
# YT-D 160kW DC Fast Charger

## User Manual

Version: V1.1
Date: October 19, 2024

# Disclaimer

Guangdong Ferries New Energy Technology Co., Ltd.. ("Ferries") assumes no responsibility for any consequences resulting from:

- the expiry of the warranty period as agreed in the contract;
- installation and use in environments that do not meet conventional standards;
- improper handling, dismantling, storage, installation, and use.
- damage to the equipment as a result of force majeure (e.g. lightning, typhoon, flood, fire, etc.);
- equipment malfunction, damaged components, personal injury, or property losses resulting from failure to observe the instructions and safety precautions set forth in this manual;
- unauthorized modification of the product nameplate or appearance;
- unauthorized alteration or dismantling of the product structure, electrical accessories, wiring, or software programs;
- failure to store the equipment under the conditions set forth in this manual; It is recommended that the equipment, if not in use, should be stored in a packing box and placed in a dry place; if installed, the equipment should be put to use as early as possible; if not in use for a long time, the equipment should be run at a regular interval (upon delivery, the equipment should be powered on and tested; otherwise, it should be returned to Ferries for aging test, with the freight covered by the customer).
- equipment malfunction, damaged components, personal injury, or property losses resulting from failure to ensure heat dissipation conditions in the place of equipment installation; or
- installation or maintenance by nonprofessionals.
- This manual is for reference only. In the event of any discrepancy between this manual and the actual product, the latter should prevail.

# Caution

- Carefully check cables to ensure proper connection before powering on the equipment. Do not tighten or loosen cable connection bolts while the equipment is powered on.
- The installation and maintenance personnel should have received appropriate training and hold certificates for HV operation, LV operation, working at height and special equipment operation issued by local competent authorities.

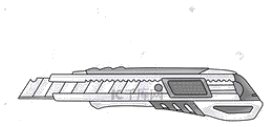
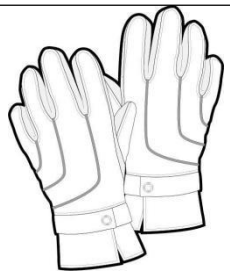
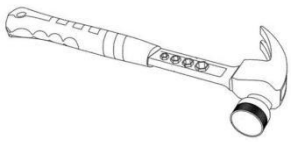
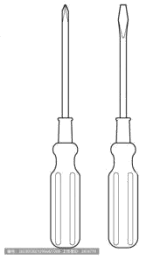
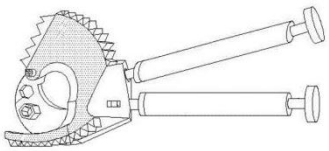
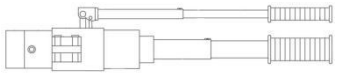
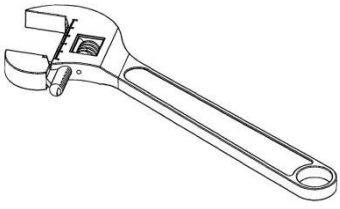
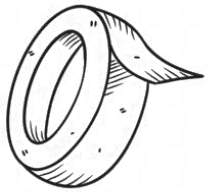
# Foreword

Scope of application

This document is intended for use by:

- Pre-sales Technical Engineer
- After-sales Technical Engineer
- Maintenance Engineer
- Installation Personnel

# Tools Required for Installation

| No. | Tool | Picture | No. | Tool | Picture |
|---|---|---|---|---|---|
| 1 | Utility knife |  | 6 | Insulated gloves |  |
| 2 | Claw hammer |  | 7 | Insulated shoes |  |
| 3 | Screwdriver |  | 8 | Cable scissor |  |
| 4 | Percussion drill |  | 9 | Hydraulic crimping tool |  |
| 5 | Adjustable wrench |  | 10 | Insulation tape |  |

# Revision History

The revision history registers updates of the document. The latest version of the document should contain all updates made to previous versions. In case of revision to particulars, V1.0, V1.1, ... V1.9 should be used as the document version number; In case of major revision to framework and content, V1.0, V2.0, ... should be used as the document version number.

| No. | Revision Summary | Version | Revised by | Approved by | Date | Notes |
|---|---|---|---|---|---|---|
| 1 | First edition | V1.0 | Chen | Luo | August 17, 2024 | |
| 2 | Modify the model description | V1.1 | Chen | Luo | October 19, 2024 | |
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# Contents

## 1. Safety Precautions

1.1 General safety precautions

To ensure the safety of personnel and the equipment, follow all safety precautions noted on the equipment and mentioned in this manual during installation, operation, testing, and maintenance.

To ensure the safety of personnel and the equipment, take note of the safety symbols and all safety precautions set out in this manual. Otherwise, the equipment may become a potential hazard or malfunction.

If any problem or malfunction occurs to the equipment during operation, contact the After-Sales Service Center of Ferries. Ferries will not assume any responsibility if the equipment is maintained by an unauthorized party during the warranty period.

1.2 Personnel requirements

The personnel responsible for the installation, commissioning, and maintenance must have received strict training and understand all safety precautions and correct operation methods before they are allowed to perform installation, testing, operation, and maintenance.

- Qualified and trained personnel are allowed to install, operate, test, and maintain the equipment.
- The manufacturer's after-sales technical engineers or authorized personnel are allowed to replace parts (including updating software).
- The testing and operation personnel should promptly report to project leaders any malfunction or error that may lead to a safety issue.

1.3 Grounding requirements

To ensure the safety of personnel and the equipment, please observe the requirements below:

- Connect the grounding wire before installing the input cables of the equipment.
- When removing the input cables of the equipment, remove the grounding wire last.
- Do not damage the grounding conductor of the equipment.
- Do not operate the equipment without installing a grounding conductor.
- The equipment should be permanently grounded. Before operating the equipment, check the electrical connections to ensure reliable grounding.

1.4 Personal safety

- Before operating the equipment, the technicians should wear high-voltage insulated protective shoes and ESD gloves and must not wear conductive jewelry because that poses the risk of electric shock or burn.

- In case of a fire, evacuate from the building or place where the equipment is installed and ring the fire alarm bell or call the fire department. Do not re-enter, in any case, the burning building or place where the equipment is installed.
- Do not touch the EV charging connector or vehicle inlet and always keep them dry and clean.

1.5 Equipment safety

- Before operating, reliably fix the equipment to the base.
- Do not touch any cabinet components while the system is running.
- When installing electric baffle plates, tighten the set screws with an appropriate tool.
- After the incoming cable of the equipment is installed, plug the cable entry with fire-retardant cement.
- After the equipment is installed, clear the packaging materials from the place.
- In case of any abnormal condition, press the emergency button immediately, which can cut off the input and output of the charging module to ensure safety.

