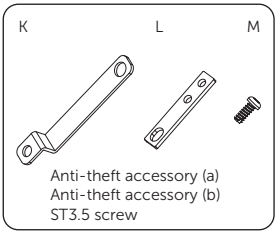
RJ45 terminal adapter



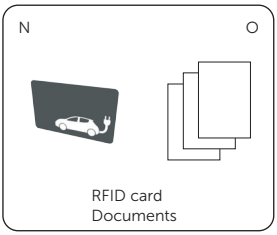
RJ45 terminal
RJ45 connector



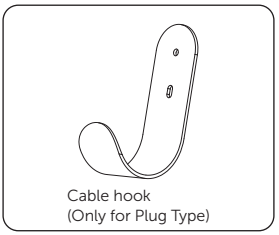
CT (for single-phase) or
CT (for three-phase)



Anti-theft accessory (a)
Anti-theft accessory (b)
ST3.5 screw



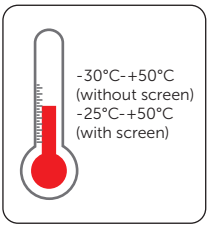
RFID card
Documents

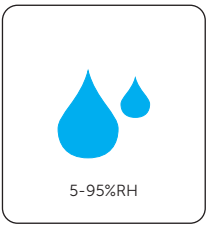

Cable hook
(Only for Plug Type)

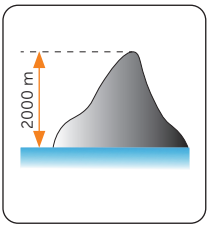
Item	Description	Quantity	Remark
/	EV-Charger	1	
/	Base plate	1	
A	Expansion tube	4 for Socket Type, 6 for Plug Type	For installation of the base plate and cable hook
B	Self-tapping screw	4 for Socket Type, 6 for Plug Type	For installation of the base plate and cable hook
C	R-type terminal	3 for single-phase, 5 for three-phase	For AC input connection

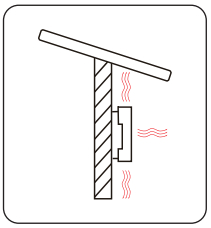
Item	Description	Quantity	Remark
D	M5 screw	4	For fixing the EV-Charger on the base plate
E	Panel	1	
F	M4 screw	1	For securing the panel
G	RJ45 terminal adapter	1	For communication connection
H	RJ45 terminal	4	
I	RJ45 connector	1	For extension connection of CT
J	CT	1	Single-phase CT for single-phase EV-Charger, three-phase CT for three-phase EV-Charger. The cable length of CT is 1 m. Only for connecting with the EV-Charger
K	Anti-theft accessory (a)	1	
L	Anti-theft accessory (b)	1	
M	ST3.5 screw	2	For securing anti-theft accessory (b)
N	RFID card	2	
O	Documents	/	
/	Cable hook	1	Only for Plug Type

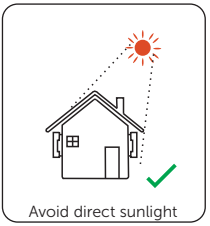
Installation Site





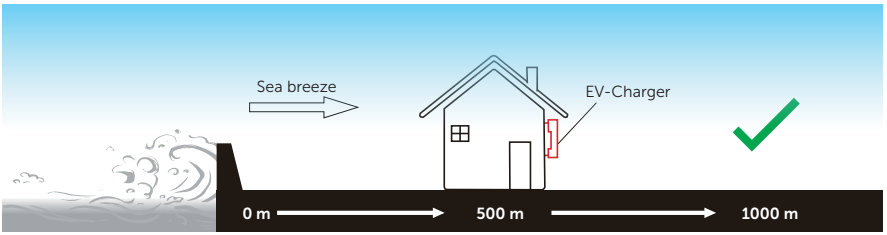


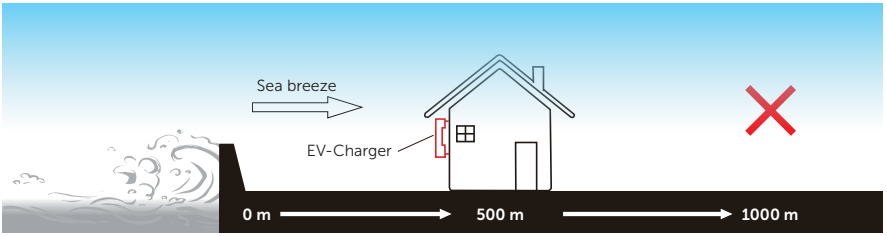




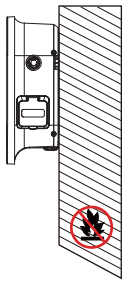
NOTICE!

- For outdoor installation, precautions against direct sunlight, rain exposure and snow accumulation are recommended.
- Exposure to direct sunlight raises the temperature inside the device. This temperature rise poses no safety risks, but may impact the device performance.



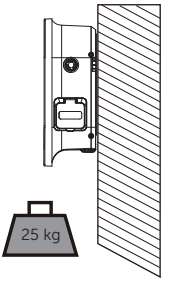


Installation Carrier

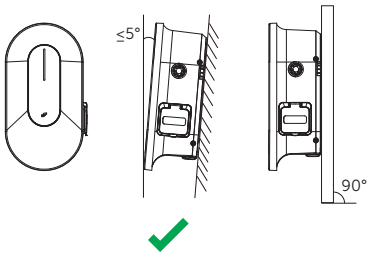


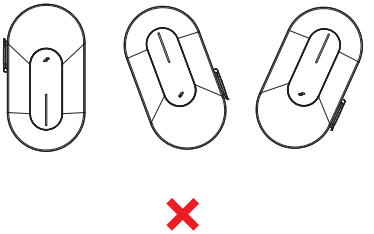
Fire resistant

Be suitable for the dimension of the EV-Charger (390 mm × 206 mm × 139 mm, also taking the charging cable and connector into consideration) and able to withstand the weight of 25 kg.

