Operation and Installation Manual

CORE 60~180 US

Contents

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 CORE 60~180 USropean Standard 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	July 2024	Initial version

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, and rings 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 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.

	Do not touch or approach the area where the surface temperature is high or there is hot air
	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.

3. Description

3.1 Overview of CORE 60~180 – Outside

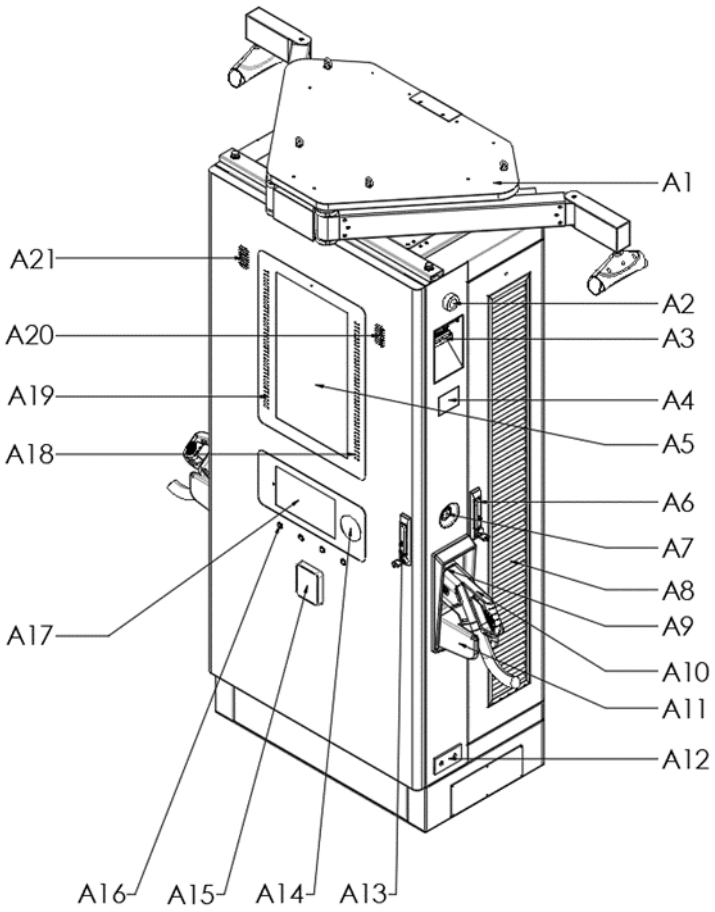


Figure 1. Front View of the EVSE

A1	Cable Management System	A2	POS Machine Antenna	A3	Waterproof Gland B	A4	DC Meter Window
A5	21.5” Advertising Screen	A6	Right Door Lock	A7	Emergency Stop Button	A8	Louvre
A9	Connector Base	A10	Connector	A11	Connector Holder	A12	PE
A13	Front Door Lock	A14	Card Reader	A15	POS Machine	A16	Reserved button

A17	10.1” Touch Screen	A18	Connector B Indicator Light	A19	Connector A Indicator Light	A20/ A21	Loudspeaker A/B

Note: A1 A15 is optional

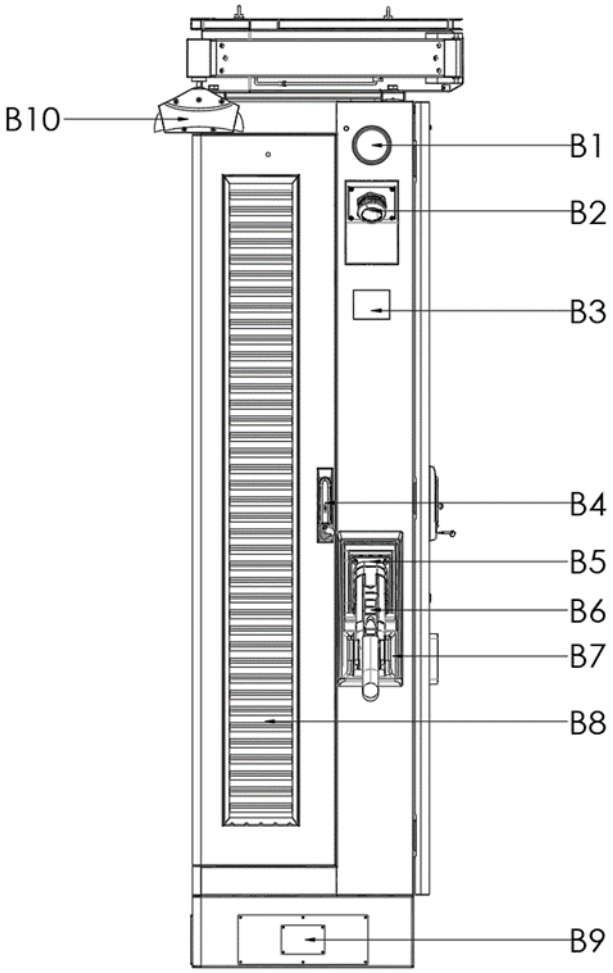


Figure 2. Side View of the EVSE

B1	4G Module Antenna	B2	Waterproof Gland A	B3	DC Meter Window	B4	Left Door Lock
B5	Connector Base	B6	Connector	B7	Connector Holder	B8	Louvre
B9	Nameplate	B10	Cable Support				

3.2 Overview of CORE 60~180 – Inside

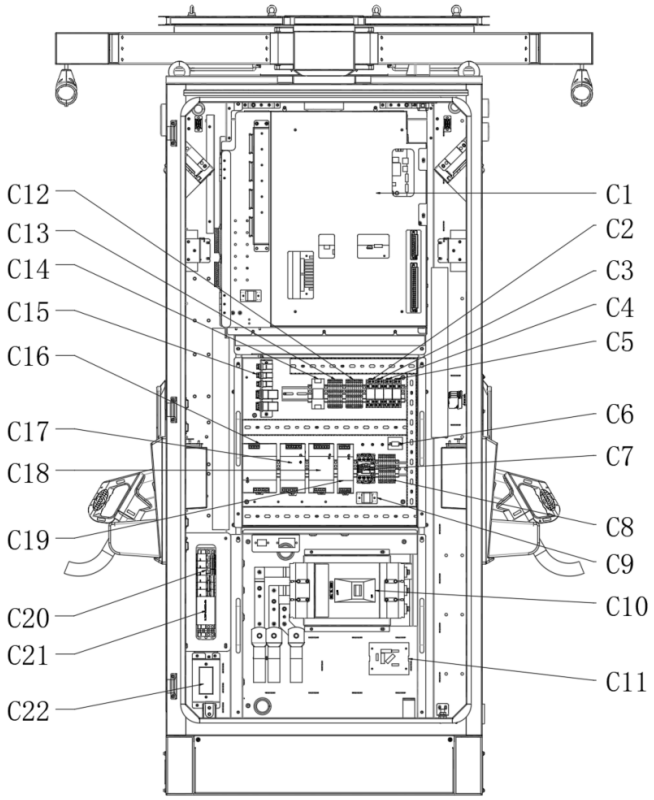


Figure 3. Internal Component Diagram

C1	PDU Module	C2	Intermediate Relay A	C3	Intermediate Relay B	C4	Intermediate Relay C
C5	Intermediate Relay D	C6	Capacitance PCB	C7	AC Terminals	C8	AC cocontactor
C9	common mode choke PCB	C10	MCCB	C11	MC PCB	C12	24V Terminals
C13	12V Terminals	C14	isolated power supply	C15	capsule shell	C16	UR4-24V
C17	UR3-24V	C18	UR2-24V	C19	UR1-12V	C20	MCB
C21	SPD	C22	socket				

Note: C22 is optional

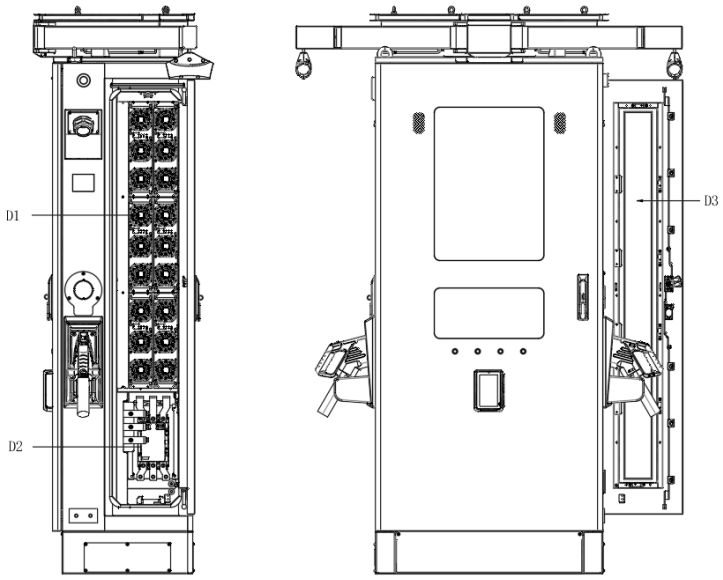


Figure 4. Right Component Diagram

D1	Power Module	D2	AC Contactor	D3	Filter

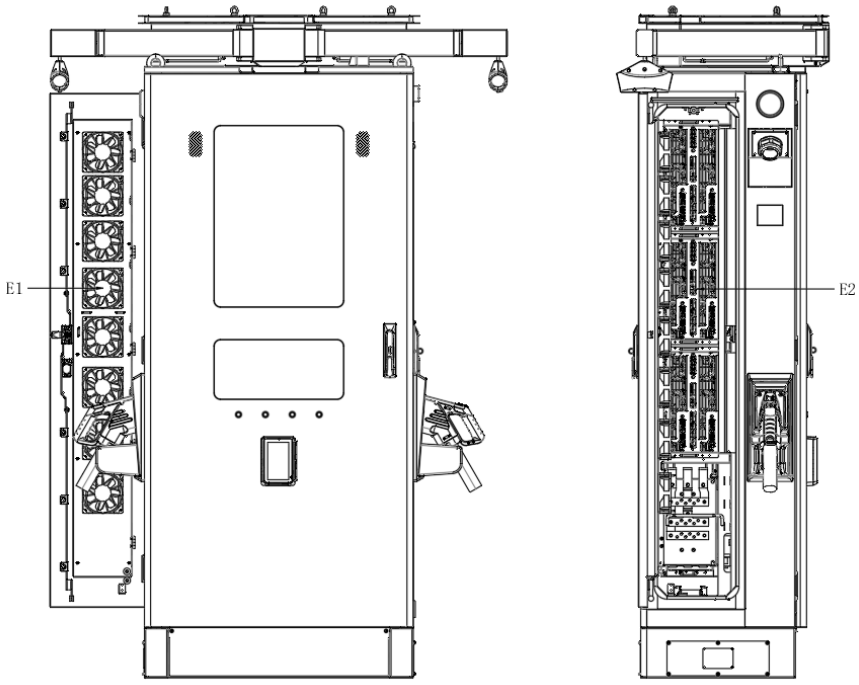


Figure 5. Left Component Diagram

E1	Cooling Fan for Power Module	E2	Terminals for Power Module

3.3 Overview of Cable Management System

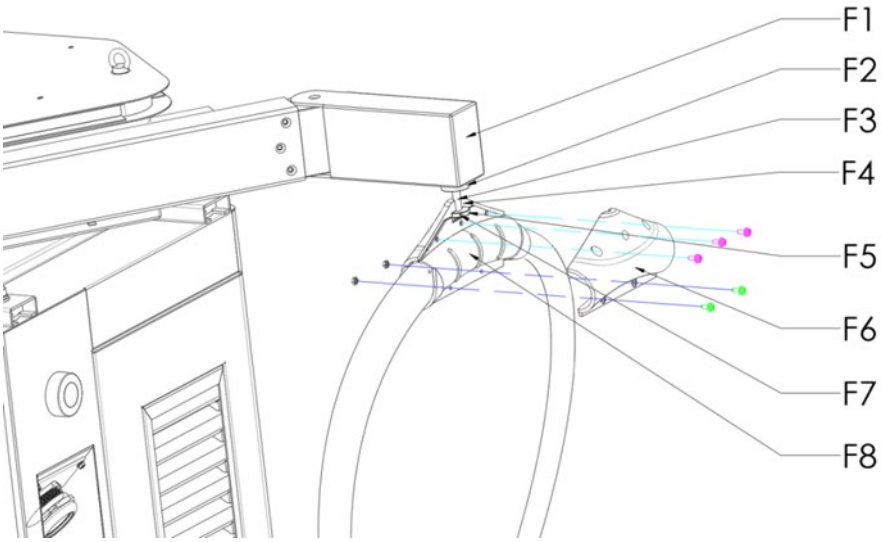


Figure 6. Cable Management System components

F1	Swing Arm Minor Axis	F2	Cardan Shaft Fixing Bracket	F3	Cardan Shaft	F4	Chuck
F5	Cable Support Left Bracket	F6	Pin	F7	Connector Line Apron	F8	Cable Support Right Bracket

3.4 Overview of EVSE Status Indicator

Indicator Light	Standby	Charging	Error
DC1	Green steady	Blue running light	Red steady
DC2	Green steady	Blue running light	Red steady
DC connector plug-in light: White constant light			
Atmospheric light at the top: Available: Green; Unavailable: Blue			

4. Moving and Storage

4.1 Moving Instructions

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 impact.

Transport according to the shipping information and markings on the packaging box: keep the EVSE upwards, lightly put, prevent moisture, prohibition of stacking, no rollover.

4.2 Storage Instructions

The storage temperature requirement for EVSE is between -30 ℃ and 60 ℃。This temperature range is designed to ensure that the electronic components and other mechanical parts inside the EVSE can still work properly or at least not be permanently damaged under extreme weather conditions.

EVSE should be stored in a dry, ventilated, non open flame, and non corrosive indoor environment. Avoid storing flammable and explosive materials, corrosive materials, toxic and harmful substances in the same space.

