

1 Safety

1.1 General Safety

The series EV-Charger has been meticulously designed and thoroughly tested to comply with the relevant state and international safety standards. Nevertheless, like all electrical and electronic equipment, safety precautions must be observed and followed during the installation of the EV-Charger to minimize the risk of personal injury and ensure a safe installation.

Please thoroughly read, comprehend, and strictly adhere to the comprehensive instructions provided in the user manual and any other relevant regulations prior to the installation of the EV-Charger. The safety instructions in this document serve as supplementary guidelines to local laws and regulations.

SolaX shall not be liable for any consequences resulting from the violation of the storage, transportation, installation, and operation regulations outlined in this document. Such consequences include, but are not limited to:

- EV-Charger damage caused by force majeure events, such as earthquakes, floods, thunderstorms, lightning, fire hazards, volcanic eruptions, and similar events.
- EV-Charger damage due to human causes.
- Usage or operation of the EV-Charger in violation of local policies or regulations.
- Failure to comply with the operation instructions and safety precautions provided with the product and in this document.
- Improper installation or usage of the EV-Charger in unsuitable environmental or electrical conditions.
- Unauthorized modifications made to the product or its software.
- EV-Charger damage occurring during transportation by the customer.
- Storage conditions that do not meet the requirements specified in this document.
- Installation and commissioning performed by unauthorized personnel who lack the necessary licenses or do not comply with state and local regulations.

1.2 Safety Instructions

SAVE THESE IMPORTANT SAFETY INSTRUCTIONS. Failure to follow these safety instructions may result in damage to the EV-Charger and injury or even loss of life.

 **DANGER!**

- Danger to life due to output and input high voltages in this device.
- Do not attempt to open the enclosure without authorization from SolaX. Unauthorized opening of the enclosure will void the warranty and can result in 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, cut off all input and output power supply immediately.
- 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.
- Keep all product labels and the nameplate on the EV-Charger clearly visible and well-maintained.

NOTICE!

- Only connect the EV-Charger to the grid with the permission of the local utility grid company.

2 Product Overview

2.1 Product Introduction

The A1-HAC series are AC EV charger and intended only for charging electric vehicles. It should be installed in a fixed location and connected to the AC supply. The EV-Charger can communicate with other devices or systems (inverter, meter, CT, third-party charger management platform, etc.) to realize intelligent control of charging process. For details, please refer to "[6.1 Decide Application Scenario](#)".

2.2 Supported Power Grid

There are different ways of wiring for different grid systems; shown as below:

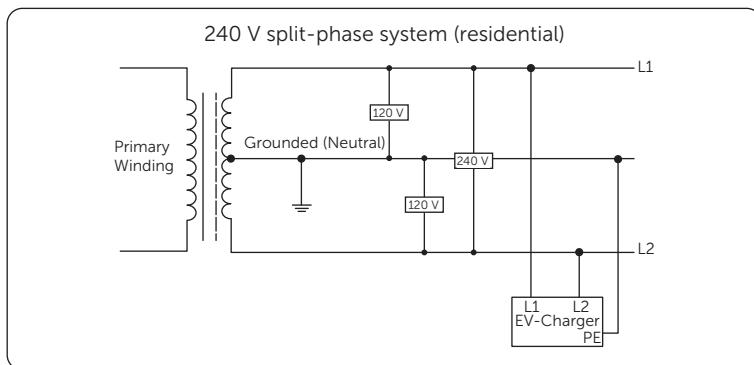


Figure 2-1 Supported power grid - 240 V split-phase system

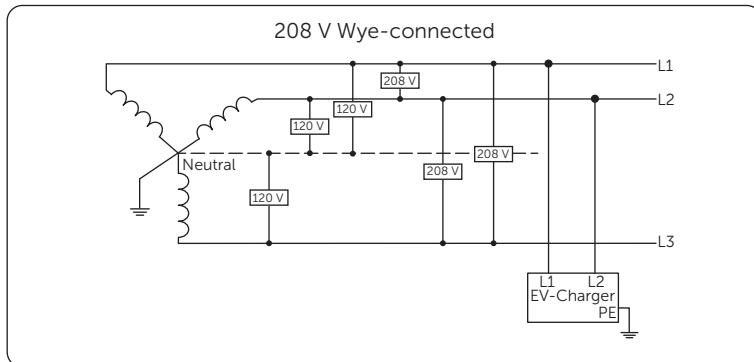


Figure 2-2 Supported power grid - 208 V Wye-connected

2.3 Appearance

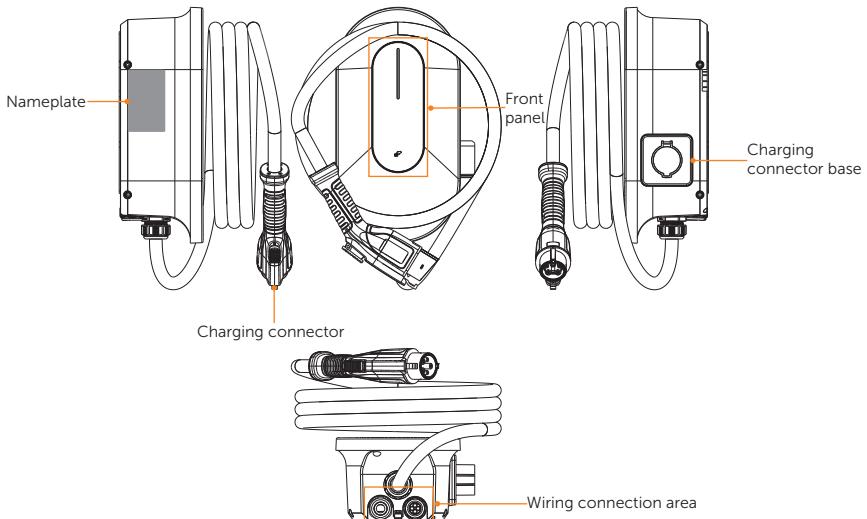


Figure 2-3 Appearance

Table 2-1 Description of appearance

Item	Description
Nameplate	Nameplate clearly identifies the device type, serial number, specific parameters, certification, etc.
Front panel	Including LED indicator and card swiping position. LED indicator indicates the operating status of the EV-Charger. Card swiping position is for swiping RFID card.
Charging connector base	Connector holder
Wiring connection area	Including AC input terminal (for AC input connection) and communication terminal (for communication connection).
Charging connector	Charging connector for connecting EV.

2.3.1 Dimensions

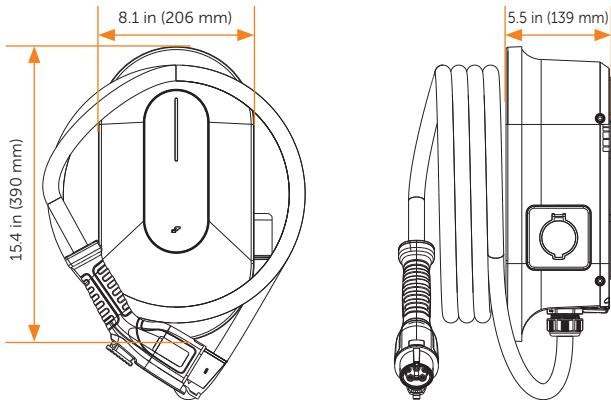


Figure 2-4 Dimensions

2.3.2 Front Panel

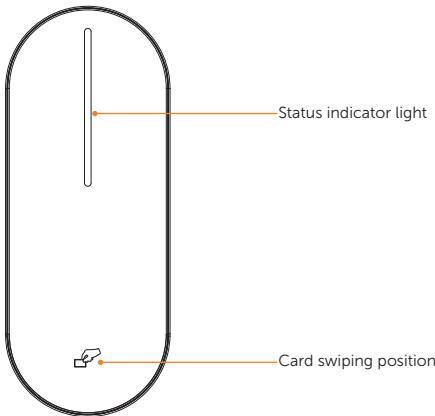


Figure 2-5 Front Panel

Table 2-2 Definition of 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 " 2.3.3 States ".
Card swiping position	Swipe RFID card here.

2.3.3 States

The states of this series of EV-Charger are described as below:

Table 2-3 States

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.
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 " 11.2 Troubleshooting ".
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.

No.	State of the EV-Charger	Indicator light colour	Status of the light	Remark
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.

2.4 Symbols on the Label

Table 2-4 Description of symbols

Symbol	Description
	ETL certification
	FCC 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.