1.6 Electrical safety

- Before installing or removing the power cord, disconnect the input (or the superior input) power switch.
- Make sure that the power cord is correctly connected before connecting the equipment to the power cord.
- Make sure the EV charging connector or vehicle inlet is free of foreign objects.
- Do not connect or disconnect the power cable in the power-on state. During maintenance, turn off the power switch to ensure proper electrical connections and erect a warning sign.
- Use lighting during maintenance, as there is no lighting inside the equipment.
- Upon installation or maintenance, make sure the door is properly locked.
- Do not use any extension cable.
- Do not operate any electronic devices in a flammable and explosive environment.

1.7 Mechanical safety

When handling the equipment by hand, wear protective gloves to protect your hands from being hurt. It is recommended to use a forklift or other mechanical tool to handle the equipment.

1.8 Cable laying

- The signal cable should be laid separately from the power cable or high-voltage cable, with spacing not less than 0.5m. Avoid severe shock or vibration during cable laying.
- All cables should be laid and installed within the range of ambient temperature and humidity suitable for the

power distribution cabinet.

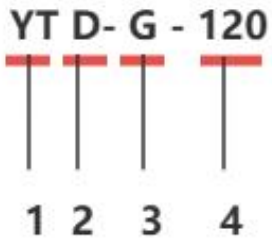
Handle cables (externally connected cables for the power distribution cabinet) gently, especially in low-temperature environments, and do not perform any non-standard operations such as pushing the cables straight off the vehicle.

## 2. Product Introduction

YTD is an all-in-one DC fast charger featuring high efficiency, high current, high stability, and great compatibility. The dual CCS2 charging connectors can be simultaneously used to charge in the full-power charge or equalizing charge mode.

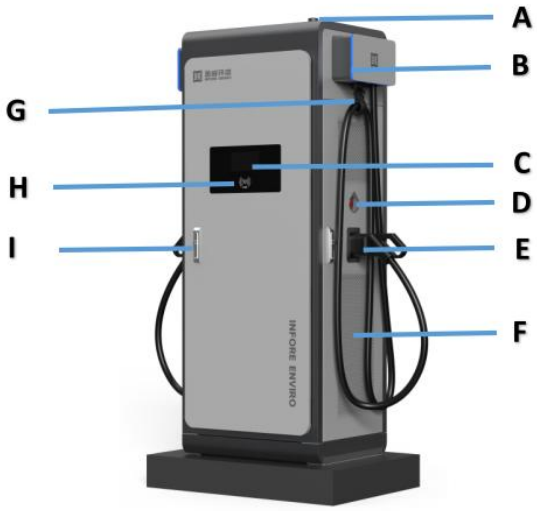
The charger is primarily used in centralized fast-charging stations, with 40kW charging modules to charge new energy vehicles using CCS2 charging plugs compliant with IEC standards.

### 2.1 Model description




| S/N | Meaning |
|---|---|
| 1 | Yingtong Zhilian |
| 2 | Structure type：D (All-in-one), S (Split type) |
| 3 | Connector standards: G (China), E (Europe), U (USA), J (Japan) |
| 4 | Rated power |

2.2 Product appearance




A: 4G antenna B: Charging indicator C: Display screen

D: Emergency stop button E: Charging connector F: Air vent

G: Cable retractor H: IC card reader I: Door lock

2.3 Product features

- The product features can be customized according to customer needs. The dual charging connectors are flexible in power distribution; the power output can be automatically adjusted based on vehicle-specific needs to charge two vehicles at the same time.
- The constant-power charging module with a maximum output voltage of up to DC1000V brings high charging efficiency, high stability, good environmental adaptability, and other benefits.
- The charger, designed according to IEC 61851-1: 2019, enables higher output current and power in the single connector mode.
- It has safety protections including charging connector temperature detection, protection against overvoltage, under-voltage, overcurrent, electric leakage, short circuit, lightning, and reverse connection.
- The intelligent standby mode is power-efficient, reducing the charging station's power consumption and ultimately increasing its profitability.
- The cable retractor makes it easy for the car owner to insert or remove the charging connector and reduces the wear caused by frequently dragging the cable on the ground.
- The IP54 cabinet is made of sheet metal with baking finish to meet outdoor conditions.

2.4 Specifications of the charging pile

| | | | |
|---|---|---|---|
| Basic specifications | Model | YTD-E-160 | |
| | Rated power | 160kW | |
| Input specifications | Input voltage | AC400V±15% | |
| | Input current | ≤258A | |
| | Input frequency | 50/60Hz | |
| Output specifications | Output voltage | DC200-1000V | |
| | Constant-power output voltage | DC300-1000V | |
| | Maximum output current | 200A for a single connector, 400A for dual connectors | 250A for a single connector, 500A for dual connectors |
| Characteristic specifications | Peak efficiency | ≥95% | |
| | Power factor | ≥99% | |
| | Communication protocol | OCPP1.6J | |
| | Human-machine interaction | LED indicator, 7" LCD HD touch screen | |
| | Network mode | 4G Full Netcom/Ethernet | |
| | Start mode | Scanning QR code, swiping card, or using password | |
| | Charging port | 2 (CCS2) | |
| | Cable length | 5m | |
| | Protection rating | IP54 | |
| | Cable retractor | Available | |
| | Protections | Charging connector temperature detection, protection against overvoltage/under-voltage, overload, short circuit, over-temperature, and lightning | |
| | Mounting method | Floor-mounted | |
| | Cooling mode | Intelligent air-cooled speed regulation | |
| | Operating temperature | -25℃～+50℃ | |
| | Storage temperature | -40℃～+70℃ | |
| | Relative humidity | 5%~95% (no condensation) | |
| | Altitude | ≤2000m | |
| | Dimensions (W*D*H) | 750mm*600mm*1950mm | |

