

Wall-mounted 30KW DC

Charging Station

Product Specification V1.0

Version	Date	Edit	Note
V1.0	25-02-21	Technical Dept.	Edit the first version of the technical specification

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1. Product Technical Feature

DC EV quick charger is mainly used for fast charging of electric vehicles. It is designed with self-developed control board, integrating the charging module, charging connector, human-machine interaction interface, communication, and other parts. The modular design of the DC EV quick charger makes it easy to install and simple to operate and maintain. It is an ideal choice for electric vehicles to charge in the public area.

2. Product Appearance



3. Main Function Description

- Without open door on back side, DC EV quick charger can install back to wall. Cover small area, easy to maintain.
- Internal charging module is designed with independent air space, isolated from the controlling part, to ensure the operating environment of controlling part clean and high stability.
- With wide voltage output rang from 150V to 1000V, it is adjustable to meet the charging needs of different voltage levels of electric vehicles.
- All-round protections include input, output, components self-test and operation connection protection, input over/under voltage protection, DC output over voltage/short circuit protection, module overheating/fault protection, insulation protection, DC EV quick charger and battery connection inspection and other multiple protection functions, to ensure system operate safely and reliably and effectively prevent accidents
- Human-machine interface adopts 7-inch color touchscreen with humanized design, easy and convenient to operate.
- Equipped with comprehensive protection functions such as AC over/under voltage protection, output over/under protection, output current limiting/overcurrent protection, over-temperature protection, battery reverse connection protection, etc.
- The DC EV quick charger is designed to prevent rain and dust. IP55 protection grade meets the outdoor operation requirements.
- The function of charging plug falling off detection ensures the safety use during charging process.
- The function of remote and local upgrade control program.

4. System Working Principle

1. System Structure

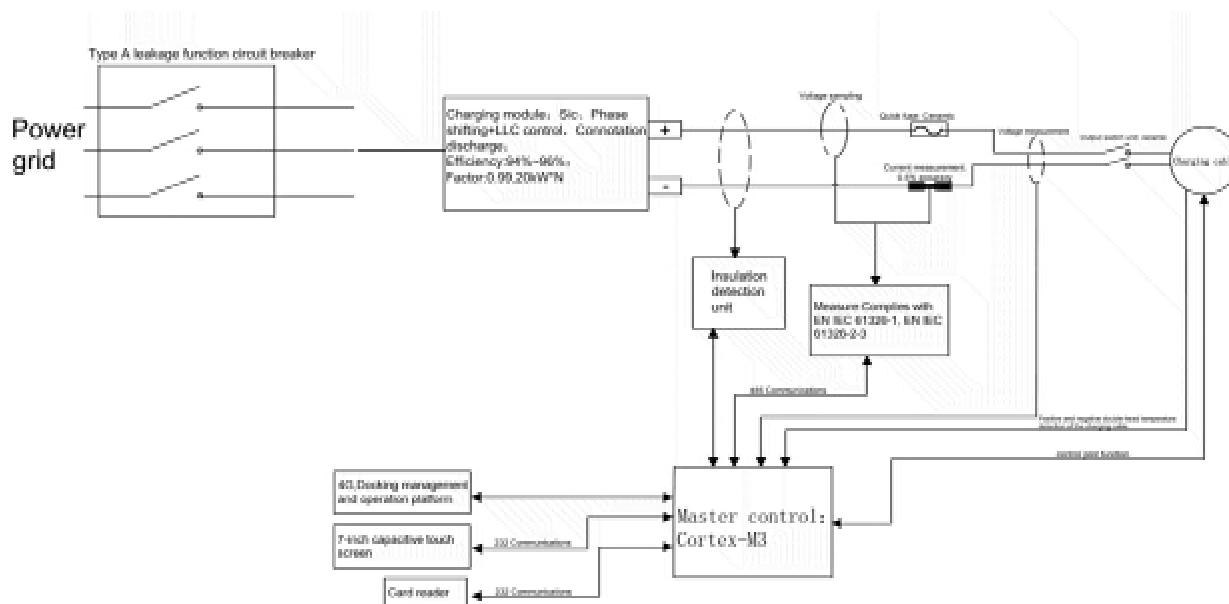
The DC EV quick charger consists of 4 main parts. The first is human-machine interaction part. It includes the charging station body, touchscreen, RFID card reading module, charging plug. Secondly is the controlling part, which mainly refers the main monitoring and auxiliary

module. The third part is the metering unit-electricity meter. The last part is safety protection unit, which is composed of lead-in line protection switch, emergency stop switch, over and under voltage protection unit, etc.