FCC conformity

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC warning:

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following

measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

2.5 Principle Circuit Diagram

The principle design of the EV-Charger is shown in the figure below:

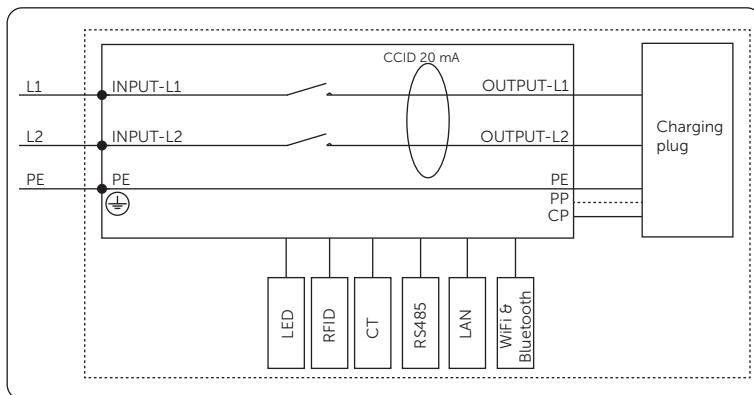


Figure 2-6 Principle Circuit Diagram

3 Transportation and Storage

If the EV-Charger is not put into use immediately, the transportation and storage requirements need to be met:

Transportation

- Observe the caution signs on the packaging of EV-Charger before transportation.
- Pay attention to the weight of EV-Charger. Be cautious to avoid injury when carrying the EV-Charger.
- Wear protective gloves when carrying the equipment by hand to prevent injuries.
- When lifting up the EV-Charger, hold the bottom position of the EV-Charger. Keep it horizontal in case of falling down.



Figure 3-1 Caution signs on the packaging

Storage

- The EV-Charger must be stored indoors.
- Do not remove the original packaging material and check the outer packaging material regularly.
- The storage temperature should be between -40°F to +140°F (-40°C and +60°C). The humidity should be between 5%RH and 65%RH.
- Stack the EV-Charger in accordance with the caution signs on the carton to prevent their falling down and device damage. Do not place it upside down.

4 Preparation before Installation

4.1 Selection of Installation Location

The installation location selected for the EV-Charger is quite critical in the aspect of the guarantee of device safety, service life and performance. It has the Type 3R per UL 50E enclosure type, which allows it to be installed outdoor. The installation position shall be convenient for wiring connection, operation and maintenance.

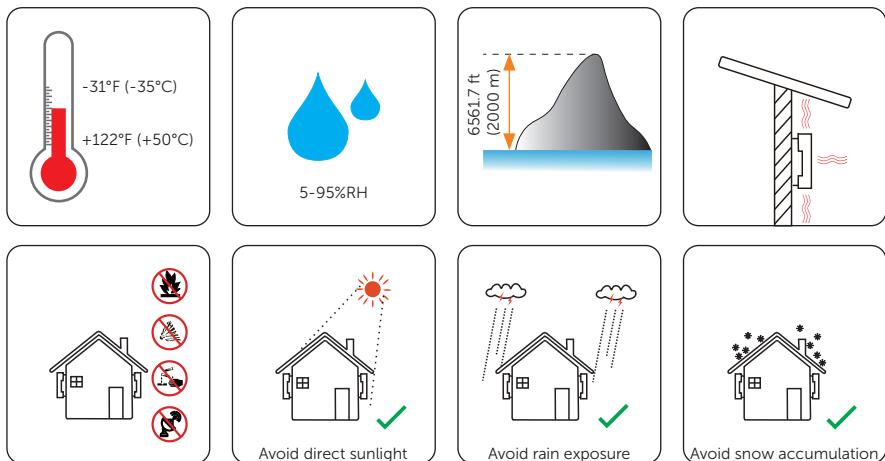
NOTICE!

- When 7.6 kW and 9.6 kW models are installed with a NEMA outlet, they should be used only indoors.

4.1.1 Environment Requirement

Make sure the installation environment meets the following conditions:

- The ambient temperature: -31°F to +122°F (-35°C to +50°C).
- The relative humidity shall be between 5-95%RH.
- Do not install the EV-Charger in the areas where the altitude exceeds 6561.7 ft (2000 m).
- Install the EV-Charger in a well-ventilated environment for heat dissipation. It is recommended to install an awning over the EV-Charger if it is installed on a support outdoor.
- Do not install the EV-Charger in areas with flammable, explosive and corrosive materials or near antennas.
- Avoid direct sunlight, rain exposure and snow accumulation.



