



Operation and Installation Manual

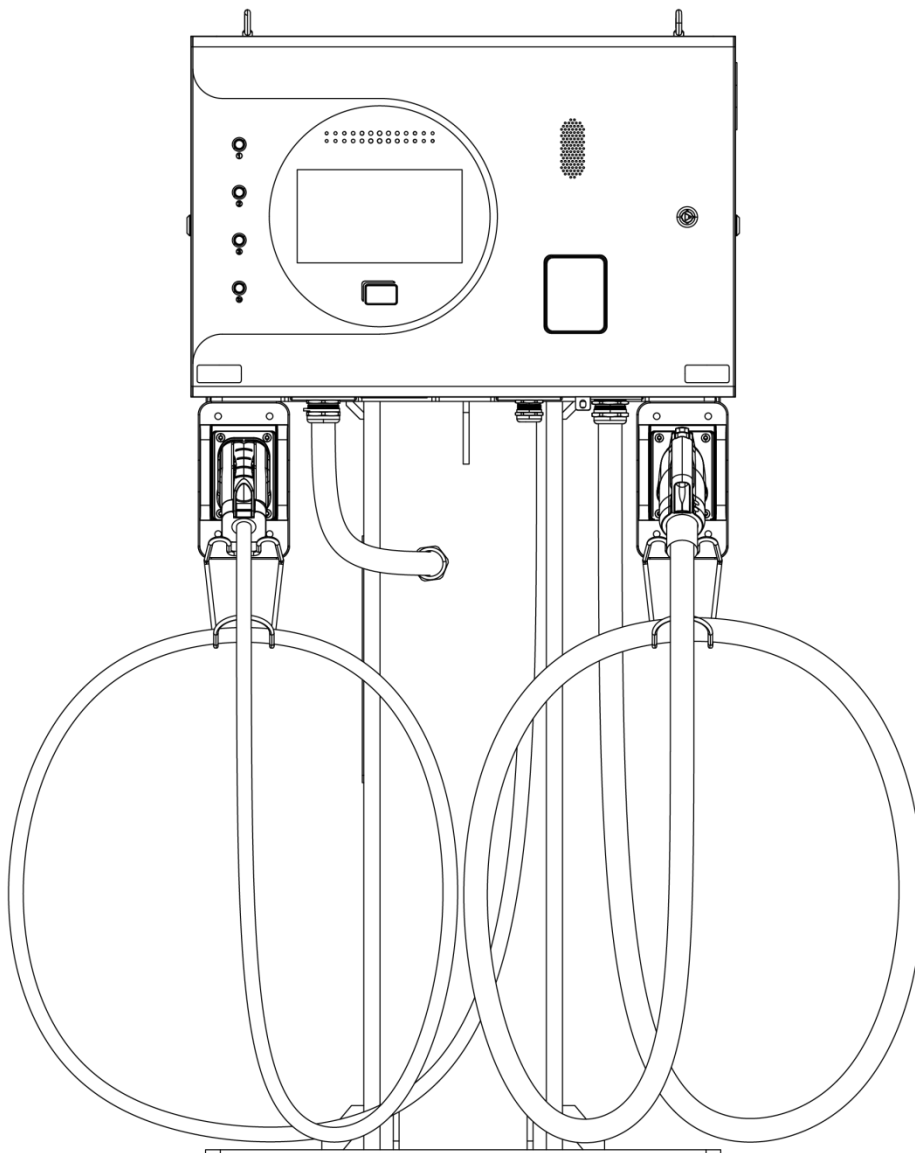
KERN ETL

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1. About This Document

1.1 Purpose of the Document

This document provides the information that is necessary to safely perform these tasks:

- Install the electric vehicle supply equipment (EVSE)
- Operate the EVSE
- Perform basic troubleshooting

1.2 Scope of Application

1.2.1 EVSE

This document is applicable for KERN ETL EVSE.

1.2.2 Target Group







This document is intended for the following group of people:

- EVSE operator
- Installation engineer

1.3 Revision History

Version	Date	Description
001	May 2024	Initial version
002	October 2024	Update Formats

1.4 Definition of Relevant Warning Symbols

No.	Symbol	Meaning
1		Operations or situations in which hazardous voltages must be handled with extreme caution
2		Important safety information
3		Indicates a burn hazard arising from hot areas or areas with high component temperatures
4		Protective earth connection
5		Alternating current
6		Indicates that the described operations must be performed using personal protective equipment

1.5 Manufacturer Contact Information

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2. Safety

Before starting any operation, please read the operational instructions and safety precautions carefully to minimize the risk of accidents. The “Caution”, “Warning” and “Danger” labels on the product and manual do not represent all safety measures, but are only supplements to various operational safety precautions.



When operating Chargecore's products and equipment, it is necessary to follow the industry's safety regulations and strictly adhere to the equipment precautions and specific safety instructions provided by Chargecore.










2.1 General Safety Instructions

In order to ensure personal safety, the following regulations should be observed at all times:

1. Only trained personnel equipped with sufficient knowledge of EVSE are authorized to perform installation and maintenance. Strictly adhere to the safety instructions provided in the manual and local safety regulations.
2. Before conducting any work inside the EVSE, ensure that the station is de-energized and the main input to the EVSE must be disconnected.
3. Clearly mark switches, buttons, and any other components that should not be operated while working inside the EVSE to indicate they are prohibited from use.
4. Properly route and protect power distribution cables to avoid accidental contact when operating power supply equipment.
5. It is strictly prohibited to wear conductive objects such as watches, bracelets, bracelets, and rings on the finger during operation.
6. De-energize the EVSE immediately if water or humidity is detected on the equipment. When operating in a humid environment, take precautions to prevent water from entering the device.

2.2 Operational Safety Instructions

	When the EVSE is energized, some components have high voltage, direct contact or indirect contact with these components through non-insulating objects will bring fatal danger.
	Construction operations on high-voltage lines may cause fire or electric shock accidents. AC cables must be erected and routed in accordance with the local regulations and specifications. Only personnel qualified for

	high-voltage and alternating current operations can perform various high-voltage operations.
	It is strictly forbidden to operate high voltage and alternating current in thunderstorm weather.
	When performing various operations on high voltage and alternating current, special insulated tools must be used.
	It is strictly forbidden to short-circuit the non-grounded pole to the ground during operation. A short circuit will cause equipment burns and personal safety hazards.
	It is necessary to do a proper grounding of the equipment in time in order to avoid lightning damage to the equipment.
	The static electricity generated by the human body will damage the electrostatic sensitive components on the circuit board. Before touching circuit boards, wear an anti-static wrist strap and ground the other end of the anti-static wrist strap to prevent static electricity from damaging sensitive components.
	The polarity of cables and interface terminals must be strictly checked when performing live work.
	The power distribution operation space is compact, so please pay attention to select the operation space before any operation.
	When operating inside the EVSE, ensure hands, wrists, and arms remain tense to prevent accidents resulting from excessive movement of body or tools in case of slippage.
	This equipment is not intended for use in a residential environment and may not provide adequate protection for radio reception in such environments.

This device complies with Part 15 of the FCC Rules / Industry Canada licence-exempt RSS standard(s). 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.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit

accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

MPE Requirements

To satisfy FCC / IC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

Les antennes installées doivent être situées de façon à ce que la population ne puisse y être exposée à une distance de moins de 20 cm. Installer les antennes de façon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l'antenne.

La FCC des états-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son fonctionnement.

3. Description

3.1 Overview of KERN – Outside

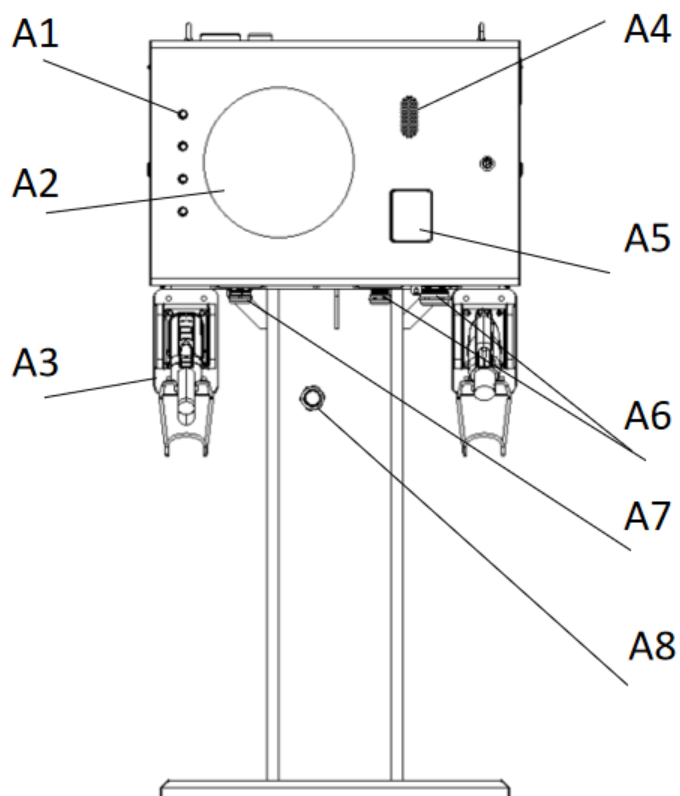


Figure 1. Front View of the EVSE

A1	Mechanical Button	A2	Touch Screen	A3	Gun Stock	A4	Trumpet
A5	POS Machine	A6	DC Waterproof Gland	A7	AC Waterproof Gland	A8	Outlet

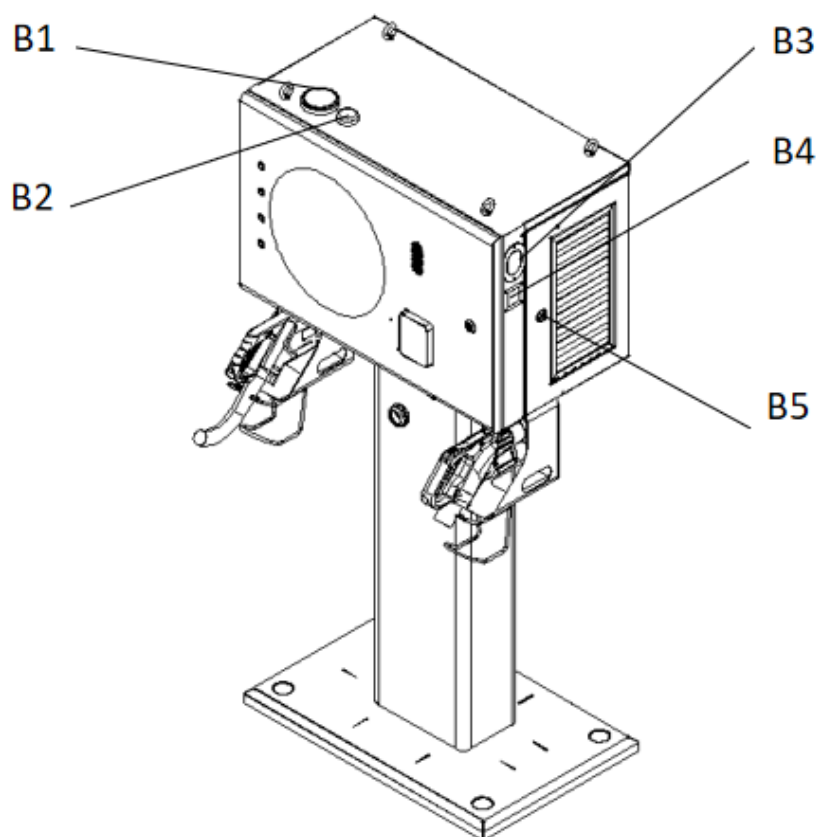


Figure 2. Side View of the EVSE

B1	4G Module Antenna	B2	POS Machine Antenna	B3	Emergency Stop Button
B4	DC Meter window	B5	Right Door Lock		

3.2 Overview of KERN – Inside

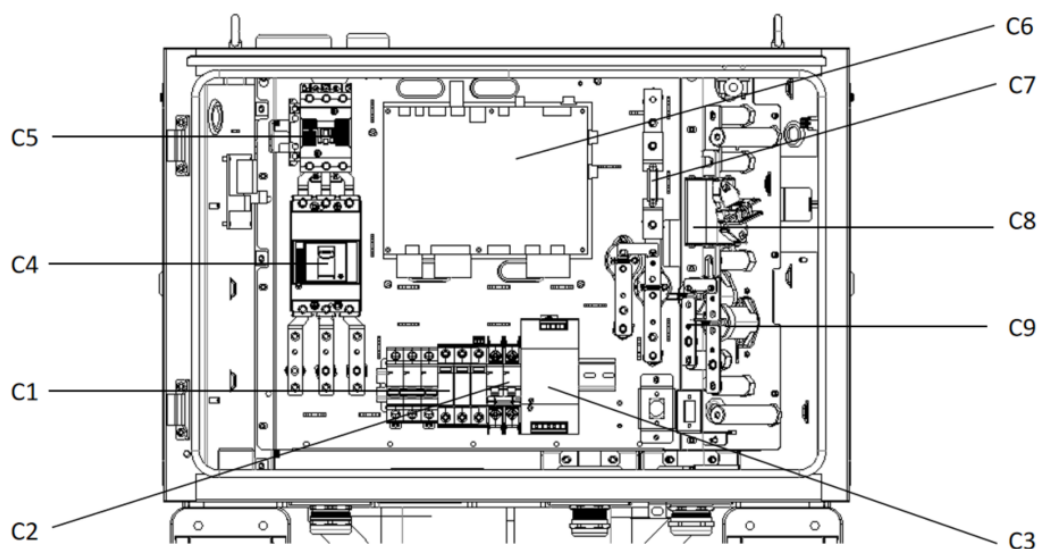


Figure 3. Internal Component Diagram

C1	Surge Protector	C2	RCBO	C3	UR1-24V
C4	MCCB	C5	AC Contactor	C6	PCB
C7	Shunt	C8	Fuse	C9	DC Contactor

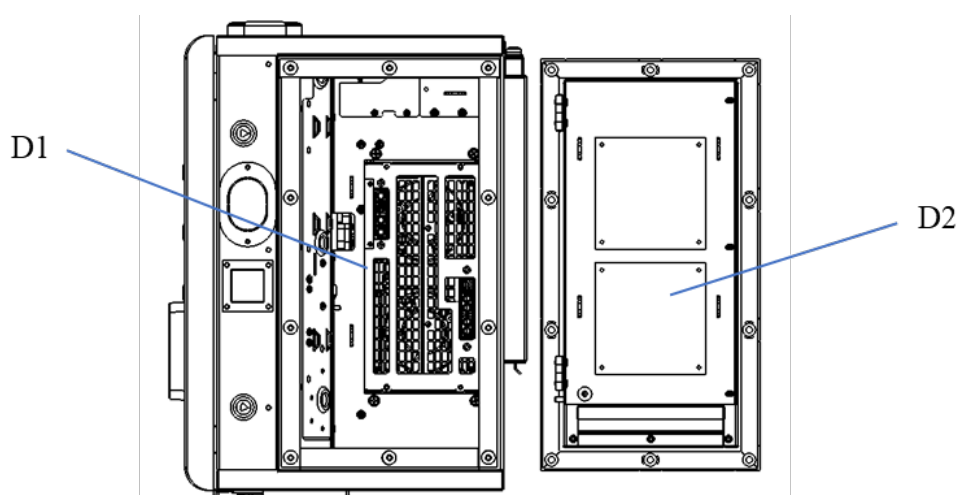


Figure 4. Right Component Diagram

D1	Power Module	D2	Fan
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3.3 Overview of EVSE Status Indicator

Indicator Light	Standby	Charging	Error
DC	Green steady	Blue steady	Red steady

4. Transportation and Storage






The EVSE is mounted on a wooden pallet and protected with wooden box and wrappings to prevent damage during transportation. Handle with care and avoid dropping or sudden impacts.