## 3. Installation Instructions

3.1 Charging pile dimensions

3.1.1 Appearance and dimensions, as shown in Figure 1.

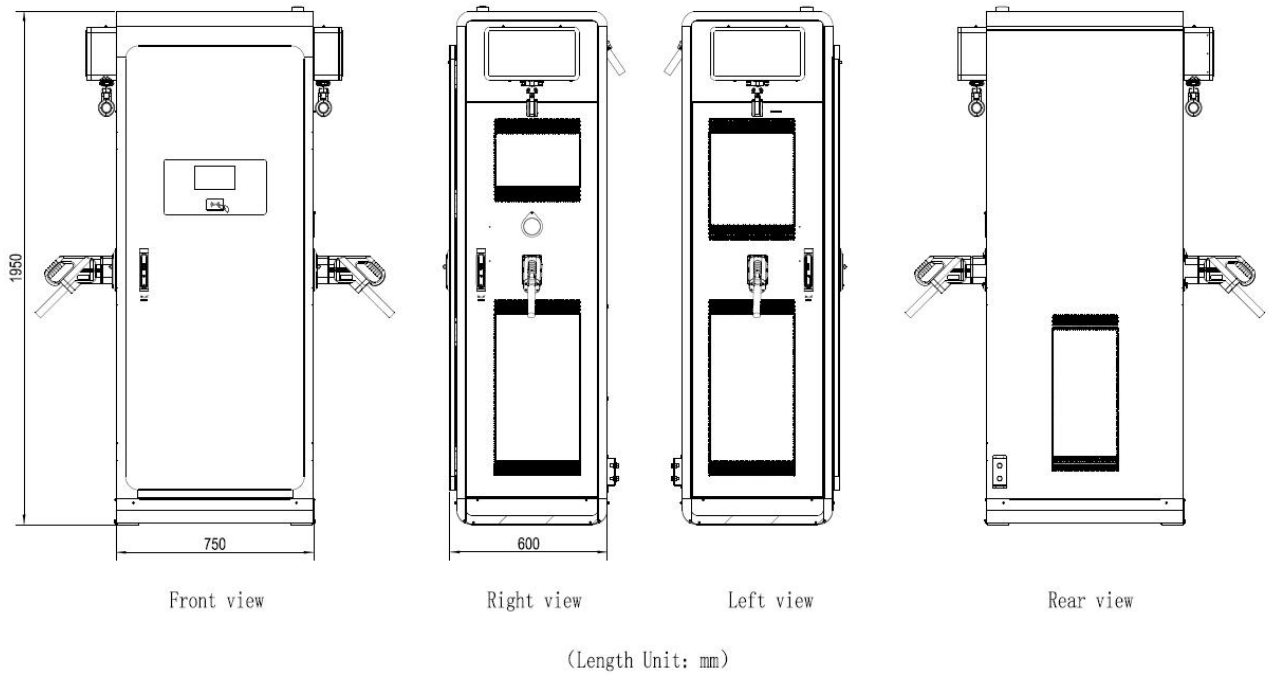



Figure 1: Appearance and dimensions

3.1.2 Bottom view and ports, as shown in Figure 2.

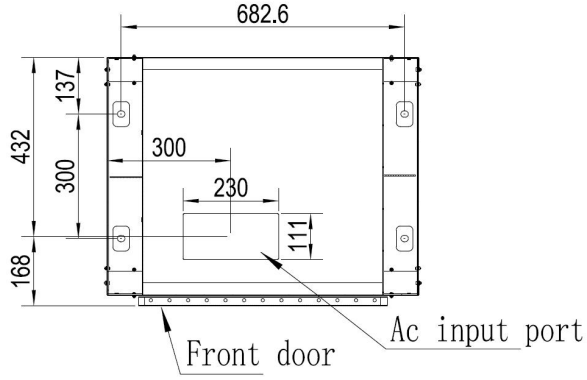



Figure 2: Bottom view and ports

3.2 Installation requirements

- The charging pile should be installed in a way that allows for operational spacing of 1000mm, 700mm and 400mm on the front, left, right, and rear sides.
- The charging pile must be mounted on a concrete or custom steel structure. The cable should be pre-buried, with the length of the reserved power cable 600mm±20mm protruding from the base, and the length of the reserved Ethernet cable 1500mm protruding from the base.

- The height of the foundation is recommended to be 200mm and the vertical inclination is not greater than 5°.
- Four M12*80mm expansion bolts should be installed between the foundation and the charging pile.

3.3 Distribution cable installation

3.3.1 Arrangement requirements for the distribution cable

- The input cable should be drawn from the bottom inlet and the cable should be laid in the cable trench.
- The AC input cable should be copper cable, and its cross-sectional area should fit the power of the charging pile.
- Cables should be laid in line with laws and regulations. To avoid interference with communication signals, the power cable and the signal cable should not be laid in the same cable tray or conduit.
- The cable from the distribution box to the charger should be reliably connected to the incoming copper bar of the input circuit breaker, with a proper circuit breaker inside the distribution box.
- The colors of the AC input cable are usually yellow (phase A), green (phase B), red (phase C), blue (neutral wire), and yellow-green (grounding wire). If the input cables have only one color, they should be distinguished by labels or insulation tapes with different colors.

3.3.2 Process requirements for the distribution cable

- The cable should be laid in a way that is free from external force, insulation deformation or damage.
- The protective layer must not be distorted, crushed, damaged or severely worn.
- The cable should be neatly arranged and tied without crossing.
- Each wire should have sufficient clearance and the bends should be consistent.
- The terminals on the cable gland should be tightly pressed to the extent that there are no cracks on the surface of the terminals.
- When crimping the incoming cable gland, a heat shrink tubing should be placed between the cable and the gland, and the inner and outer surfaces of the tube should be smooth and clean and free from damage and cracks. Before casing the heat shrink tubing, the cable should be cleared of debris and the surface should be free of burrs and iron filings to prevent damage to the tube. The color of the heat shrink tubing should be the same as the phase color. When the heat shrink tubing shrinks, the flame should be prevented from splashing into the cabinet to avoid burning components and cables in the cabinet. The appearance of the heat shrink tubing should be level, smooth, in uniform shrinkage, and free of dust and cracks.
- When crimping the Ethernet cable gland, the wiring should be performed in proper sequence and checked for

compliance after crimping.

3.4 Internal wiring

The AC input cables inside the charging pile are PE, N, L1, L2, and L3, from left to right. The cabinet grounding consists of two parts: ground copper bar inside the cabinet and case ground point outside the cabinet, as shown in Figure 3.