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.
- Install the EV-Charger at least 1640.4 ft (500 m) away from the coast and avoid sea breeze directly hit.

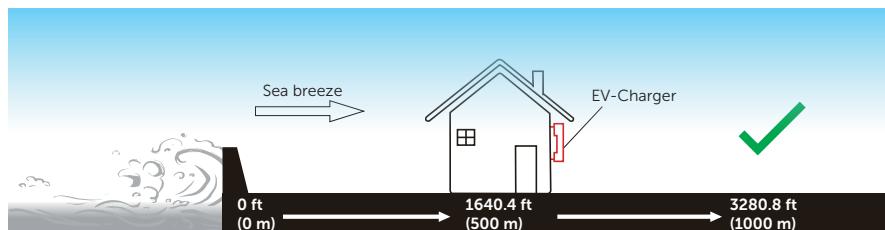


Figure 4-1 Recommended installation position

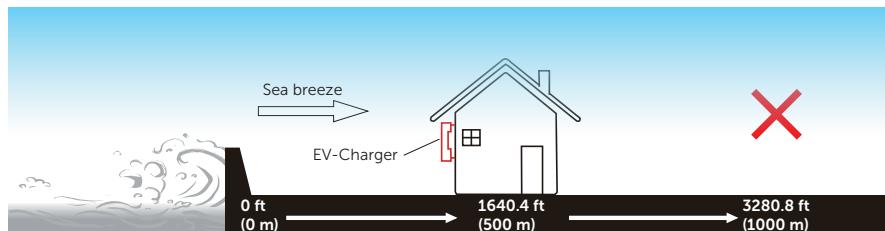


Figure 4-2 Incorrect installation position

4.1.2 Installation Carrier Requirement

The installation carrier must be made of a non-flammable material, such as solid brick, concrete, etc. and be capable of supporting the weight of the EV-Charger and suitable of the dimensions of the EV-Charger. If the wall strength is not enough (such as wooden wall, the wall covered by a thick layer of decoration), it must be strengthened additionally.

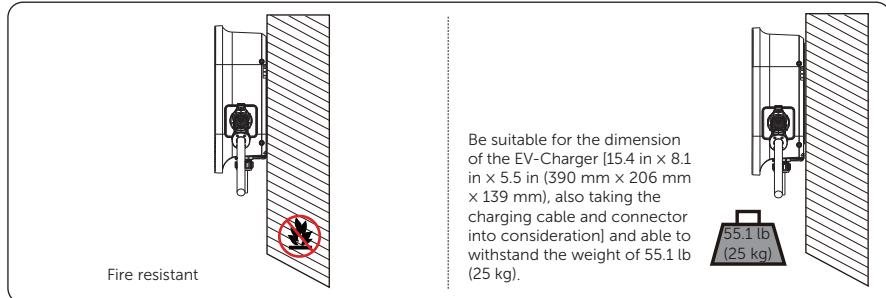


Figure 4-3 Installation carrier requirement

The EV-Charger can also be mounted on EVC pedestal provided by SolaX. For details, please refer to the quick installation guide of the pedestal.

4.1.3 Clearance Requirement

To guarantee proper heat dissipation and ease of disassembly, the minimum space around the EV-Charger must meet the standards indicated below.

In areas with high ambient temperatures, increase the clearances and provide adequate fresh air ventilation if feasible.