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	Weld 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

CORE 60~180 USropean Standard 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 (60kW)	3AWG（26.67mm² ）	3AWG（26.67mm² ）	3AWG（26.67mm² ）	6AWG（13.3mm² ）	6AWG（13.3mm² ）
Torque (N.m)	11~13.6N.m	11~13.6N.m	11~13.6N.m	11~13.6N.m	11~13.6N.m
Cable diameter (90kW)	1/0AWG（53.49mm² ）	1/0AWG（53.49mm² ）	1/0AWG（53.49mm² ）	3AWG（26.67mm² ）	3AWG（26.67mm² ）
Torque (N.m)	11~13.6N.m	11~13.6N.m	11~13.6N.m	11~13.6N.m	11~13.6N.m
Cable diameter (120kW)	1/0AWG（53.49mm² ）	1/0AWG（53.49mm² ）	1/0AWG（53.49mm² ）	3AWG（26.67mm² ）	3AWG（26.67mm² ）
Torque (N.m)	11~13.6N.m	11~13.6N.m	11~13.6N.m	11~13.6N.m	11~13.6N.m

Cable diameter (150kW)	2/0AWG （67.43mm² ）	2/0AWG （67.43mm² ）	2/0AWG （67.43mm² ）	2AWG （33.62mm² ）	2AWG （33.62mm² ）
Torque (N.m)	26~32.7N.m	26~32.7N.m	26~32.7N.m	11~13.6N.m	11~13.6N.m
Cable diameter (180kW)	2/0AWG （67.43mm² ）	2/0AWG （67.43mm² ）	2/0AWG （67.43mm² ）	2AWG （33.62mm² ）	2AWG （33.62mm² ）
Torque (N.m)	26~32.7N.m	26~32.7N.m	26~32.7N.m	11~13.6N.m	11~13.6N.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
6AWG （13.3mm²)	SC16-6/SC16-8
4AWG （21.15mm²)	SC25-6/SC25-8
3AWG （26.67mm²)	SC25-6/SC25-8
2AWG （33.62mm²)	SC35-8
1AWG （42.41mm²)	SC50-8
1/0AWG （53.49mm²)	SC50-8
2/0AWG （67.43mm²)	SC70-8/SC70-10
3/0AWG （85.01mm²)	SC95-8/SC95-10
4/0AWG （107.22mm²)	SC120-10/SC120-12

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 Requirements 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 height.
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
60kW	480Vac,50/60Hz	L1+L2+L3+PE	≥75kVA	76A
90kW	480Vac,50/60Hz	L1+L2+L3+PE	≥100kVA	114A
120kW	480Vac,50/60Hz	L1+L2+L3+PE	≥150kVA	152A
150kW	480Vac,50/60Hz	L1+L2+L3+PE	≥180kVA	190A
180kW	480Vac,50/60Hz	L1+L2+L3+PE	≥200kVA	228A

Circuit Breaker Selection	Remark
Ue=480V,≥160A，Icu≥Ics≥40kA，3P	
Ue=480V,≥250A，Icu≥Ics≥40kA，3P	
Ue=480V,≥300A，Icu≥Ics≥40kA，3P	

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℃～ + 50℃
Altitude	≤2000m
Humidity	5%～95%RH No condensation inside the product.
Dust	≤1mg/m^3
Corrosive substances	Free from pollutants such as salt, acid, smoke, etc.
Shock	≤1.5mm/s
Insects, pests, vermin, termites	None
Mold	None
Damp	None

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 installation size is 800mm(W) × 2000mm(H) × 495mm(D), with external dimensions depicted in the figure below.

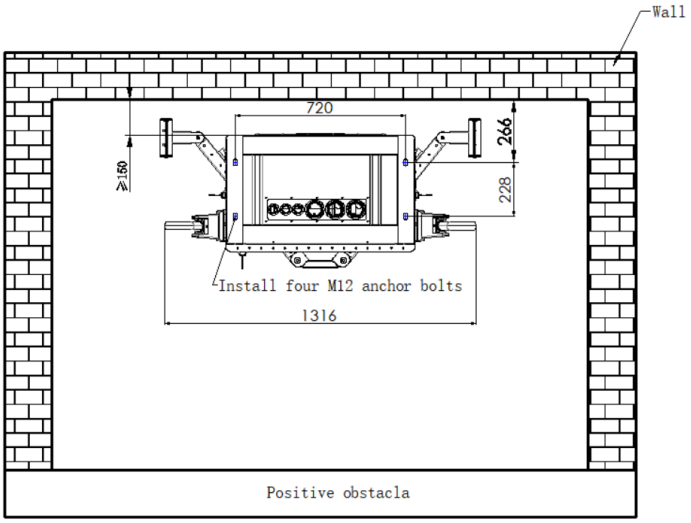


Figure 7. Installation Distance Diagram

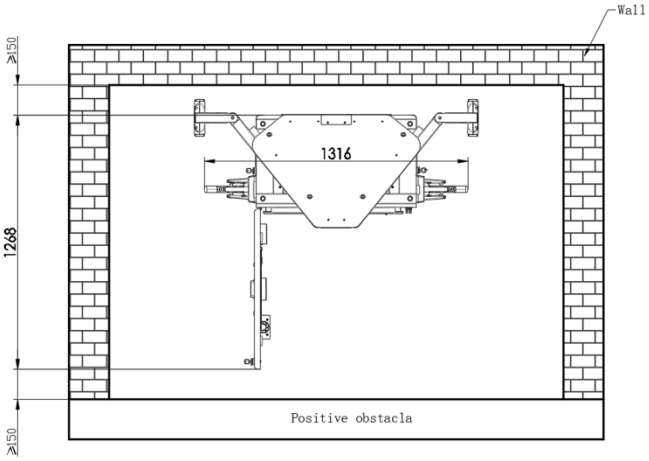


Figure 8. Maintenance Distance Diagram

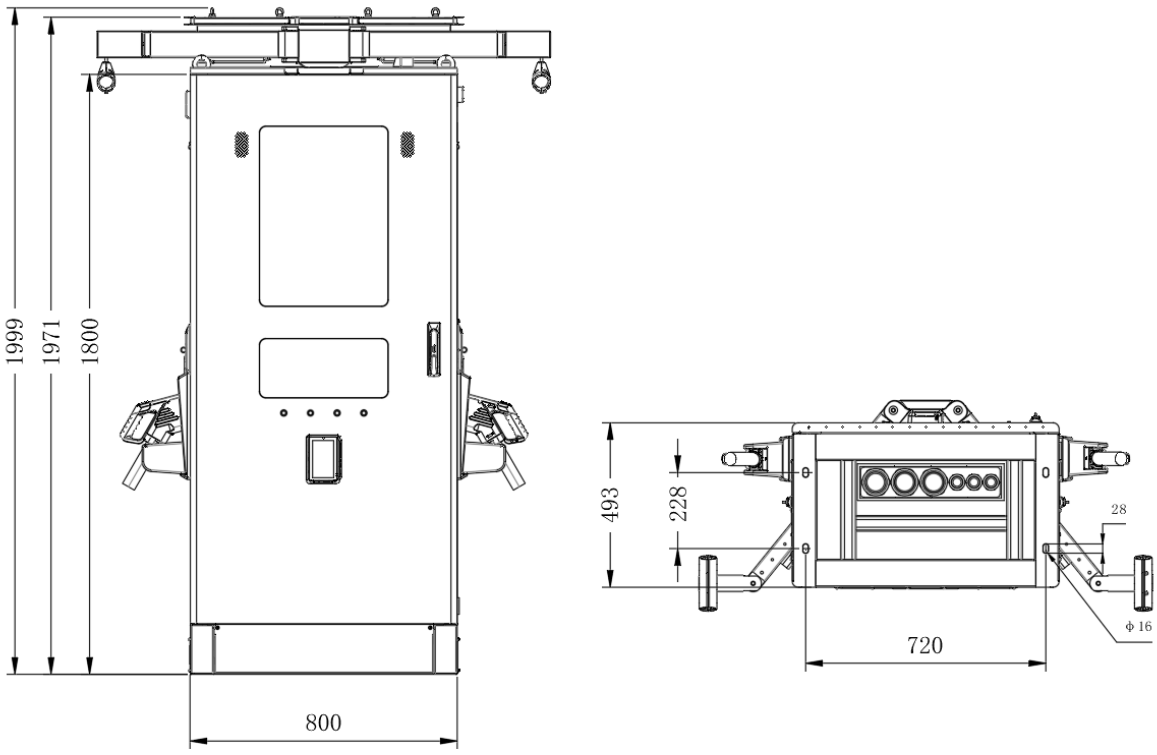


Figure 9. Installation Size

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.

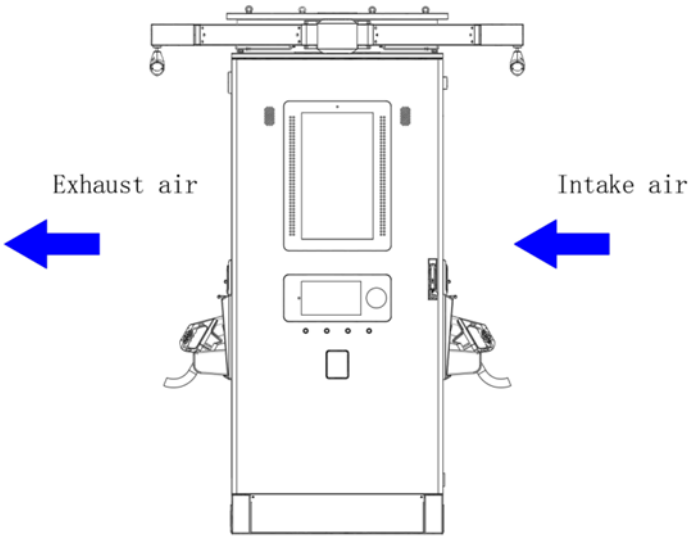


Figure 10. Schematic Diagram of Wind Direction

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.

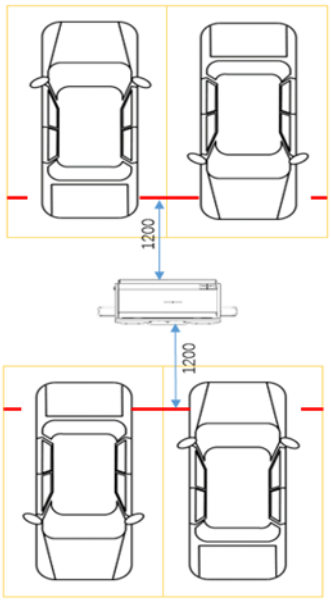


Figure 11. Parking Distance Requirements

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 1000mm(W) x 700mm(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.

- Four M14 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.

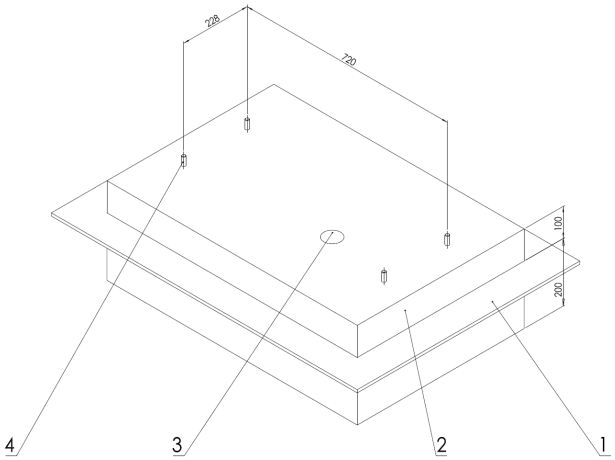


Figure 12. Schematic Diagram of Cement Foundation

1	Ground	3	Cable Outlet
2	Cement Foundation	4	M14 Threaded Rod

Plane dimensions of cement base of charging station is shown in the figure below.

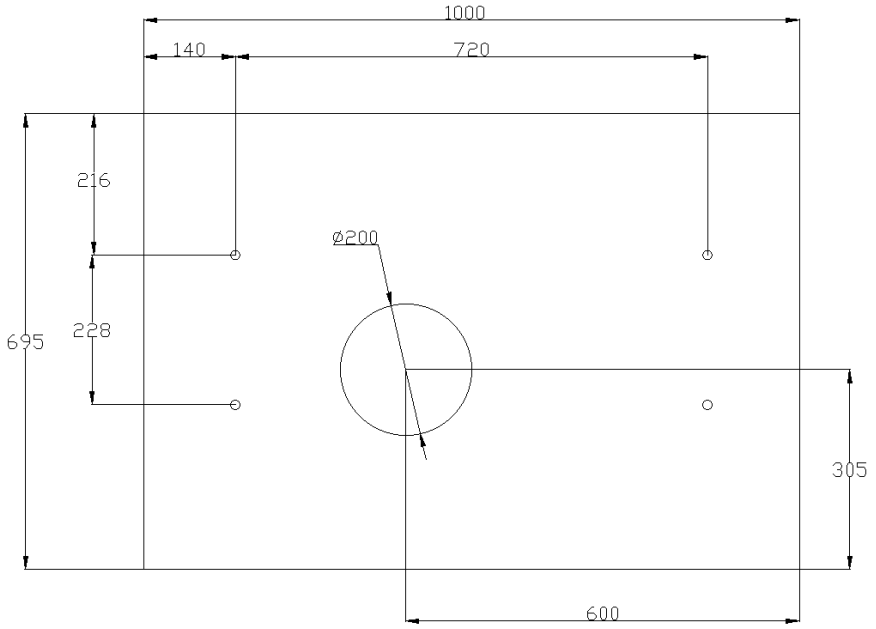


Figure 13. Plane dimensions of cement base of charging station

5.8 Grounding Connection Requirements

The grounding wire of the charging station should be connected to the building grounding terminal or the ground and ensure the reliability and safety of the grounding position.

The grounding material is selected as copper wire, ground wires need to have well conductivity and corrosion resistance to ensure long-term stability and safety.

When connecting the ground wire, it should be ensured that the connection is firm and reliable to avoid safety hazards caused by looseness or poor contact.

5.8.1 Grounding and Insulation Resistance

1. Check the civil engineering grounding resistance test report to ensure that the resistance value of the grounding grid produced on site is ≤4Ω.
2. Check the civil engineering insulation resistance test report to ensure that the insulation resistance of the cable is ≥10MΩ.

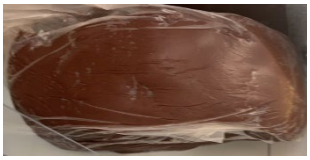
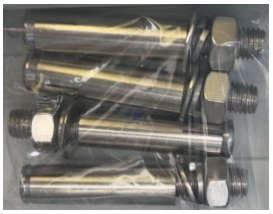
5.9 Confirmation of Construction Drawings

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	10	

		Key	9	
		Qualification Certificate	1	
		Fireproof mud	1	
		Desiccant	1	
		Stainless steel expansion bolt	4	
		Cross recessed hexagon head set screws with indentation	8 (4 pcs per power module)	
Power Module	Carton Box	30kW ACE Module	2 (CORE-60) 3 (CORE-90) 4 (CORE-120) 5 (CORE-150) 6 (CORE-180)	

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.