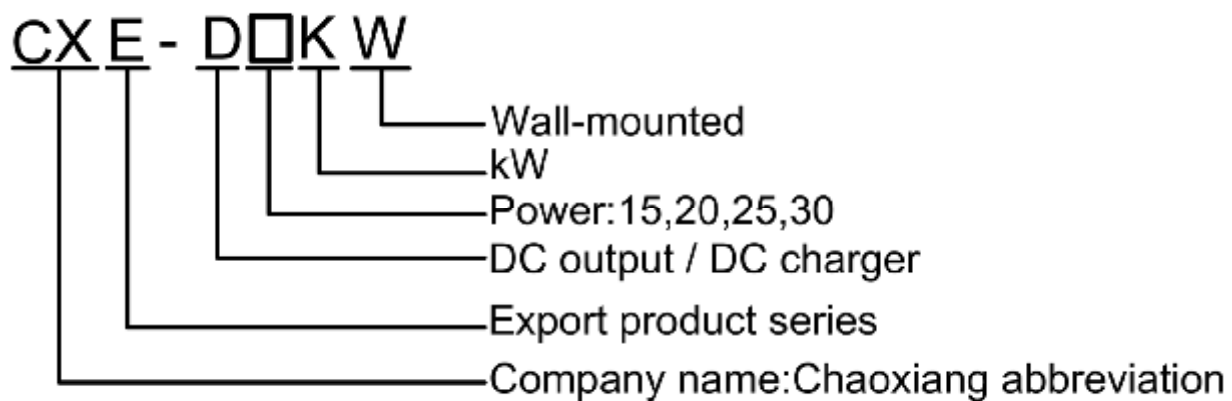
2. Working Principle

When connecting the charging plug to the DC EV quick charger, the controlling board will confirm the connection to wake up the charging module, which convert AC voltage into DC voltage for charging. Through the human-machine interface such as card reading module or touchscreen, the user gives the charge/ disconnect/ query instructions. Then the DC EV quick charger will receive the instruction signals, communicate with the controlling board, and execute the instruction issued by the user. The main monitoring is not only responsible for many detections, like the detection of the charging port, the detection and control of the safety protection unit, the monitoring of the communication with the energy meter, to ensure the billing and user safety during charging process. It is also responsible for processing charging status, billing, alarm information, and then timely save the information and alarm fault in the controlling module.

The block diagram of its working principle is shown in the figure below:



5. Model Definition



6. Product Specification & Parameter

Model	CXE-D40KW	CXE-D30KW	CXE-D25KW	CXE-D20KW	CXE-D15KW
Output Power	40kW	30kW	25kW	20kW	15kW
Input Voltage	AC400V±20%				
Input Frequency	50/60Hz				
Output Voltage	150~1000VDC				
Constant Power Range	300~1000VDC				
Output Current	0~133A	0~100A		0~70A	
Charging Gun	Single gun with 5m charging cable (length customized available)				
Human Machine Interface	7-inch color touchscreen				
Communication Method	4G/Ethernet				
Stable Voltage Accuracy	≤0.2%				
Stable Current Accuracy	≤0.2%				
High and Low Temperature Stable Current Accuracy	≤0.2%				
Ripple Effective Value	≤0.2%				
Efficiency	≥96%				
Power Factor	≥0.99				
Current Sharing Coefficient	≤5%				
Harmonic Current	≤4%				
Noise	≤65db				
Metering Accuracy	Level 1				
IP Grade	IP55				