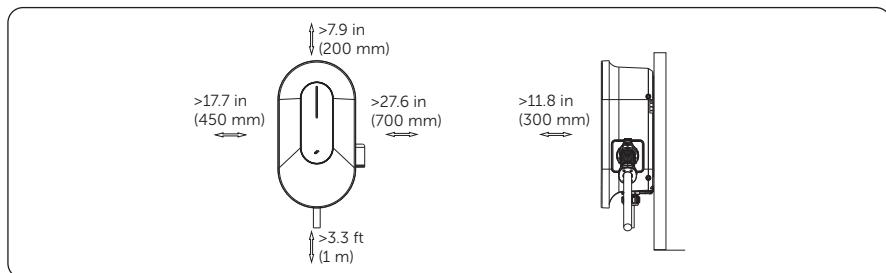
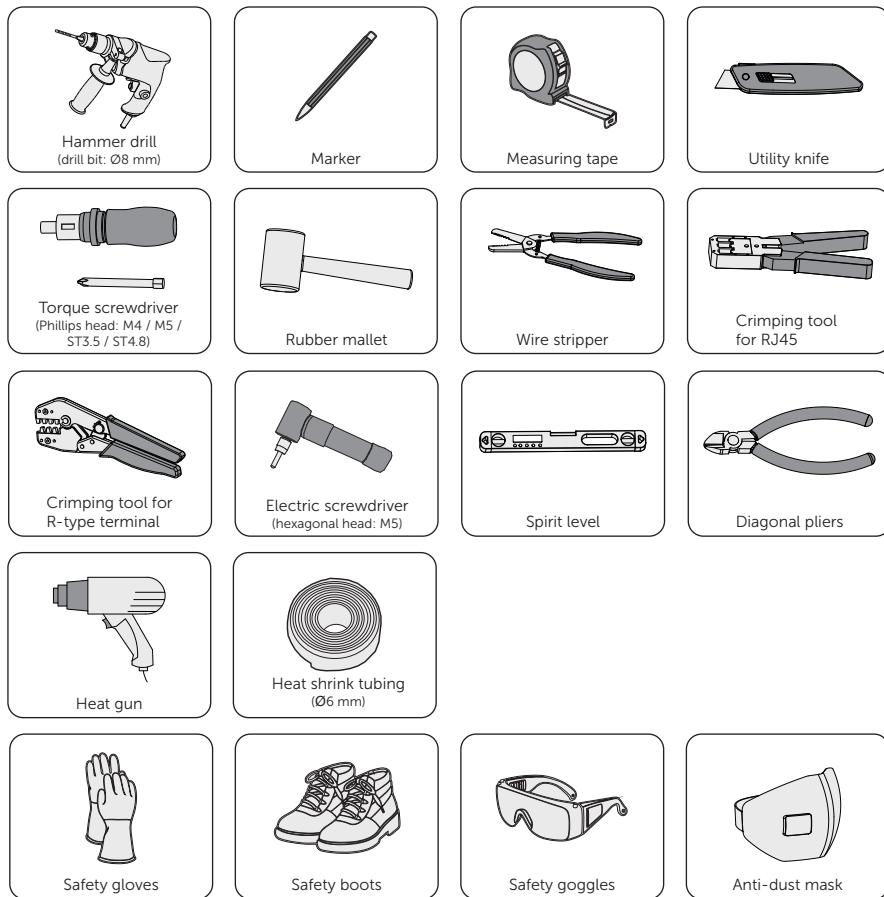


Figure 4-4 Clearance requirement

4.2 Tools Requirement

Installation tools include but are not limited to the following recommended ones. If necessary, use other auxiliary tools on site. Please note that the tools used must comply with local regulations.



4.3 Additionally Required Materials

Table 4-1 Additionally required materials

No.	Required Material	Type
1	Circuit Breaker	<p>CAUTION: The EV-Charger is a continuous load device. The circuit must be rated for 125% of the maximum load.</p> <p>2P and rated current ≥ 40 A for 7.6 kW, 2P and rated current ≥ 50 A for 9.6 kW, 2P and rated current ≥ 60 A for 11.5 kW.</p> <p>Ensure the electrical panel supports a 240 V dedicated circuit with a new, dedicated, two-pole circuit breaker.</p> <ul style="list-style-type: none"> • For NEMA installation, use a GFCI circuit breaker. • For a hard-wired installation, use a GFCI or non-GFCI circuit breaker.
2	AC input cable (For hard-wired installation)	Copper wire, 190°F (90°C), 8 AWG (8 mm ²) for grounding wire and 2 x 6 AWG (13 mm ²) for phase wire
3	Communication cable	Network cable CAT5; Conductor cross-section: 24 AWG (0.2 mm ²)
4	Meter (Optional)	Contact with the installer for type recommendation
5	Padlock (Optional)	With a diameter ≤ 0.2 in (5.5 mm)
6	RJ45 coupler (Optional)	One-to-two in-line coupler

* Please choose appropriate circuit breaker according to local regulations.