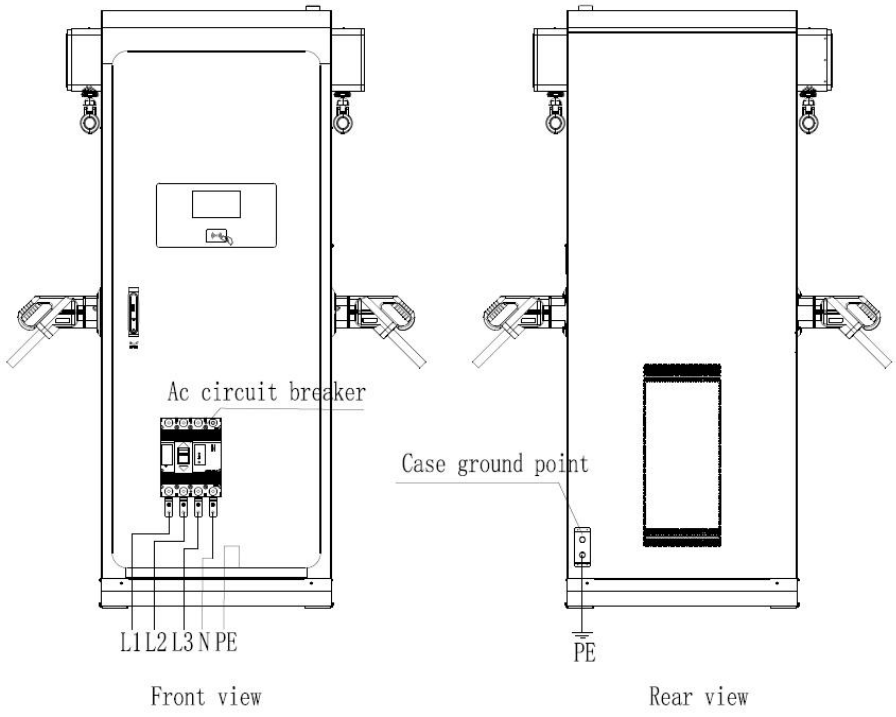



Figure 3: Wiring diagram

3.5 Installation steps

3.5.1 Removal of outer packaging

Tools required: claw hammer, utility knife, adjustable wrench, and insulated gloves.

- Use a claw hammer to straighten the metal card and remove the head cover, as shown in Figure 4.

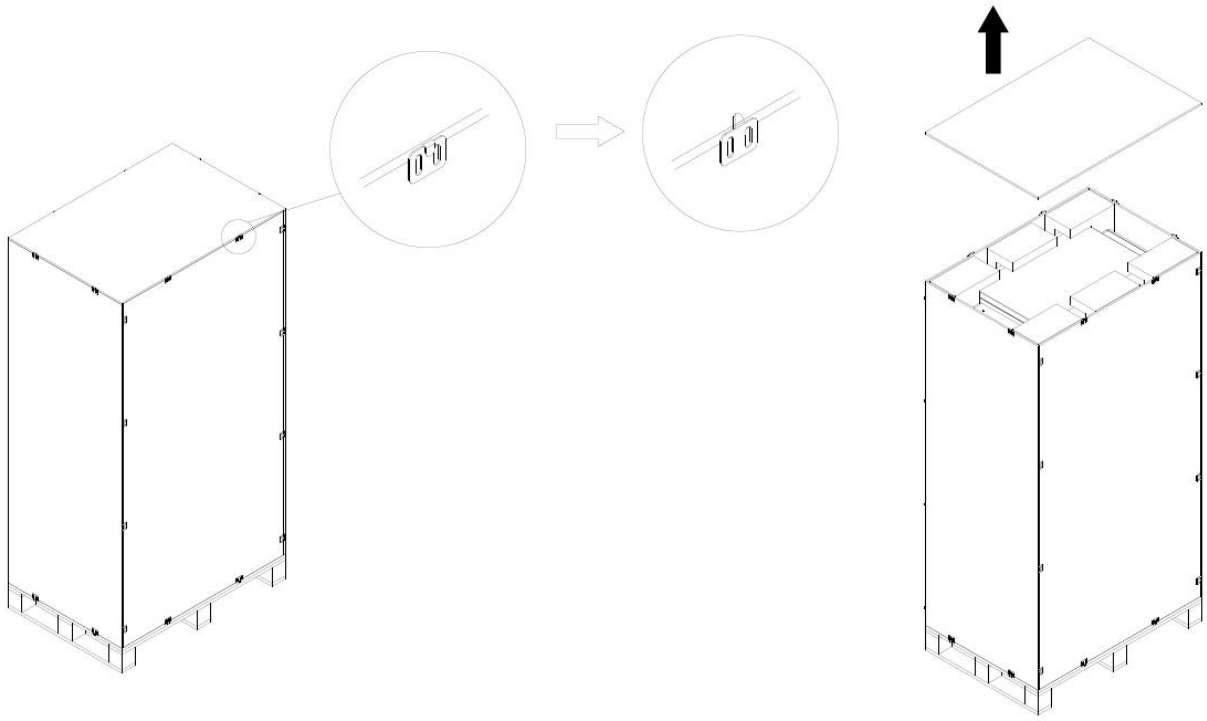


Figure 4

- Remove the wooden boards, and use a utility knife to remove the PE stretch film and pearl cotton wrapped around the charging pile, as shown in Figure 5.

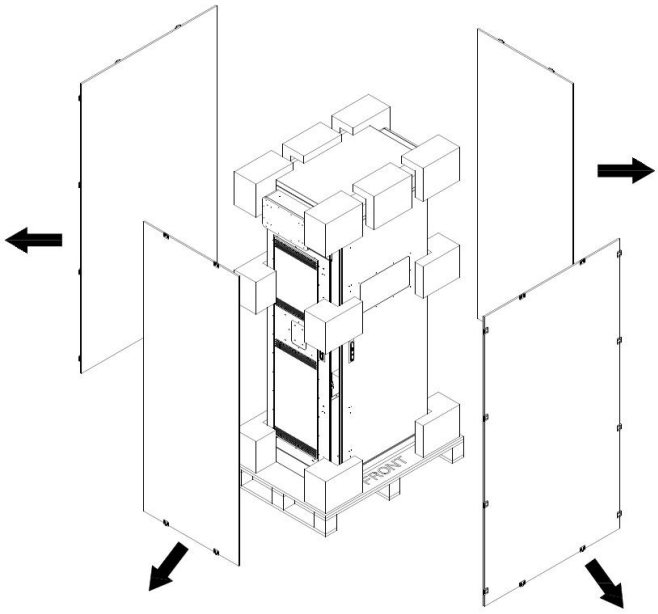



Figure 5

- Use a screwdriver to remove the baffle at the bottom, as shown in Figure 6.