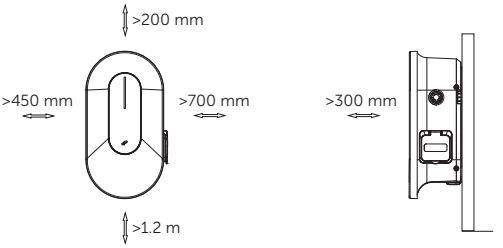


Installation Angle





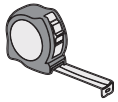
Installation Space



Installation Tools

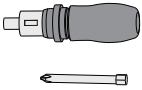
Hammer drill
(drill bit: Ø8 mm)

Marker

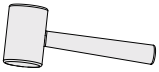


Measuring tape

Utility knife

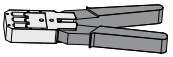


Torque screwdriver
(Phillips head: M4 / M5 / ST3.5 / ST4.8)

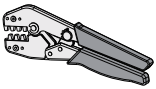


Rubber mallet

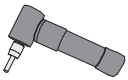
Wire stripper



Crimping tool
for RJ45

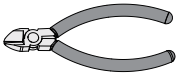


Crimping tool for
R-type terminal

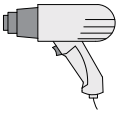


Electric screwdriver
(hexagonal head: M5)

Spirit level



Diagonal pliers



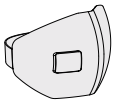
Heat gun

Heat shrink tubing
(Ø6 mm)

Safety gloves

Safety boots

Safety goggles



Anti-dust mask

Additionally Required Materials

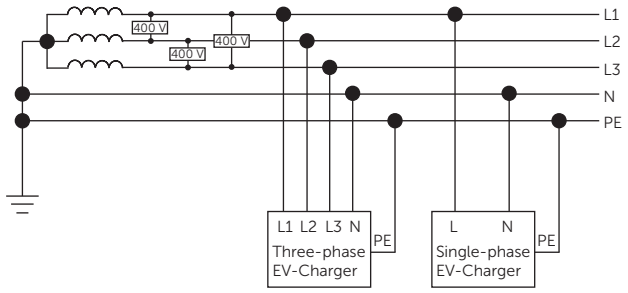
No.	Required Material	Type
1	RCBO *	Type A RCD with a trip current of ≤ 30 mA; 2P and rated current ≥ 25 A for 4.6 kW, 2P and rated current ≥ 40 A for 7.2 kW, 4P and rated current ≥ 20 A for 11 kW, 4P and rated current ≥ 40 A for 22 kW
2	AC input cable	Three-core copper wire for single-phase, five-core copper wire for three-phase; Outer diameter: 11-20.5 mm; Conductor cross-section for copper wire: ≥ 4 mm^2 for 4.6 kW and 11 kW, ≥ 6 mm^2 for 7.2 kW and 22 kW
3	Communication cable	Network cable CAT5 (better with RJ45); Conductor cross-section: 0.2 mm^2
4	Meter (Optional)	Contact with the installer for type recommendation
5	Padlock (Optional)	With a diameter ≤ 5.5 mm
6	RJ45 coupler (Optional)	One-to-two in-line coupler

* Please choose appropriate RCBO according to local regulations.

Supported Power Grid

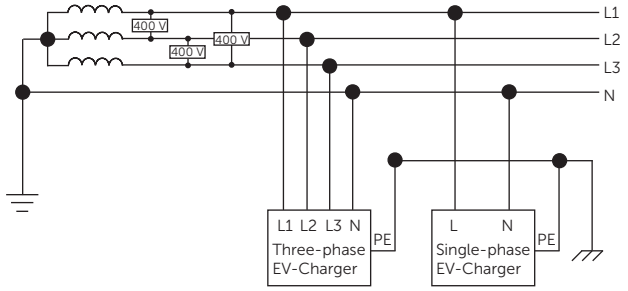
Models named without "-E" support TN-S, TT (High-voltage), TT (Low voltage) and IT; models named with "-E" support TN-C-S.

TN-S



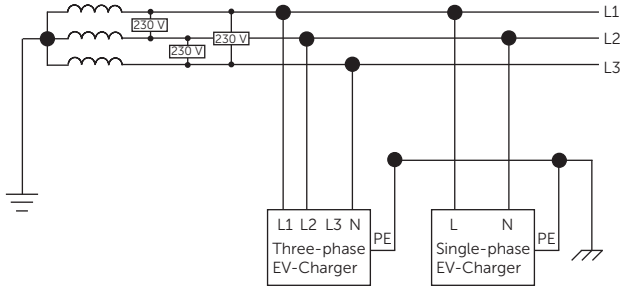
1. L-N: 230 V; L-L: 400 V 2. L-N: 220 V; L-L: 380 V

TT (High-voltage)