4.4 NEMA Outlet

For 7.6 kW and 9.6 kW models, an AC input power cable is provided with the device upon delivery and a NEMA outlet is needed for the NEMA installation.



WARNING!

- Switch off the circuit breaker of the electrical outlet before installation.

The NEMA outlet should be matched with the EV-Charger. It is either a NEMA 14-50 or NEMA 6-50 type based on the specific delivery.

Please verify whether the outlet matches your device if you already have one and ensure that it complies with local electrical codes and regulations and has a designated circuit breaker and appropriately dimensioned wires.

If you do not have a NEMA outlet yet, choose and install one that matches with your EV-Charger.

Preparation before Installation

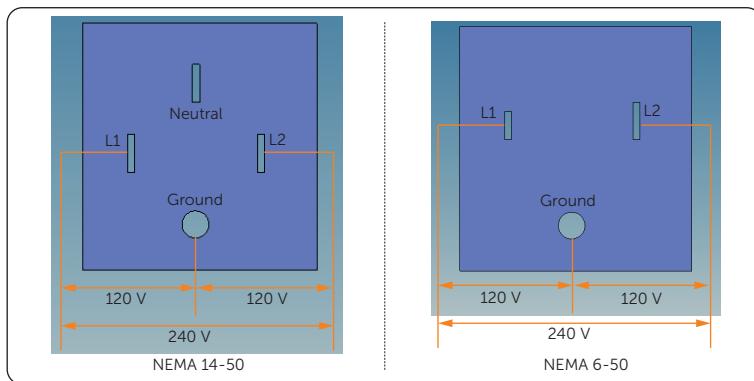


Figure 4-5 NEMA outlet

When install the outlet, please:

- Make sure that the ground pin is facing down as shown in above figure.
- Make sure that you have get the permission for this installation.
- The NEMA outlet must be placed on the down-left side of the EV-Charger and close enough to it for the input power cable to plug in. The recommended installation height of the outlet is shown as below.
- The length of the input power cable is 11.8 in (300 mm). Make sure the cable has a slight curve and not stretched when plug in.

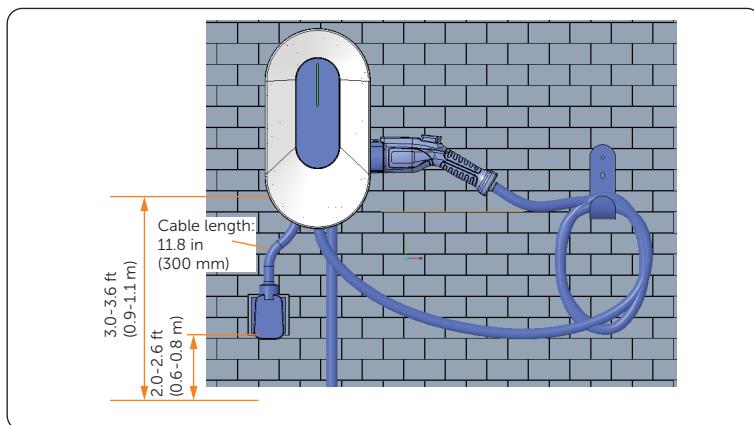


Figure 4-6 The location of NEMA outlet

5 Unpacking and Inspection

5.1 Unpacking

- The EV-Charger undergoes 100% testing and inspection before delivery. However, damages may still occur during transportation. Before unpacking, please carefully check the external packaging for any signs of damage, such as punctures or cracks.
- Unpacking the EV-Charger according to the following figure.

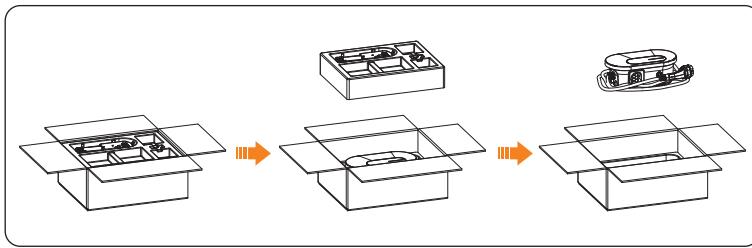
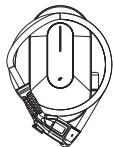


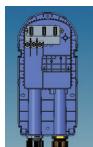
Figure 5-7 Unpacking the EV-Charger

- Properly handle all the packaging materials in case they may be reused for storage and transportation of the EV-Charger in the future.
- Upon opening the package, check whether the EV-Charger is intact and whether all accessories are included. If any damage is found or any parts are missing, contact your dealer immediately.