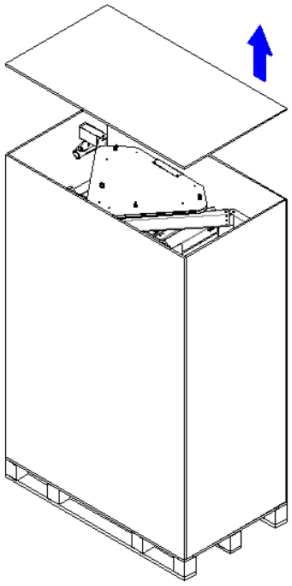


Figure 14. Open the Top Cover

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

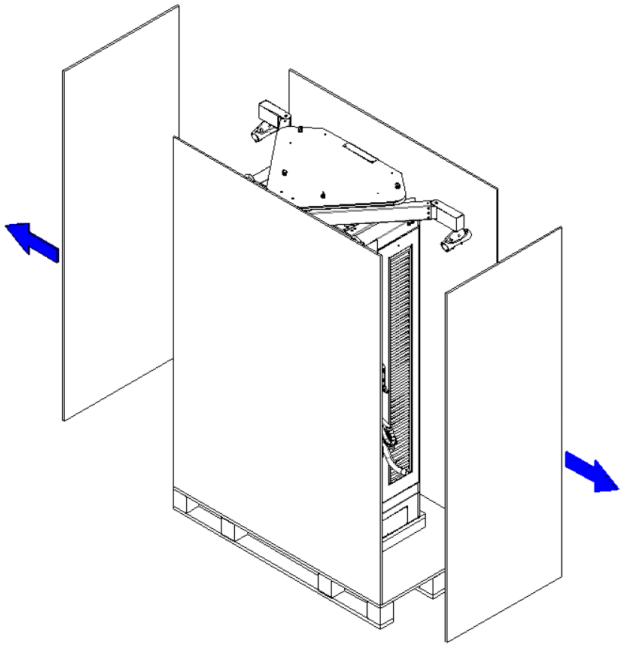


Figure 15. Remove the Left and Right Side Boards.

3. Remove the boards on the front and back.

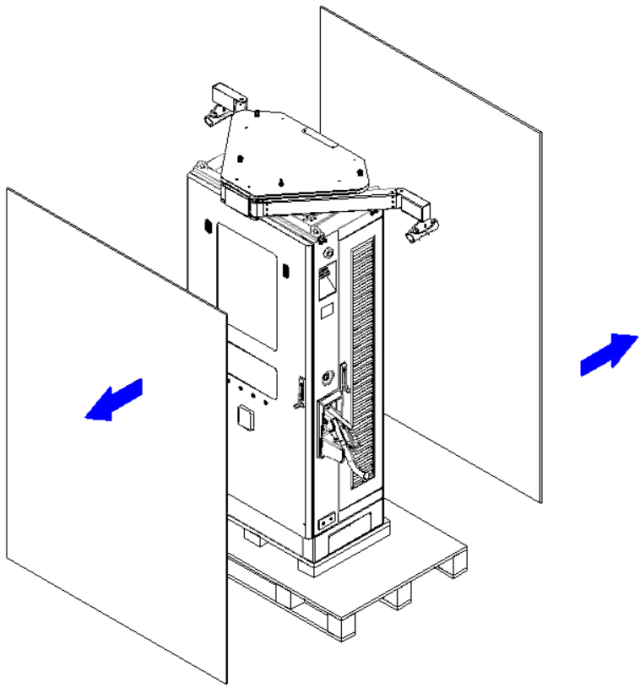


Figure 16. Remove the Front and Back Boards

5.11.2 Unloading and fixing

1. Remove the tray on the bottom right and left sides of the EVSE.
2. Use a No 19 socket wrench to remove the M12 screws in the cabinet.

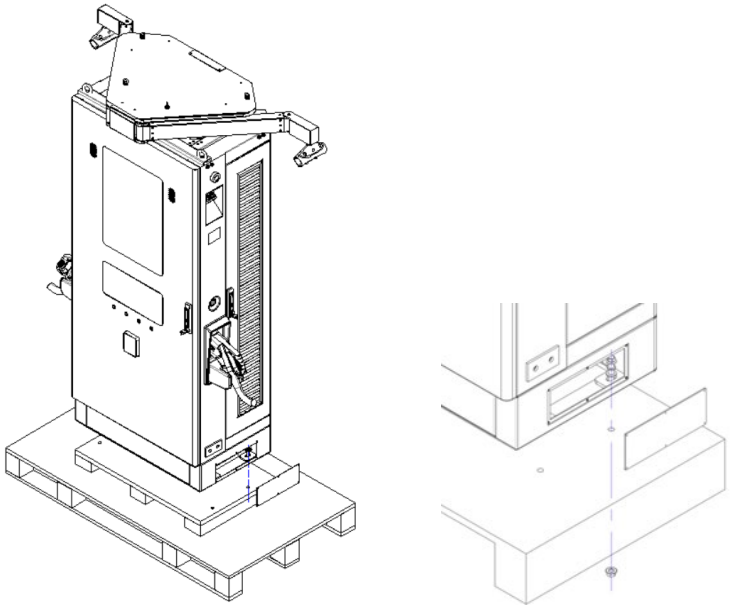


Figure 17. Diagram of Removing the Tray.

3. Unloading

There are two methods of unloading: you can choose either the hoisting method or the liftable forklift method to transport the EVSE.

a.For the forklift method, use the forklift to lift the EVSE from the wooden base.

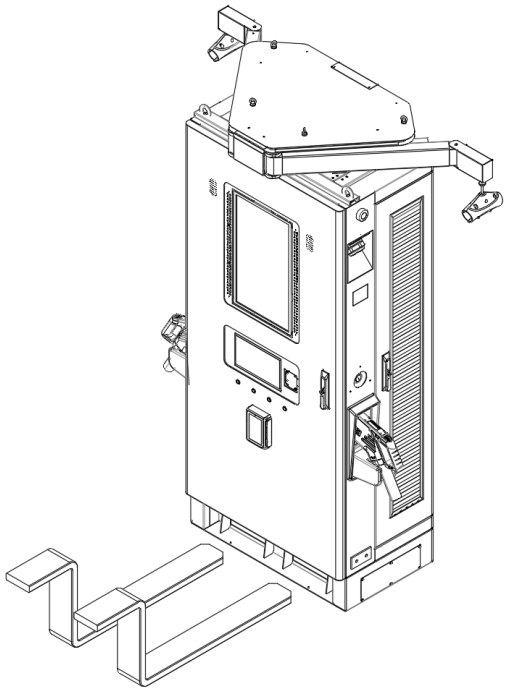


Figure 18. Lifting the EVSE with Forklift

b.For the hoisting method, attach four lifting rings on top of the EVSE and pass the rope through the rings. Lift the EVSE with a crane.

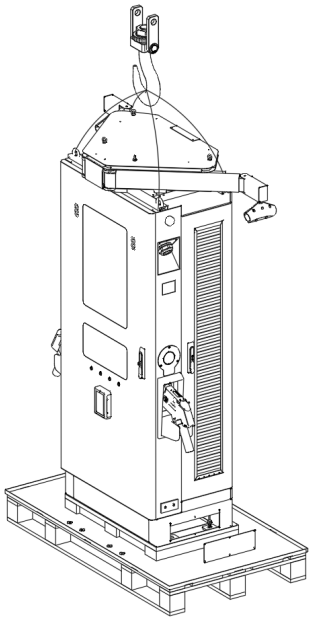


Figure 19. Lifting the EVSE with a Crane

4. Lift the EVSE steadily and slowly, aligning it with the pre-embedded threaded rods until it rests on the installation base. Ensure that the cables have entered the cabinet through the cable protection cover.

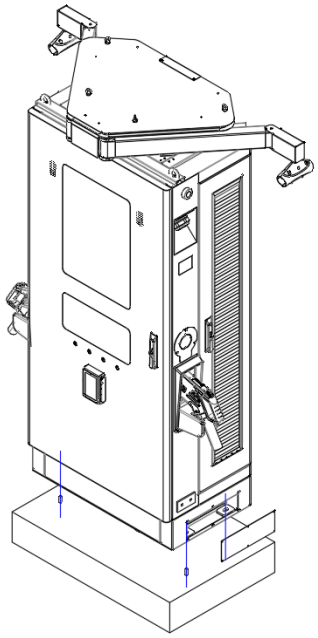


Figure 20. Schematic Diagram of EVSE Placement

5. Use M14 nuts along with flat and spring washers, to fix the EVSE. Tighten the nuts with the recommended torque of 95.5N·m.
6. Guide the cables into the cabinet through the cable glands.

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.

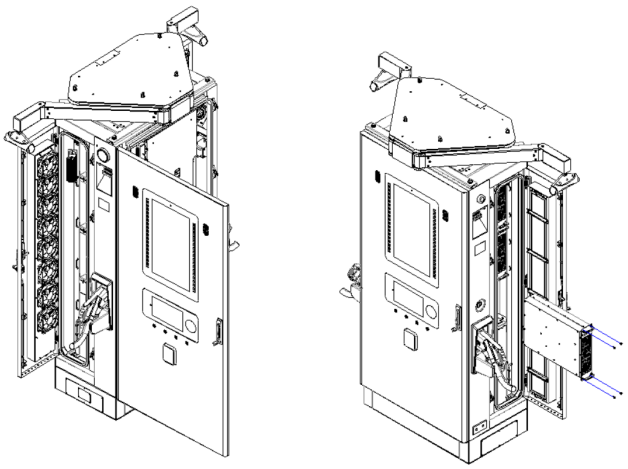


Figure 21. Power Modules Installation Diagram

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

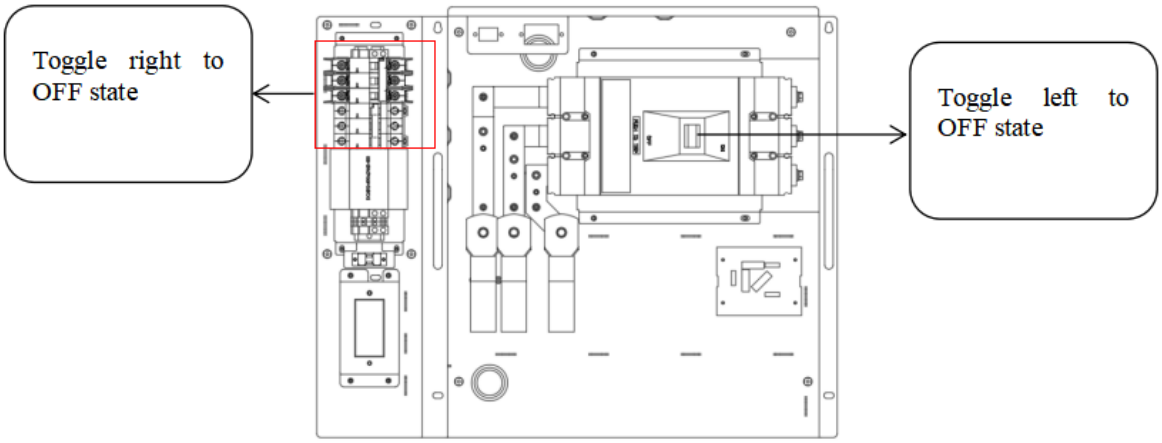


Figure 22. Leakage Protection and Air Switch

4. 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.

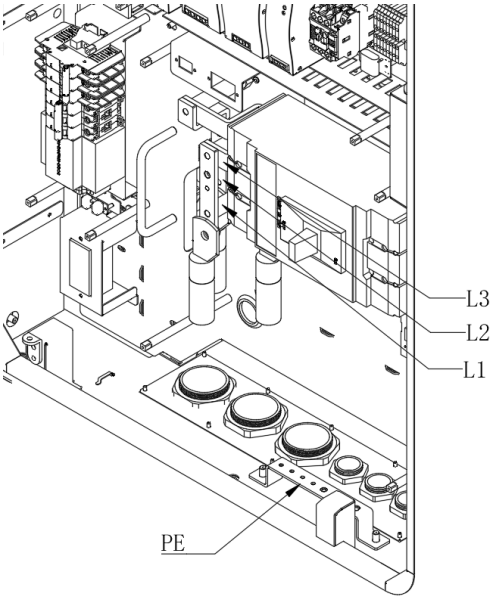


Figure 23. Wiring Diagram

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

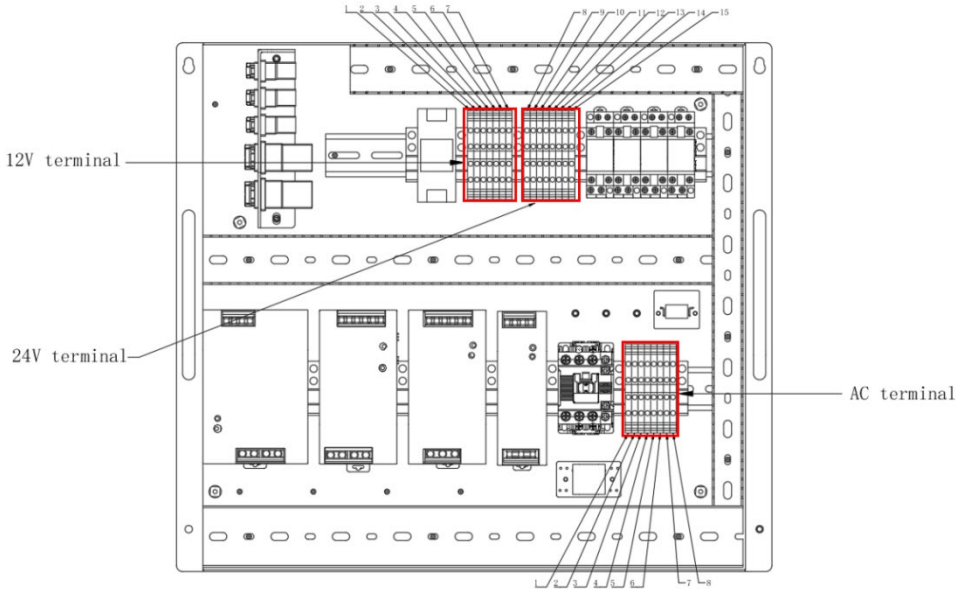


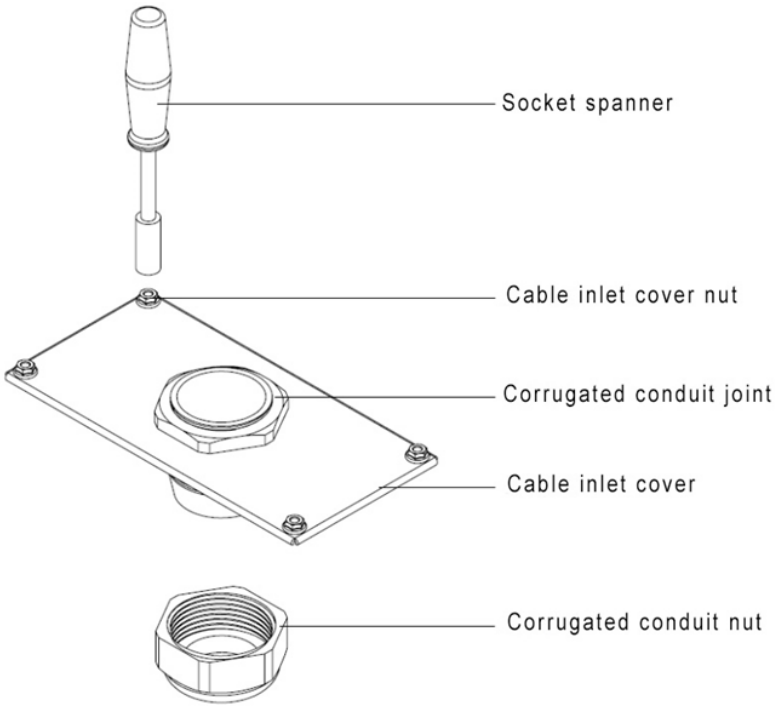
Figure 24. Terminal Points to Check for Short Circuit