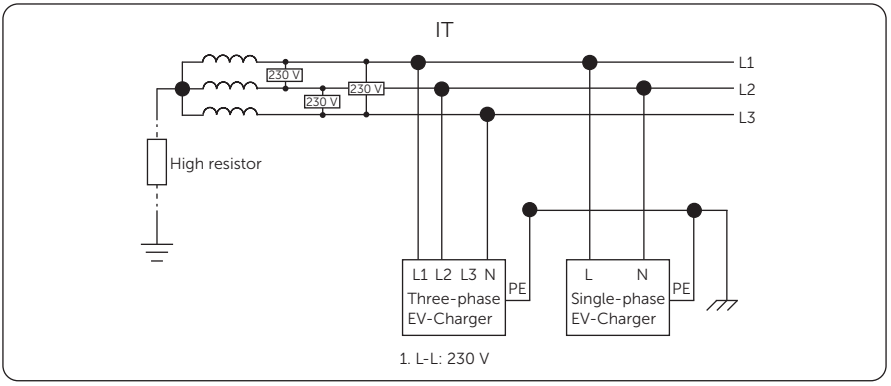


1. L-N: 230 V; L-L: 400 V 2. L-N: 220 V; L-L: 380 V

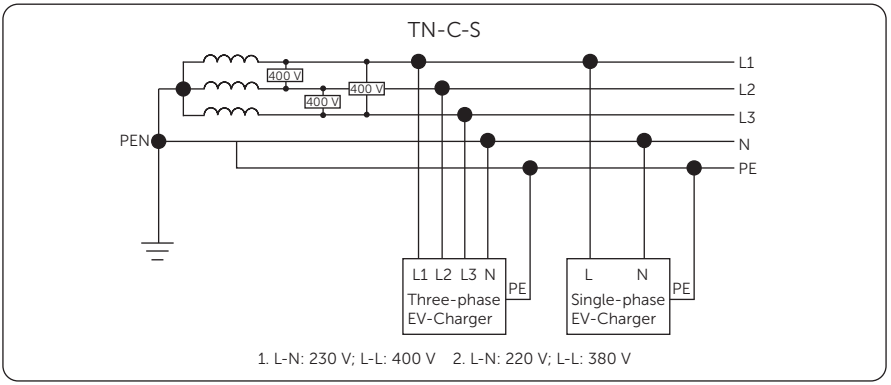
TT (Low-voltage)



1. L-L: 230 V



1. L-L: 230 V

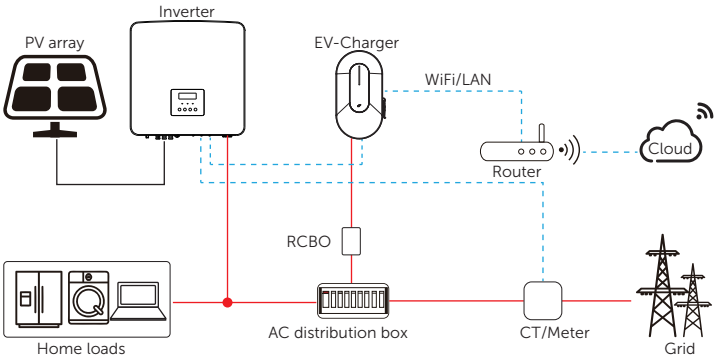


1. L-N: 230 V; L-L: 400 V 2. L-N: 220 V; L-L: 380 V

Installation and Wiring

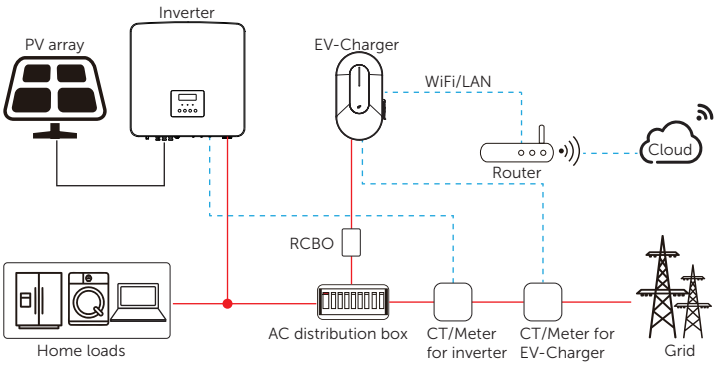
- Decide the application scenario before installation

- Solar Scene:
  1) Communication with Inverter



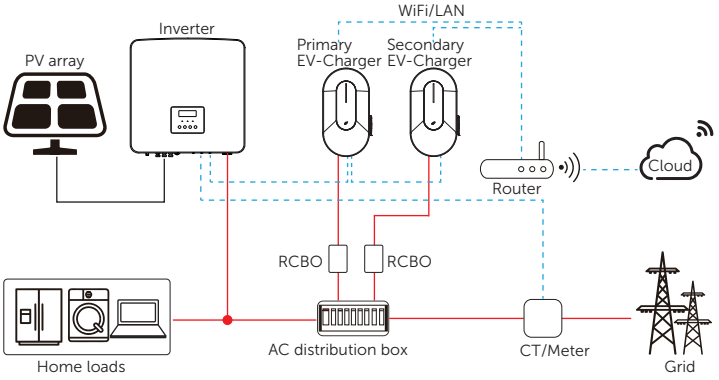
* If the system has zero injection requirement, the EV-Charger must communicate with the inverter.

- Solar Scene:
  2) Communication with CT/Meter

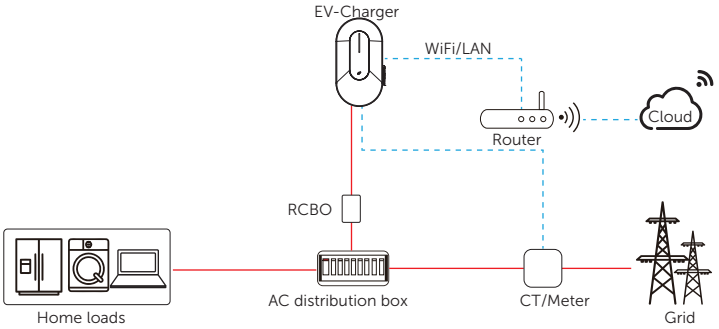


- Solar Scene:

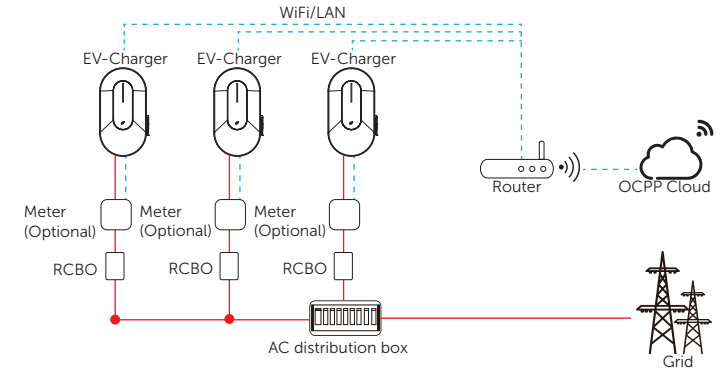
3) Parallel Connection (Take communication with inverter as an example)



- Standard Scene:

