

AC Charger User Manual



---X1-AE-7.0 --

Contents

- Preface - 2 -
- Safety Instruction - 2 -
- 1 Product Overview - 3 -
 - 1.1 Product Introduction - 3 -
 - 1.2 Schematic Diagram - 3 -
 - 1.3 Specification Parameter - 4 -
 - 1.4 Performance and Characteristics - 5 -
 - 1.5 Working Environment - 5 -
 - 1.6 Product Naming - 6 -
 - 1.7 Product Structure - 6 -
 - 1.7.1 External Structure - 6 -
 - 1.7.2 Internal Structure - 7 -
- 2 Operation Instruction - 8 -
 - 2.1 Product Installation - 8 -
 - 2.1.1 Package Verification - 8 -
 - 2.1.2 Installation Preparation - 8 -
 - 2.1.3 Installation Process - 9 -
 - 2.2 Power-on Checking - 10 -
 - 2.3 Charging Operation - 10 -
 - 2.3.1 Connect Charger to EV - 10 -
 - 2.3.2 Start Charging & Stop Charging - 11 -
- 3 Troubleshooting - 11 -
- 4 Disposal - 14 -

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 focuses on the field of new energy and is committed to providing customers with excellent charging equipment 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

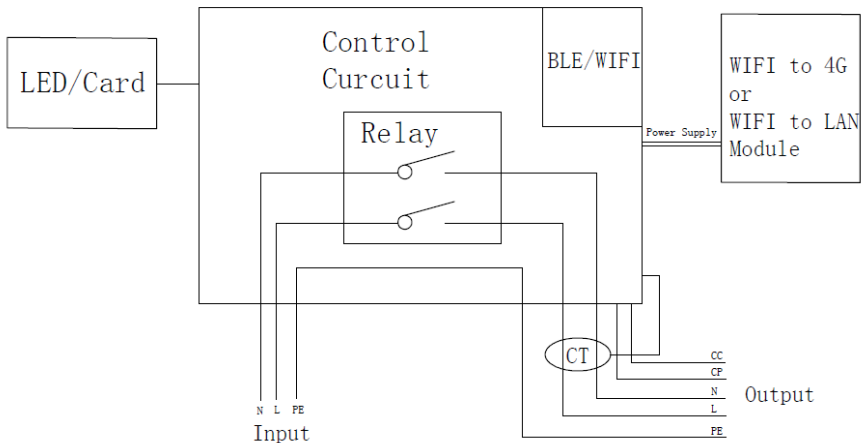
- 1) Keep the explosive or flammable materials, chemicals, vapors and other hazard objects away from the charger.
- 2) Keep the charging socket clean and dry. If dirty, please wipe with clean dry cloth. Touch the socket core is strictly forbidden when power on.
- 3) Do not use the charger in case the 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 disassemble, 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. The protection grade of the charger is high as IP65, 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 users are able to monitor and manage the charger operation from the mobile APP.

1.2 Schematic Diagram



1.3 Specification Parameter

| | | |
|----------------------|--|--|
| | Model No. | X1-AE-7.0 |
| Configuration | User Interface | LED indicator, RFID card reader |
| | Housing Material | Plastic |
| | Installation Way | Wall-mount (default), Floor-stand (optional) |
| | Card Quantity | 2pcs |
| | Charging Outlet | One charging gun type 2 |
| | Product Dimension | 325*181*87mm (L*W*H) |
| | Net Weight | 3.01KG |
| | Gross Weight | 3.83KG |
| Electrical Parameter | Input Voltage | AC230V±20% |
| | Input Frequency | 50/60Hz |
| | Max Power | 7kW |
| | Output Voltage | AC230V±20% |
| | Max Output Current | 32A |
| | RCD | 6mA DC |
| | Standby Power | <1W |
| Environmental Index | Application Place | Indoor / Outdoor |
| | Working Temp | -30°C ~ +55°C |
| | Working Humidity | 5% ~ 95% without condensation |
| | Working Altitude | <2000m |
| | Protection Grade | IP65 |
| | 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, current leakage, ground fault, over temperature, under temperature. | |
| Communication | Charger v.s. Backend communication: WiFi Internet Communication Protocol: OCPP 1.6 | |

1.4 Performance and Characteristics

Performance:

- LED Indicator: Different light color indicate different working status of the charger.
- 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.