When storing the product, please ensure it is placed in a dry environment with an ambient temperature between -40°C and 70°C. The storage area should be kept clean and well-ventilated.

5. Installation

5.1 Installation Tools

The following tools are recommended and should be selected based on the actual on-site conditions.

No.	Category	Name	Use	Picture
1	Wire Preparation Tool	Electrician's Knife	Peeling off insulating sheath	
2	Tools For Installation	Wire Stripper	Peeling off insulating layer	
3	Tools For Installation	Crimping Tool	Terminal crimp	
4	Tools For Installation	Impact Drill	Component tube clip installation	
5	Tools For Installation	Electric Air Pick Machine	Slotted	

6	Tools For Installation	Cutting Machine	Cut the tube	
7	Tools For Installation	Heat Gun	Heat shrinking of insulating materials	
8	Tools For Installation	Hot Melt Machine	Welded PE water pipe	
9	Tools For Installation	Allen Key (Full Set)	Install and remove screws	
10	Tools For Installation	Open-End Wrench (Full Set Includes No. 13)	Install and remove the nut	
11	Tools For Installation	Angle Grinder	Grinding of materials	
12	Tools For Installation	Phillips Screwdriver (Full Set)	Remove and install screws	
13	Measuring Instrument	Laser Level	Level measurement	
14	Measuring Instrument	Level	Level measurement	
15	Measuring Instrument	Multimeter	Measure voltage, current, etc.	
16	Measuring Instrument	Megohmmeter	Measuring insulation resistance	
17	Assistive Device	Insulating Floor Mat	Placing the disassembled parts	
18	Lifting Tools	Manual Crane	Equipment lifting	

5.2 Installation Materials

5.2.1 Power Cables

Kern CE EVSE recommends using cables with the following specification:

- Voltage level of 0.4/1kV or higher
- Copper conductors only
- Temperature resistance level of at least 90°C.
- If shielding is required according to local regulations, both ends of the shielding wire must be connected to the PE terminal.

Phase sequence	L1 / L2 / L3	N	PE
Cable diameter (30kW)	5AWG (16.77mm ²)	5AWG (16.77mm ²)	5AWG (16.77mm ²)
Torque (N.m)	5~6.6N.m	5~6.6N.m	5~6.6N.m
Cable diameter (40kW)	5AWG (16.77mm ²)	5AWG (16.77mm ²)	5AWG (16.77mm ²)
Torque (N.m)	5~6.6N.m	5~6.6N.m	5~6.6N.m

5.2.2 Terminals

Please refer to the table below to select the proper terminals corresponding to different wire diameters.

Wire Diameter	Terminal Model
8AWG (8.37mm ²)	SC10-6
7AWG (10.55mm ²)	SC10-6
6AWG (13.3mm ²)	SC16-6/SC16-8
5AWG (16.77mm ²)	SC16-6/SC16-8
4AWG (21.15mm ²)	SC25-6/SC25-8
3AWG (26.67mm ²)	SC25-6/SC25-8
2AWG (33.62mm ²)	SC35-8

5.2.3 Network Cable

- When utilizing an Ethernet communication function, it's advised to use a shielded twisted-pair network cable (Cat6a) along with an RJ45 crystal plug.
- Ensure that the network cable does not exceed 75 meters in length.
- If it exceeds 75 meters, the construction plan must be tailored according to the site conditions.

5.2.4 Other Materials

Additional materials required for cable assembly, such as heat shrink tubes, insulation tape and cable tie.

5.3 Requirement for Installer

1. Installers should abide by the installation site safety regulations.
2. Installers should avoid working while the EVSE is energized whenever possible.
3. Installers must wear a personal protective equipment correctly and ensure it is in good, including:
 - Safety Helmet
 - Insulation Glove
 - Insulation Boot
 - Safety Glass
4. Do not wear unsafe clothing such as loose clothing and slippers.
5. It is strictly prohibited from drinking and smoking on the construction site.
6. For high-altitude installation, installer must wear safety helmets, hang seat belts, wear non-slip shoes, and fasten labour tools.
7. If the construction site is dusty or there is painting work, protective masks must be worn.
8. Do not enter the hoisting area, below the vertical operation and other dangerous areas.

9. Keep a safe distance from mechanical equipment and electrical circuits to avoid any potential mechanical or electrical damage.
10. Installers using mobile power tools must be proficient in their operation and knowledgeable on the safety precautions.
11. For temporary electricity use on-site, it's crucial to maintain the integrity of the electrical box, and any damaged electrical components must be promptly replaced.
12. When entering the foundation pit, roof and other marginal places and various openings, installers must concentrate their attention to prevent falling from heights.
13. Pay attention to the ground conditions such as iron nails and steel bars to prevent injuries such as punctures, abrasions, hanging and falling.
14. Installation site protection facilities, safety signs, warning signs, etc., must not be dismantled without proper authorization.

5.4 Grid Capacity Requirements

Ensure that the distribution network can support the requirements of the EVSE as outlined in the table below, and select the appropriate circuit breaker for the EVSE.

Please note that when installing an EVSE, the power supply line of the EVSE must be equipped with an independent circuit breaker or leakage protection device, and a B-type leakage protection device is recommended.

EVSE Specification	Distribution grid voltage	Wiring form	Grid capacity	Rated current
30kW	480Vac, 50/60Hz	L1+L2+L3+PE	≥50kVA	38A
40kW	480Vac, 50/60Hz	L1+L2+L3+PE	≥50kVA	51A

EVSE Specification	Circuit Breaker Selection
30kW	Ue=400V ≥80A, Icu≥Ics≥35kA, 3P
40kW	

5.5 Installation Site Requirements

When selecting an installation site for EVSE, the environmental conditions listed in the table below should be considered.

Environmental Conditions	Recommended Range
Ambient temperature	-30°C ~ +50°C
Altitude	≤2000m
Humidity	5% ~ 95%RH No condensation inside the product.
Dust	≤1mg/m ³
Corrosive substances	Free from pollutants such as salt mist, acid, smoke, etc.
Shock	≤1.5mm/s
Insects, pests, vermin, termites	None
Mold	None
Damp	Rainproof

5.6 Space Requirements

To ensure safe and reliable operation of the EVSE, it's essential to provide adequate space for installation, ventilation and maintenance.

5.6.1 Maintenance Distance Requirements

When the back or side of the EVSE will be installed close to a wall or other obstacles, it's necessary to reserve a certain maintenance distance. Please refer to figures below for installation guidelines.

The equipment's external dimensions depicted is 740mm(W) × 1518mm(H) × 510mm(D), with installation size in the figure below.

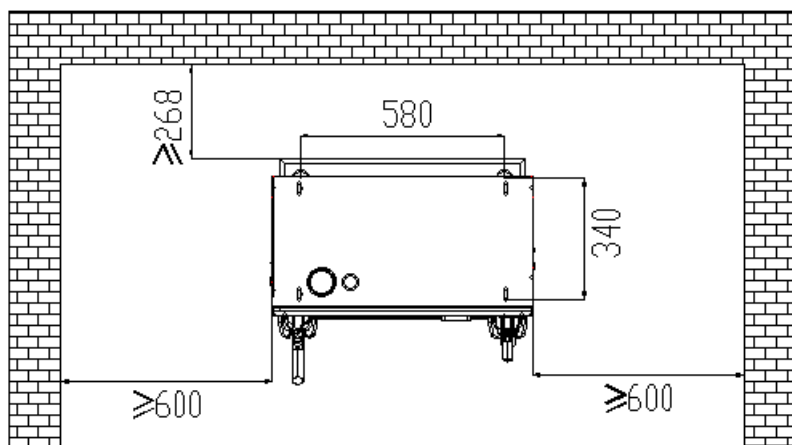


Figure 5. Base Installation Distance Diagram

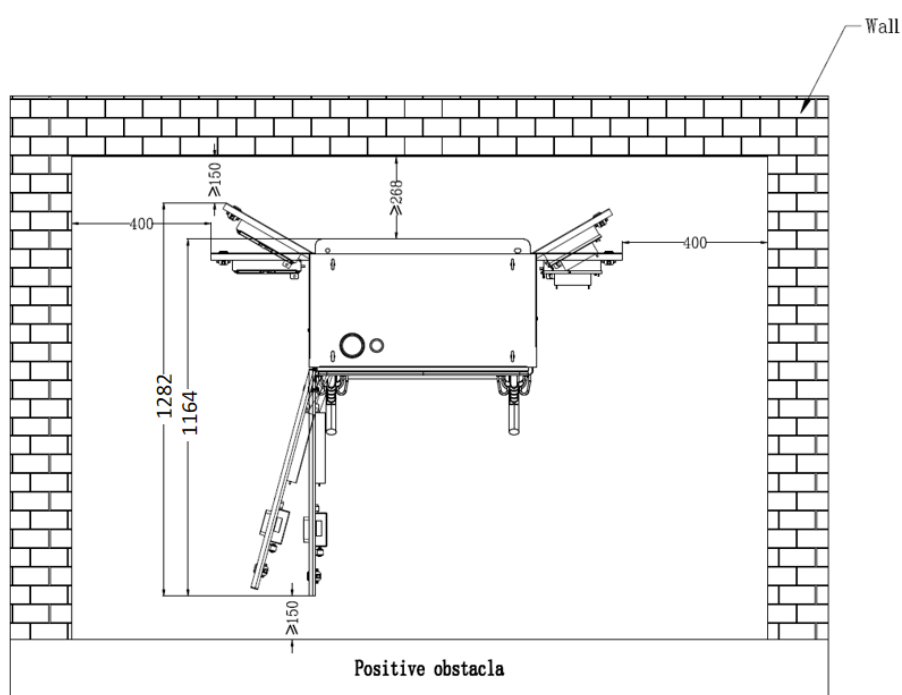


Figure 6. Maintenance Distance Diagram

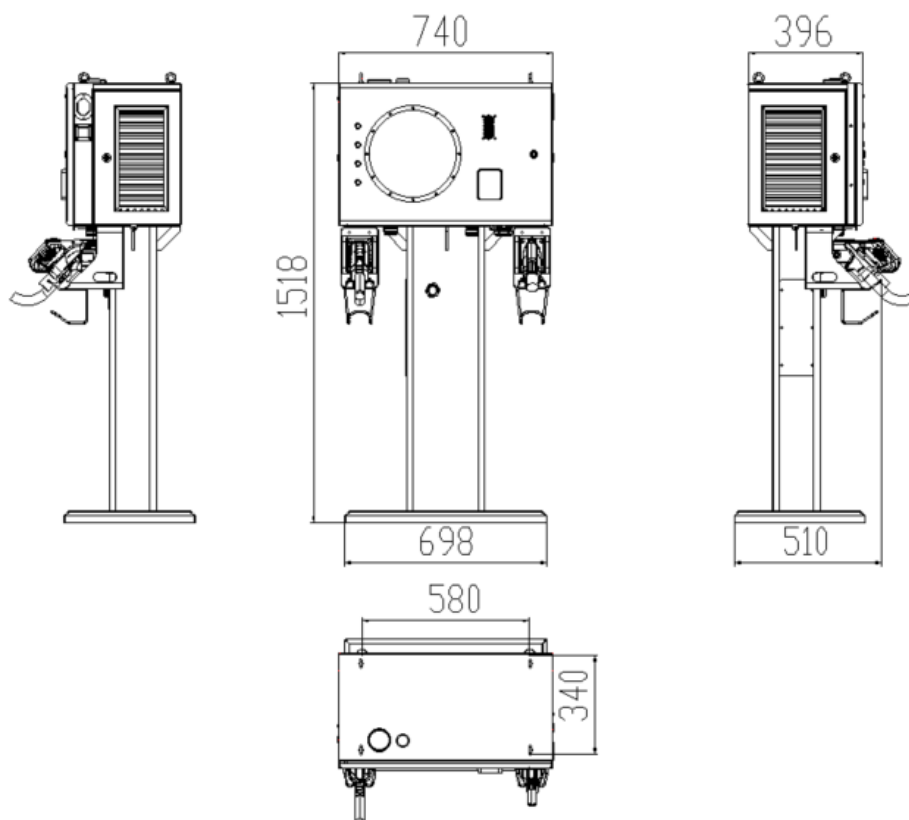


Figure 7. Installation Size

5.6.2 Airflow Space Requirements

The EVSE utilizes left and right ventilation for heat dissipation, with air entering from the right side and exiting from the left side.