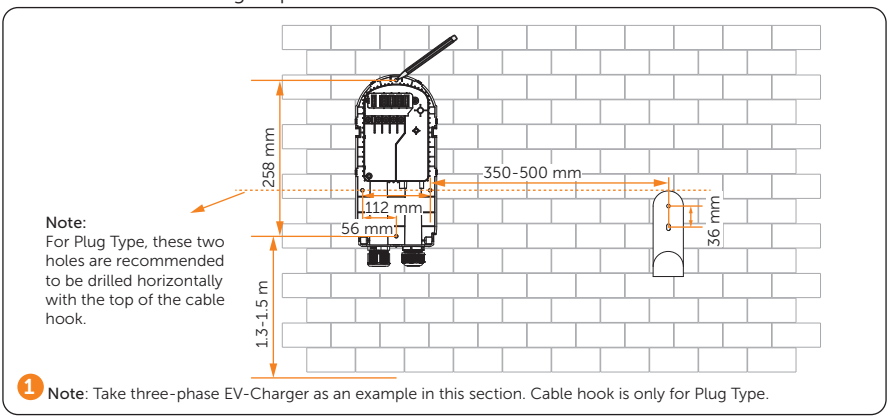


- OCPP Scene:

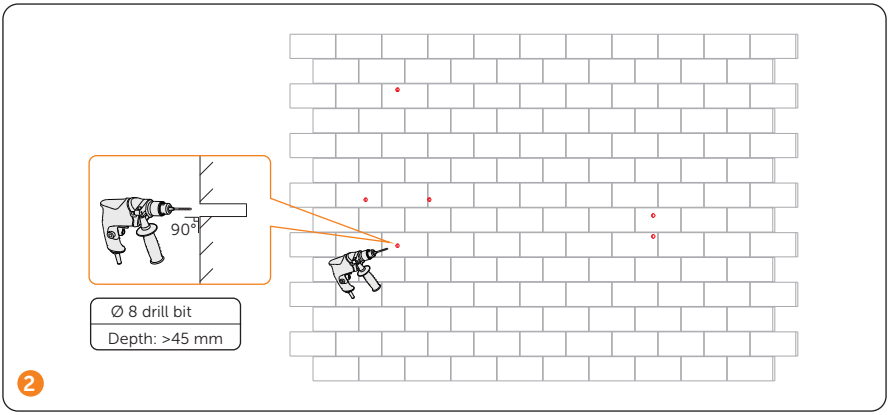


AC DC COM

- Installation and wiring steps



1 **Note**: Take three-phase EV-Charger as an example in this section. Cable hook is only for Plug Type.



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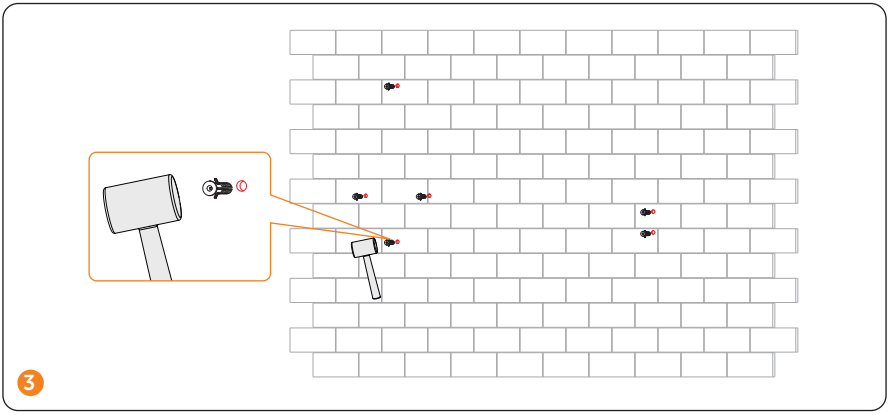

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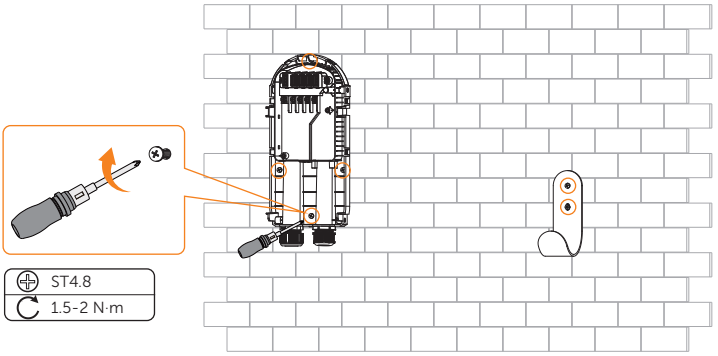
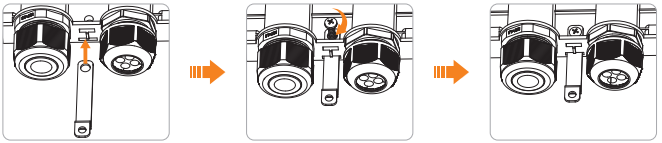


(Optional) If the user wants to install the padlock for safety reasons, install the anti-theft accessory (a) before tighten the screw at the bottom part of the base plate:



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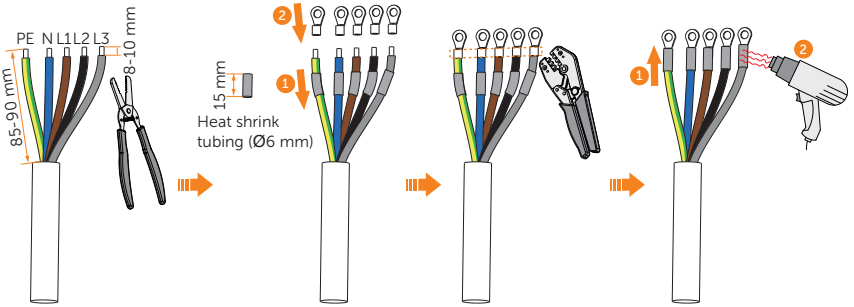

