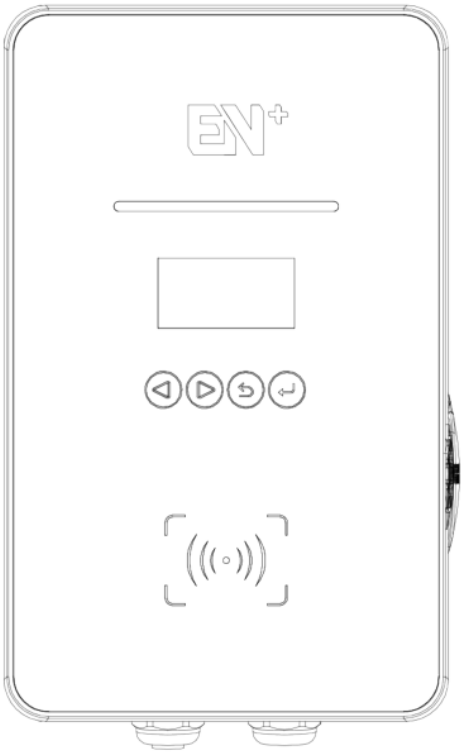
User Manual



AC7000-BE-24

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Before any operation, please read the user manual carefully to understand the correct use of the device. After reading, please keep the user manual for future review.

Warning

The input and output voltages of this device are dangerous high voltage, which can endanger human life safety. Please strictly observe all warnings and operating instructions on the device and in the manual. Unauthorized and non-professional service personnel should not remove the cover of this device.

Preface

Thank you for your support on our products, our company focus on new energy field of electric vehicle charging, dedicated to provide customers with excellent charging device and complete solutions.

The EV chargers have the characteristics of advanced function, steady performance, wide application range and strong practicability, winning a good reputation in the industry.

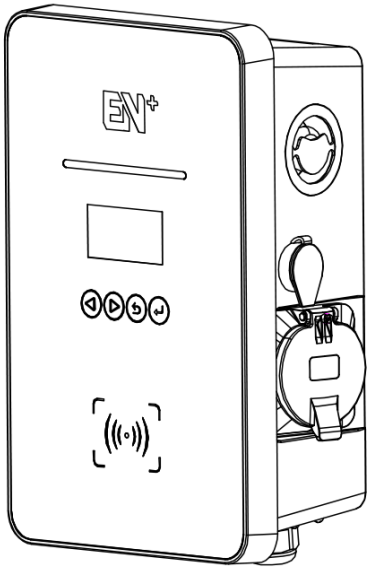
Safety Instruction

1) Keep the explosive or flammable materials, chemicals, vapors and other hazard objects away from the charger.
2) Keep the charging socket clean and dry. If dirty, please wipe with clean dry cloth. Touch the socket core is strictly forbidden when power on.
3) Do not use the charger in case the device has defects, crack, abrasion, bare leakage and so on. Please contact the working staff in case of above conditions.
4) Do not attempt to dissemble, repair, refit the charger. If necessary, please contact the working staff. Improper operation will result in device damage, electric leakage, etc.
5) In case any abnormal condition happens, please press the emergency stop button immediately, cut off all input and output power supply.
6) Please make charging cautiously in raining or lighting weather.
7) The children should not get close to or use the charger to avoid being hurt.
8) During the charging, the EV is not allowed to drive. Charging only when the EV stops still. For Hybrid car, charging only when switching the engine off.