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

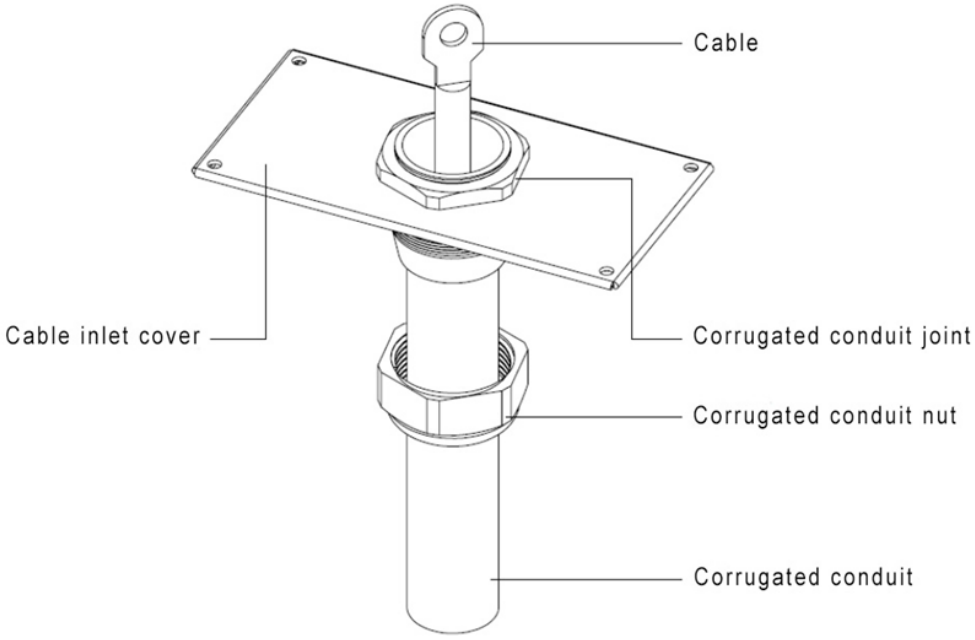
5.12 Fixing the Power Supply Cable Inlet

5.12.1 Equipped with the Joint of Corrugated Conduit – With Corrugated Conduit

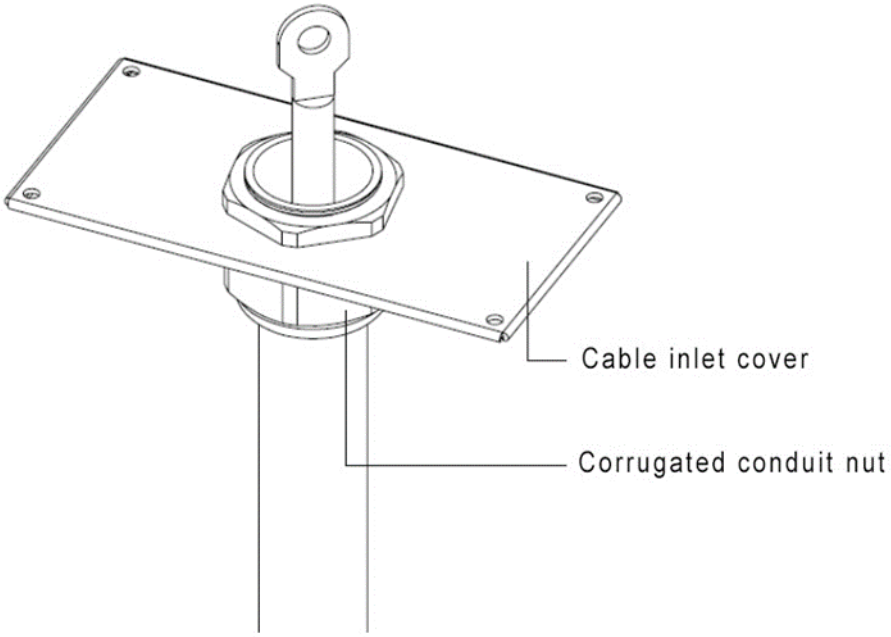
1. Use a socket spanner or ratchet wrench to remove the cable inlet cover and unscrew the corrugated conduit nut.



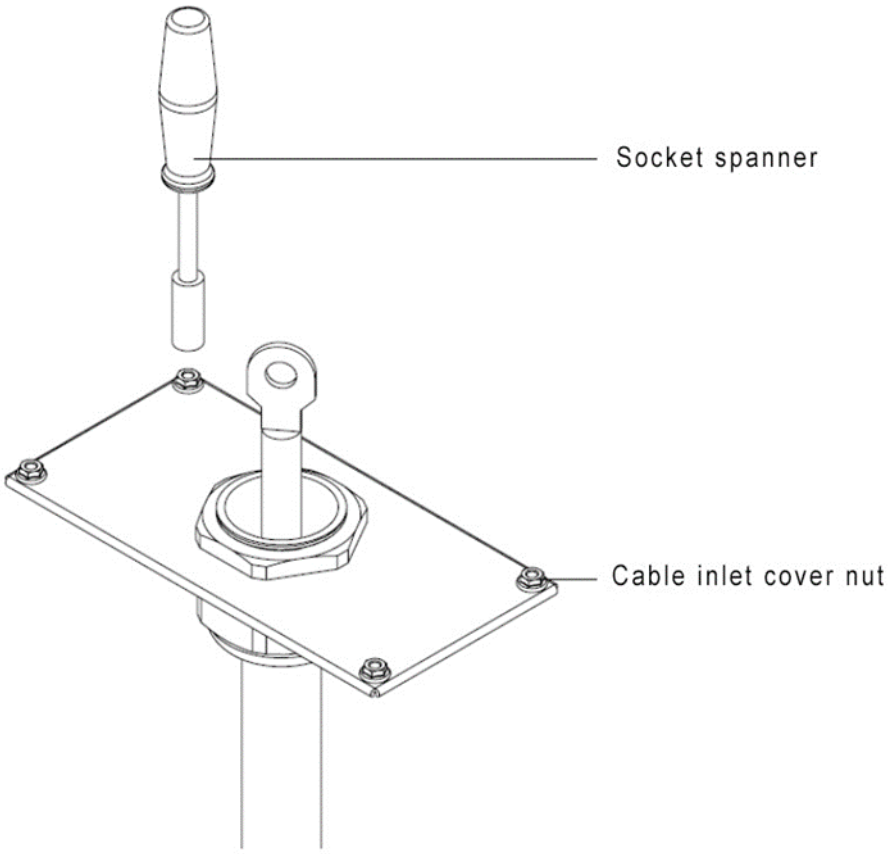
2. Thread the corrugated conduit and cable into the corrugated conduit nut and corrugated conduit joint in turn.



3. After tightening the corrugated conduit nuts, place the cable inlet cover plate back to the bottom of the EVSE.

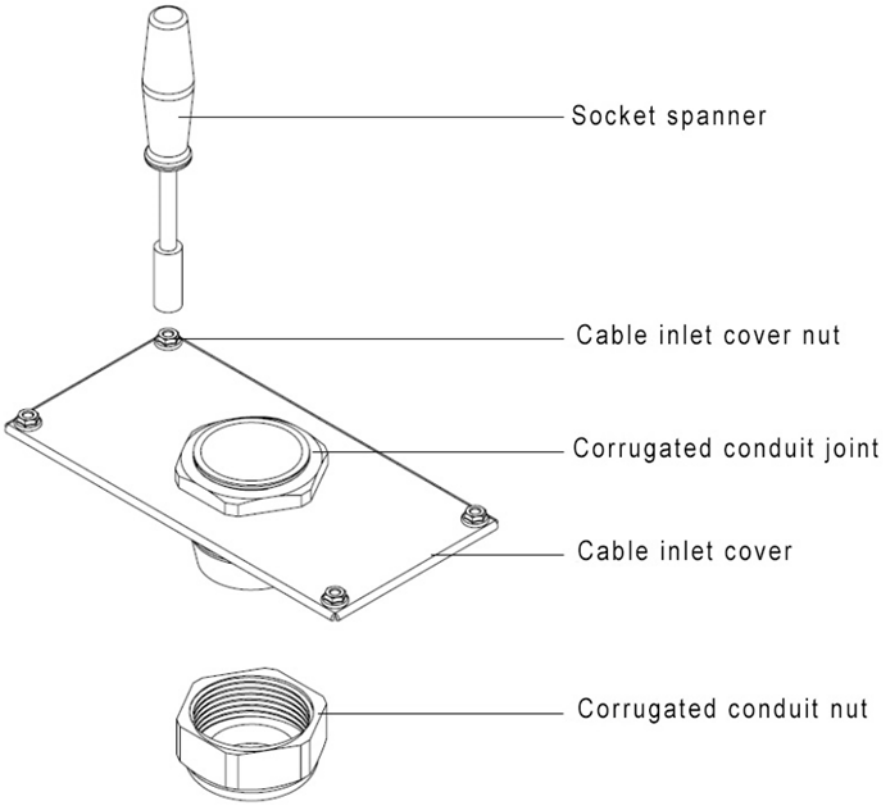


4. Assemble the cable inlet cover nut with a socket spanner or ratchet wrench.

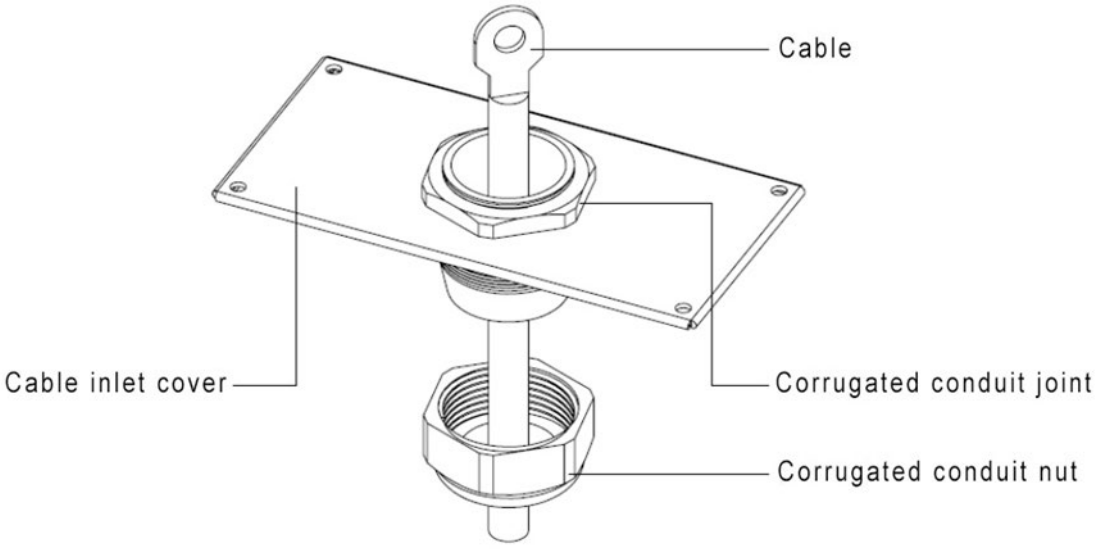


5.12.2 Equipped with the Joint of Corrugated Conduit – Without Corrugated Conduit

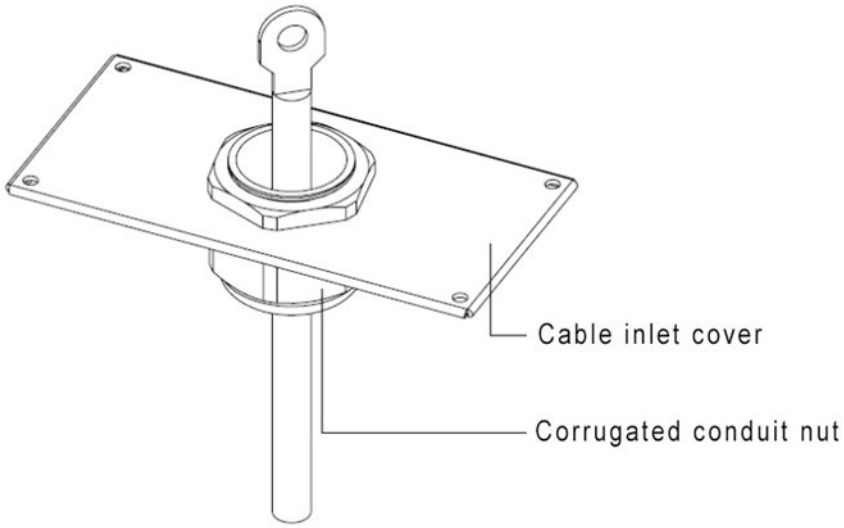
1. Use a socket spanner or ratchet wrench to remove the cable inlet cover and unscrew the corrugated conduit nut.