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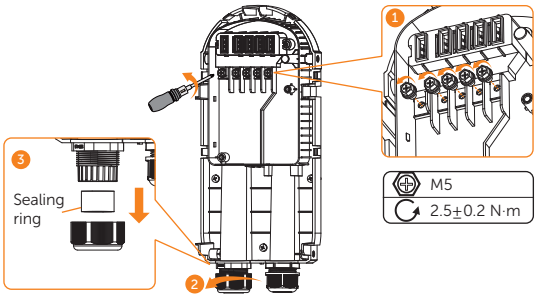

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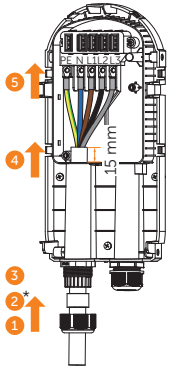
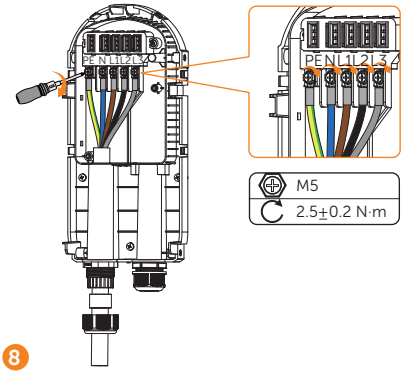


Note:
When the outer diameter of the AC input cable is:
11 mm-14 mm: with the sealing ring
14 mm-20.5 mm: without the sealing ring

7



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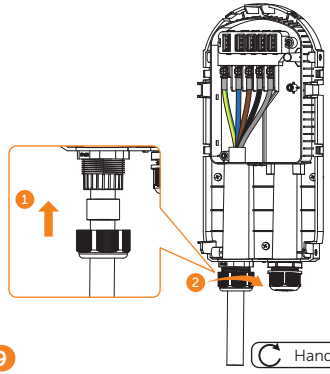

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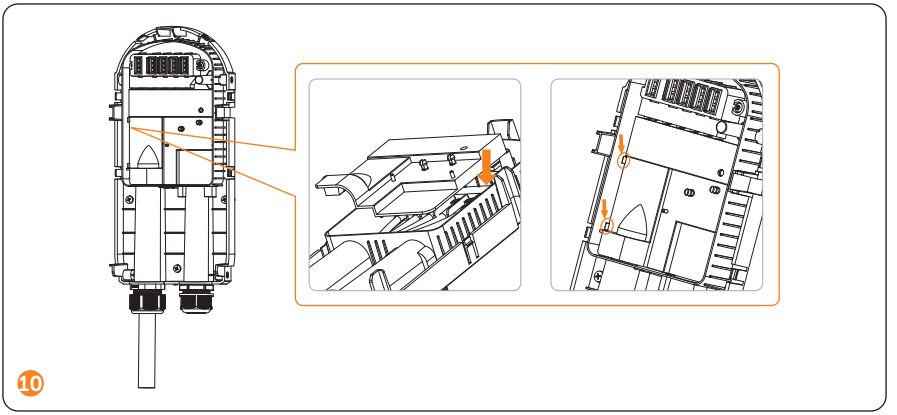
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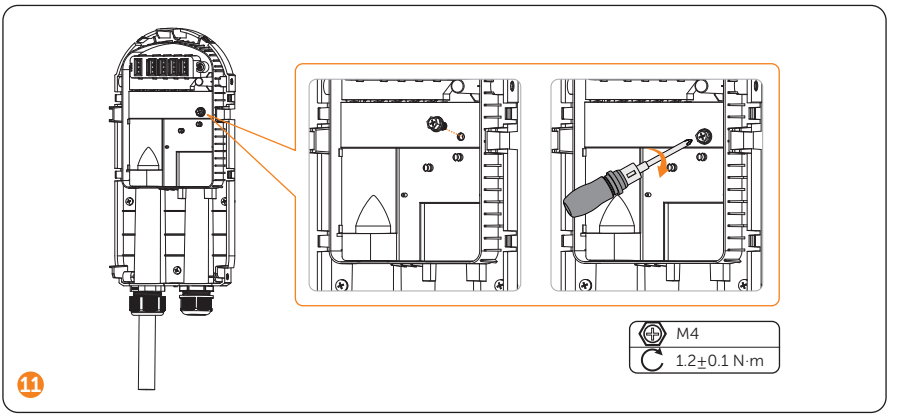
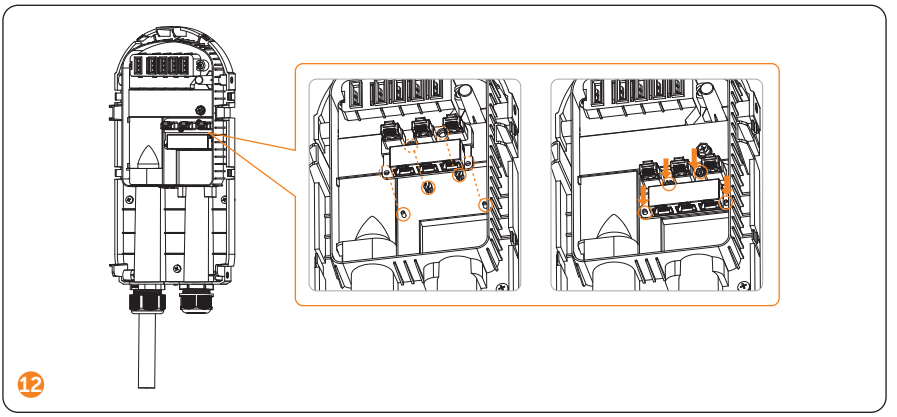
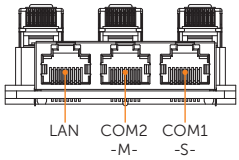

M4
1.2±0.1 N·m
11


12

Pin Definition of Communication Ports



1) White with orange stripes
2) Orange
3) White with green stripes
4) Blue
5) White with blue stripes
6) Green
7) White with brown stripes
8) Brown

- Pin Definition of COM1-S-:

Pin	1	2	3	4	5	6	7	8
Pin Definition	X	X	X	A1	B1	X	X	X

- Pin Definition of COM2-M-:

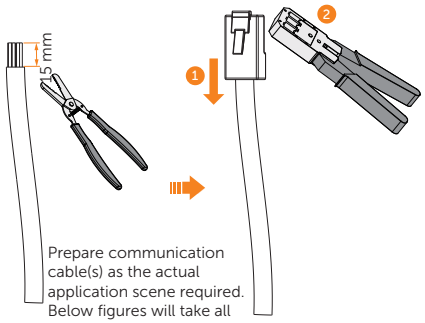
Pin	1	2	3	4	5	6	7	8
Pin Definition	L1_CT+	L1_CT-	L2_CT+	A2	B2	L2_CT-	L3_CT+	L3_CT-

Note:
1. PIN 3, 6, 7, 8 of COM2-M- is null for single-phase.
2. For A1 & B1 and A2 & B2, please refer to below table.