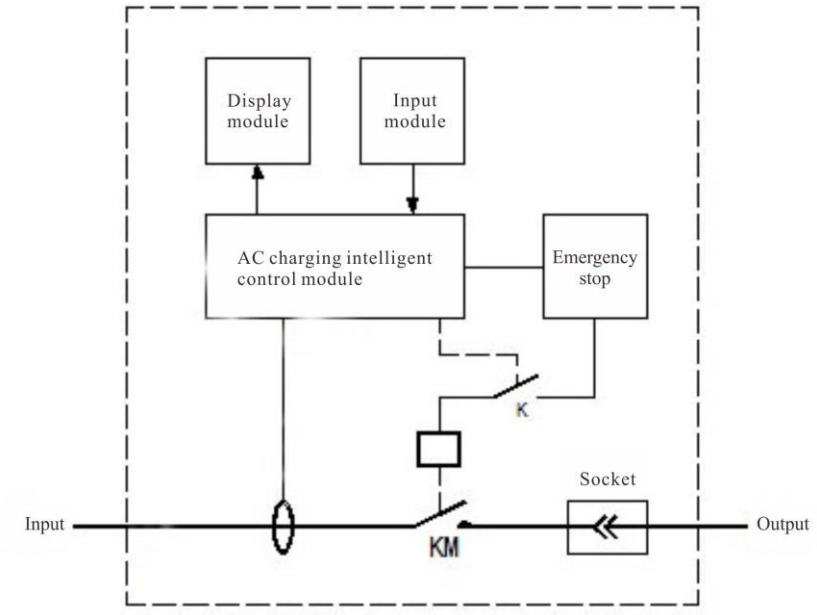
1 Product Overview

1.1 Product Introduction

The single phase AC charger is used for electric vehicle's AC charging, with the function of charging by scanning the RFID card. The RFID card is a key component to start or stop the charging session. The LED indicator on the front panel helps you understand what is happening with the charger by indicating different colors. Compatible with all types of cables, the socket locks the charging cable into the charger to ensure a safe charging. The protection grade of the charger is high as IP54, with the excellent capacity of water and rust proof, assuring the safe outdoor operation and maintenance. The floor-stand installation is optional by ordering an additional pillar. Designed according to Electric Vehicle Charging System Standard EN 61851-1: 2011 and EN 61851-22: 2002, the charger is compliant with the industrial standards and safe for usage. With internet connection through WiFi/Ethernet, users are able to monitor and manage the charger operation from the PC backend or mobile APP.



1.2 Schematic Diagram



1.3 Specification Parameter

	Model No.	AC7000-BE-24
Configuration	User Interface	LED indicator, LCD screen, Touch buttons, RFID card reader, Emergency stop button
	Housing Material	Plastic
	Installation Way	Wall-mount (default), Floor-stand (optional)
	Optional Accessory	Bracket 160*10*303mm (L*W*H) Floor-stand pillar 100*50*1003mm (L*W*H)
	Card Quantity	2pcs
	Charging Outlet	One charging socket type 2
	Product Dimension	356*221*136mm (L*W*H)
	Net Weight	3.0KG
	Gross Weight	4.5KG

Electrical Parameter	Input Voltage	220~240V
	Input Frequency	50Hz
	Max Power	7kW
	Output Voltage	220~240V
	Max Output Current	32A
	Standby Power	<8W
Environmental Index	Application Place	Indoor / Outdoor
	Working Temp	-30℃ ~ +50℃
	Working Humidity	5% ~ 95% without condensation
	Working Altitude	<2000m
	Protection Grade	IP54
	Cooling Method	Natural air cooling
	Safety Standard	EN 61851-1: 2011, EN 61851-22: 2002
	MTBF	100,000 hours
	Special Protection	Anti UV design
Safety Design	Protections from over voltage, under voltage, over load, short circuit, current leakage, ground fault, over temperature, under temperature, lighting & surge.	
Communication	Charger v.s. EN-GATE communication: CAN EN-GATE v.s. Backend communication: Ethernet Internet Communication Protocol: OCPP 1.6	

1.4 Performance and Characteristics

Performance:

- LED Indicator: Different light color indicate different working status of the charger.
- LCD Screen: Real-time display the charger status and charging data.
- Touch Buttons: Four touch buttons to adjust the charger's configuration and settings.
- RFID Card: Built-in card reader to realize the function of charging with RFID card. Scan RFID card first to start charging, and scan RFID card again to end charging.
- Emergency Stop Button: In case of emergent issues happen, press the button to cut off charging output for safety.