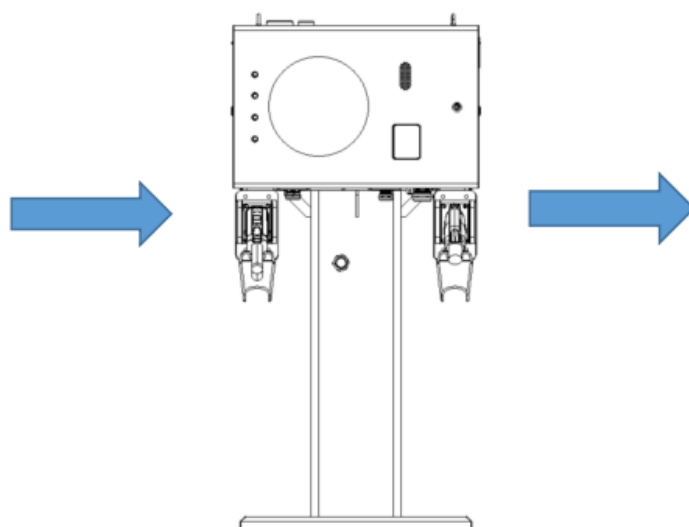


Figure 8. Schematic Diagram of Wind Direction

5.6.3 Parking Space Requirements

When installing the EVSE in the middle of a parking space or between back-to-back parking spaces, it is recommended to leave a space of 1200mm between the car wheel block and the EVSE to facilitate its use, as illustrated in the figure below.

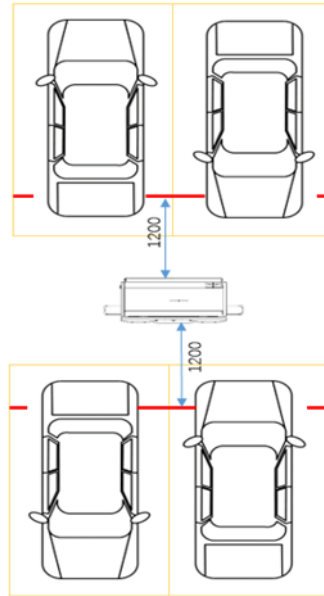


Figure 9. Parking Distance Requirements

5.7 Cement Foundation Requirements

The cement foundation needs to be poured before the installation of the EVSE. The size of the cement foundation must be at least 880mm(W) x 640mm(D) x 600mm(H), and the depth of the foundation is 600mm. The design of the cement foundation can be adjusted according to the user's requirements and the actual situation on site. The schematic diagram of the cement foundation is shown in the figure below, and the basic inspection requirements are as follows:

- The surface of the cement foundation must be flat.
- The foundation installation is higher than the ground level with necessary maintenance passages reserved on-site based on the specific space available.
- The drainage outlet on the foundation surface is slightly inclined to avoid water accumulation.
- The cement foundation is filled with C25 concrete.

- Reserve a wire outlet hole with a diameter of at least 200mm, and adjusting it according to the actual wire diameter as depicted in Figure 4.
- Four M12 screw rods are utilized for fixed pre-embedding, positioned within the interior of the concrete foundation according to the drawing specifications. Expose 30-40mm of thread on the upper surface of the concrete foundation.

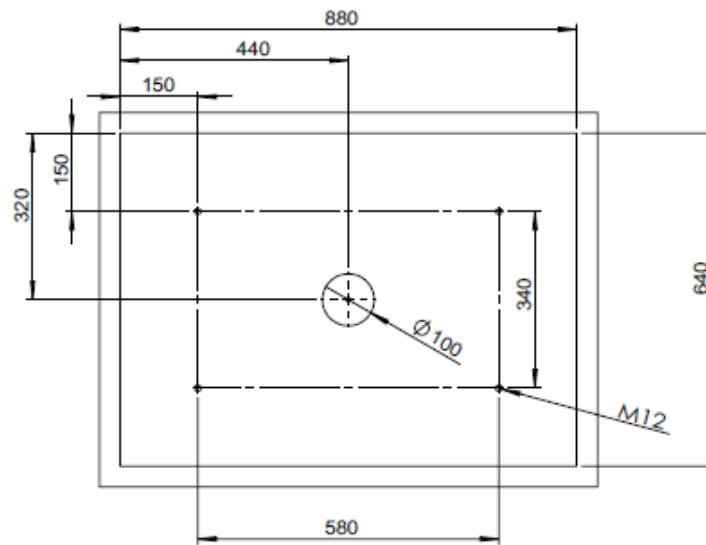


Figure 10. Plane Dimension of Cement Foundation

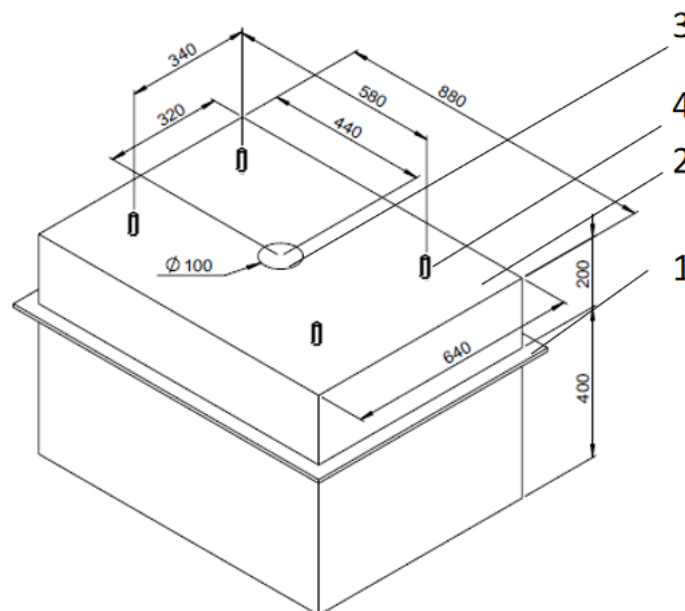


Figure 11. Schematic Diagram of Cement Foundation

1	Ground	3	Cable Outlet
2	Cement Foundation	4	M12 Threaded Rod

5.8 Grounding and Insulation Resistance Requirements



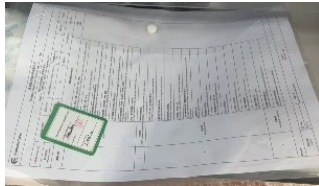

1. Check the civil engineering grounding resistance test report to ensure that the resistance value of the grounding grid produced on site is $\leq 4\Omega$.
2. Check the civil engineering insulation resistance test report to ensure that the insulation resistance of the cable is $\geq 10M\Omega$.


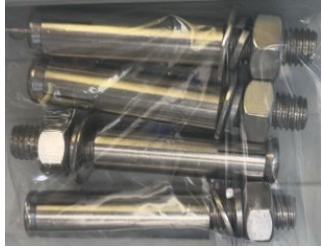



5.9 Confirmation of Construction Drawings

Upon arriving at the site, the installer first reviews the installation location drawings for the equipment and checks whether the cables and the cement foundation meet the specified requirements

5.10 Unpacking

5.10.1 Equipment List

Name	Package	Item	Quantity	Picture
EVSE	Wooden Box	RFID Card	5	
		Key	2	
		Qualification Certificate	1	
		Fireproof mud	1	

		Desiccant	1	
		Stainless steel expansion bolt	4	
		Cross recessed hexagon head set screws with indentation	4	
		Anti-theft screw wrench	1	
Power Module	Carton Box	ACE Module	1	

5.10.2 Unpacking Inspection

- Check the packing list number and equipment quantity.
- Check the equipment nameplate information.
- Check whether the documents are complete.
- Check whether the spare parts and accessories are complete.
- Check the factory inspection report and certificate of conformity.
- Check whether the appearance of the equipment is good, and whether there is deformation, bump, stain, etc.

5.10.3 Unpacking Precaution

- The installer must unpack the equipment in the presence of the owner and fill out the unpacking record. Refer Appendix 1 for the unpacking record sheet.

- After unpacking and inspection, request the owner's representative to confirm and sign the equipment unpacking record sheet.
- If any issues are identified during the unpacking and acceptance of the equipment, aside from documenting them, wait for discussion between the owner and the supplier.

5.11 Equipment Installation, Fixing and Wiring

5.11.1 Unboxing

1. Remove the top cover of the wooden crate.



Figure 12. Open the Top Cover

2. Remove the boards on the front and back.

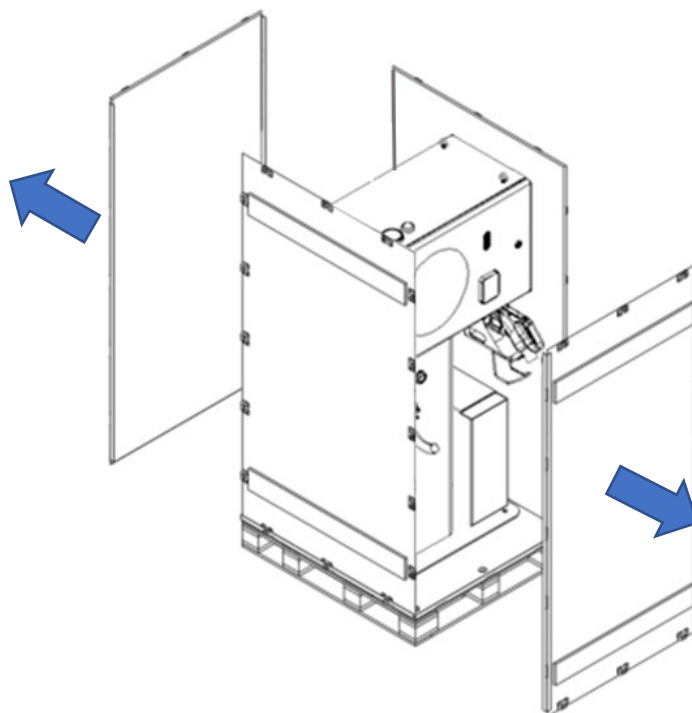


Figure 13. Remove the Front and Back Boards.

3. Remove the boards on the left and right side.

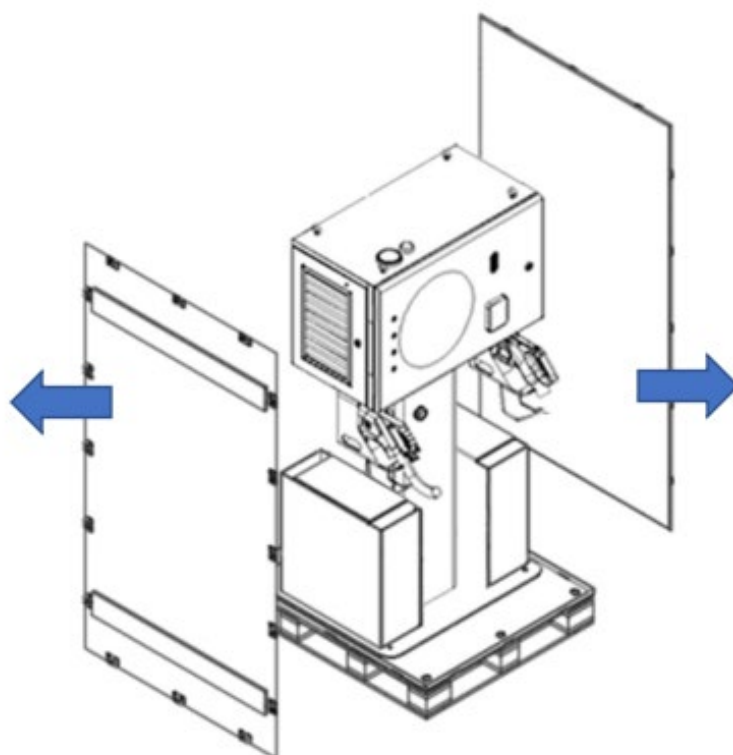


Figure 14. Remove the Left and Right Side Boards

5.11.2 Installation

There are two installation options for the product: column-mounted and wall-mounted, both of which require lifting.

Column-mounted

1. Loosen the M12 screws on the cabinet and pallet using a No. 19 socket wrench to separate the pile from the pallet.

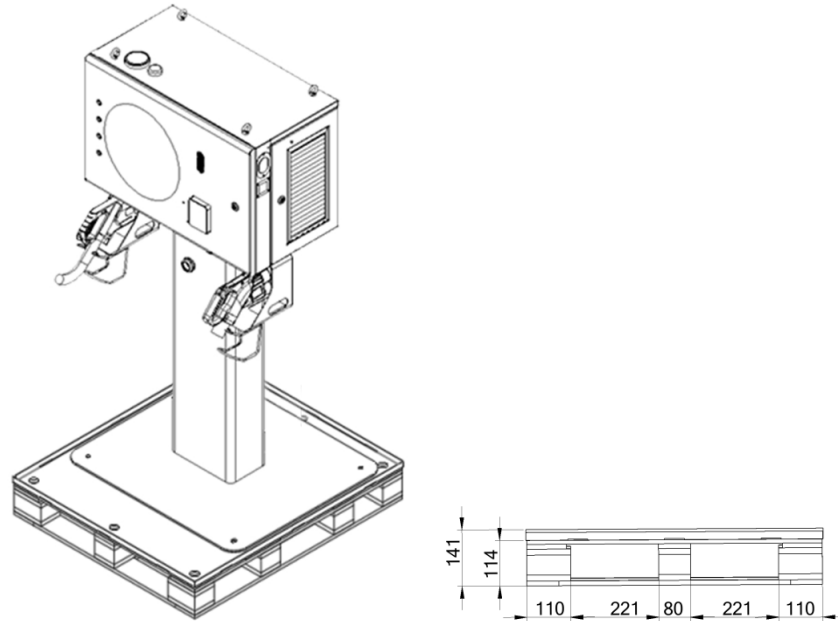


Figure 15. Removing the Pallet.

2. Use a crane and lifting straps to lift the charging pile.

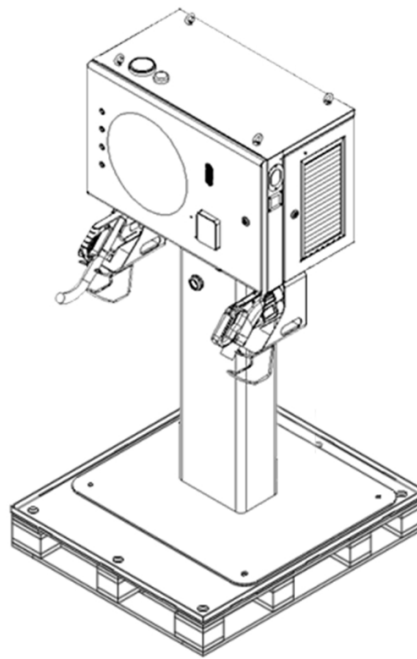


Figure 16. Lifting the EVSE

3. Lift the EVSE steadily and slowly, aligning it with the pre-embedded threaded rods until it rests on the installation base.