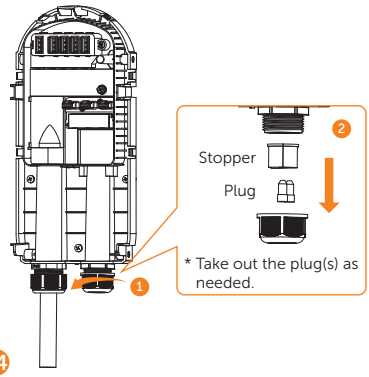
Port	Pin	Single EV-Charger	In parallel connection
COM1 -S-	A1 B1	Connecting inverter, Datahub or other master devices	As secondary EV-Charger
COM2 -M-	A2 B2	Connecting meter or other slave devices	As primary EV-Charger

NOTICE!

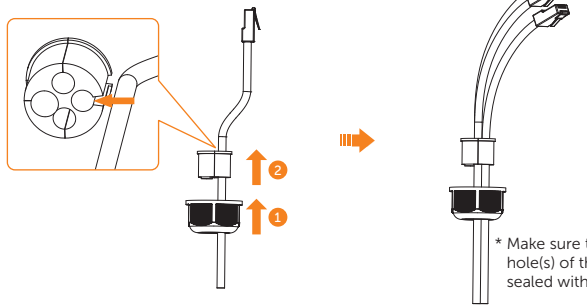
- When powered on after completing the installation, the system will automatically identify the grid data source of the grid side (Priority: Inverter > Meter > CT).



13 Prepare communication cable(s) as the actual application scene required. Below figures will take all ports connected as an example.

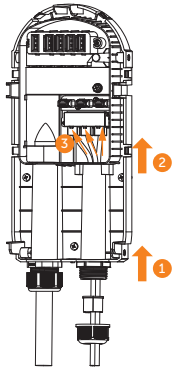


14



* Make sure the unused hole(s) of the stopper are sealed with the plug(s).

15



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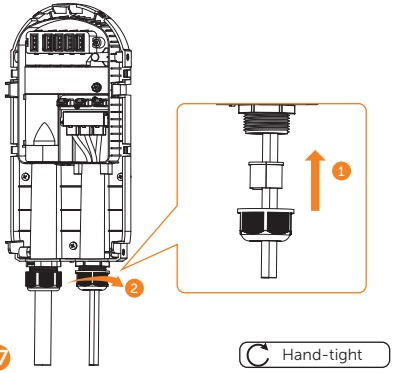
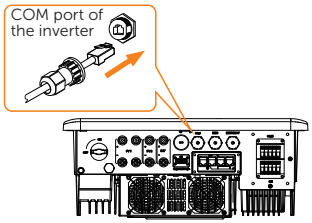


17

Hand-tight

Note:

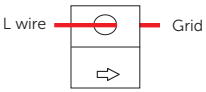
For Inverter side:



Inverter side (one example)

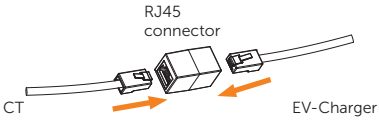
Connect the other end of the communication cable to the COM or RS485 port of the inverter.

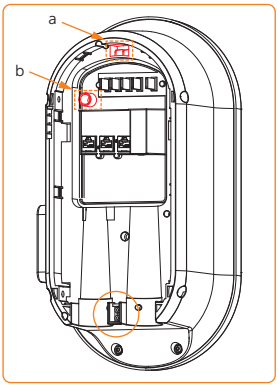
For CT side:

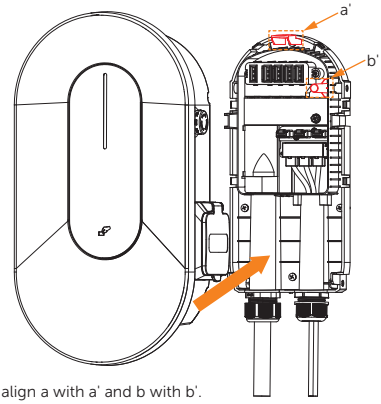


1. The arrow on the CT must point at the public grid.
2. When using the three-phase CT, please clip the CT clamps on the corresponding phases (CT-R must be connected to grid L1, CT-S connected to grid L2, CT-T connected to grid L3).

* If extended communication cable for CT is needed:

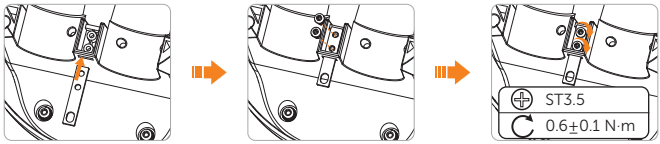




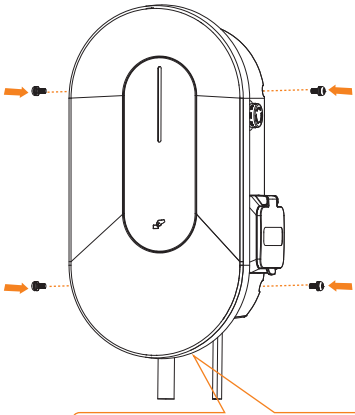


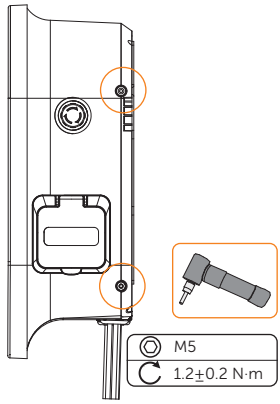
* When aligning the body with the base plate, align a with a' and b with b'.