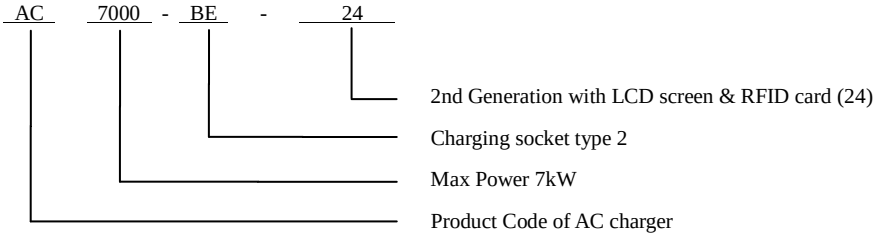
Characteristics:

- Dust & Water Proof: IP54 protection grade, workable under severe conditions, no need of extra shelter.
- Low Standby Power Consumption: The standby power is as low as 8W, energy saving and green.
- Compatible Application: The device is equipped with a type 2 charging socket, compatible for all EV charging by using either type 1 or type 2 charging cable.
- Easy Installation: With a wall-mount bracket delivered together with the charger, the installation is easy by hanging the changer onto the bracket and fix it with just a couple of screws.
- All Direction Protection: Protections from over voltage, under voltage, over load, short circuit, current leakage, ground fault, over temperature, under temperature, lighting & surge to ensure the device working safely and avoid accidents effectively.
- Safety Design: The charger is designed with over-current and ground fault protection components that constantly monitor safety status. No voltage is present in the charging socket until your vehicle is properly connected. Each charger is locked with keys, allowing access to its interior only by maintenance professionals.

1.5 Working Environment

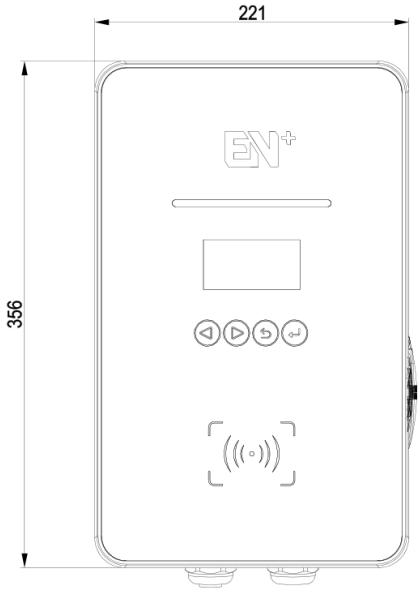
- Altitude: ≤2000 meters
- Temperature: -30℃~50℃
- Humidity: 5%~95%
- Indoor/Outdoor use
- Natural air cooling for ventilation
- Keep the charger away from flammable or explosive materials.