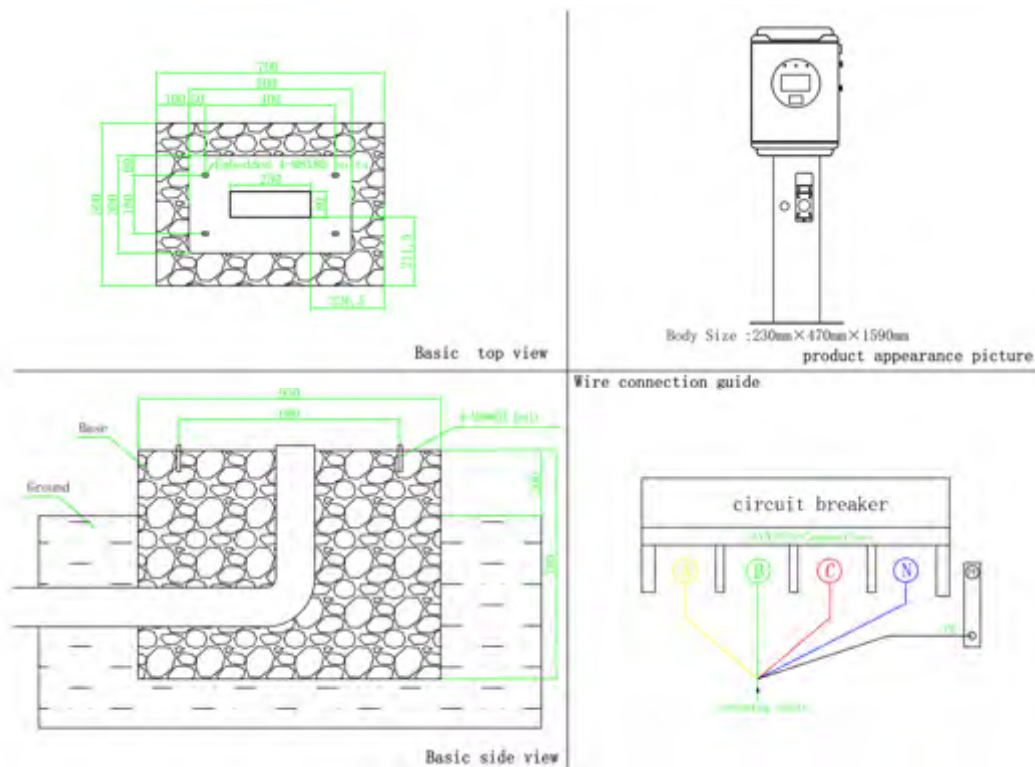
Standby Power	$\leq N \times 10W$
Cooling	Fan cooling
Electrostatic Discharge Immunity	Class 4
Surge Immunity	Class 4
Radio Frequency Electromagnetic Field Radiation Immunity	Class 4
Electrical Fast Transient Burst Immunity	Class 4
Connection Method	Connection Method C
Working Temperature	$-30^{\circ}C \sim 55^{\circ}C$
Working Humidity	5%~95% no condensation
Altitude	$\leq 2000m$
Dimension W×D×H	250MM*470MM*1590MM

7. According to Standards

- IEC/EN 61851-1, IEC/EN 61851-23; NB/T 33001, NB/T 33008.1; EN61000-3-2, EN61000-3-3, EN 61000-6-2, EN61000-6-4;
- IEC/EN 61851-21-2, IEC/EN 61851-24;
- DIN 70121, DIN 70122;
- GB/T 27930, GB/T 34658, GB/T 34657.1 ;
- EN301489-1, EN300220, EN301908;

8. Installation Instruction

- Charging station foundation size construction (attention to keep one hole in the middle of the cement foundation for cables)



Note:

1. This model is 30kw European standard DC single gun wall-mounted car charger and the concrete stage should be set up at the installation location of this charger. As is shown in the above figure, the concrete grade not lower than C20.
2. The concrete stage should ensure a complete appearance, flatness, and no cracks. The embedded pipelines should match the hole position of the charging pile bottom plate to avoid inconsistency between the pipeline and hole position.
3. When wiring connection of DC EV car charger, the cable should follow the protective tube to the circuit breaker inside the chassis. This model uses three-phase electricity A (yellow), B (green), and C (red) three-phase are correctly connected to the circuit breaker according to the national standard color code, N line (light blue) is connected to the busbar, and PE line (yellow green alternating) is connected to the PE busbar. The cable end at the overlap should use DT to ensure stability and reliability.