(Optional) If the user wants to install the padlock for safety reasons, install the anti-theft accessory (b) before aligning the body with the base plate:

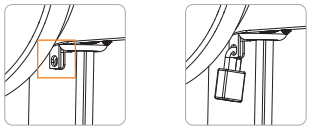


18





(Optional) If the user wants to install the padlock for safety reasons, hang the padlock after fixing the screws:



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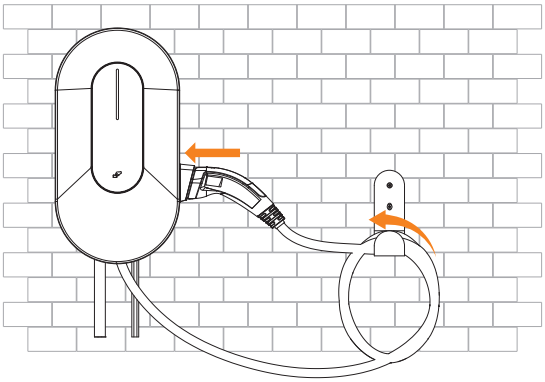
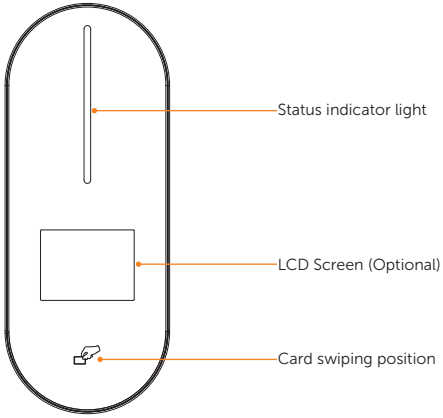


20 * For Plug Type.

Power on

- Turn on the RCBO.
- Check the status of the LED indicator:
  1. When the device is powered on, the buzzer will give a short sound, and the indicator light will be solid or breathing green ("Available" state) after three seconds by default. The EV-Charger has been successfully connected with network server if the indicator light is solid green and it is off-line if the light is breathing green.
  2. Then the system will start self-checking automatically. After the checking process, if there is any fault, the indicator light will be solid red ("Faulted" state), please check if it is correctly installed and connected.
  3. If it works normally:
     1) When the charging connector is not plugged, the indicator light will be solid or breathing green ("Available" state);
     2) When the charging connector is plugged in but the device is not charging, the indicator light will be solid blue ("Preparing" state);
     3) When the charging connector is plugged in and the device is in charging process, the indicator light will show as the "Charging" state (the colour will be displayed according to the application scene and charging mode and the flowing speed will be determined by the charging power.

Front Panel



Name	Definition
Status indicator light	The status light will be on according to the state of the EV-Charger. For details, please refer to below table.
LCD screen (Optional)	The information of the EV-Charger will be displayed. (For details, please refer to the user manual.)
Card swiping position	Swipe RFID card here.

Table: Description of the status indicator light

No.	State of the EV-Charger	Indicator light colour	Status of the light	Remark
1	Available	Green	Solid/ Breathing	The EV-Charger is powered on and available for usage. The EV-Charger is on-line when it has solid light, and off-line when it has breathing light.
2	Preparing	Blue	Solid	The EV-Charger is connected with the vehicle and waiting to start charging.
3	Charging	Solar - Green: Green Solar - Eco: Cyan Solar - Fast: Fuchsia Standard: Fuchsia Scheduled: Blue OCPP: Fuchsia	Flowing	The EV-Charger is in charging process. The flowing speed of the light is determined by the charging power. Different colours are displayed according to the application scene and charging mode.

No.	State of the EV-Charger	Indicator light colour	Status of the light	Remark
4	Finish	Cyan	Solid	The EV-Charger has completed charging.
5	Faulted	Red	Solid	The EV-Charger is in fault state. Please check the fault message on the App and refer to corresponding solutions in the user manual.
6	Unavailable	Yellow	Solid	The EV-Charger is not available for usage.
7	Scheduled	Blue	Flashing for 1 second	The charging connector of the EV-Charger is plugged in but it hasn't been the time for scheduled setting yet.
8	Reserved	Orange	Flashing for 1 second	The EV-Charger has been reserved by another user.
9	ChargPause	Same as the colour of Charging status	Stop flowing	The charging process is suspended. The light will stay in the current flowing position and flash for 1 second.
10	Update	Yellow	Flowing	The EV-Charger is remote upgrading. The light will be displayed based on the upgrading process.
11	CardActivation	Purple	Flashing for 0.5 second	The EV-Charger is waiting for card-swiping to activate the cards.
12	StartDelay	Blue	Flowing backwards	The EV-Charger is in the random delay starting process. Display according to the percentage of the remaining count down time to the total random delay time.

Wi-Fi Configuration

1 Scan the QR code to download SolaXCloud App.

Create a new account, log in and follow the instructions on the SolaXCloud APP or the App guide at https://www.solaxcloud.com/ to set the WiFi configuration.

Note:

* If the WiFi connection fails, users can connect to the WiFi signal named after the device registration number and visit the IP address http://192.168.10.10/ in a browser to configure Wi-Fi. (Account: "admin"; default password: the Registration No.)
* If users connect to the network server through LAN, there is no need to set the

2 WiFi configuration, as it will be automatically configured.

General Setting

Add device (For users who already have the App account)

1. Turn to the **Home** page or the **Device** page of the App and select the exact plant from the plant list on the upper left corner.
2. Touch the ⊕ icon on the upper right corner of the **Home** page or the **Device** page, then touch **Add device**.
3. Follow the instructions to add the EV-Charger and complete the device network configuration.

Note: The Registration No. can be found on the type label of the EV-Charger.