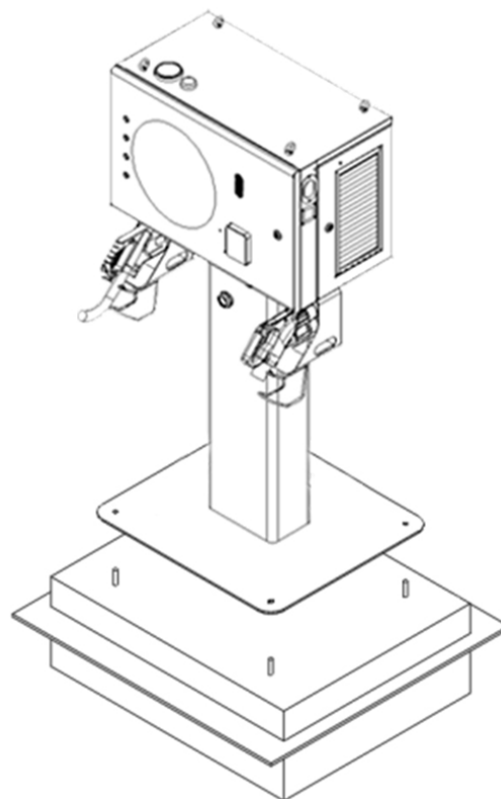


Figure 17. Schematic Diagram of EVSE Placement

Wall-mounted

1. After confirming the installation position, drill holes using a cable drilling tool and fix four M12 *100 and eight M8*60 expansion screws to the wall.

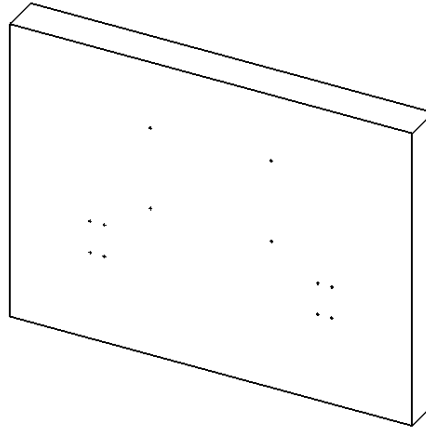


Figure 18. Installation Diagram of Expansion Screws

2. Fix the mounting backplate to the wall with M12 nuts and spring washers. The tightening torque is 59N·m.

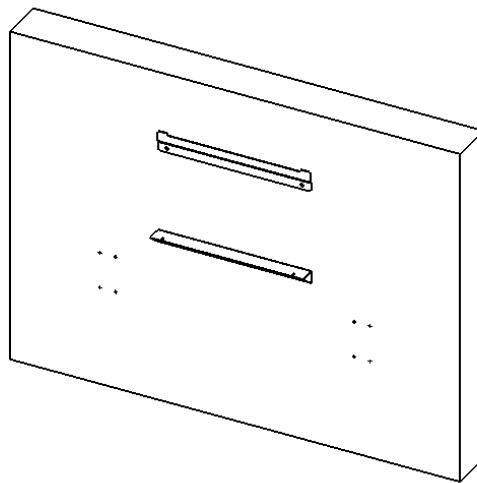


Figure 19. Diagram of Backplate Installation

3. Fix the mounting plate with three M8 * 14 anti-theft screws;

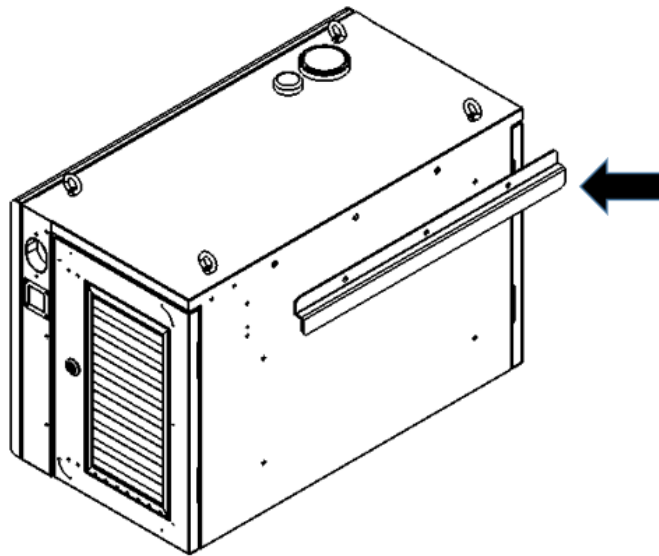


Figure 20. Installation Diagram of mounting plate.

4. Lift up the charging station and fix it to the mounting backplate with two M8 * 14 anti-theft screws. Lift up the gun stock and fix it to the wall with M8 nuts and spring washers. The tightening torque is 30N·m.

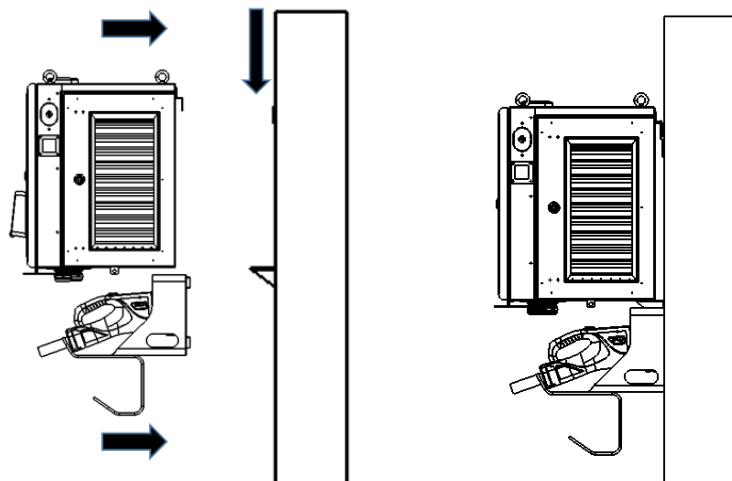


Figure 21. Installation Diagram of EVSE.

5.11.3 Wiring

1. Open the cabinet doors on both sides, insert the power module into the module compartment. Ensure the module identification corresponds to the label attached to the module compartment

2. Lock the power module with 4 M4×12 combination screws, the recommended torque is 8·8N·m.

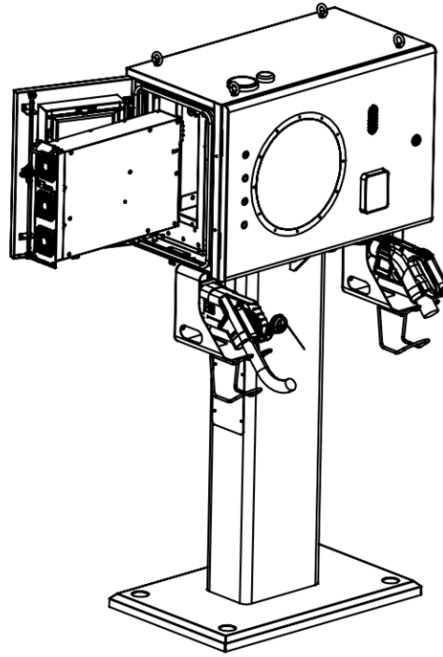


Figure 22. Power Modules Installation Diagram

3. Before wiring, confirm that the leakage protection of the circuit breaker and the air switch are in the OFF position.

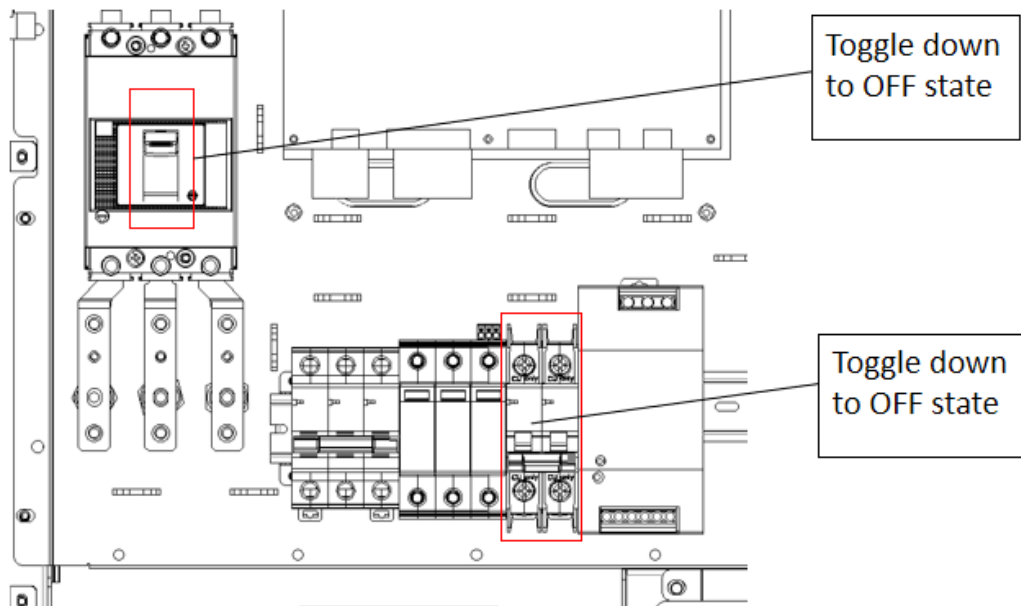


Figure 23. Leakage Protection and Air Switch

4. Select the power cables according to the requirement in Chapter 5.2. Connect power supply cable to the EVSE L1, L2, L3, N and PE terminals with reference to the figure below. Ensure that the cable is not broken, damaged or scratched.

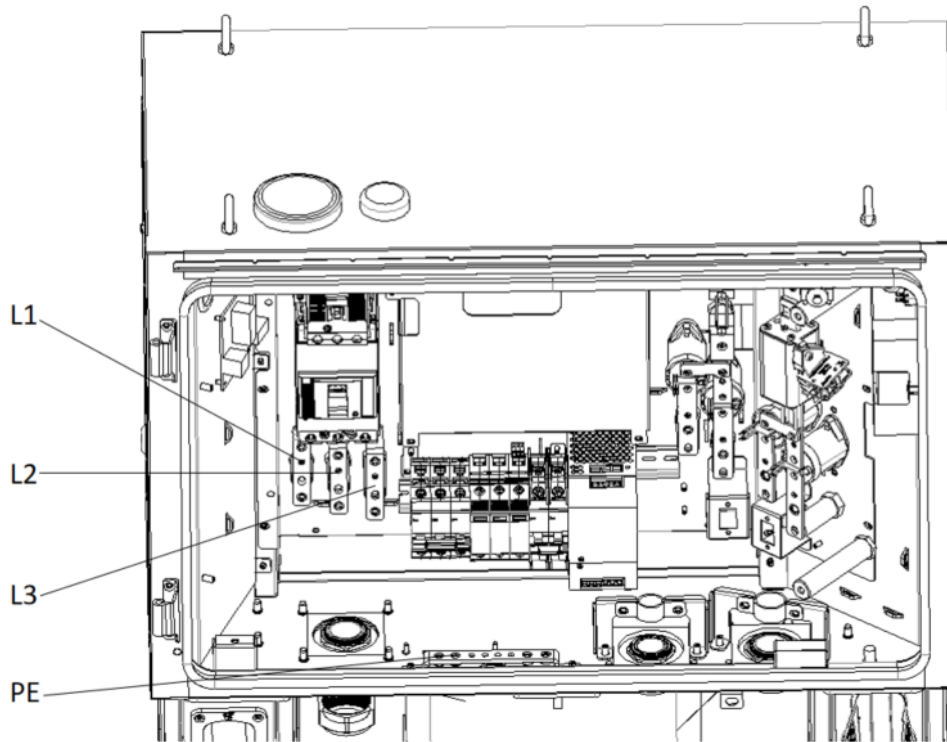


Figure 24. Wiring Diagram

5. Select the continuity test option in the multimeter and check whether there is a short circuit between +12V and -12V, between L1, L2, L3, and N, PE.

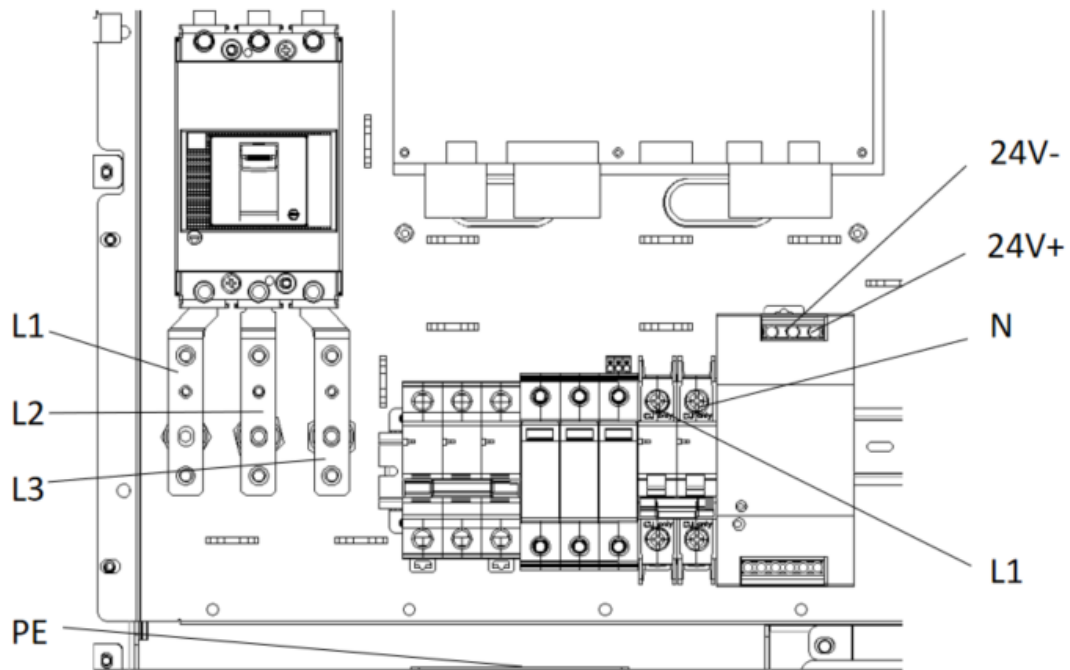


Figure 25. Terminal Points to Check for Short Circuit



Warning: Must be carried out in accordance with the specifications and correct operation steps. Improper execution may result in personal injury or death.