- Before power on, pls check and make sure that there is no short circuit in the input

circuit.

9. Security Policy

1. Overvoltage and undervoltage protection on the AC input side

When the AC input overvoltage or undervoltage occurs, the DC EV quick charger will automatically cut off the DC output and send alarming

2. Overvoltage protection on the DC output side

When the DC output overvoltage occurs, the DC EV quick charger will automatically cut off the DC output and send alarming signal.

3. Overcurrent protection on the DC output side

When overcurrent occurs on the DC output side, the DC EV quick charger will automatically cut off the DC output and send alarming signal.

4. Short-circuit protection on the DC output side

When the DC output occurs short-circuit, the DC EV quick charger will automatically enter the current limiting output state.

5. Lightning surge protection

The DC EV quick charger is equipped with a C-class lightning protection device, which has the function of lightning surge protection. It can effectively prevent direct lightning, inductive lightning or overvoltage from damage to the charging equipment.

6. Battery current backflow protection

The DC EV quick charger has the function of preventing battery current backflow from causing harm to charging equipment and personal safety.

7. Over-temperature protection

When the AC-DC conversion power unit overheats, the DC EV quick charger will automatically cut off the DC output and send alarming signal

8. Power battery abnormal detection

When establishing the connection between the DC EV quick charger and BMS, the DC output circuit of the DC EV quick charger is not allowed to connect to the battery until the

power battery polarity is correctly detected. During the charging process, when the temperature and voltage of the power battery exceed the limit value, the DC EV quick charger will automatically stop charging.

9. Power battery connecting confirmation

The charging process will start only when the DC EV quick charger is correctly connected to the EV's battery system. If abnormal connection detected, it will automatically cut off the DC output immediately.

10. Temperature monitoring and alarm

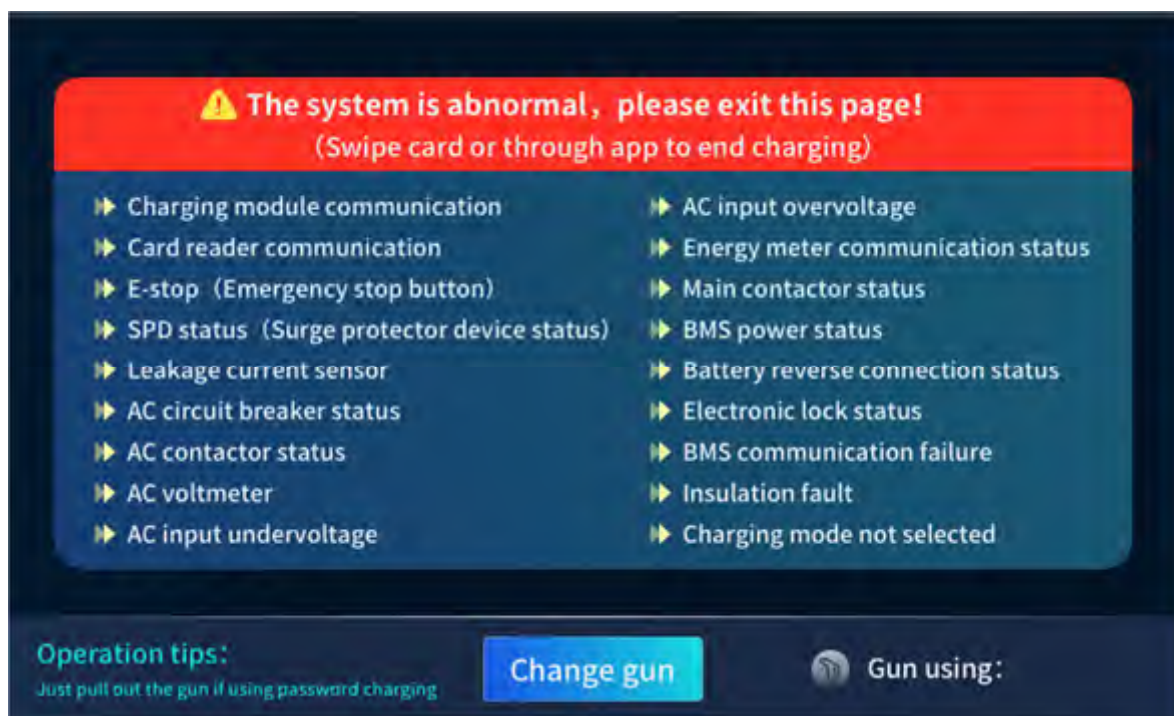
The built-in temperature monitoring device in the charging gun monitors the temperature rise of the main power conduction pin in real time. If exceeds the setting value, the system will alarm and cut off the DC output to prevent the DC EV quick charger and vehicle damage and personal injury.