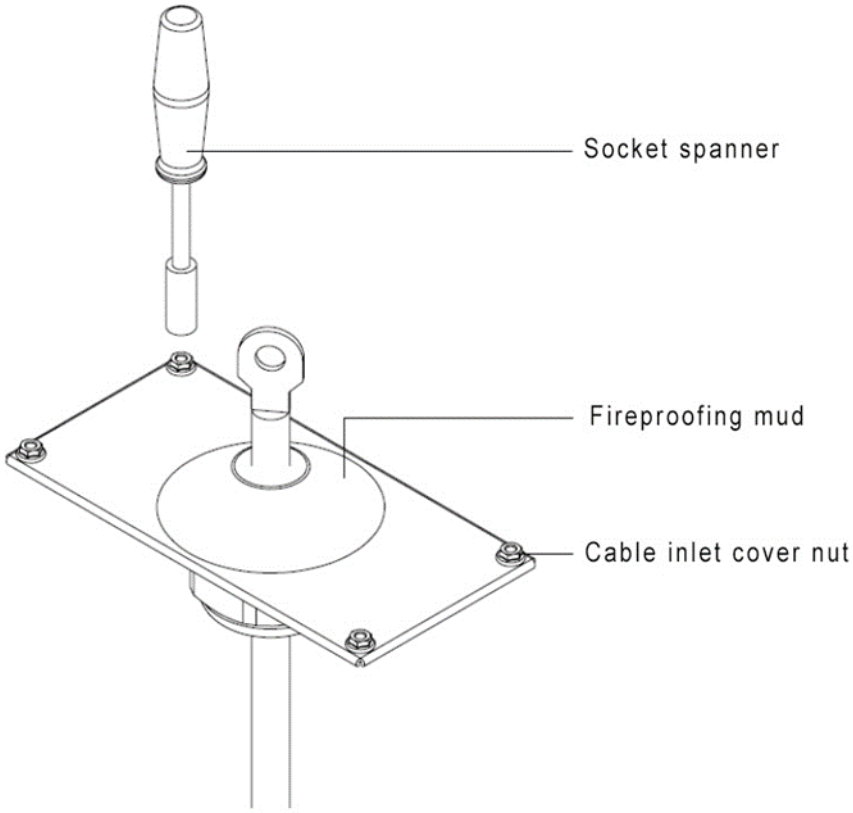
2. Thread the cable into the corrugated conduit nut and corrugated conduit joint in turn.



3. After tightening the corrugated conduit nuts, place the cable inlet cover plate back to the bottom of the EVSE.

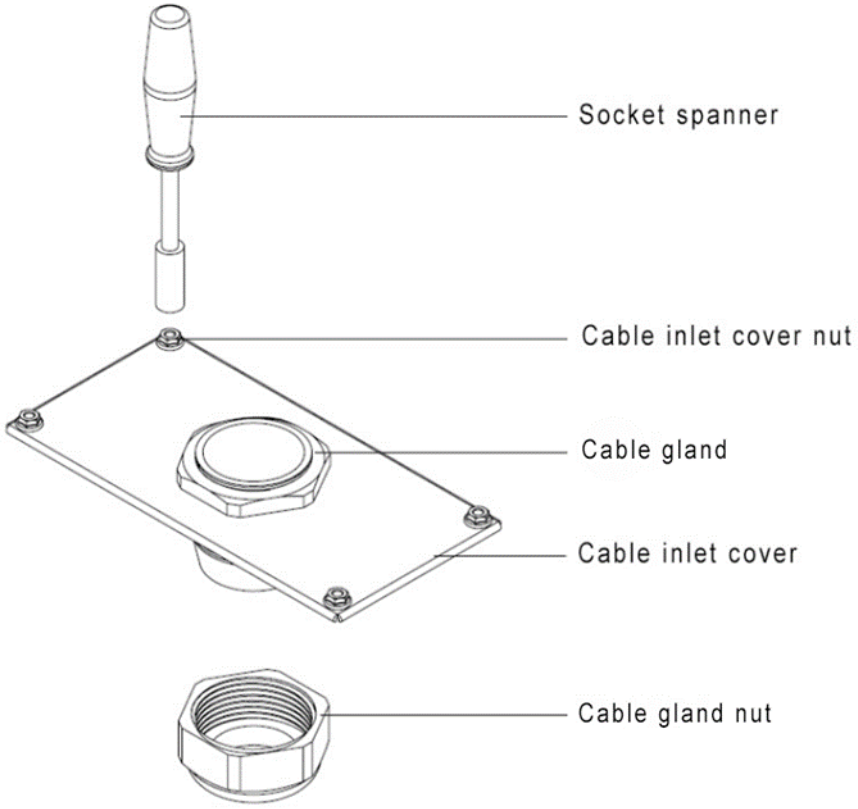


4. After assembling the cable inlet cover nut with a socket spanner or ratchet wrench, seal the cable inlet with fireproofing mud.

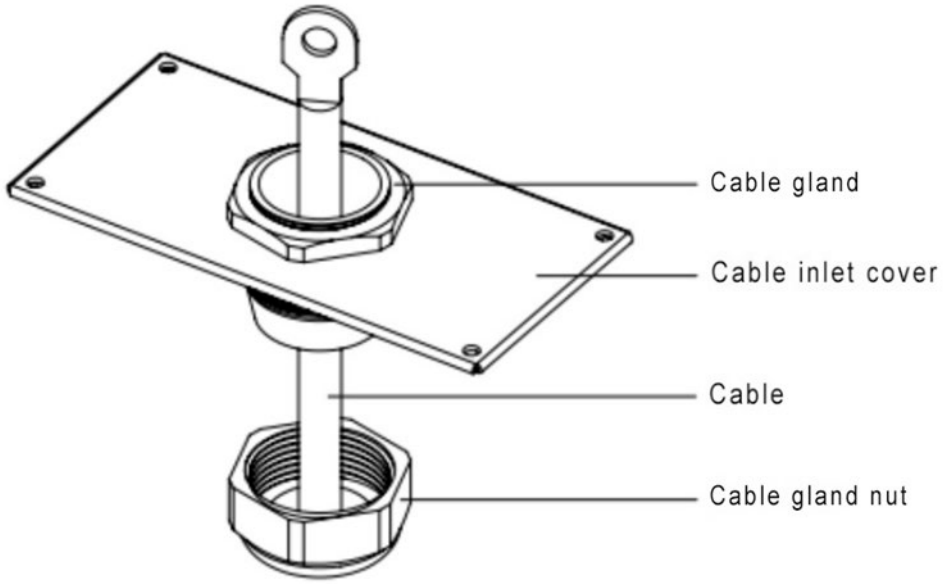


5.12.3 Equipped with Cable Gland

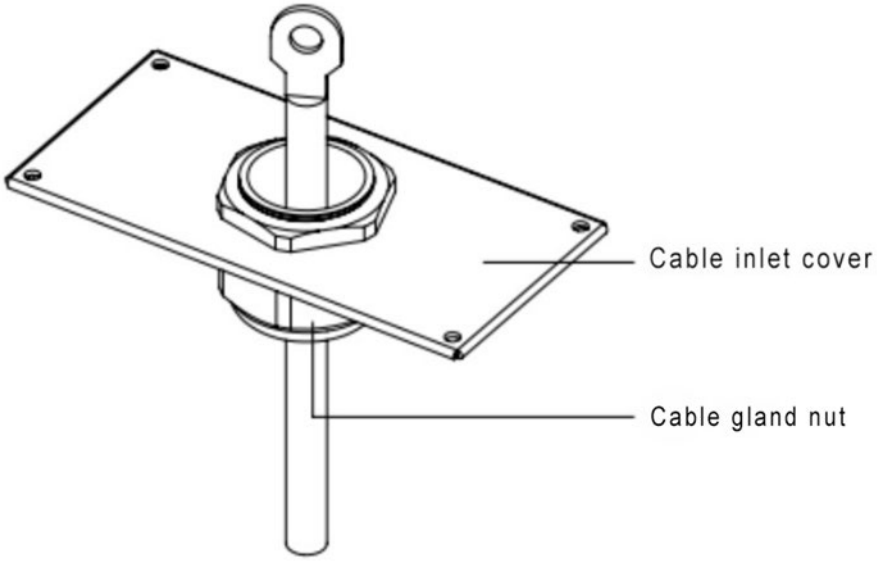
1. Use a socket spanner or ratchet wrench to remove the cable inlet cover and unscrew the cable gland nut.



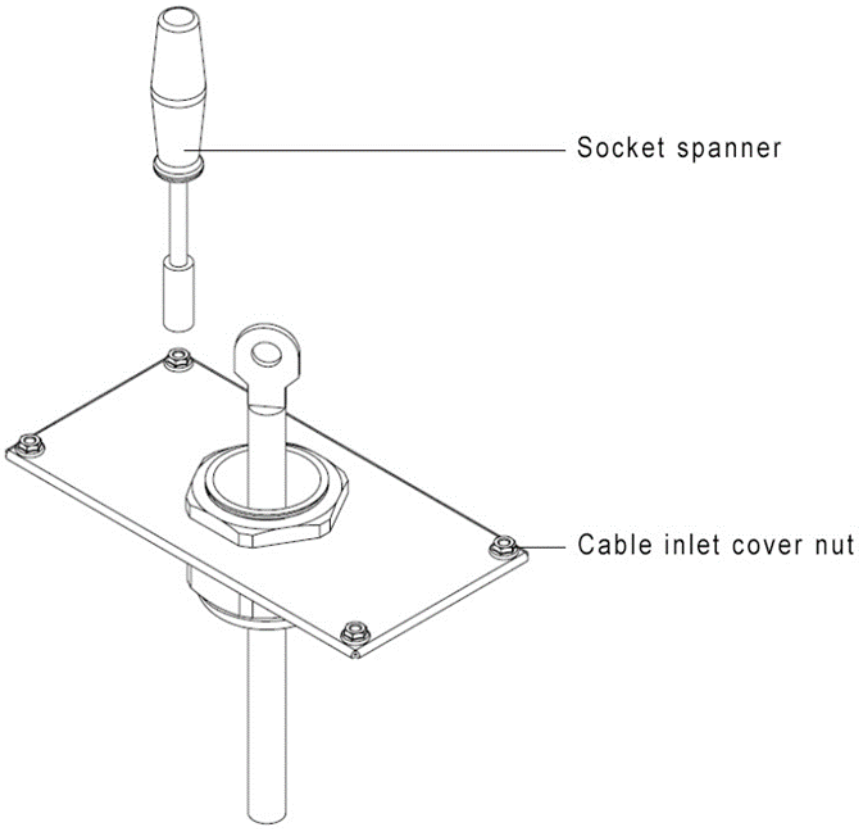
2. Thread the cable into the cable gland nut and cable gland in turn.



3. After tightening the cable gland nut, place the cable inlet cover back to the bottom of the EVSE.



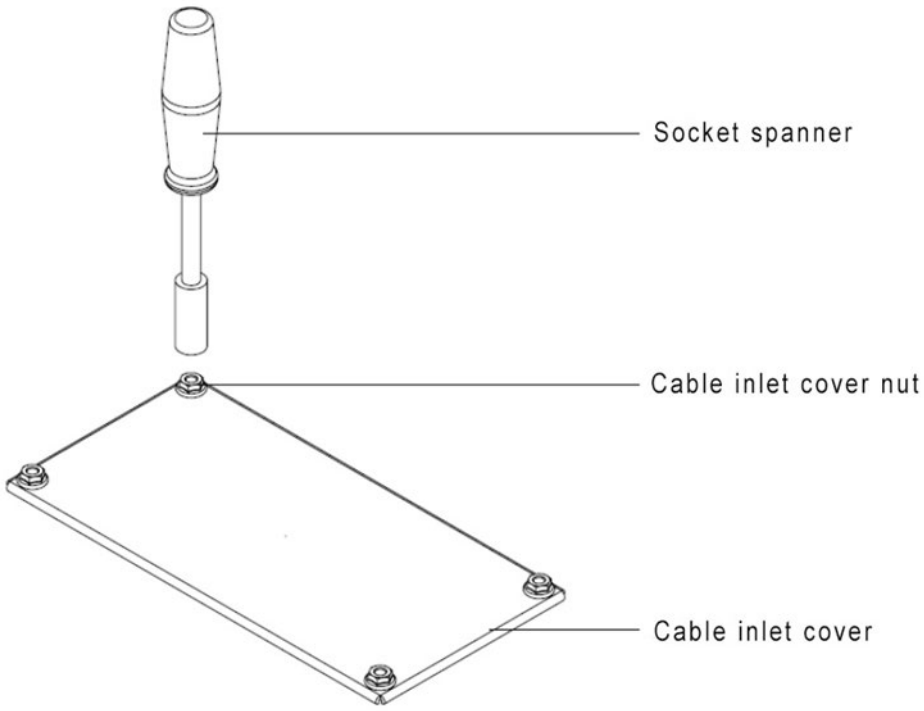
4. Assemble the cable inlet cover nut with a socket spanner or ratchet wrench.



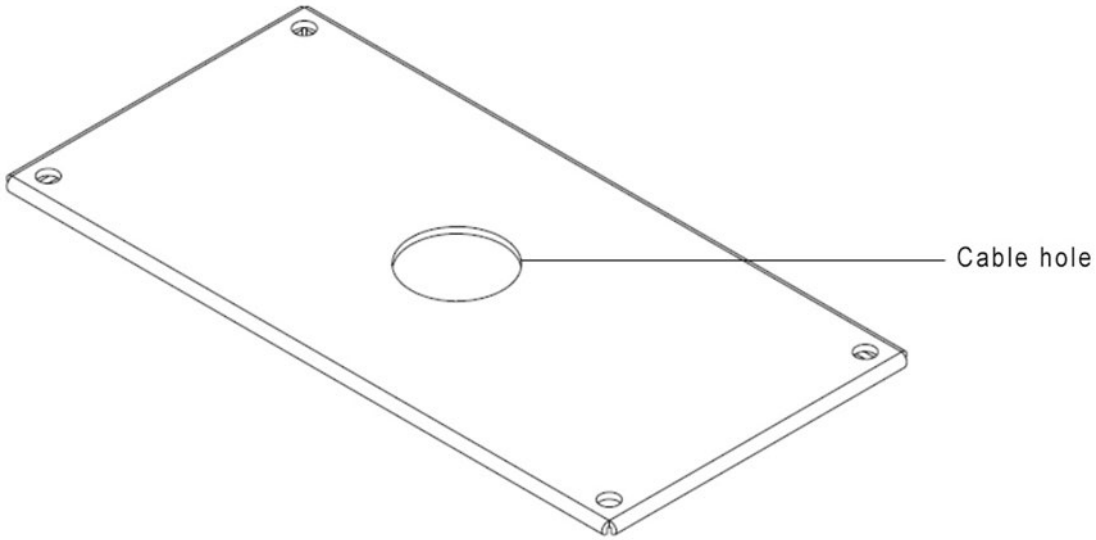
5.12.4 Equipped with Cover Plate Only

When the EVSE power supply inlet is only equipped with cover plate, the customer has to drill the hole for the cable.