5.12 Fixing the Power Supply Cable Inlet

The EVSE is equipped with a cable gland. The installation steps are as follows:

1. Use an anti-theft wrench or a ratchet wrench to remove the cable entry cover and unscrew the cable gland nut.

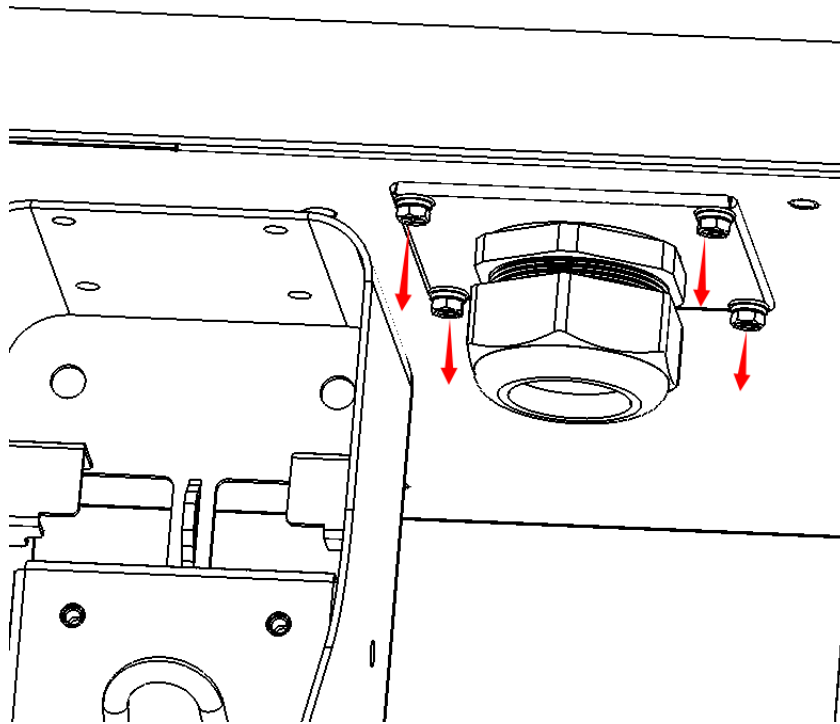


Figure 26. Removal Diagram of the Cover Plate of the Cable Gland

2. Thread the cable into the gland nut.

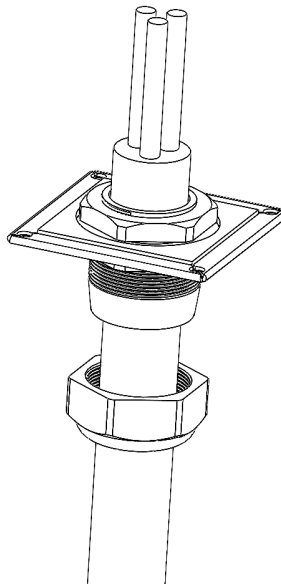


Figure 27. Diagram of the Threading Cable

3. (3) After tightening the gland nuts, place the cable inlet cover plate back to the bottom of the pile.

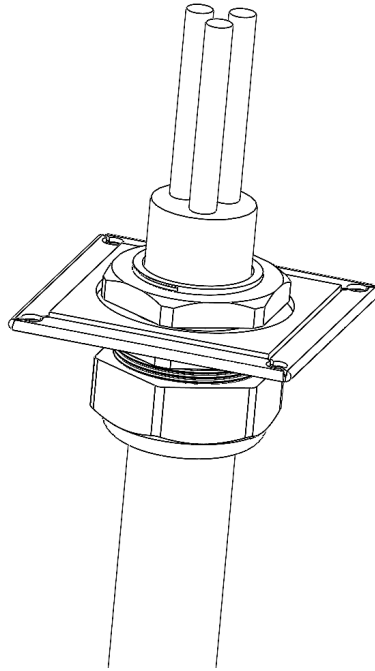


Figure 28. Diagram of the Tightening of the Gland Nuts

4. Fix the cable gland mounting plate to the charging pile using an anti-theft wrench. The recommended torque is 6N·m.

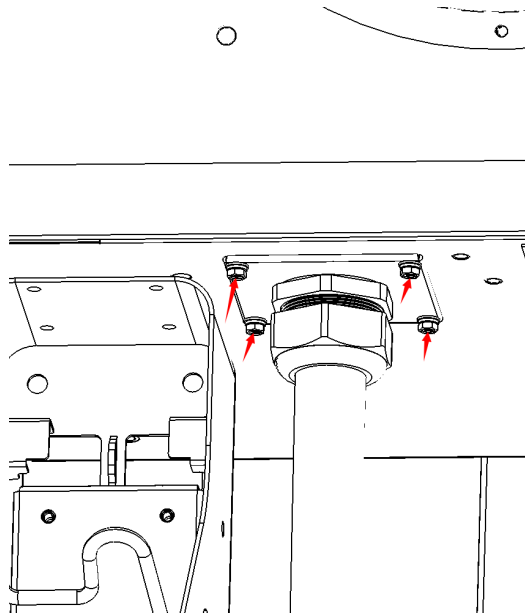


Figure 29. Installation Diagram of the Cable Gland Cover Plate

5.13 Installation Wiring Inspection

5.13.1 Equipment and Equipment Fixing Inspection

1. Ensure that the appearance of the EVSE is clean and tidy, without any bumps or damage.
2. Ensure the EVSE is fixed firmly without looseness.
3. Ensure the orientation of the equipment meets the installation standards.
4. Ensure there is no missing parts on the EVSE.
5. Measure and ensure that the levelness of the EVSE meets the specified requirements using a spirit level.

5.13.2 Cable Laying and Connection Inspection

1. Check whether the cable insulation is scratched or damaged.
2. Check whether the power cable terminals are compliant and the wiring is firm.
3. Check that the communication cable terminals are correct and not loose.
4. Check for hanging cable labels.
5. Check whether the cable bending radius meets the requirements.
6. Check whether the all the PE wires are connected to the PE cable from the supply inlet.

5.13.3 Inspection Before Energizing

1. Check whether power supply voltage at the input of the circuit breaker in the distribution box is normal, and there are no abnormalities such as phase loss, overvoltage, undervoltage and phase sequence.
2. Ensure the circuit breaker, leakage protection and air switch should be in the OFF position, as shown in the figure below.

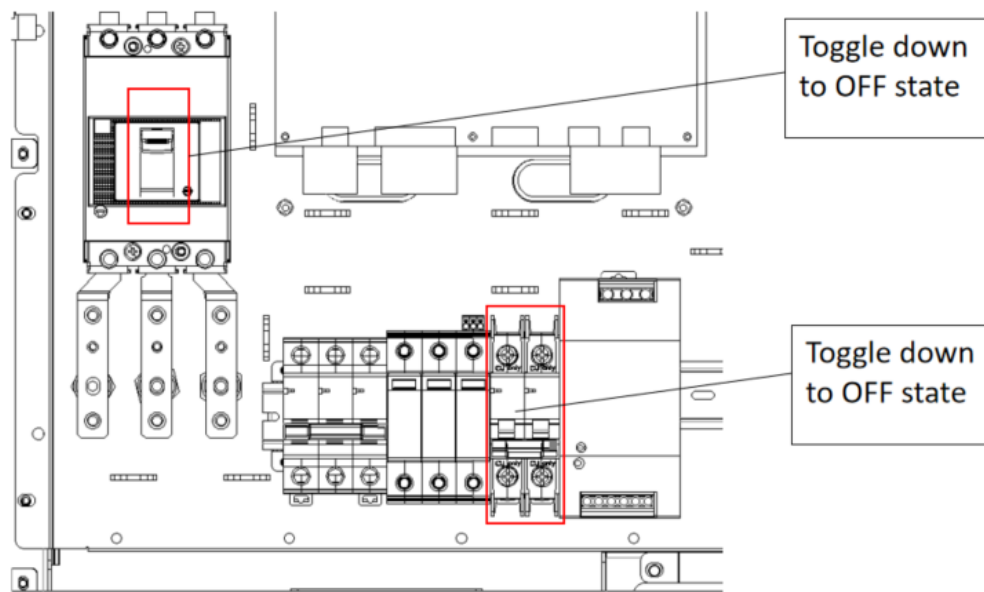


Figure 30. Turning Off the Circuit Breaker, leakage Protection and Air Switch

5.13.4 Inspection During Energizing

1. Turn on the main circuit breaker in the distribution box.
2. Turn on the circuit breaker, leakage protection and air switch in the EVSE.

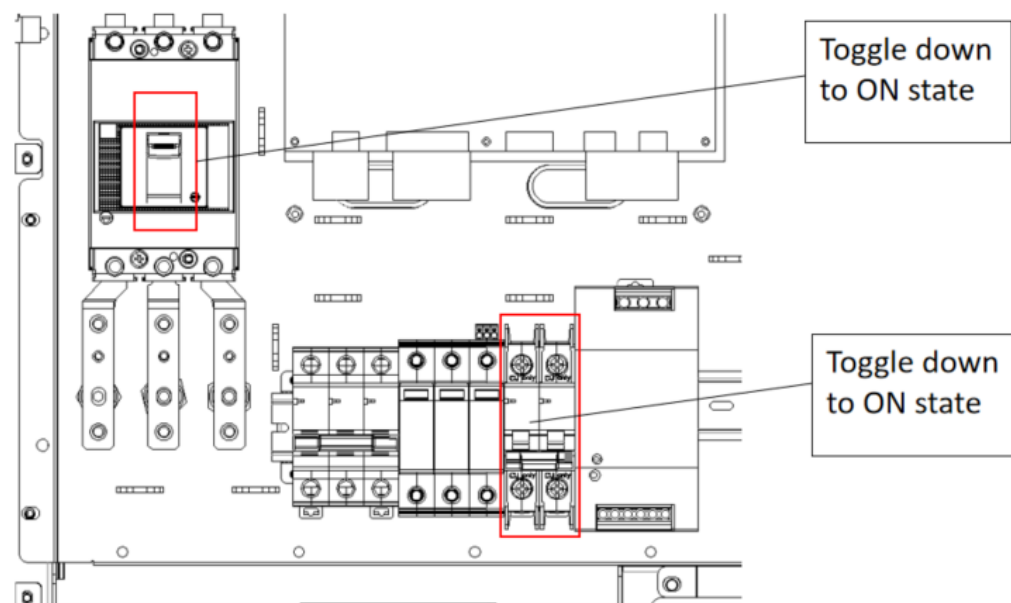


Figure 31. Switching On the Circuit Breaker, Leakage Protection and Air Switch

3. Since the door is open, the fault light will be on, and the buzzer will sound.
4. Close the EVSE door. The fault indicator light will be off at this time, and the buzzer stops beeping.

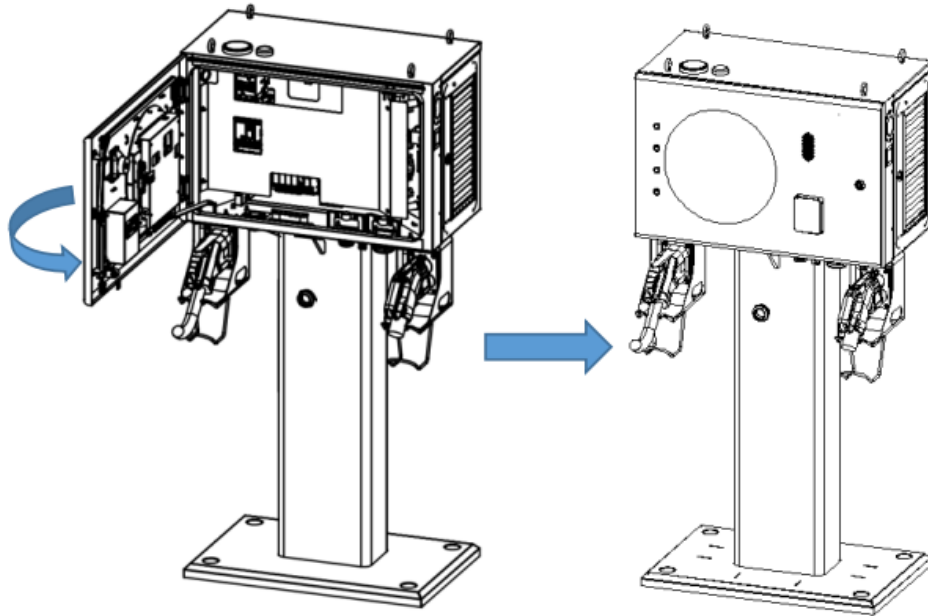


Figure 32. Close the Cabinet Door

5. The screen will enter the startup interface.

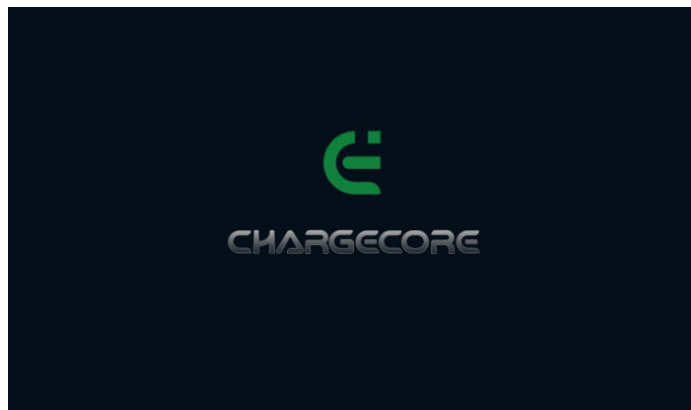


Figure 33. Screen Display while Energizing

5.14 Power Module Address Configuration

5.14.1 Power Module Operating Instructions

This is the guide to set the address for ACE power module in the EVSE. There are five DIP switches on the front board of each power module. The address of the power module can be set by adjusting the DIP switches according to the binary representation of the desired address. The table below shows the binary representations of addresses in the numeric system, where 1 indicates 'on' and 0 indicates 'off'.