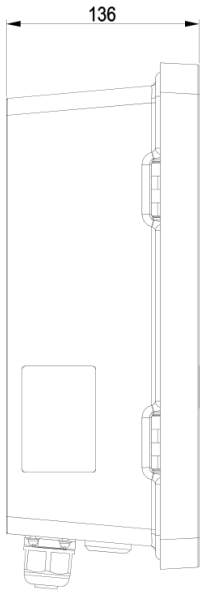
1.6 Product Naming

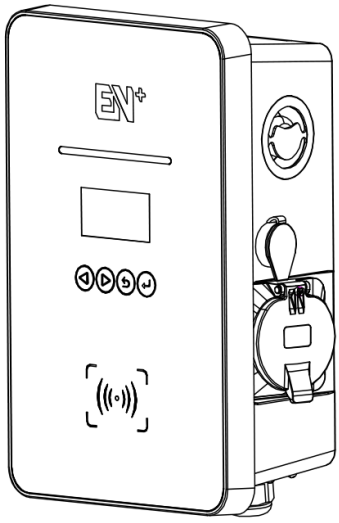


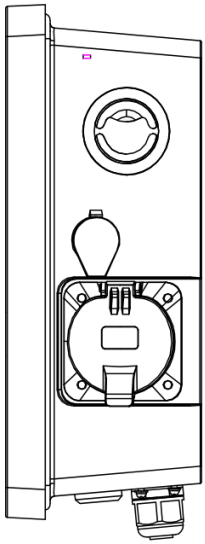
1.7 Product Structure

1.7.1 External Structure

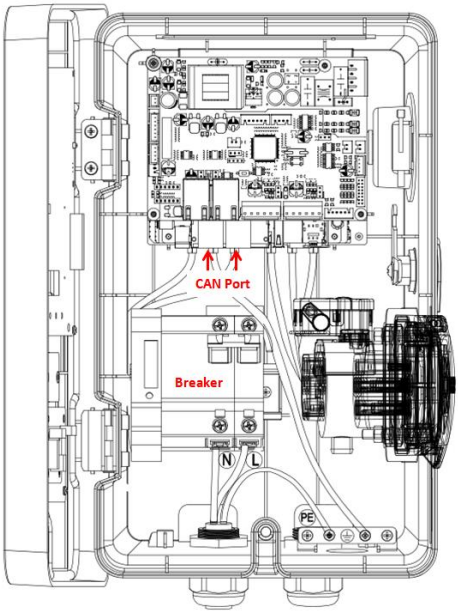




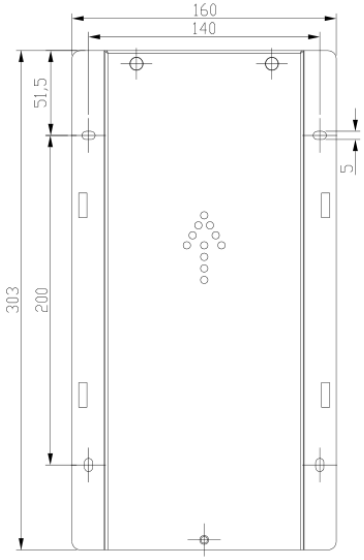




1.7.2 Internal Structure



1.7.3 Wall-mount Bracket Structure



2 Operation Instruction

2.1 Product Installation

2.1.1 Package Verification

Unpack to check and verify following items after receiving the charger:

- Visual inspection on external appearance. In case there is any broken or damage, notify the seller immediately.
- Check accessory type and quantity. If there is quantity in short or type inconformity, make the record in time and contact the seller at once.

2.1.2 Installation Preparation

1) Tools

Tool Name	Photo	Function
Multimeter		Check electrical connection and electrical parameter
Cross Screwdriver (PH2x150mm, PH3x250mm)		Tight the screws
Insulated Spanner		Tight the bolts and nuts
Insulated Torque Wrench		Tight the bolts
Combination Wrench		Tight the bolts
Hydraulic Clamp		Press OT terminals
Diagonal Pliers		Cut cables

2) Cables & Materials

Name	Specification	Quantity
Power supply cable	≧5*6mm² three-phase power supply cable	Depend on actual requirement
Network cable	STP, Category 5 enhanced, 8 cores	Depend on actual requirement
Network cable plug	RJ45	Depend on actual requirement
Insulated tape	0.15mm*18mm, 0~600V, 0℃~80℃	Depend on actual requirement
Cable tie	4*200mm	Depend on actual requirement

2.1.3 Installation Process

1) Installation Notice

a）Electrical device should be installed, operated, serviced, and maintained only by qualified personnel. No responsibility is assumed by the manufacturer for any consequences arising out of the use of this device. A qualified person is one who has skills and knowledge related to the construction, installation and operation of electrical device and who has received safety training to recognize and avoid the hazards involved.

b) All applicable local, regional, and national regulations must be respected when installing, repairing, and maintaining this device.

2) Layout Cables

Wall-mount Installation：

Network cable and power supply cable inlet from the top, fixed with cable slot.

Cable slot lays on the wall against the center line of parking place. Cable slot end should be above the ground at 1.3cm.

Cables extend out of the slot end with more than 30cm.

Floor-stand Installation：

Locate the position for floor-stand pillar on the ground, against the center line of parking place.

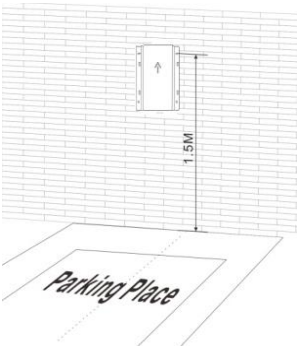
Bury network cable and power supply cable under the ground.

Cables go out of the ground from the position of floor-stand pillar with more than 150cm.