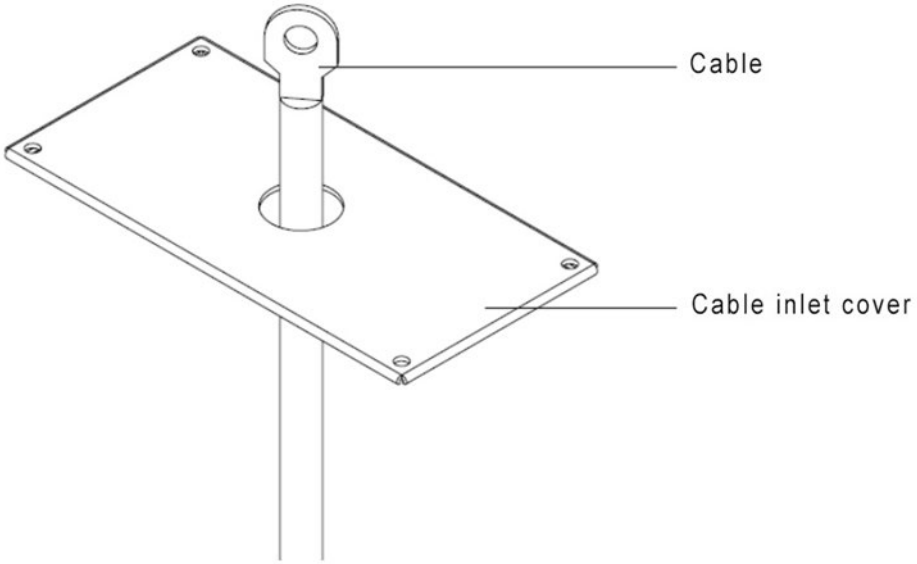
1. Use a socket spanner or ratchet wrench to remove the cable inlet cover.



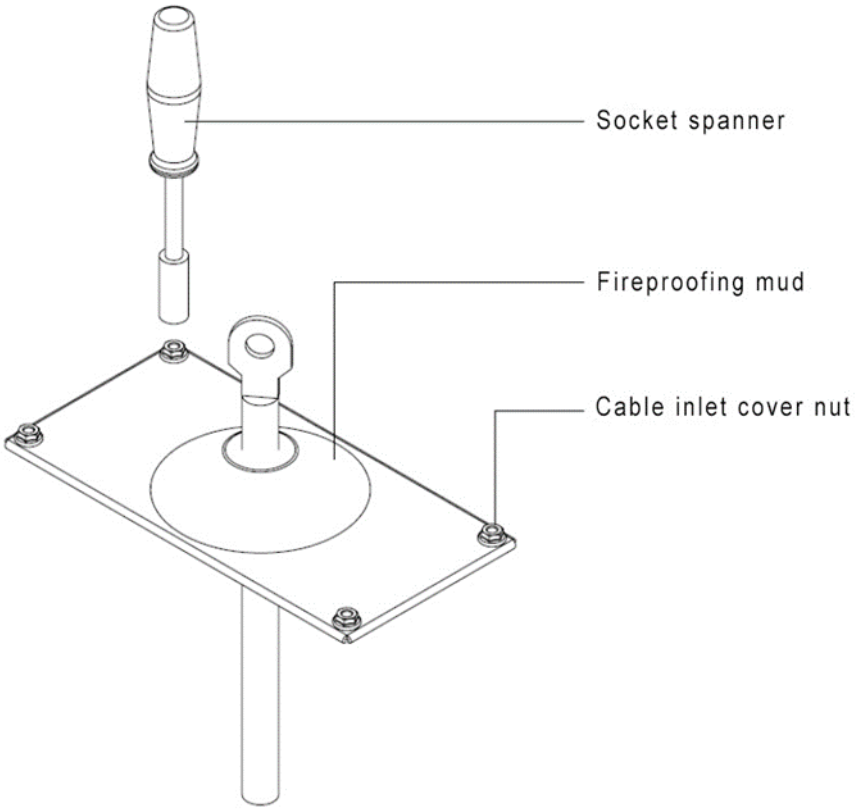
2. According to the equipped inlet cable diameter, the customer can drill the corresponding size of the cable hole.



3. After threading the cable into the cable hole, place the cable inlet cover plate back to the bottom of the EVSE.



4. After assembling the cable inlet cover nut with a socket spanner or ratchet wrench, seal the cable inlet with fireproofing mud.



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.

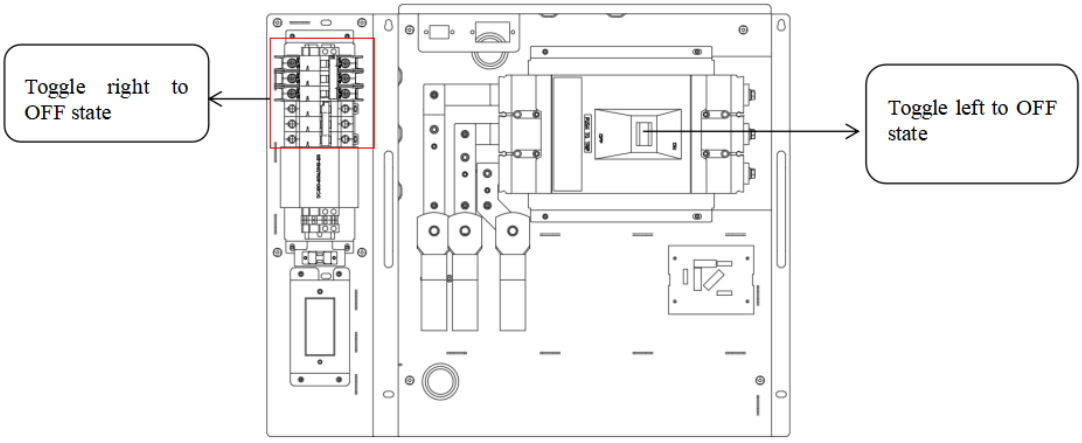


Figure 25. Turning Off the Circuit Breaker, leakage Protection and Air Switch

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.

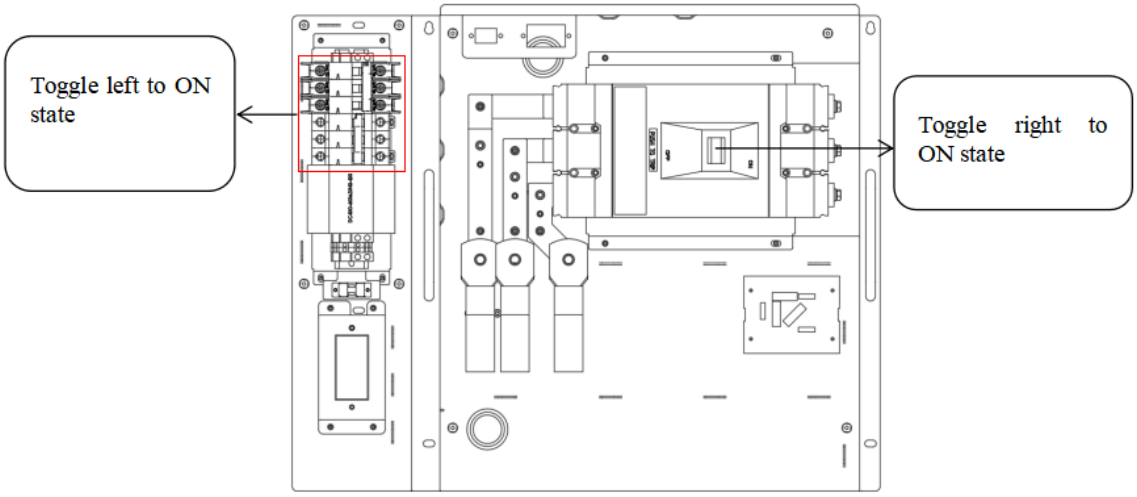


Figure 26. Switching On the Circuit Breaker, Leakage Protection and Air Switch

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.

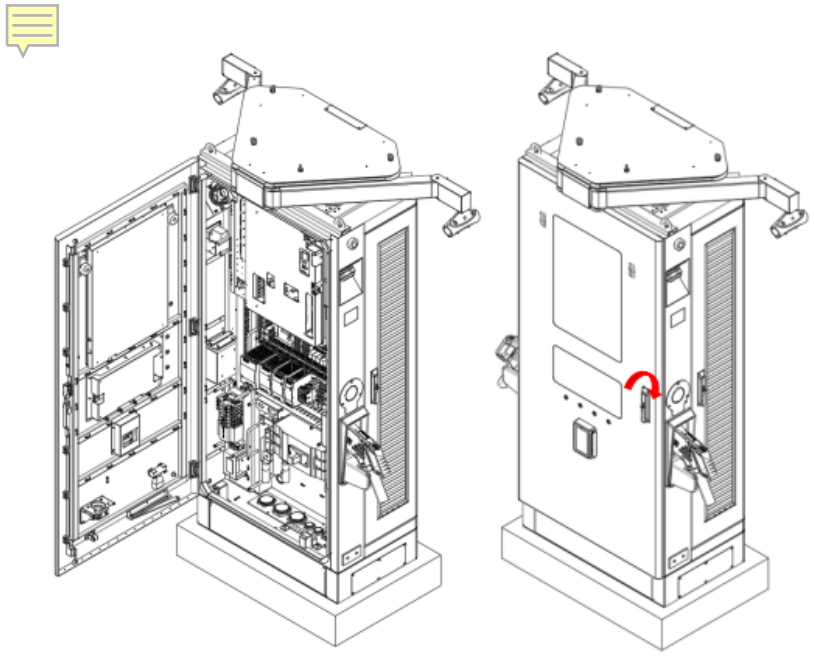


Figure 27. Close the Cabinet Door

5. The screen will enter the startup interface.

Figure 28. Screen Display while Energizing

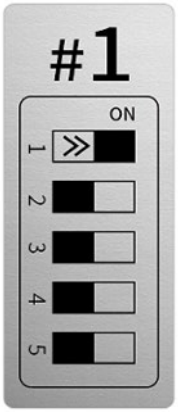
5.14 Power Module Address Configuration

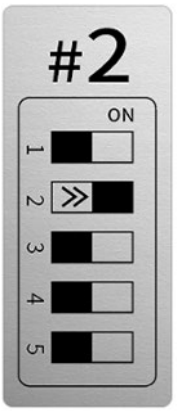
5.14.1 ACE

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'.

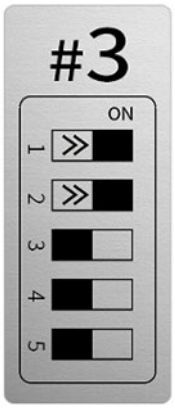
Address	DIP Code	Address	DIP Code
1	00001	5	00101
2	00010	6	00110
3	00011	7	00111
4	00100	8	01000

1. De-energize the EVSE.
2. Set the DIP switches address of each power modules to match the numbers next to their respective compartments.
3. Energize the EVSE. THE EVSE will detect the modules addresses within 2 minutes of energizing.

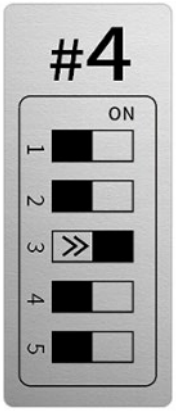




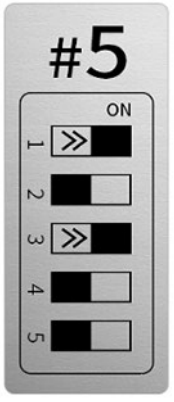

Address 3
OK


#3
ON
1
2
3
4
5

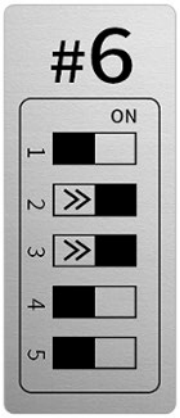

Address 4
OK


#4
ON
1
2
3
4
5


Address 5
OK


#5
ON
1
2
3
4
5


Address 6


#6
ON
1
2
3
4
5

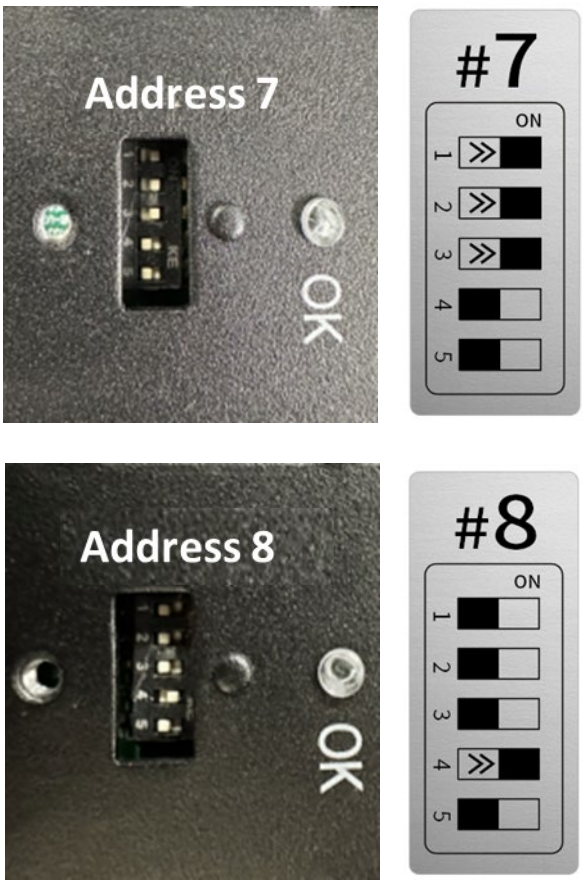


Figure 29. Power Module Addresses for Eight ACE Power Modules

6. Operation

6.1 Display Introduction

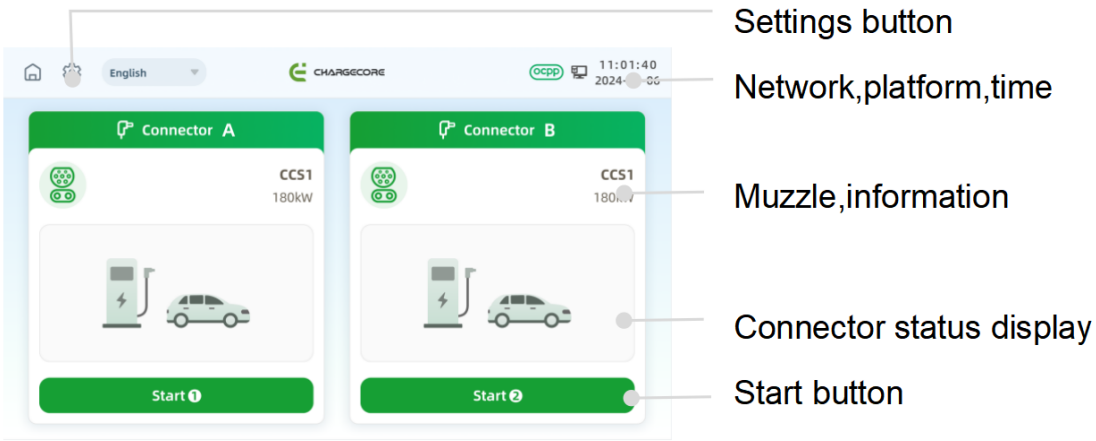


Figure 30. Display Introduction

6.2 Initial Setup

6.2.1 Administrator Interface

Tap the "Settings" icon on the homepage.