11. Emergency stop

Equipped with the emergency stop on the DC charging station, the personnel can cut off the charging circuit within 100ms on the hardware under the emergency cases. It helps to prevent many vicious events such as electric shock, fire, or explosion, etc.

12. Equipment self-check

The system self-check error page displays various error messages that occur during the self-check, and a red warning light will flash before the error message. Note: If the user uses the mobile phone to scan the QR code for charging and encounter an error during the self-check, this page will wait for about 5 seconds and then automatically return to the home page. Users do not need to take any action. However, if the user swiped the card on this page, will need to swipe again to return to the home page.



10. Swipe Card to Start Charging

By swiping online or offline card, DC EV quick charger can realize the functions of start, stop charging, refund and so on.

Main charging steps are as follows:

Step 1: Select an idle charging station, insert the gun correctly into the charging vehicle, and click the touch screen to select the charging gun.



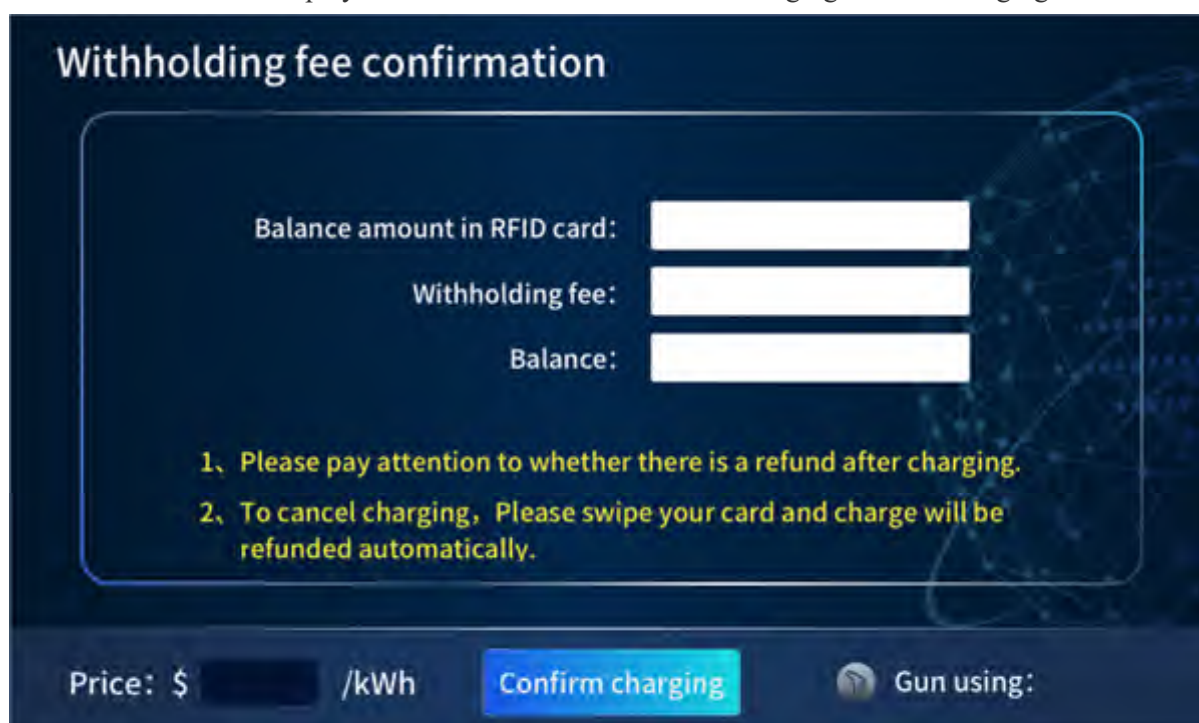
Click and select the RFID card:



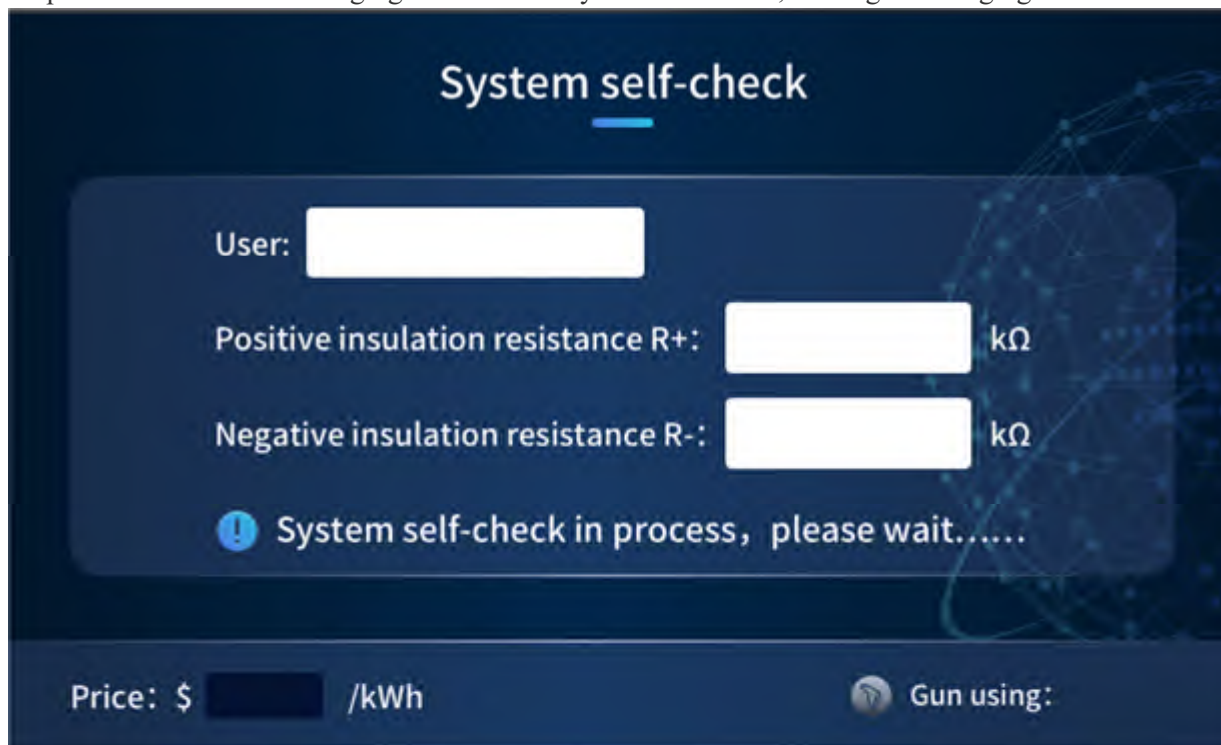
Step 2: After selected RFID card, five charging modes will appear as shown in the figure below. Select any charging mode. After confirming the BMS power voltage of the charging vehicle, select the correct VDC to avoid damage to the vehicle.



Swipe your online or offline card. After the card is successfully swiped, the estimated charge amount and card balance will be displayed. You need to click "Confirm Charging" to start charging.



Step 3: Click to confirm charging and enter the system self-check, waiting for charging to start.



The image shows a 'System self-check' interface on a dark blue background. At the top, the title 'System self-check' is displayed with a blue underline. Below the title, there are three input fields: 'User:', 'Positive insulation resistance R+:', and 'Negative insulation resistance R-:'. Each field is followed by a white input box and a unit 'kΩ'. Below these fields, there is a blue circular icon with a white exclamation mark, followed by the text 'System self-check in process, please wait.....'. At the bottom left, there is a 'Price: \$' label followed by a dark blue input box and a '/kWh' unit. At the bottom right, there is a circular icon with a white 'G' followed by the text 'Gun using:'.