4) Install Wall-mount Bracket/Floor-stand Pillar

Wall-mount Installation:

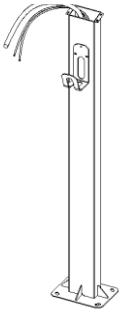
Mount the bracket over the cable slot with its upper right screw hole 1.5m above the ground.



Floor-stand Installation:

Network cable and power supply cable go through the inner space of floor-stand pillar.

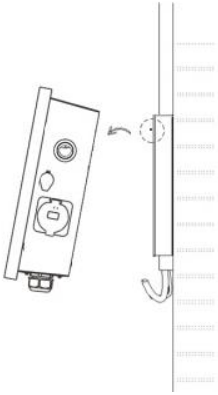
Install the floor-stand pillar on the ground position against the center line of parking place and fix it by mounting the four screws at the bottom.



5) Place Charger

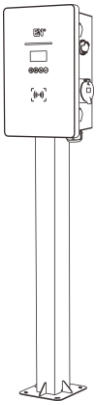
Wall-mount Installation:

Hang the charger onto the bracket, with the two protruded points on the bracket fitting into the two holes on top of the charger's back.



Floor-stand Installation:

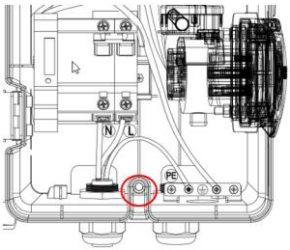
Put the charger on top of the pillar, with the two protruded plates on top of the pillar fitting into the two positioning holes at the charger's bottom.



6) Fix Charger

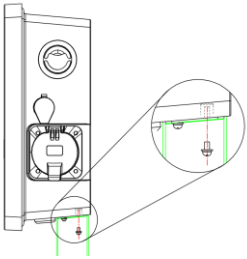
Wall-mount Installation:

Fix the charger to the bracket by mounting a screw to the screw hole at the bottom of the charger and bracket, from inside to outside.



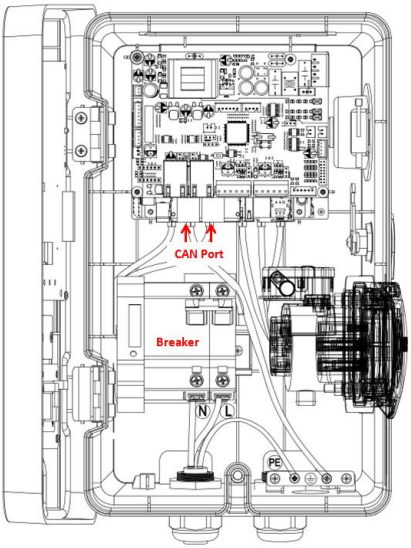
Floor-stand Installation:

Fix the charger to the pillar by mounting four screws to four screw holes on top of the pillar and at the bottom of the charger, from underside to upside.

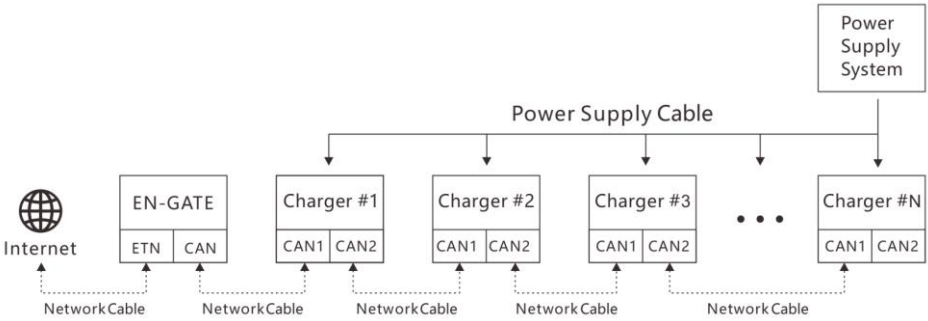


7) Connect Cables

The power supply cables go through the input inlet at the charger's bottom, and connect to the corresponding PE, L and N terminals on the breaker inside charger. A network cable is needed to connect the charger with the EN-GATE which has an access to the Internet by Ethernet. One end of the network cable connects to the charger's CAN port on the PCBA. Through the CAN inlet at the charger' bottom, the other end of the network cable connects to the EN-GATE's CAN port. Details about EN-GATE installation refer to its user manual.