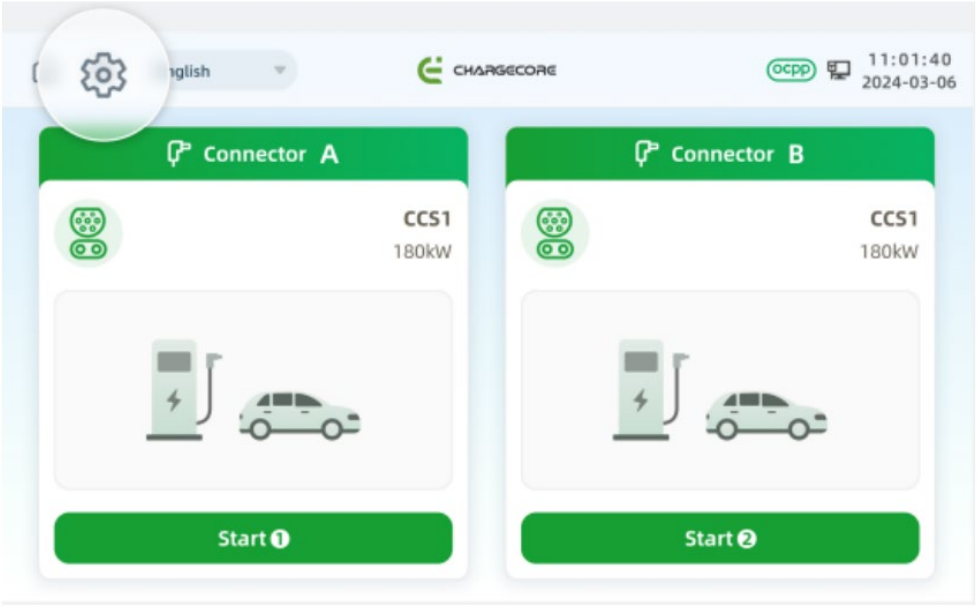


Figure 31. Settings Icon Location in Homepage

Enter password to enter the administrative interface.

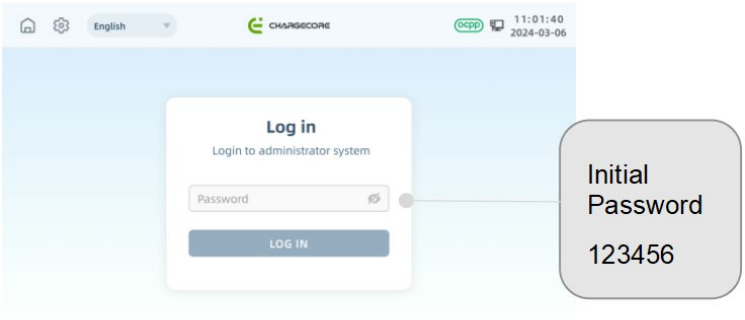


Figure 32. Password Input

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

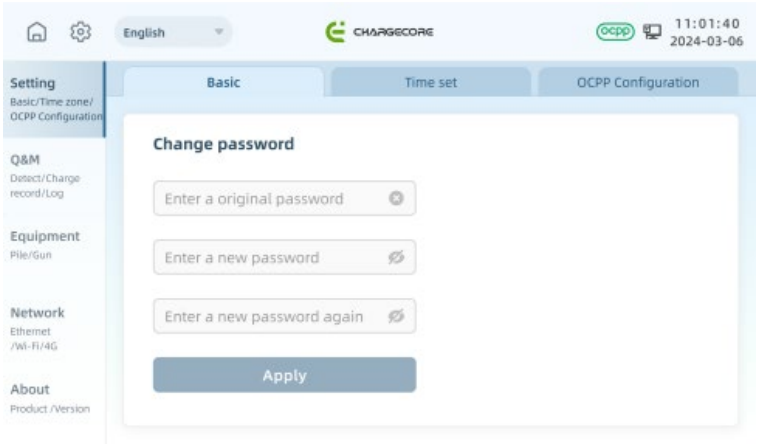


Figure 36. Password Tab in the Administrative Interface

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

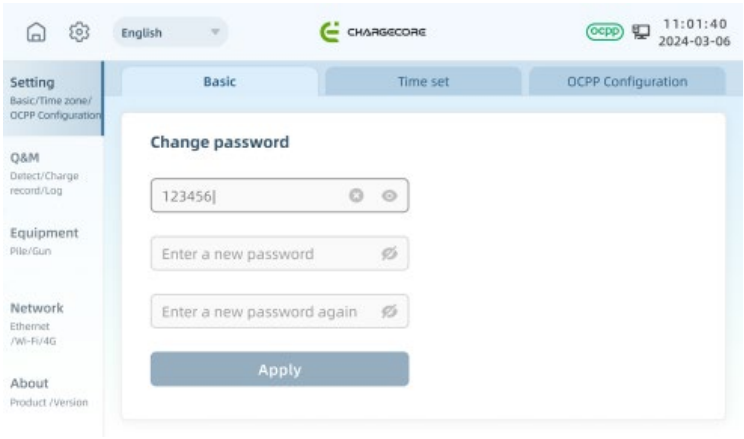


Figure 37. Change Password

6.2.2 Network configuration

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

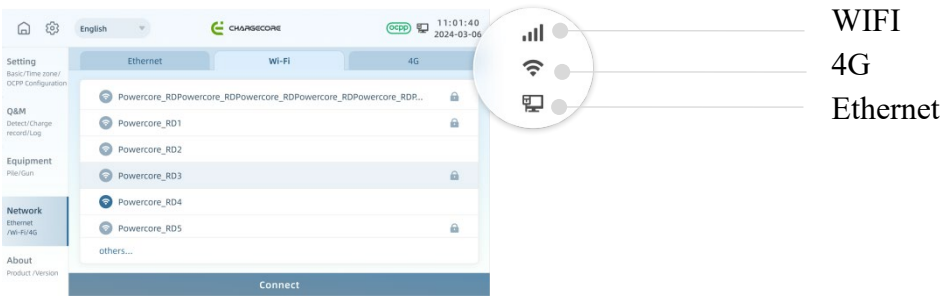


Figure 38. Network Configuration Signal Icon

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

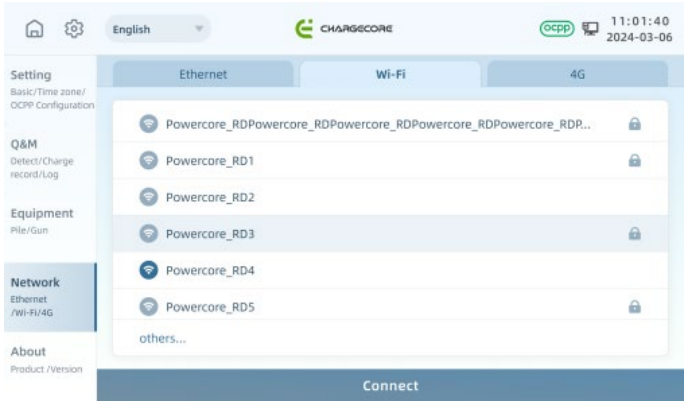


Figure39. Select WIFI

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

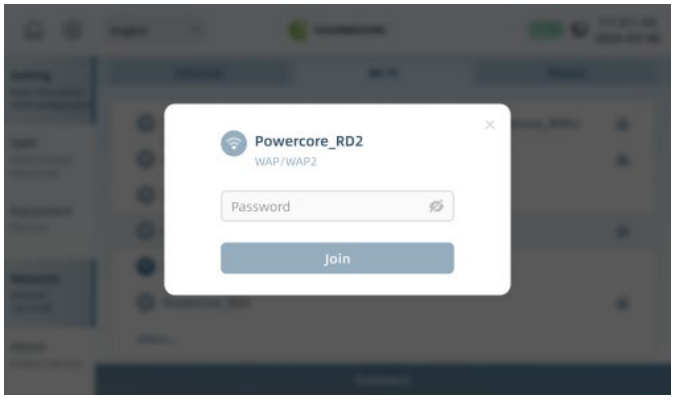


Figure 40. Enter WIFI Password

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

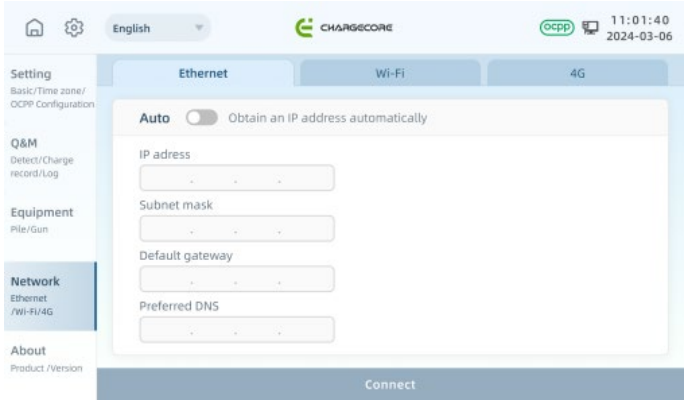


Figure 41. Select Ethernet

4G Configuration: Select 4G > Tick Obtain Automatically > Tap Connect.

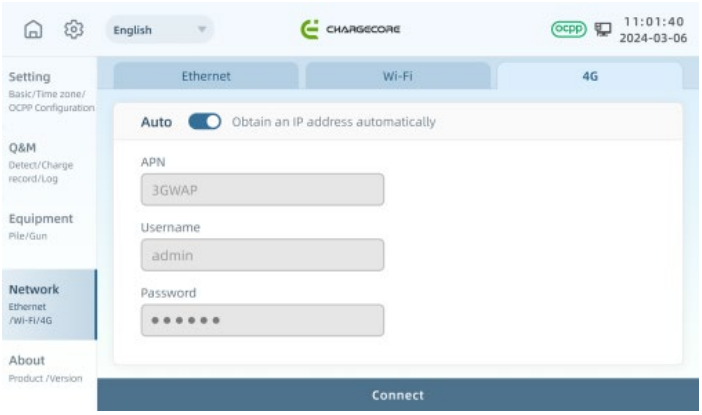


Figure 42. Select 4G

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 43. 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.

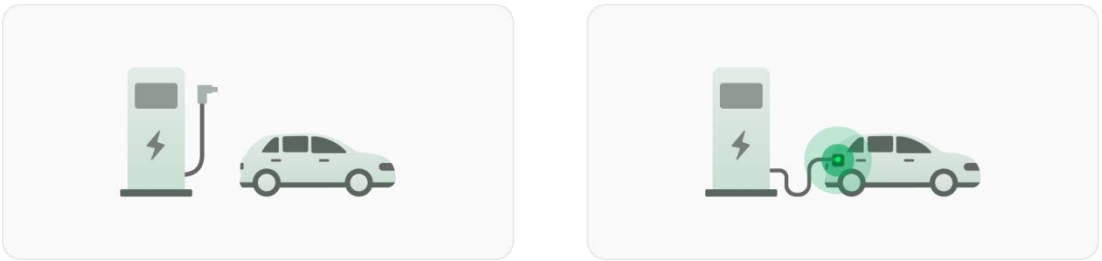


Figure 44. The State of Inserting the Connector and the State of Inserting the Connector

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.

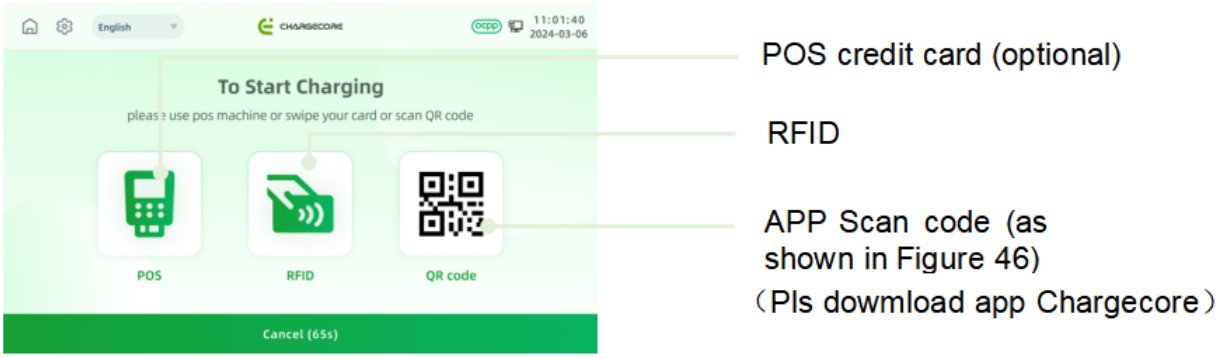


Figure 45. Payment Method Selection Interface

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 46. Chargecore APP Inetrface

The EVSE supports several charging modes, including SOC mode, time mode, energy mode and quick start mode.

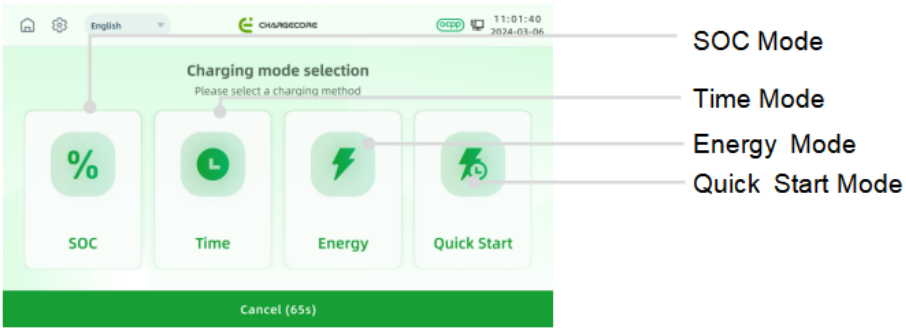


Figure 47. Charging Mode Selection – Screen Operation Interface

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.