1. De-energize the EVSE.
2. Set the DIP switches address of the power module to 00001
3. Energize the EVSE. THE EVSE will detect the modules addresses within 2 minutes of energizing.



Figure 34. Power Module Address

6. Operation

6.1 Display Introduction

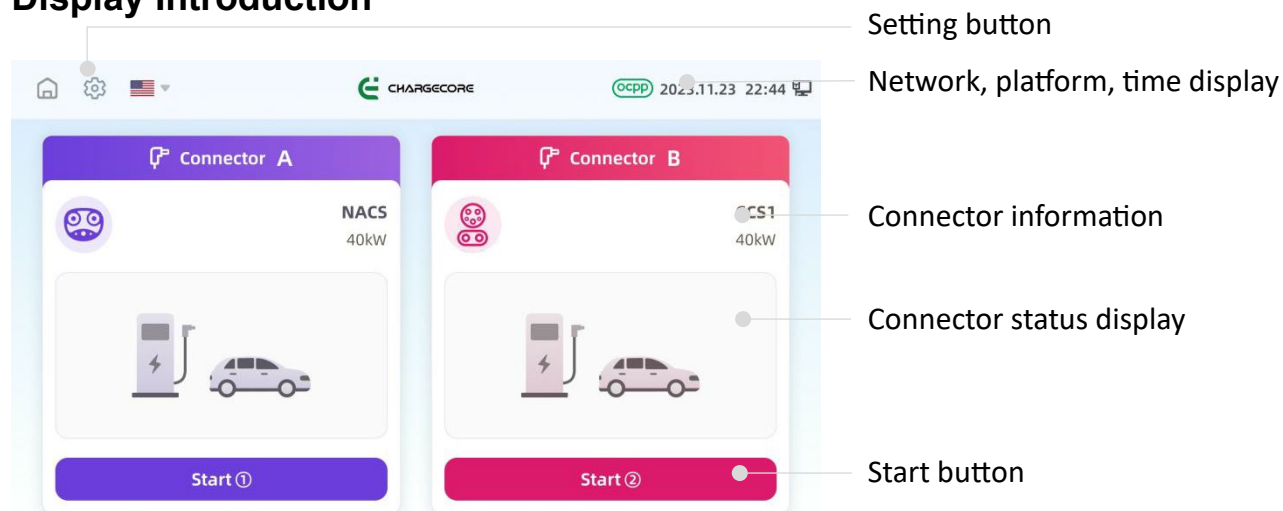


Figure 35. Display Introduction

6.2 Initial Setup

6.2.1 Administrator Interface

Tap the "Settings" icon on the homepage.

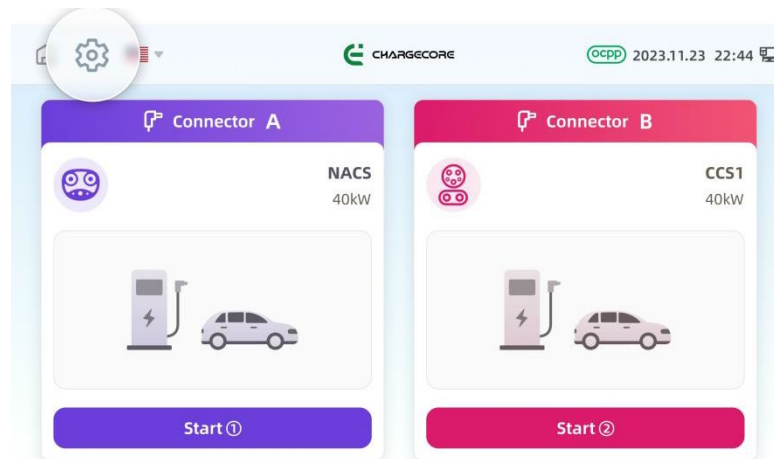


Figure 36. Settings Icon Location in Homepage

Enter password to enter the administrative interface.

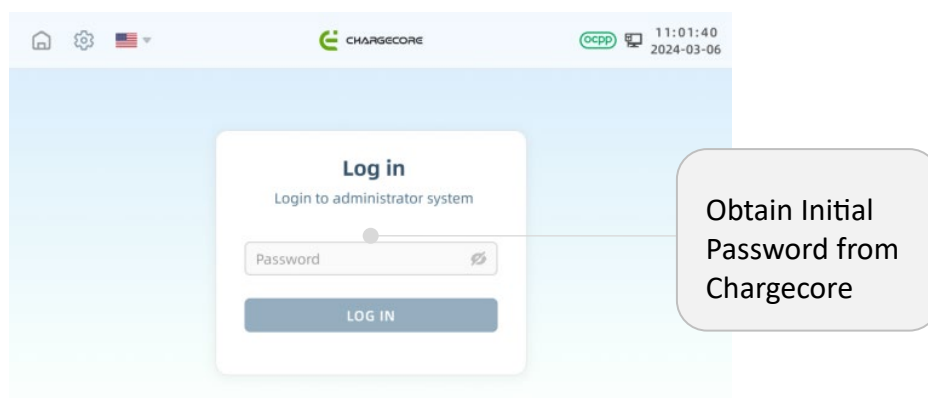


Figure 37. Password Input

Log in to the administrator interface, select "Settings" and tap the "Basic" tab.

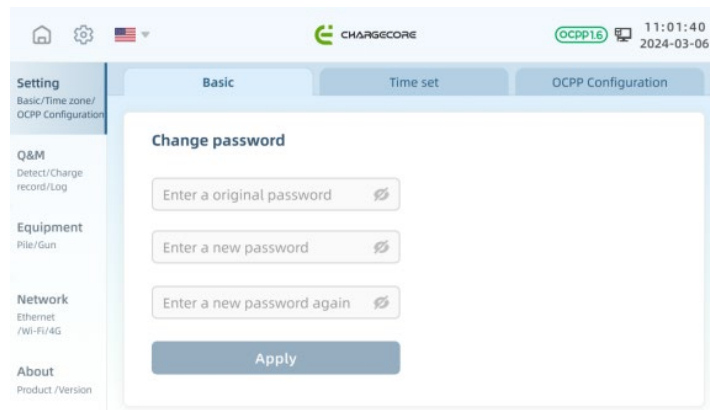


Figure 38. Password Tab in the Administrative Interface

Enter the six-digit old password, new password and confirm the new password. Tap “Apply” and the modification is successful.

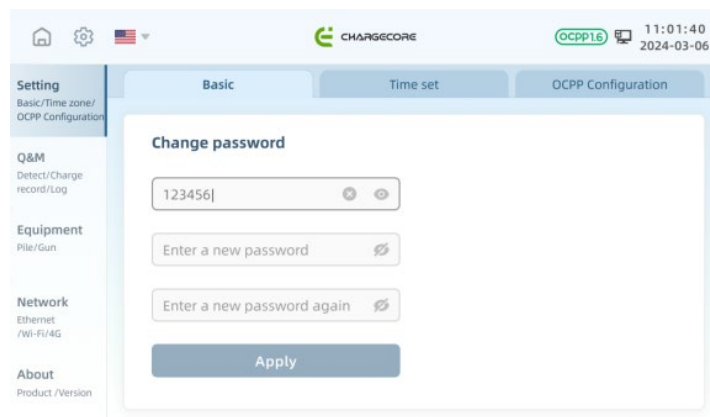


Figure 39. Change Password

6.2.2 Network configuration

After entering the administrator Interface, select "Network". The network configuration available are 4G, Ethernet and WIFI.



Figure 40. Network Configuration Signal Icon

WIFI Configuration: Step 1. Select WIFI > Pull down to refresh.

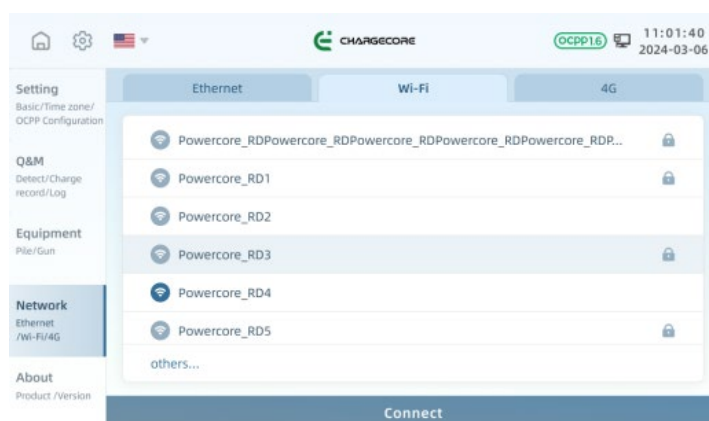


Figure 41. Select WIFI

WIFI Configuration: Step 2. Select WIFI > Enter WIFI password > Tap Join to confirm.

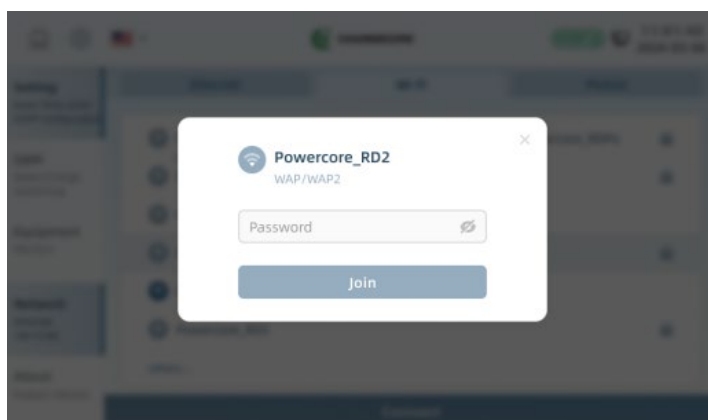


Figure 42. Enter WIFI Password

Ethernet Configuration: Select Ethernet > Tick Obtain Automatically > Tap Connect.

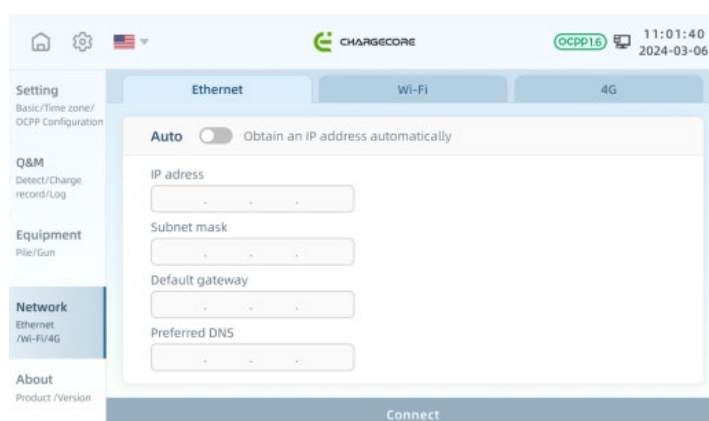


Figure 43. Select Ethernet

4G Configuration: Select 4G > Set the corresponding parameters > Tap Connect.

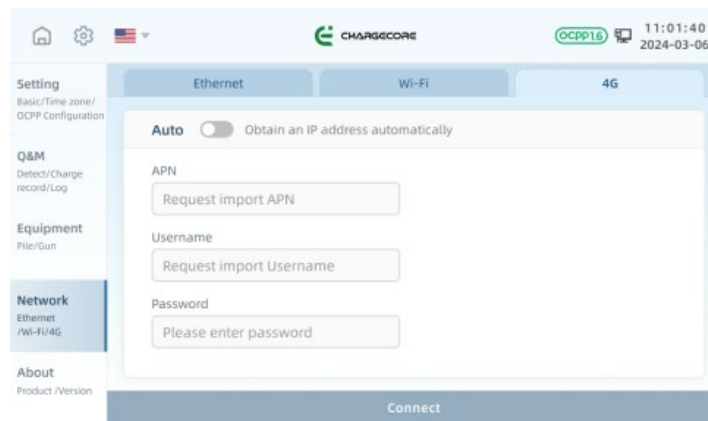


Figure 44. Select 4G

6.2.3 OCPP Platform Connection

When the network is connected, it will automatically connect to the OCPP platform within 60 seconds. The OCPP icon on the screen turns green to indicate successful connection.



Figure 45. OCPP Connection Successful

6.3 Charging Session

Take out the connector from the EVSE, then insert it into the vehicle's charging port. The screen icon changes at this point.

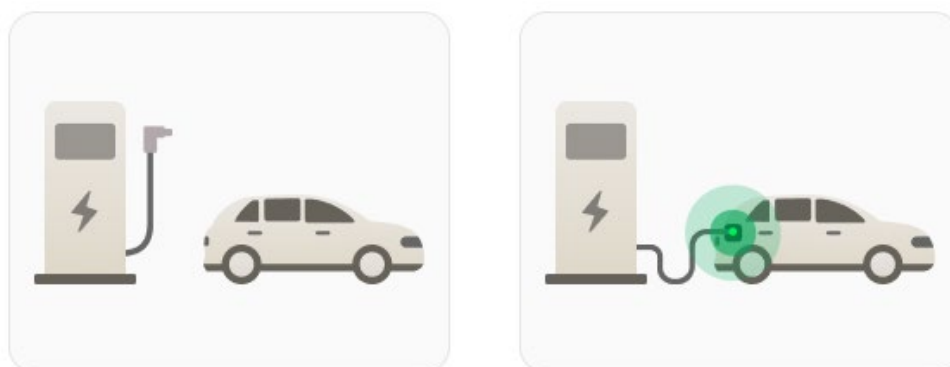


Figure 46. The State of Inserting the Connector and the State of Inserting the Connector

After inserting the connector, tap the "Start" button and select the payment method. Charging session can be initiated by RFID card, scanning QR code with mobile APP and credit card at the POS machine.