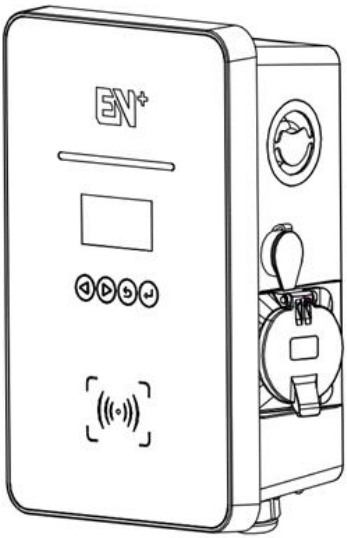


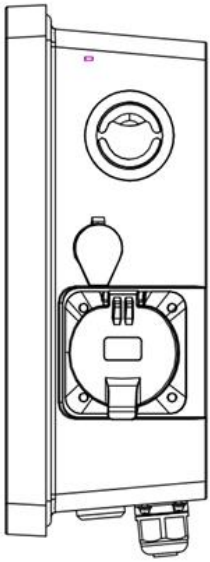
In clusters of chargers in a parking garage, a single EN-GATE can act as the communication gateway for maximum 12pcs chargers. Connect the EN-GATE with Charger #1 and the other chargers connect one by one with network cables between the CAN ports. The length of network cable between EN-GATE and Charger #1 should be ≤10M. The total length of network cables from EN-GATE to the farthest charger should be ≤100M.



8) Lock Charger

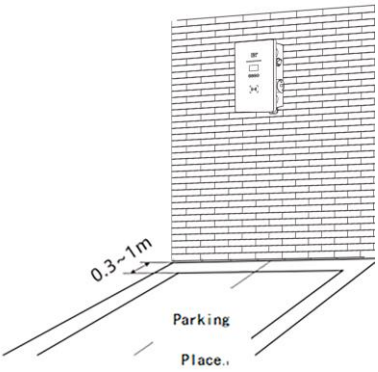
Turn on the breaker switch inside the charger and close the front cover of charger. Use the equipped keys to lock the charger through the two keyholes on the right side. Note: Pressing the front door to the charger will make it easier to lock or unlock the charger.



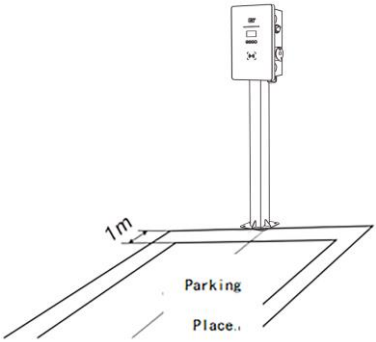


9) Installation Sketch

Wall-mount Installation:



Floor-stand Installation:



2.2 Power-on Checking

1) Check before Power-on

Please check the followings before any operation:

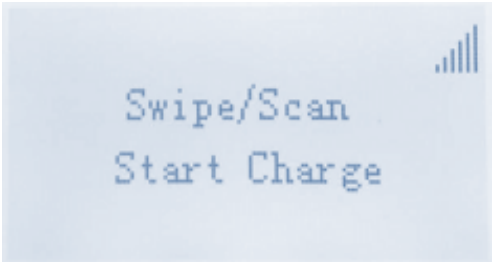
1. The charger's location is easy for operation and repairing.
2. Double confirm the charger is installed properly.
3. AC input's current leakage protection switch is reasonable.
4. No other stuff or component left on the top of the charger.

2）Power-on Charger

1. Make sure all checking is done according to the above items.
2. Turn on the current leakage protection switch of AC input.
3. Power-on the charger and observe the LED indicator, which should be standby status.