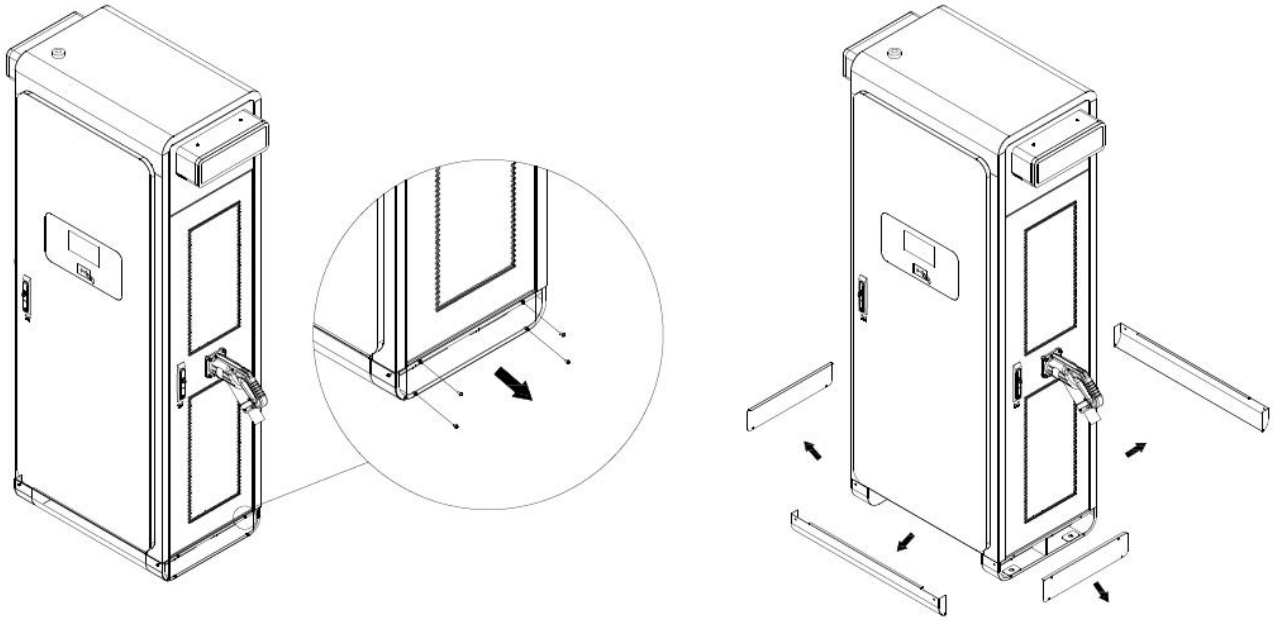


Figure 6

- Use an adjustable wrench to remove the four M12 screws at the bottom, as shown in Figure 7.

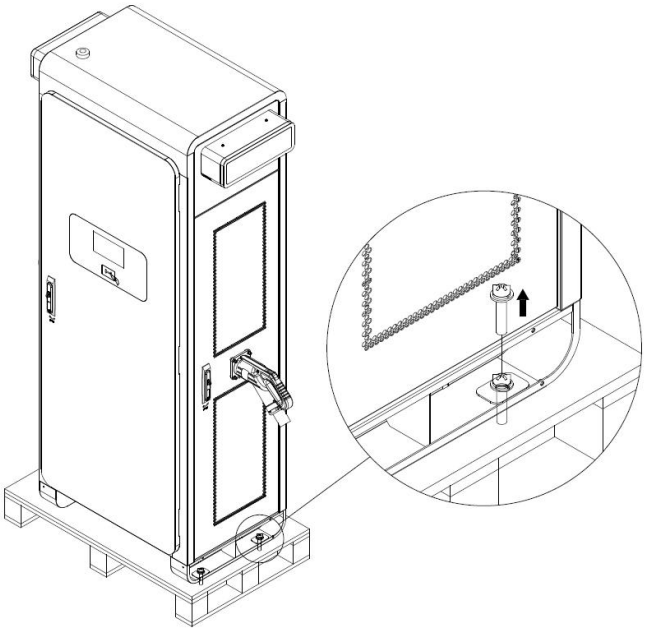


Figure 7

3.5.2 Drilling holes at the foundation

Tools required: claw hammer, percussion drill, Ø16mm bit, insulated gloves, and insulated shoes

- Place the plotting sheet on the concrete foundation and align cable holes on the plotting sheet with those on the foundation, as shown in Figure 8.

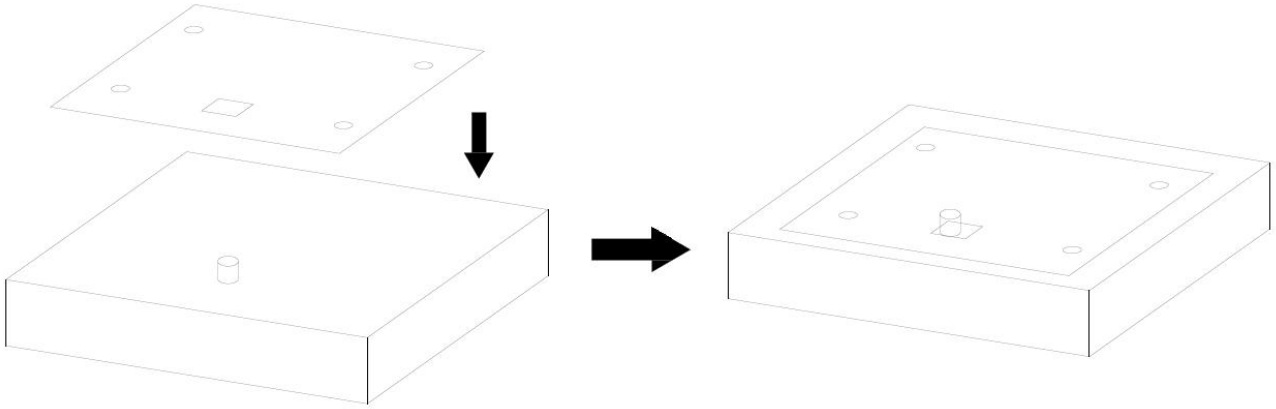


Figure 8

- Secure the plotting sheet, use a percussion drill to drill 4 holes with a diameter of Ø16mm and a depth of 80-85mm on the foundation as per the hole positions on the plotting sheet.
- Tap the four M12*80mm expansion bolts into the holes with a hammer, then tighten the screws to expand and fix them in the holes, and remove the nuts and spacers, as shown in Figure 9.