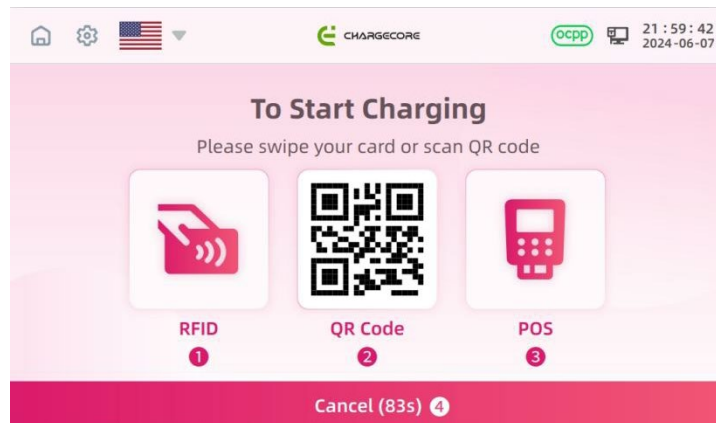



Figure 47. Payment Method Selection Interface

Note: Chargecore mobile app is required for scanning QR code method. On the mobile app homepage, tap the  icon to scan the QR code. Refer to the Chargecore APP manual for further instructions.

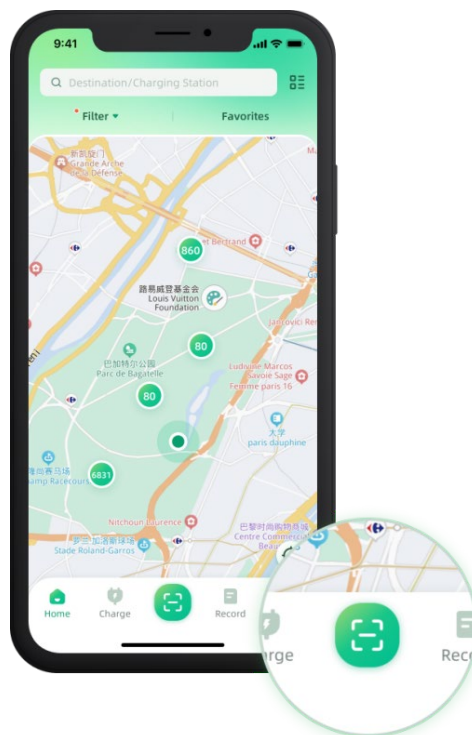


Figure 48. Chargecore APP Interface

The EVSE supports several charging modes, including SOC mode, Time mode, Energy mode and Quick mode.

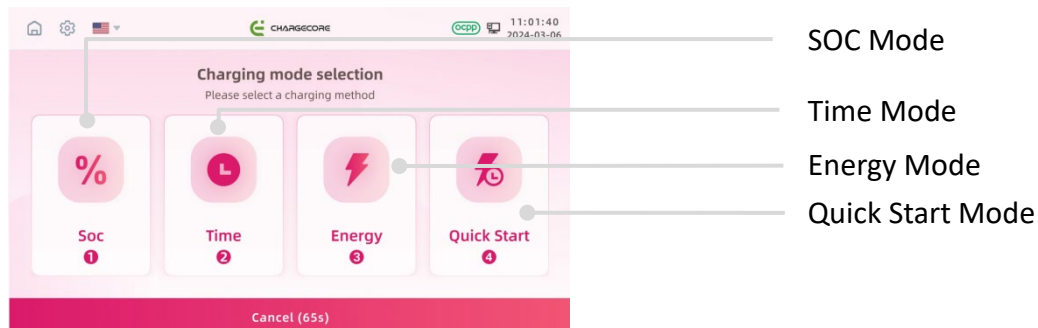


Figure 49. Charging Mode Selection – Screen Operation Interface

When using app: After scanning the QR code, it shows the charging modes and the payment methods available. Refer to the Chargecore APP manual for further instructions.

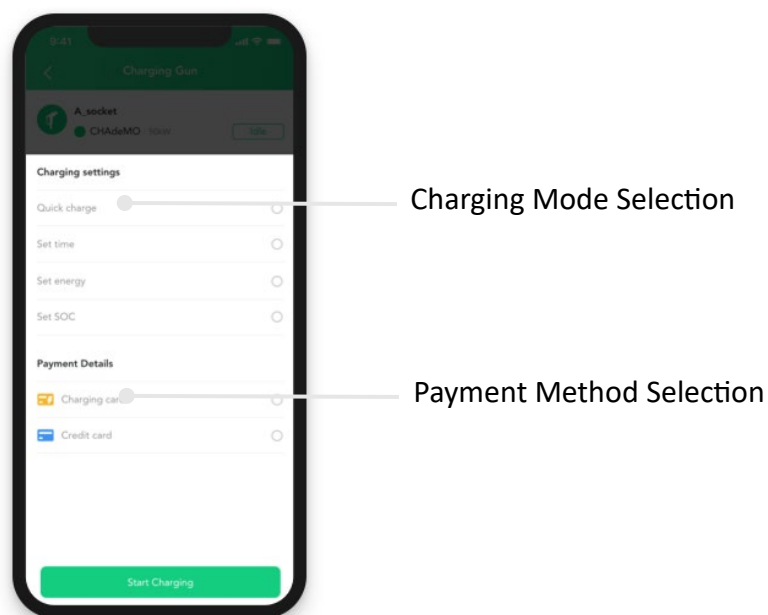
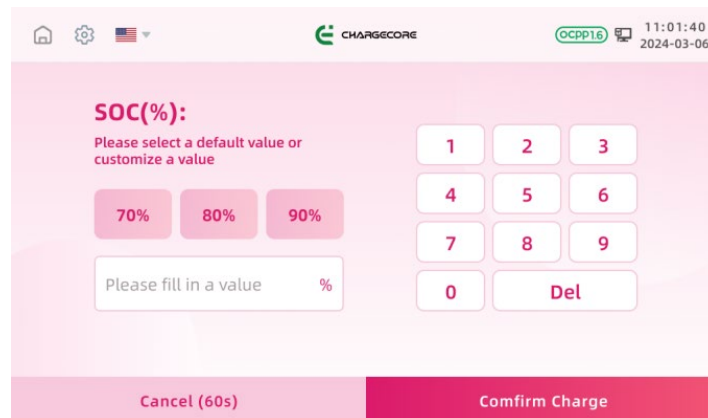


Figure 50. Charging Mode Selection – APP Operation Interface

- SOC mode: Users can enter their preferred battery percentage for the vehicle. Charging session will stop when it reaches the battery percentage specified.

- Time mode: Users can enter their preferred charging duration. Charging session will stop when it reaches the duration specified.
- Energy mode: Users can enter their preferred charging energy. Charging session will stop when the specified energy level is reached.
- Quick mode: User can start charging immediately. Charging session will stop when the vehicle is fully charged.



The screenshot shows the 'SOC(%)' input screen. At the top, there's a header with a home icon, settings, a US flag, the 'CHARGE CORE' logo, 'OCCP16', and a timestamp '11:01:40 2024-03-06'. The main area has a pink background with the text 'SOC(%):' and 'Please select a default value or customize a value'. Below this are three buttons: '70%', '80%', and '90%'. There's also a text input field with the placeholder 'Please fill in a value' and a '%' symbol. To the right is a numeric keypad with buttons for digits 1-9, 0, and a 'Del' button. At the bottom, there are two large buttons: 'Cancel (60s)' and 'Confirm Charge'.

Figure 51. SOC Mode Input Prompt

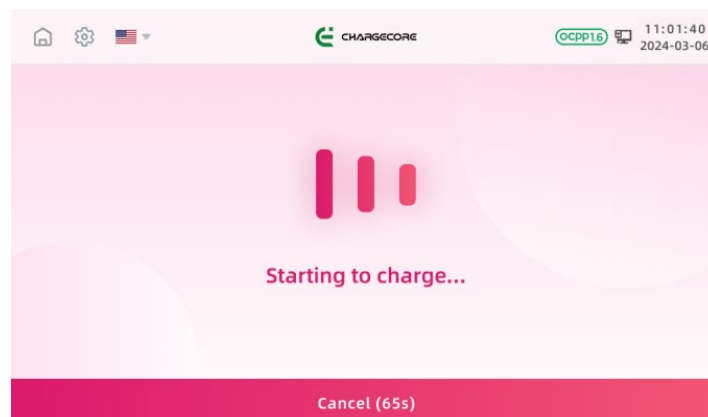


Figure 52. Initiating Charging Session

Users can monitor real-time vehicle charging details on the screen.

Charging session will automatically stop when the vehicle is fully charged, or users can manually end the session by tapping the "STOP" button in advance.

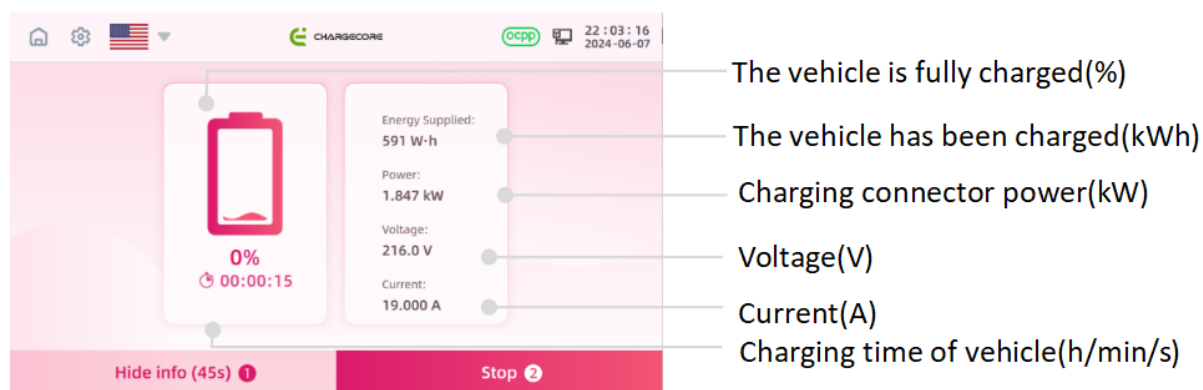


Figure 53. Charging Interface

For app payment, the amount will be automatically deducted from the credit card or debit card linked to the app.

For RFID payment, swipe the card again to pay.

For POS payment, the payment will be automatically deducted from the credit card or debit card.

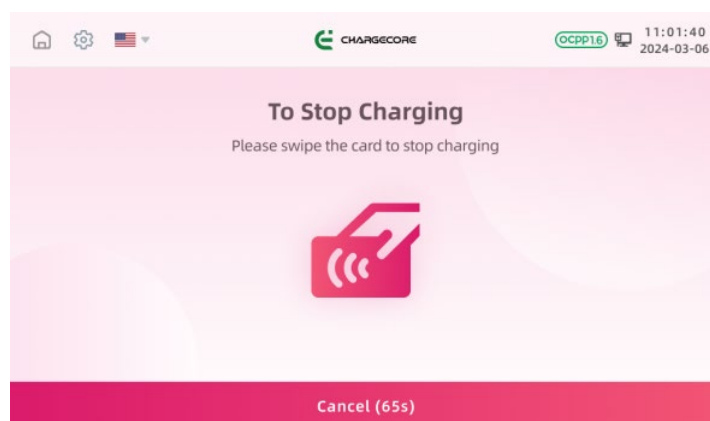


Figure 54. RFID Card Payment Interface

After the charging session ends, the screen will display the charging session's summary.

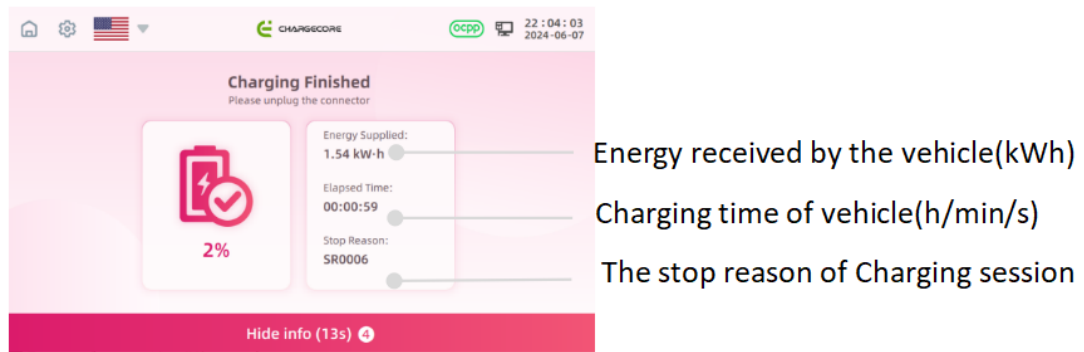


Figure 55. Charging Session Summary Interface

After charging session is complete, remove the connector from the vehicle and return it to the EVSE connector holder.