5.2 Scope of Delivery



EV-Charger



Base plate



Expansion tube
Self-tapping screw



C



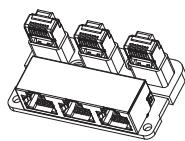
M5 screw

D



M25 to 3/4 inch adapter

E



RJ45 terminal adapter

F

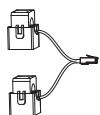


RJ45 terminal
RJ45 connector

G

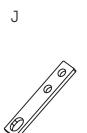


H



CT

I



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

L

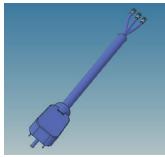


RFID card
Documents

M



N



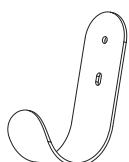
Input power cable
(for 7.6 kW & 9.6 kW models)

O



M27 to 1 inch adapter
R-type terminal
(for 11.5 kW models)

P



Cable hook

Table 5-1 Packing list

Item	Description	Quantity	Remark
/	EV-Charger	1	
/	Base plate	1	
A	Expansion tube	6	For installation of the base plate and cable hook
B	Self-tapping screw	6	For installation of the base plate and cable hook
C	M5 screw	4	For fixing the EV-Charger on the base plate
D	M25 to 3/4 inch adapter	1	For communication connection
E	RJ45 terminal adapter	1	For communication connection
F	RJ45 terminal	4	
G	RJ45 connector	1	For extension connection of CT
H	CT	1	The cable length of CT is 11.8 in (300 mm). Only for connecting with the EV-Charger
I	Anti-theft accessory (a)	1	
J	Anti-theft accessory (b)	1	
K	ST3.5 screw	2	For securing anti-theft accessory (b)
L	RFID card	2	
M	Documents	/	
N	Input power cable	1	For AC input connection for 7.6 kW and 9.6 kW models
O	M27 to 1 inch adapter	1	For AC input connection of 11.5 kW models
P	R-type terminal	3	
/	Cable hook	1	

NOTICE!

- Refer to the actual delivery for each specific model.

6 Installation and Wiring

WARNING!

- Only qualified personnel are allowed to perform the mechanical installation in accordance with local laws and regulations.
- Check the existing power cables or other piping in the wall to prevent electric shock or other damage.
- Use insulated tools and wear personal protective equipment throughout the installation and maintenance process.

CAUTION!

- During installation, always be cautious about the weight of the EV-Charger. Improper lifting or dropping of the EV-Charger may result in personal injury.

NOTICE!

- Install the EV-Charger at a maximum back tilt of 5 degrees and avoid it being forward tilted, side tilted, or upside down.

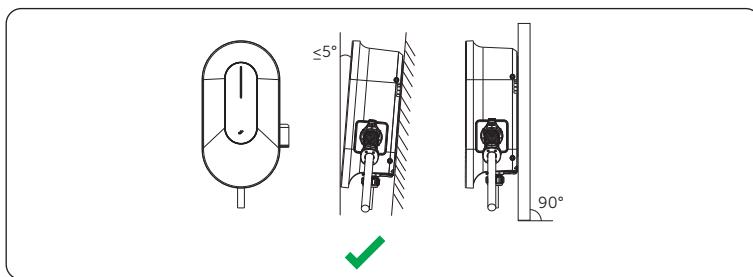


Figure 6-1 Correct installation

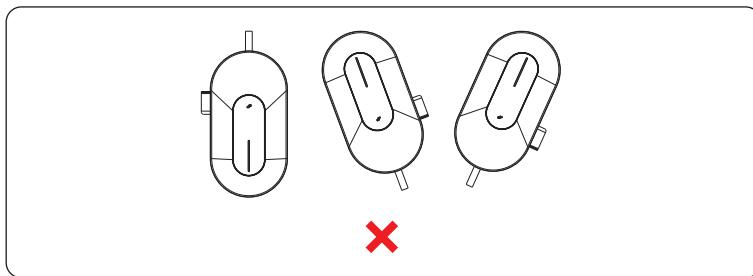


Figure 6-2 Incorrect installation