State	Description	LED Status
Standby	Power-on, but no gun plug-in	Flashing green, 2S on 2S off
Ready to charge	Gun plug-in, but not start charging yet	Flashing yellow, 2S on 2S off
In charging	Gun plug-in, and start charging by RFID	Breathing green, on/off gradually
Stop charging	Charging stop, but gun is still plug-in	Solid green
Fault	Error happens	Solid red

4. Observe the screen display and the symbol on the top right corner. The screen should display as the following picture.



2.3 Charging Operation

2.3.1 Connect Charger to EV

Park EV near to the charger, take out the charging cable from EV, and plug its guns respectively into the socket of the charger and the EV. After plug-in, please check the gun is correctly and tightly connected. With appropriate connection, the charger LED indicator will change to flashing yellow light, which indicates that the charger is ready for charging.

2.3.2 Start Charging & Stop Charging

After the charger is connected to EV and ready for charging, scan the RFID card for once on the identification area of front panel, then the charging starts. When the charging starts, the gun will be locked on the charger socket. The charger screen will display the running information on the screen, such as charged electricity, charged time, voltage, current and power.

When the EV is fully charged, the charging will stop and the charger LED indicator will be solid green. Please end the charging session by scanning the RFID card for a second time. If not scanning the RFID card again, the charger will not unlock the gun on the charger side and the user cannot plug out the gun.

In charging state before the EV is fully charged, the user can stop charging by scanning the RFID card for a second time. The charging session will end and the gun on the charger side will be unlocked.

Another solution to stop charging is to end the charging session from the EV side. After the gun on the EV side is unlocked and plugged out, the charging session will end and the gun on the charger side will be unlocked automatically.

3 Troubleshooting

Problems	Possible Causes	Solutions
Input over voltage	AC input voltage may be too high.	1. Check the input voltage from the backend.
		2. If the voltage is over 456Vac for a short time，wait till the power grid recovers to normal voltage range.
Input lower voltage	AC input voltage may be too low.	1. Check the input voltage from the backend.
		2. If the voltage is under 230Vac for a short time, wait till the power grid recovers to normal voltage range.
Input over current	AC input current may be too large.	1. Shut off the leakage current protection switch of power distribution cabinet immediately.
		2. Check whether there is low resistance connection between AC output cables of the charger.
Input over frequency	AC input frequency may be too high.	1. Check the input voltage frequency from the backend.
		2. If the frequency exceeds 55Hz for a short time, wait till power grid recover to normal voltage range.
Input lower frequency	AC input frequency may be too low.	1. Check the input voltage frequency from the backend.
		2. If the frequency is lower than 45Hz for short time, wait till power grid recover to normal voltage range.
Over temperature	Temperature may be too low inside the charger.	1. Check the surrounding conditions of chargers installed whether there is heating device nearby. Make sure environmental temperature is under 60℃.
Over leakage current	Leakage current to the earth may be too high.	1. Shut off the leakage current protection switch of power distribution cabinet immediately.

		2. Check whether there is broken of AC output cables or low resistance connection to the earth.
Leakage current sensor abnormal	Detection of leakage current sensor is abnormal.	1. Shut off the leakage current protection switch of power distribution cabinet immediately.
		2. Check whether there is broken of AC output cables or low resistance connection to the earth.
Grounding fault	Inappropriate grounding connection of input/output cables or inverse connection of L/N input cables.	1. Shut off the leakage current protection switch of power distribution cabinet immediately.
		2. Check if AC input/output cables are normal, and if inverse connection of L/N input cables.
CAN communication abnormal	Poor connection between AC charger and EN-GATE.	1. Check whether CAN bus connection is reliable and correct.
Charging cable connection abnormal	Poor connection of charging cable with EV/Charger.	1. Check if charging cable connection is correct and firm.

Note: If the above problems cannot be solved, please contact the seller.

4 Disposal

The packaging materials are environmentally friendly and can be recycled. Put the packaging in applicable containers to recycle it. Do not dispose this device with the household waste. It shall be handed over to the applicable collection point for the recycling of electrical and electronic device. For more detailed information about recycling of this device, please contact your local city office, your household waste disposal service or the shop where you purchased the device.

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http://www.en-plus.com.cn

Due to the EN+ policy of continual product development;
specifications, colors and details of our products and those mentioned
in this manual are subject to change without notice.

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