6.4 De-energize & Shutdown

1. Turn the door lock handle to the left to open the front door.

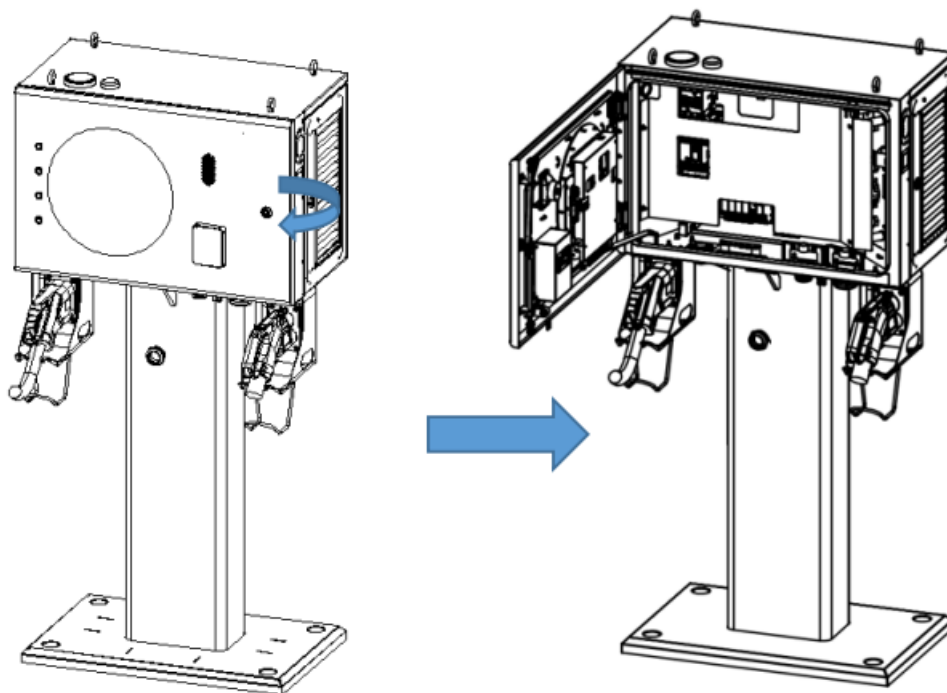


Figure 56. Open the EVSE Front Door

2. Turn off the circuit breaker and air switch.

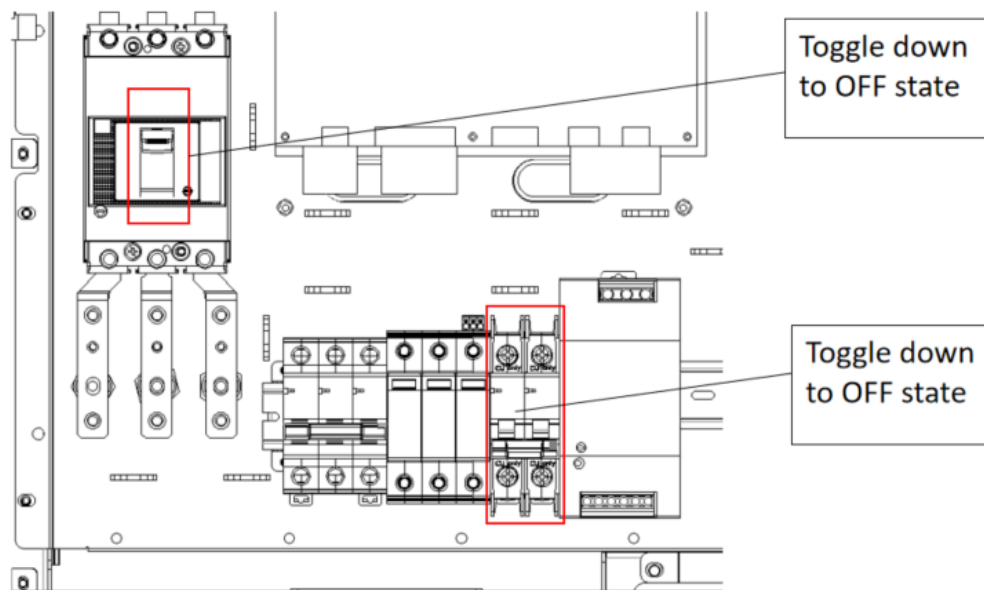


Figure 57. Turning Off the Circuit Breaker, leakage Protection and Air Switch

3. Close the cabinet door, then, turn the door lock handle to the right and lock the cabinet door.

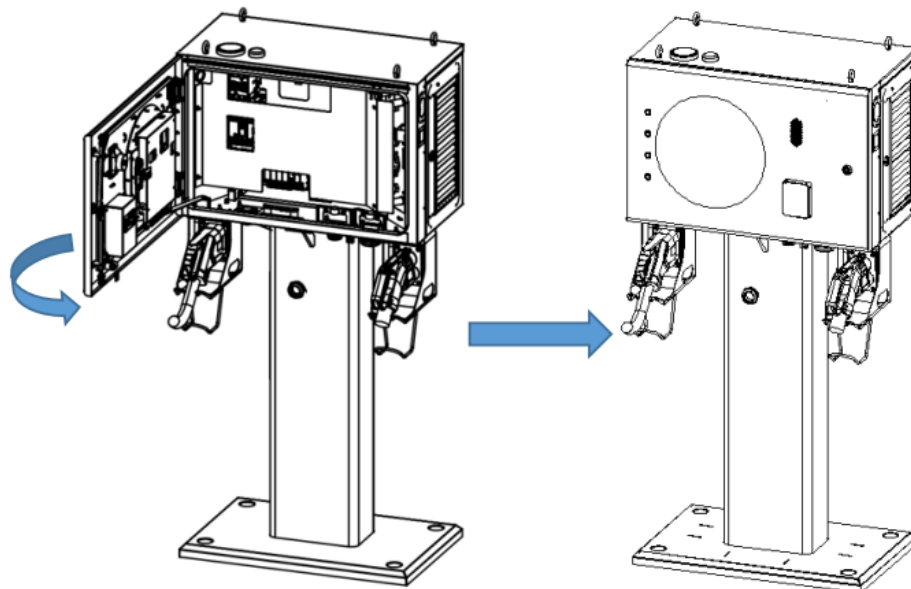


Figure 58. Close the EVSE Front Door

6.5 Emergency Operation

Refer to this section only in case of abnormalities or mis-operations.

- In case of emergency, quickly remove the transparent protective cover, press the red emergency stop button, and the system will cut off the output power.
- Do not use the "emergency stop button" during normal shutdown.
- Turn the emergency stop button clockwise to reset.

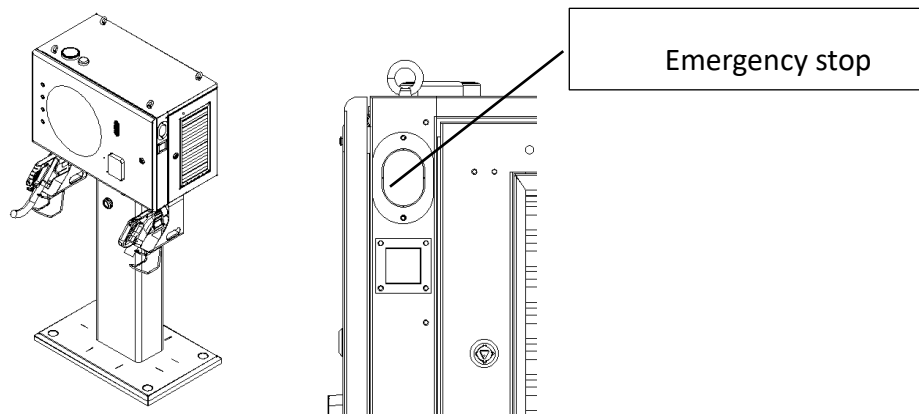


Figure 59. Emergency Stop Button

7. Troubleshooting

When encountering any abnormalities, utilize the information provided in this document to troubleshoot and resolve the issue.

If the problem cannot be resolved, contact an after-sales engineer for further support.

Fault	Fault phenomenon	Possible causes and solution
EVSE failure	Charging session cannot start normally	<ul style="list-style-type: none"> - Check screen for error code. - Check incoming power supply. - Check if all the breakers are closed. - Check whether there is loose wiring.
Meter communication lost	Screen shows error code	<ul style="list-style-type: none"> - Identify which meter is faulty from the screen error code. - Check if the meter is working, the meter screen should light up and display information. - Check for loose wiring. - If all meters are faulty at the same time, check RS485 bus of the OCPP board.
Meter reading abnormal	Data displaying on the screen is different from the data at the vehicle dashboard	<ul style="list-style-type: none"> - Check for loose wiring. - Check shunt terminal if current data is abnormal.

		<ul style="list-style-type: none"> - Check the DC meter shunt ratio and the address if the DC meter is newly added.
Power module is off	Fault can be observed 10 seconds after EVSE is energized, the module will display E08	<ul style="list-style-type: none"> - Check address and group of each power modules. - If all power modules displaying E08, check CAN bus connection. - Exchange the position of the affected power modules with a good power module. - Check the DIP switch on the SECC board.
Insulation tester faulty	Charging stopped suddenly after starting with the power module on and the fan running	<ul style="list-style-type: none"> - Obtain SECC log and send log to after-sales engineer.
RFID card swiping failure	Screen display authorization failure after swiping card	<ul style="list-style-type: none"> - Verify if there is beep sound when swiping the card. - Confirm whether card is bound. - EVSE need to be online when using the card for the first time. - Check whether Swipe Card Authorization is enabled in the OCPP platform.
Contactor failure	<p>Charging process started but the current is always 0.</p> <p>AC contactor: the power module cannot supply power</p> <p>DC contactor: there is no output to the vehicle</p>	<ul style="list-style-type: none"> - Obtain the SECC log while start charging, and send to after-sales engineer. - Start charging and check the output of the AC contactor for any loss.
Fuse failure	There is no output to the vehicle	<ul style="list-style-type: none"> - Check the insulation tube of the fuse for burning marks. - Obtain the SECC log while start charging, and send to after-sales engineer.
SECC failure	Screen shows error code	<ul style="list-style-type: none"> - Check the wiring between SECC and OCPP. - Check the indicator light on the SECC. - Restart the EVSE and reset the SECC.

Emergency stop failure	Screen shows error code	<ul style="list-style-type: none"> - Check whether the emergency stop button is pressed, release the button by turning right.
Access control failure	Screen shows error code	<ul style="list-style-type: none"> - Check whether door access switch is opened or faulty.
MCCB leakage trip	DC charging fails	<ul style="list-style-type: none"> - Inspect wiring for leakage or short circuit. - Check if the emergency stop button is pressed.
Auxiliary power failure	The 12V and 24V devices are not powering on	<ul style="list-style-type: none"> - Measure input and output of the auxiliary power supply.
OCPP system crash	Screen keeps restarting or the screen is stuck at boot interface	<ul style="list-style-type: none"> - If EVSE has been in operation while offline for a long time, connect it to the platform to automatically upload locally stored cache and clear it. - Rewrite the firmware of OCPP. - Replace OCPP if firmware cannot be written.
Screen failure	Screen keeps restarting, screen is off or the screen displays garbled characters	<ul style="list-style-type: none"> - Check the input 12V connection of the screen if there is no display. - Recalibrate or rewrite the screen firmware if the display is garbled. - If EVSE has been in operation while offline for a long time, connect it to the platform to automatically upload locally stored cache and clear it. If it doesn't work, use the reset FS() command through the serial port to clear the cache.
Network connection failure	Screen shows offline	<p>WIFI:</p> <ul style="list-style-type: none"> - Try other WIFI network. - Reset the WIFI board. - Unplug and plug the WIFI board and antenna. <p>4G:</p> <ul style="list-style-type: none"> - Unplug and plug the sim card. - Reconfigure APN.
Gun does not detect insertion	Gun insertion is not showing on the screen	<ul style="list-style-type: none"> - Check the CP-PE voltage for the affected gun. - Before insertion: CP-PE Voltage: 12V DC

		<ul style="list-style-type: none"> - After insertion: CP-PE Voltage: 9V DC - Charging: CP-PE Voltage: 6V DC
POS machine failure	Payment cannot be performed on the POS machine	<ul style="list-style-type: none"> - Check wiring between POS machine and OCPP board. - POS machine is offline or serial number expired.
Failure to start charging	Charging session is not starting	<ul style="list-style-type: none"> - Reinsert the plug and try again. - Check whether the power module is working. - Check the input and output voltages of the power supply. - Check the fuse for burn mark. - Check the indicator light at the insulation detector. - Obtain OCPP and SECC log and send to after-sales engineer.
Abnormal charge stops	Charging stopped suddenly after charging for some time	<ul style="list-style-type: none"> - Check the screen for error. - Obtain OCPP and SECC log and send to after-sales engineer.

8. Completion Documents

No.	File Name	Page	Document Necessity
1	Unpacking Record Sheet	1	√
2	Pre-Installation Checklist	1	√

9. Appendix

9.1 Unpacking Record Sheet

Unpacking Record Sheet						
Dealer Store Name				Unpacking Date		
Serial No.	Name of Goods	Actual Goods	Qty	Certificate No.	Equipment	Remarks
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
Unpacking Conclusion						
Signature	Installation Unit			Owner Unit		

9.2 Pre-Installation Checklist

Pre-Installation Checklist				
Project Name:				
Civil Construction:			Equipment Installation Unit:	
Sub-Project	No.	Main Acceptance Items	Acceptance Record	Treatment Measures
Installation Plan	1	Whether the installation of on-site equipment conforms to the design drawings of the construction plan		
Distribution Box Circuit Breaker	1	Meet the equipment installation requirements (the minimum input current of the equipment is 64A)		
Cable Type	1	4 AWG * 5		
	2	Network cable cat6a (if Ethernet communication is required)		
Cement Foundation	1	Dimensions meet the requirements		
	2	The foundation bolts meet the requirements of chapter 5.7 in the installation manual		
Installation Plan	1	Maintenance access meets the equipment spacing requirements in Section 5.6		
Conclusion:				
Note: (1) The acceptance record is filled with "V" or "x" according to the on-site situation. (2) The conclusion is filled with "qualified" or "required rectification" according to the on-site situation.				
Signature of the person in charge of inspection: _____ Date: _____				

9.3 List of Toxic and Hazardous Substances and Elements

Part Name	Toxic and Hazardous Substances or Elements					
	Lead	Hg	Cadmium	Hexavalent Chromium	PBB	Polybrominated Diphenyl Ethers
	Pb	Hg	Cd	Cr6+	PBB	PBDE
Cabinet / Subrack / Copper Bar	○	○	○	○	○	○
Power Module	○	○	○	○	○	○
Monitoring Module	○	○	○	○	○	○
Power Distribution Device	○	○	○	○	○	○
Made Board	○	○	○	○	○	○
Hardware	○	○	○	○	○	○
Cable	○	○	○	○	○	○
<p>○ : Indicates that the content of the toxic and hazardous substance in all homogeneous materials of the part is below the limit requirement stipulated in SJ/T-11363-2006.</p> <p>× : Indicates that the content of the toxic and hazardous substance in at least one homogeneous material of the part exceeds the limit requirement stipulated in SJ/T11363-2006.</p>						
<p>The following components or applications contain toxic and hazardous substances, which cannot be reliably replaced or mature solutions are limited by the current technical level:</p> <ol style="list-style-type: none"> 1. Solder Contains Lead 2. Copper alloys contain lead 3. The contacts of the switch contain cadmium 4. Mercury in backlight tubes; lead in glass 						
<p>Explanation on the environmental protection use period: the environmental protection use period of this product (marked on the product body) refers to the toxic and harmful substances contained in this product from the date of production under normal use conditions and compliance with the safety precautions of this product. The period during which a substance or element will not have serious effects on the environment, persons and property</p>						
Scope of application: Integrated connector EVSE						