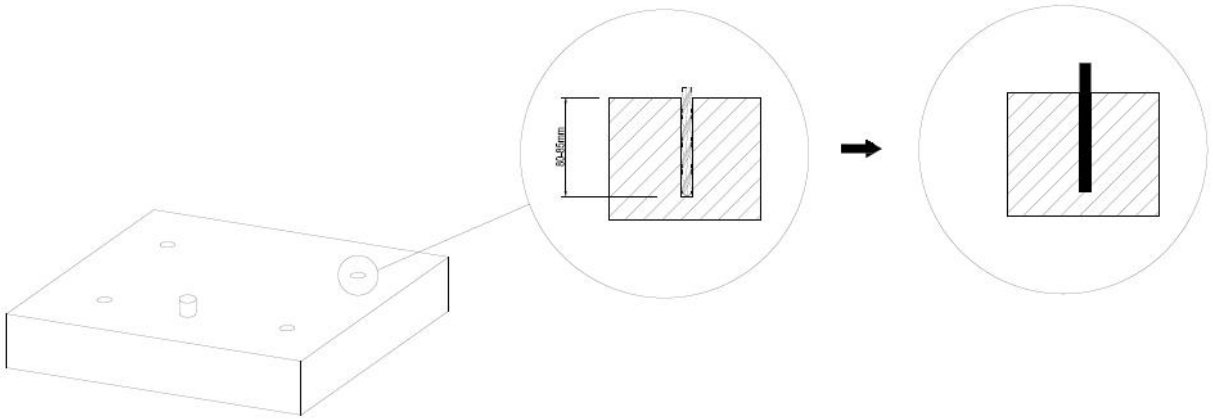


Figure 9

3.5.3 Placement of the charging pile

Tools required: adjustable wrench, screwdriver, and insulated gloves

- Open the front door of the charging pile, and then use a forklift to move the charging pile to the position above the foundation, as shown in Figure 10.

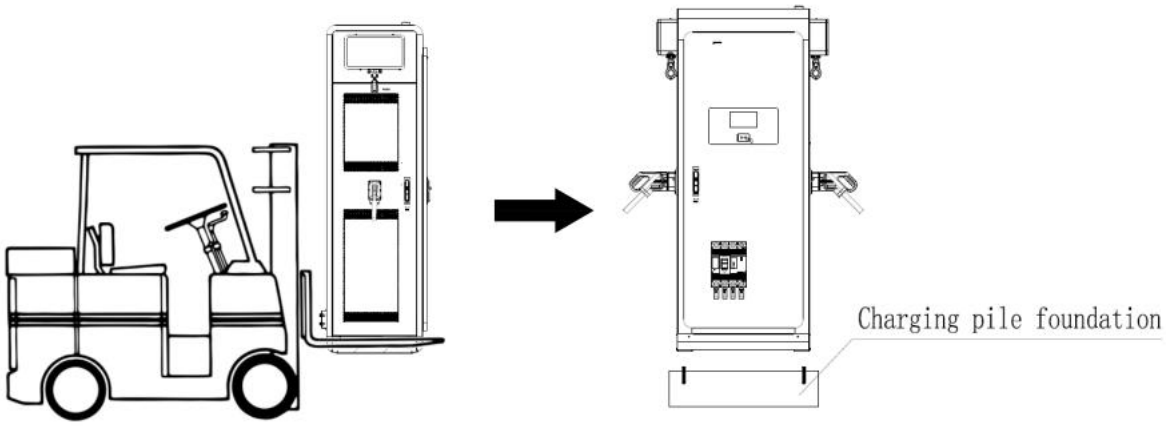



Figure 10

- Pass the cable from the inlet at the bottom of the charging pile, slowly lower the charging pile, and pull the cable out of the front door. Align the holes at the bottom of the charging pile with the 4 expansion bolts on the foundation and then place the charging pile on the foundation, as shown in Figure 11.

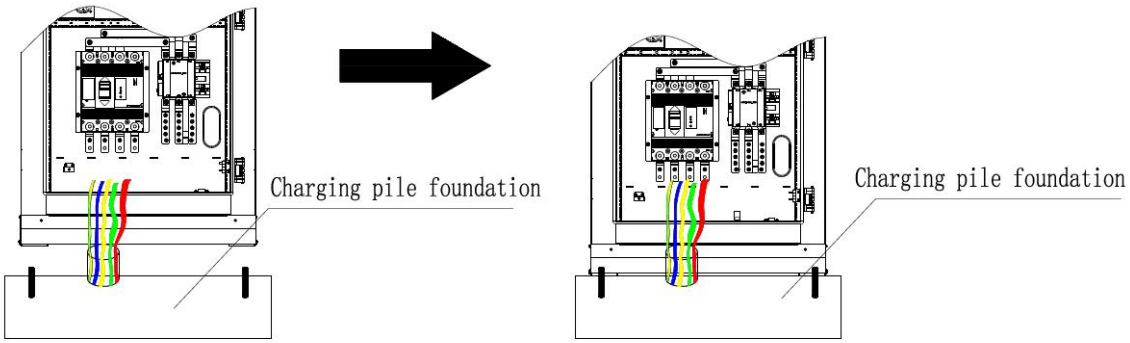



Figure 11

- Use a wrench to fix the 4 expansion bolts, as shown in Figure 12.

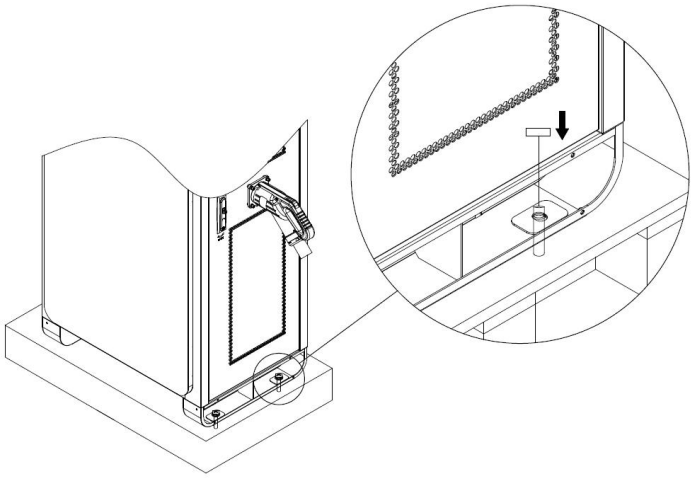


Figure 12

- Use a screwdriver and M6*15 screws to secure the sealing plates on the four sides in the arrow direction, as shown in Figure 13.