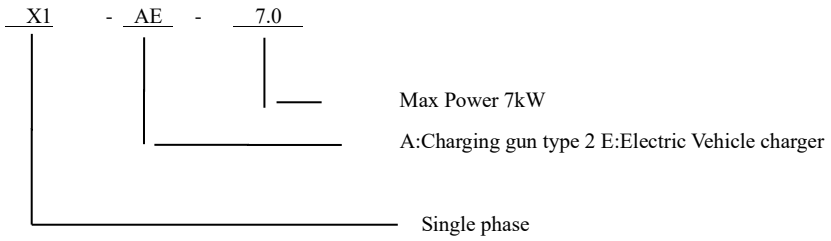
Characteristics:

- Dust & Water Proof: IP65 protection grade, workable under severe conditions, no need of extra shelter.
- Low Standby Power Consumption: The standby power is as low as 1W, energy saving and green.
- Compatible Application: The device is equipped with a type 2 charging gun.
- Easy Installation: The installation is easy by hanging the changer on the wall and fix it with just a anti-theft screw.
- All Direction Protection: Protections from over voltage, under voltage, over load, current leakage, ground fault, over temperature, under temperature 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 gun until your vehicle is properly connected.

1.5 Working Environment

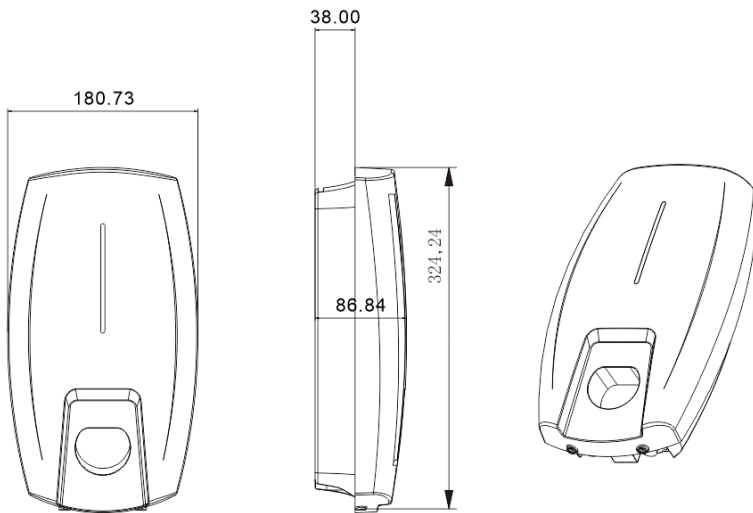
- Altitude: ≤ 2000 meters
- Temperature: $-30^{\circ}\text{C} \sim 55^{\circ}\text{C}$
- Humidity: 5%~95%
- Indoor/Outdoor use
- Natural air cooling for ventilation
- Keep the charger away from flammable or explosive materials.

1.6 Product Naming

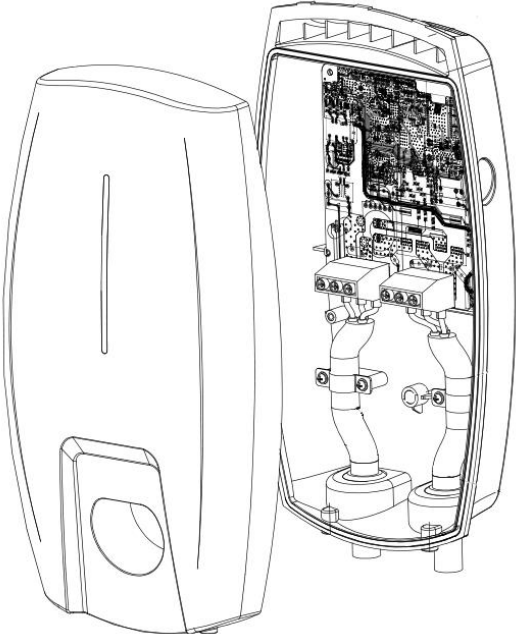


1.7 Product Structure

1.7.1 External Structure



1.7.2 Internal Structure



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 Torque Wrench |  | Tight the bolts |
| Electric drill |  | Hole on the wall |
| Diagonal Pliers |  | Cut cables |