1

Enter the setting page of EV-Charger

<	Setting	X
Basic information		>
Charger setting		>
Advanced setting		>

2

Follow the path [**Device** > Select the exact plant from the plant list > Choose and touch the exact device from the **Device** list] to enter the setting page and complete the settings of the EV-Charger as needed.

Check and complete the basic settings of the EV-Charger

<	Charger Setting	X	
Activation mode		Plug&Charge	1)
Dynamic load balance		Disable	2)
Modbus Setting		70/9600	3)

3

1. Set the **Activation mode** (**Plug&Charge** by default).
2. Set the **Dynamic load balance** according to actual need.
3. If the EV-Charger is connected with Datahub, **Modbus Setting** should be done.

Check and complete the advanced settings of the EV-Charger

<	Advanced setting	X	
Application scene		Solar	1)
Charging phase		L1	2)
Three phase imbalance		Disable	
Parallel Setting		Disable	
Random charging delay		Disable	
Earth_Type		TN	3)

4

1. Set the **Application scene** (**Solar** by default).
2. If the EV-Charger is a single-phase one, the **Charging phase** should be set according to the actual scenario.
3. Check and set the **Earth_Type**.

Note: The instructions and screenshots in this section are based on V6.0.0 and taken only as examples, which may be slightly different from the actual display. For more details, please refer to the user manual.

Technical Data

- Model List

Models	4.6 kW	7.2 kW	11 kW	22 kW
Specific model list		X1-HAC-7P	X3-HAC-11P	X3-HAC-22P
		X1-HAC-7S	X3-HAC-11S	X3-HAC-22S
		X1-HAC-7P-L	X3-HAC-11P-L	X3-HAC-22P-L
	X1-HAC-4P	X1-HAC-7S-L	X3-HAC-11S-L	X3-HAC-22S-L
	X1-HAC-4P-B	X1-HAC-7P-B	X3-HAC-11P-B	X3-HAC-22P-B
	X1-HAC-4P-L	X1-HAC-7S-B	X3-HAC-11S-B	X3-HAC-22S-B
	X1-HAC-4P-L-B	X1-HAC-7P-L-B	X3-HAC-11P-L-B	X3-HAC-22P-L-B
		X1-HAC-7S-L-B	X3-HAC-11S-L-B	X3-HAC-22S-L-B
		X1-HAC-7P-E	X3-HAC-11P-E	X3-HAC-22P-E
		X1-HAC-7S-E	X3-HAC-11S-E	X3-HAC-22S-E

- General Data

Models	4.6 kW	7.2 kW	11 kW	22 kW
AC Nominal Input				
Phases/Lines	L+N+PE	L+N+PE	3P+N+PE	3P+N+PE
Voltage [V]	230	230	400	400
Frequency [Hz]	50/60; ±5	50/60; ±5	50/60; ±5	50/60; ±5
Grid Earth Type	TN, TT, IT			
AC Nominal Output				
Voltage [V]	230	230	400	400
Current [A]	20	32	16	32
Power [W]	4600	7200	11000	22000
Interface & Communication				
Communication interface	WiFi / Ethernet / Bluetooth / RS485×2 / Optional: 4G			
Protocol	OCPP 1.6j, Modbus TCP, Modbus RTU, Cloud API			
Communicate with vehicle	IEC 61851-1, ISO 15118 (Optional)			
Authentication	Plug & Charge / RFID (ISO-14443-A) / APP			
MID meter	External (Optional)			
HMI	RGB LED / APP / LCD (Optional)			
Remote control	APP & Web			
Application	Residential / Destination place / Public			
RFID	13.56MHz/1.1dBμA/m@3m			

Models	4.6 kW	7.2 kW	11 kW	22 kW
General Data				
Housing Material	PC			
Installation Method	Wall-mounted (Optional: pedestal-mounted)			
Charging Outlet	Socket Type (Socket-outlet) / Plug Type (Charging cable with connector)			
Cable Length [m]	6.5 (for Plug Type)			
Operating Ambient Temperature Range [°C]	-30 to +50 (without screen) / -25 to +50 (with screen)			
Storage Temperature [°C]	-40 to +60			
Working Humidity	5%~95% without condensation			
Working Altitude [m]	<2000			
Ingress Protection	IP65 for Plug Type, IP54 for Socket Type			
Impact Resistant	IK10 for outer shell, IK08 for screen			
Protective Class	Class Ⅰ			
Cooling Method	Natural cooling			
Application Site	Indoor/Outdoor			
Dimension (W×H×D) [mm]	390×206×139			
Net Weight [kg]	5 for Plug Type	3 for Socket Type, 5 for Plug Type	3 for Socket Type, 6.5 for Plug Type	3 for Socket Type, 6.5 for Plug Type
Communication Info				
Communication Mode 1	WiFi			
EIRP Power	18.93 dBm (Measured Max. Average)			
Frequency	2412~2472 MHz			
Antenna Gain	2.83 dBi			
Antenna Type	Rod antenna			
Wireless Mode	802.11 b/g/n			
Communication Mode 2	LAN			
Ethernet	10/100 M (DHCP)			
Communication Mode 3	Bluetooth			
Bluetooth Version	5.0 (BLE)			
BT Modulation Type	GFSK			
Antenna Configuration	Single Transmitting (1T1R)			
Antenna Type	Rod antenna			
Antenna Gain or Antenna Spec	2.83 dBi			

- Security & Protection

Models	4.6 kW	7.2 kW	11 kW	22 kW
Multiple Protection				
Over/Under voltage protection	Yes			
Overload protection	Yes			
Short circuit 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			
Cable protection	Cable Lock (APP control)			
Relay protection	Relay weld detection			
Safety Standard	IEC61851-1; IEC62196-2			
Built-in PEN Fault Technology **	According to BS 7671:2018 requirements			

* 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.
** Only for models named with "-E".

Contact Information

UNITED KINGDOM

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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 or use your mobile phone to scan the QR code to complete the online warranty registration.

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

SolaX Power Network Technology (Zhejiang) Co., Ltd.

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