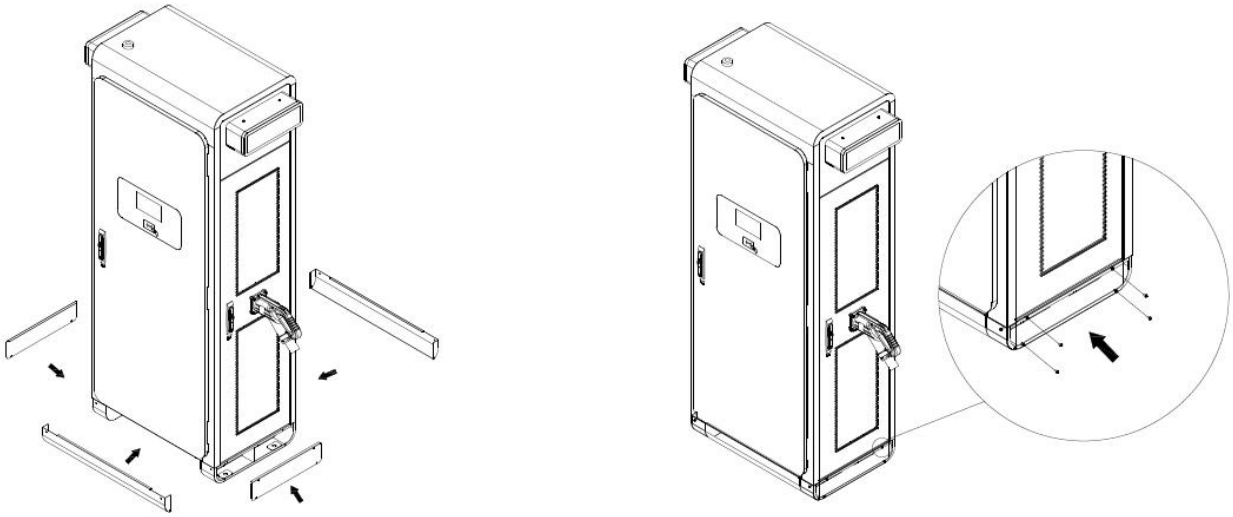


Figure 13

3.5.4 Installation of the incoming cable

Tools required: cable scissor, hydraulic crimping tool, adjustable wrench, insulated gloves, insulated shoes, and insulation tape

- Use a cable scissor to cut the cable to an appropriate length, use a hydraulic crimping tool to crimp the cable gland, insert the heat shrink tubing and let it shrink.
- Use M12 screws to secure the cable gland to the copper bar in proper sequence. The torque is 25-30N·m and should be calibrated, as shown in Figure 14.

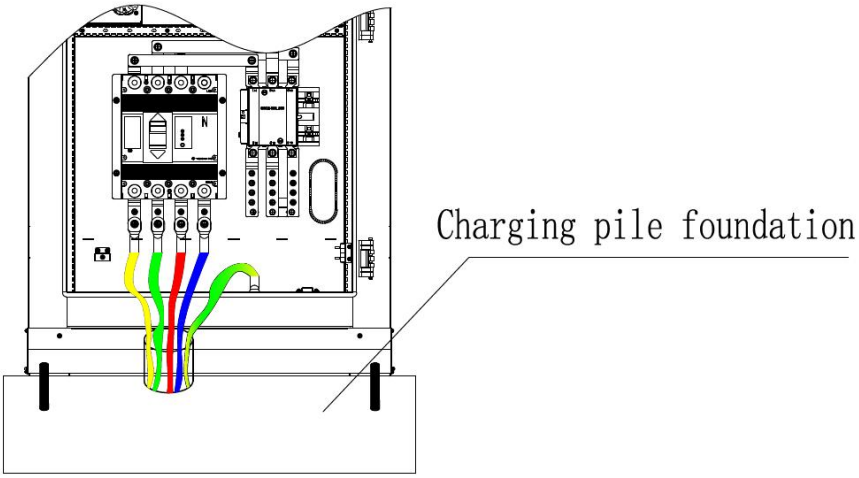



Figure 14

- Connect the case ground point with galvanized flat iron or cable, as shown in Figure 15.

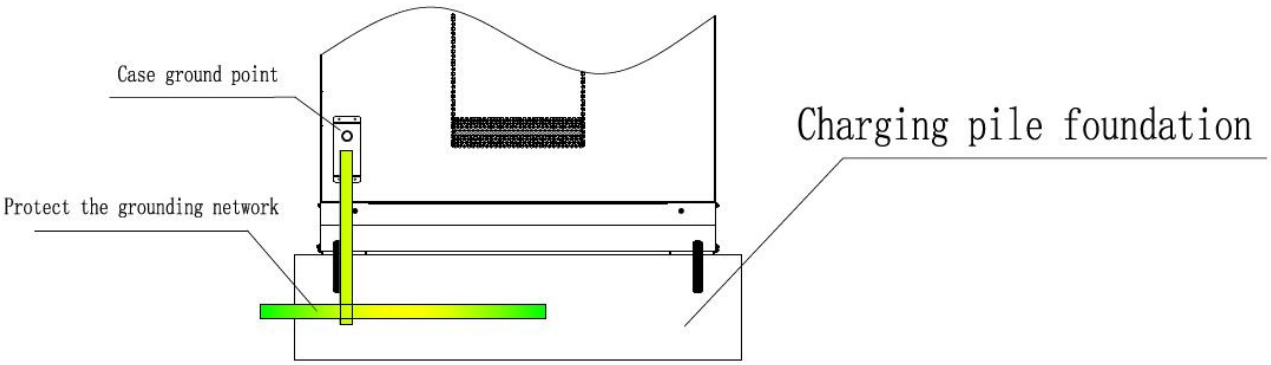



Figure 15

3.6 Check after installation

- After the charging pile is installed, manually check if it obviously sways.
- Retrieve the installation tools, cables, tapes, and screws/nuts from inside the charging pile.
- Check if the internal components of the charging pile are loose and if the wiring terminals come off.
- Check all the grounding positions of the charging pile to ensure reliable connection.
- Check the surface of cables and wires for breakage, damage and scratches.
- Block off cable entries to prevent small animals from entering.
- Check the equipment appearance to ensure it is complete and clean.
- Dispose of the transportation and packaging materials in line with relevant rules.

## 4. Screen Interface

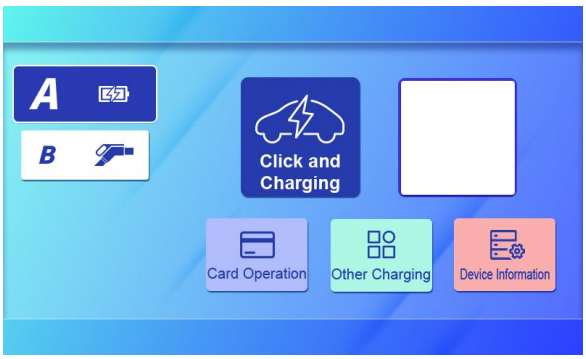
When the charging pile is in standby mode, the screen is in energy-efficient mode and is off. You can wake it by

tapping on the screen.