2) Cables & Materials

| Name | Specification | Quantity |
|--------------------|--|------------------------------|
| Power supply cable | 3*6mm ² single-phase power supply cable | Depend on actual requirement |

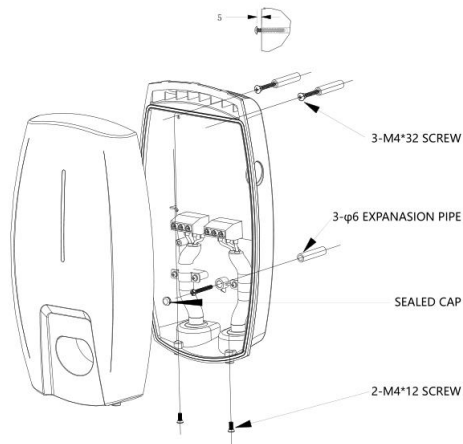
2.1.3 Installation Process

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) Installation Procedure

1. According to the cases of the attached installation board, drill 3 - $\Phi 6$ * 35 mm holes on the wall, and insert the expansion pipe;
2. Lock the 2-M4*32mm self-tapping screw into the expansion pipe, and reserve 5mm space;
3. Open the top cover of charger, hang it on the automatic screw, lock it into the bottom automatic screw, and then cover the sealing cover;
4. Connect the input power cord, close the upper cover, and lock it with 2-M4*12mm screw.



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, 1S on 3S off |
| Ready to charge | Gun plug-in, but not start charging yet | Constantly green |
| In charging | Gun plug-in, and start charging | Breathing green, 1S on 1S off |
| Fault | Error happens | Flashing red, Constantly red |

3) WIFI connection

Connect the charger to the backend through the user APP. Once the charger connected with the wifi successfully, the charger can be used for charging.

2.3 Charging Operation

2.3.1 Connect Charger to EV

Park EV near to the charger, and plug its guns into 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 or use the user APP scan the barcode on the left side of the charger, then the charging starts.

When the EV is fully charged, the charging will stop.

3 Troubleshooting

3.1 Indicator State

| State | Description | LED Status |
|--------------------------------|-------------|---|
| In the standby | Normal | Flashing green, 1S on, 3S off |
| Charging status | Normal | Breathing green, 1S on, 1S off |
| Plugged gun state | Normal | Green light normally on |
| Software upgrade | Normal | Green light flash |
| Ground warning | Normal | Flashing yellow, 2S on, 2S off |
| Relay adhesion | Fault | Red light normally on |
| Input polarity reverse | Fault | Flashing red, 500ms on, 500ms off, 1 time, 3S off, Cycle |
| CP fault | Fault | Flashing red, 500ms on, 500ms off, 2 times, 3S off, Cycle |
| Leakage current fault | Fault | Flashing red, 500ms on, 500ms off, 3 times, 3S off, Cycle |
| Input terminal overtemperature | Fault | Flashing red, 500ms on, 500ms off, 4 times, 3S off, Cycle |
| Relay overtemperature | Fault | Flashing red, 500ms on, 500ms off, 5 times, 3S off, Cycle |
| Under voltage fault | Fault | Flashing red, 500ms on, 500ms off, 6 times, 3S off, Cycle |
| Over voltage fault | Fault | Flashing red, 500ms on, 500ms off, 7 times, 3S off, Cycle |
| Overload fault | Fault | Flashing red, 500ms on, 500ms off, 8 times, 3S off, Cycle |
| Over frequency fault | Fault | Flashing red, 500ms on, 500ms off, 9 times, 3S off, Cycle |

| | | |
|-------------------------------|-------|--|
| Owe frequency fault | Fault | Flashing red, 500ms on, 500ms off, 10 times, 3S off, Cycle |
| Leakage current loop abnormal | Fault | Flashing red, 500ms on, 500ms off, 11 times, 3S off, Cycle |

3.2 Fault Resolution

| 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 276Vac 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 184Vac 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°C. |
| 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. |
| 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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