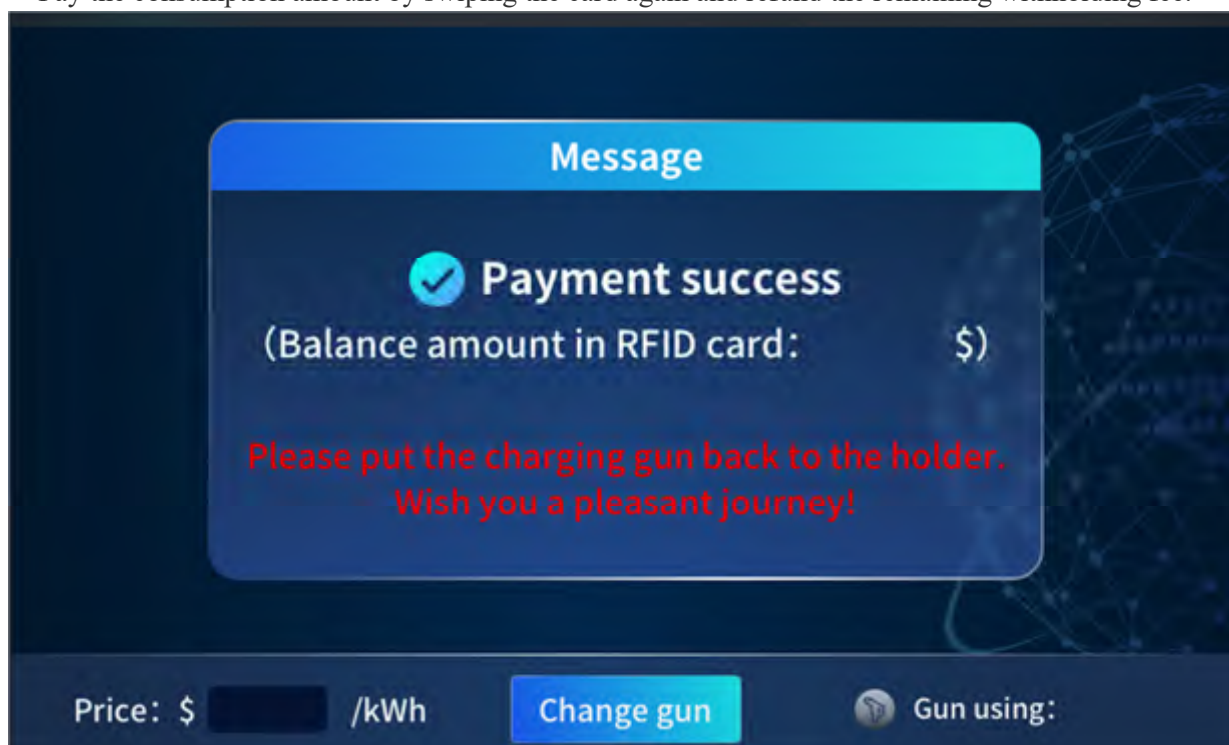
Normal charging interface (swipe card charging as an example)



Step 4: To end the order in advance, you need to swipe your card, complete the charging process, and the amount settlement interface will appear.



Pay the consumption amount by swiping the card again and refund the remaining withholding fee.



11. Precautions for Operation

1. Due to some vehicle models cannot be charged after locking the car for a few hours, please connect the gun and charge it in time after locking the cars.
2. During the charging process, the user shall not directly pull out the charging gun by force.
3. The DC EV car charger should be used under the environmental conditions specified in this specification.
4. If need to stop charging in advance, please follow the specifications. Stop charging first and then pull out the gun.
5. If safety accident happens during the charging process, such as abnormal sound, short circuit and other emergencies, press immediately the emergency stop button, disconnect the power, and then notify the site management personnel or call the manufacturer for maintenance.

12. Packaging, Transportation and Storage

1. Our products are packed in paper boxes lined with foam padding, and desiccants are included in the packaging boxes to prevent moisture.
2. The DC EV car charger is packed in a ultrahard material carton. Pls keep sure that there

is no severe vibration, impact, tumbling or inversion during transportation.

3. Modules and cabinets should be stored in a dry, well-ventilated environment during storage. They must not be stored outdoors, and should be placed in a warehouse free from corrosive or explosive gases.

4. The product must not be stacked during storage.