4.1 Standby interface


Tap on the screen to proceed to the next step or insert the charging connector into the vehicle port

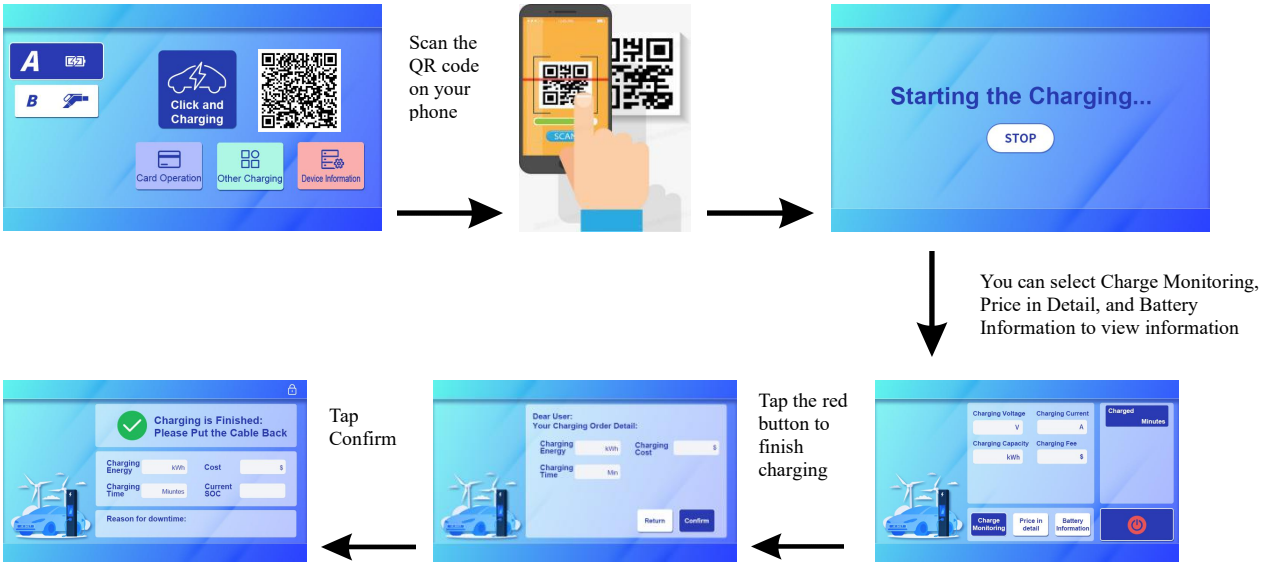
4.2 Selecting charging connector



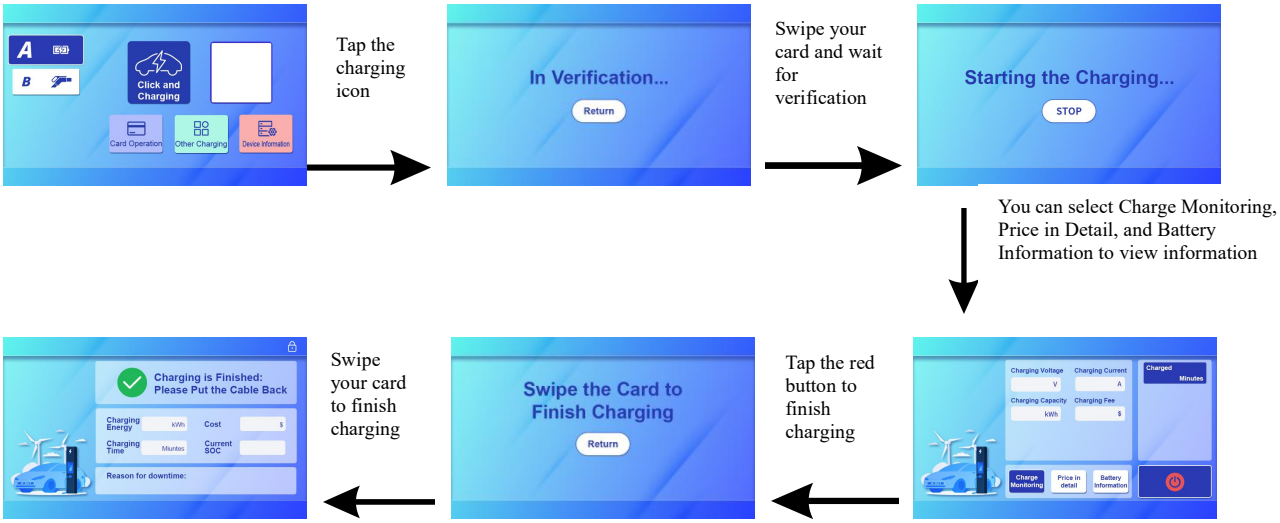

Select an appropriate charging connector as per the prompt on the screen

4.3 Selecting charging start mode

- Scan the QR code to charge



- Use IC card to charge




## 5. Faults and Troubleshooting

| No. | Warning or fault description | Solution |
|---|---|---|
| 1 | The screen goes black or touching doesn't work | Check if the connecting wire of the screen is loose |
| 2 | The card reader doesn't respond to swiping | ● Check if the indicator of the card reader functions properly<br>● Check if the connecting wire of the card reader is loose |
| 3 | DC meter communication failure | ● Check if the connecting wire of the meter communication is loose<br>● Check if the meter address is correct |
| 4 | Charging connector communication timeout | ● Make sure the charging connector is properly inserted<br>● Insert the charging connector again<br>● Check if the wiring terminal of the charging connector is loose |
| 5 | Emergency stop failure | Check if the emergency stop button is pressed When the fault is fixed, clockwise rotate the button to reset |
| 6 | Access control failure | ● Check if the door of the charging connector is fully closed<br>● If the door is closed, check the micro switch for failure; if any, replace it promptly |
| 7 | Lightning arrestor failure | Check if the lightning arrestor window gets red; if yes, it indicates that the lightning arrestor is damaged and needs replacement |
| 8 | Charging module | ● Check the fault code of the module to identify the fault type and |

| | | |
|---|---|---|
| | | solution<br>● Remove the faulty module, replace it with a standby module, and change the address |
| 9 | Electric leakage | ● Check if the back-end circuit of the residual current circuit breaker is insulated<br>● Check if the case ground point is reliable |

## 6. After-Sales Service

Please contact our After-Sales Service Center if you run into any problems during use.

Before contacting our After-Sales Service Center:

- Perform troubleshooting according to "5. Faults and Troubleshooting".
- Record your equipment model, specifications (nameplate photo), fault time, fault description