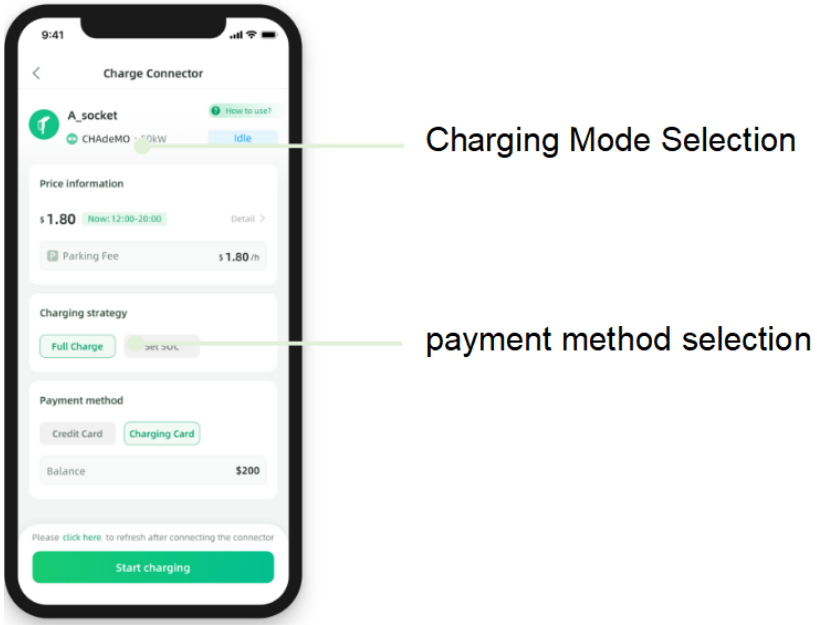


Figure 48. Charging Mode Selection – APP Operation Interface

- 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.

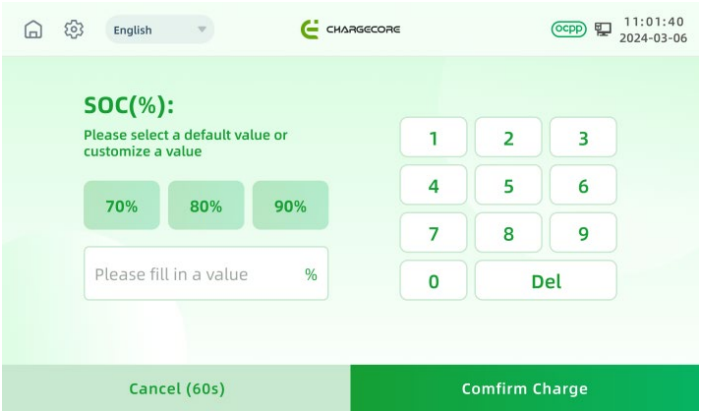


Figure 49. SOC Mode Input Prompt

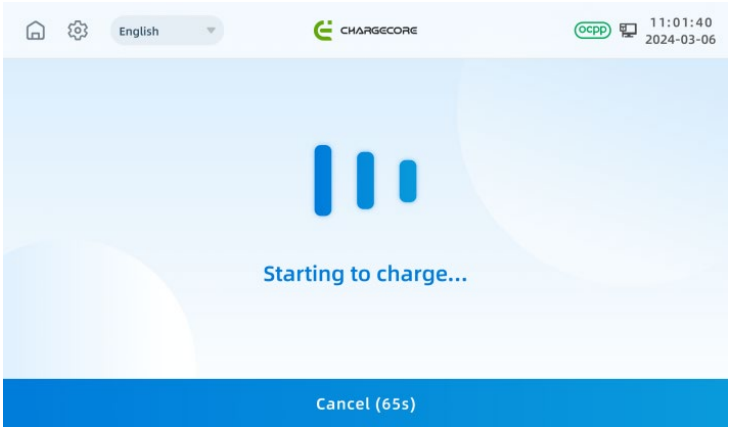


Figure 50. Initiating Charging Session

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.

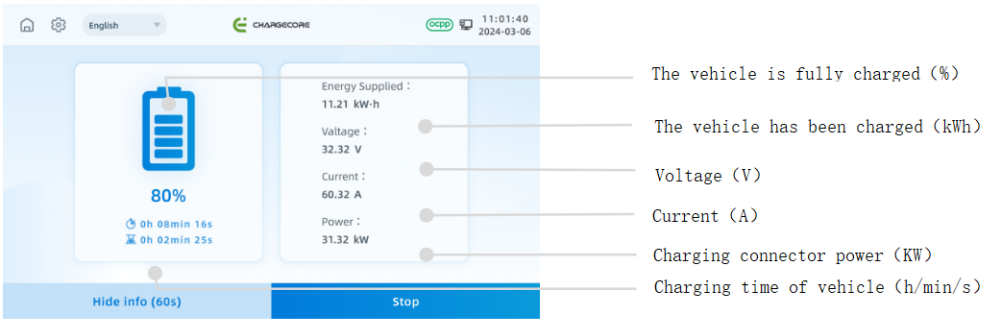


Figure 51. Charging Interface

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 52. RFID Card Payment Interface

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

Figure 53. 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.

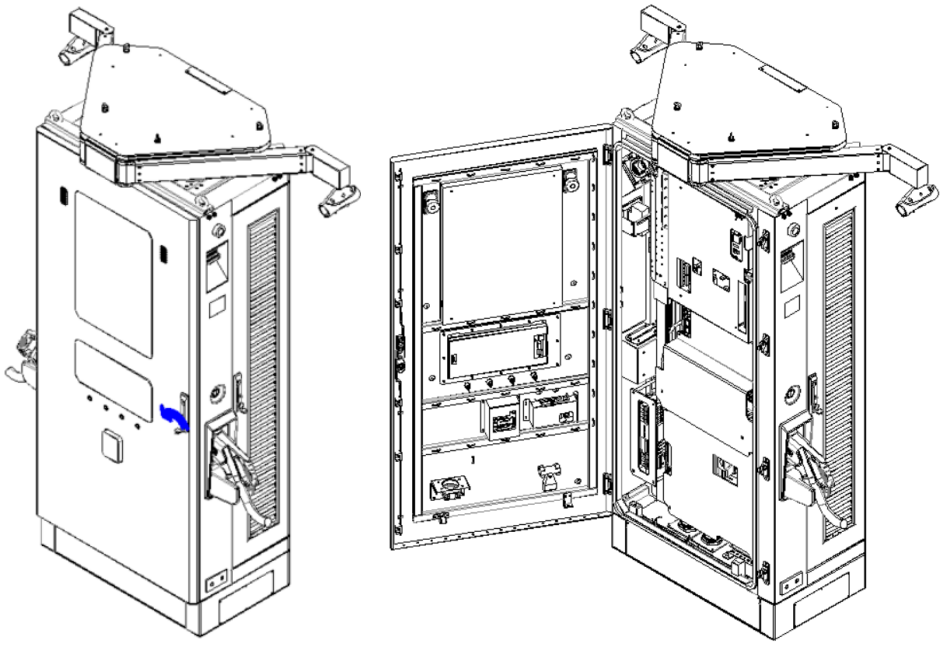


Figure 54. Open the EVSE Front Door

2. Turn off the circuit breaker and air switch.

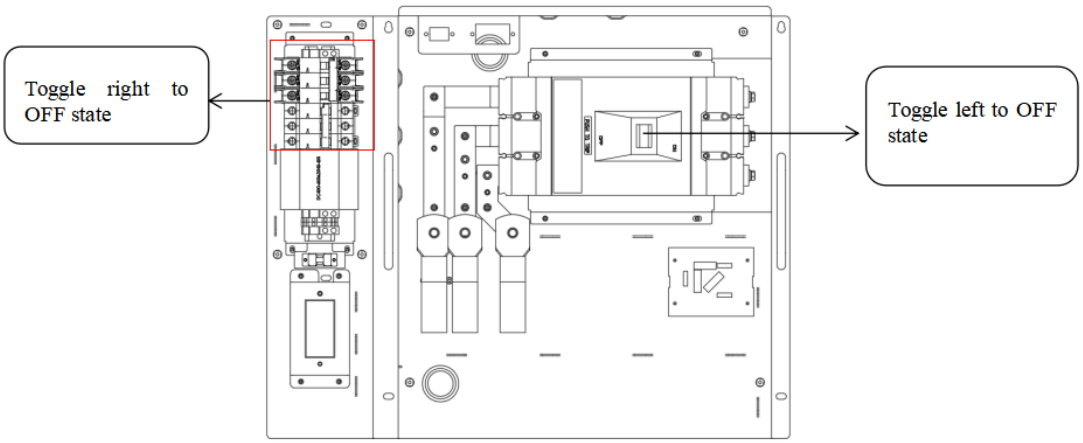


Figure 55. Turning Off the Circuit Breaker, leakage Protection and Air Switch

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

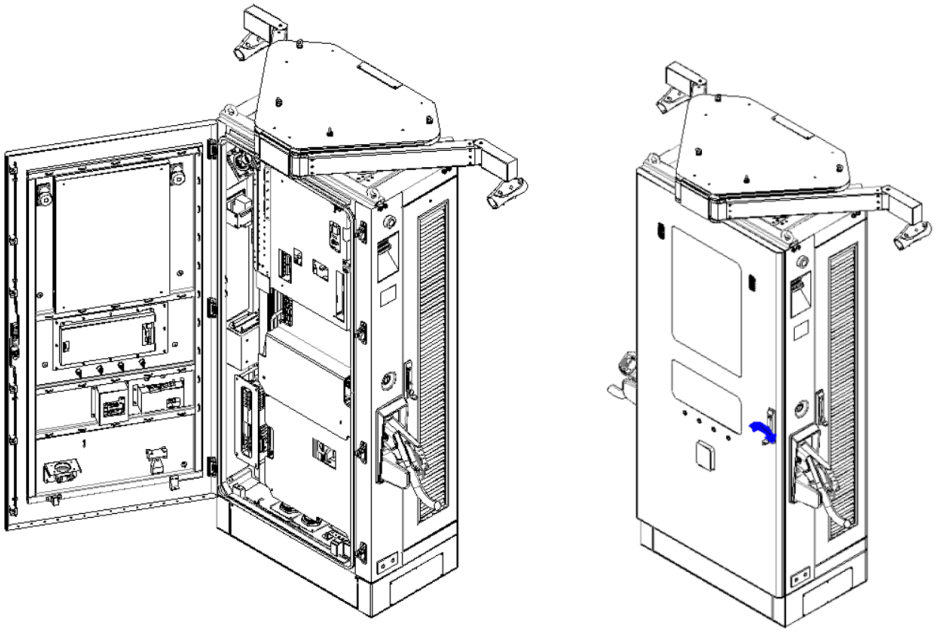


Figure 56. Close the EVSE Front Door

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.

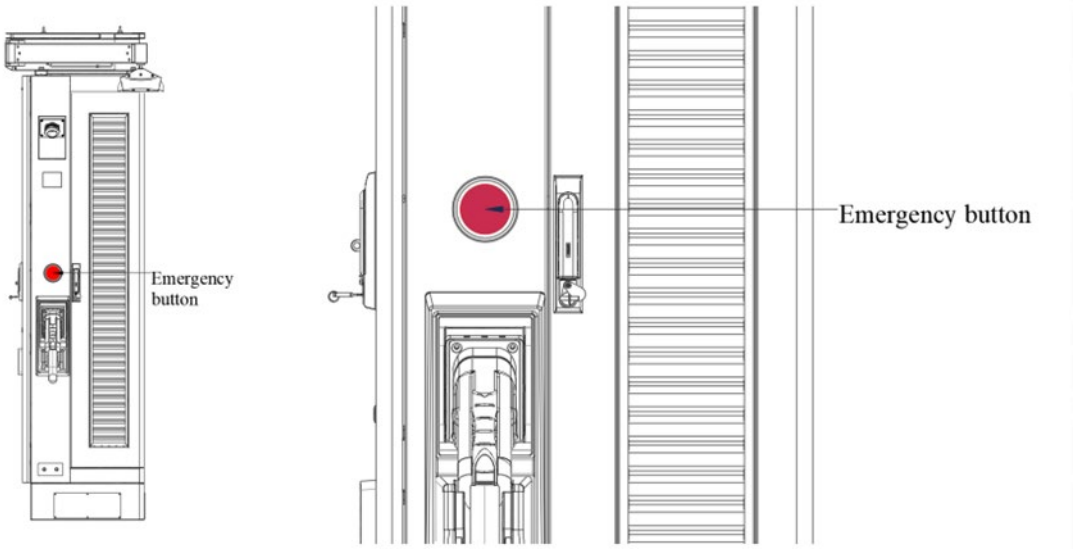


Figure 57. Emergency Stop Button

7. Maintenance

Appearance inspection: Regularly inspect the appearance of the EVSE to ensure that it is intact, including the enclosure , display screen, buttons, indicator lights, and other components, to ensure that there is no damage or abnormality.

Charging plug and cable inspection: Check whether the charging plug is clean and free of stains, whether the cable is damaged, aged or twisted, and whether the connection part is firm and reliable. Promptly clean, replace or tighten if there are any problems found.

Electrical system inspection: Check electrical system components such as power lines, grounding devices, leakage protectors, and over temperature sensor to ensure the safety and reliability of the electrical system. Use professional tools to check whether the insulation resistance and grounding resistance of the power line are qualified, and check whether the leakage protector and over temperature protection device are sensitive and effective.

Internal component inspection: Open the enclosure and check whether the internal components such as controller board, relay, fuse, fans, etc. are intact,no loose, damaged or aged. Timely repair or replace if there are any problems discovered.

8. 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	- 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	- 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	- Check for loose wiring. - Check shunt terminal if current data is abnormal. - 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	- 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	- Obtain SECC log and send log to after-sales engineer.
RFID card swiping failure	Screen display authorization failure after swiping card	- 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	Charging process started but the current is always 0. AC contactor: the power module cannot supply power DC contactor: there is no output to the vehicle	- 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	- 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	- 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	- Check whether the emergency stop button is pressed, release the button by turning right.
Access control failure	Screen shows error code	- Check whether door access switch is opened or faulty.
MCCB leakage trip	DC charging fails	- 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	- Measure input and output of the auxiliary power supply.
OCPP system crash	Screen keeps restarting or the screen is stuck at boot interface	- 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	- 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	WIFI: - Try other WIFI network. - Reset the WIFI board. - Unplug and plug the WIFI board and antenna. 4G: - Unplug and plug the sim card. - Reconfigure APN.
Gun does not detect insertion	Gun insertion is not showing on the screen	- Check the CP-PE voltage for the affected gun. - Before insertion: CP-PE Voltage: 12V DC - After insertion: CP-PE Voltage: 9V DC - Charging: CP-PE Voltage: 6V DC
POS machine failure	Payment cannot be performed on the POS machine	- 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	- 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	- Check the screen for error. - Obtain OCPP and SECC log and send to after-sales engineer.

9. Compliance

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

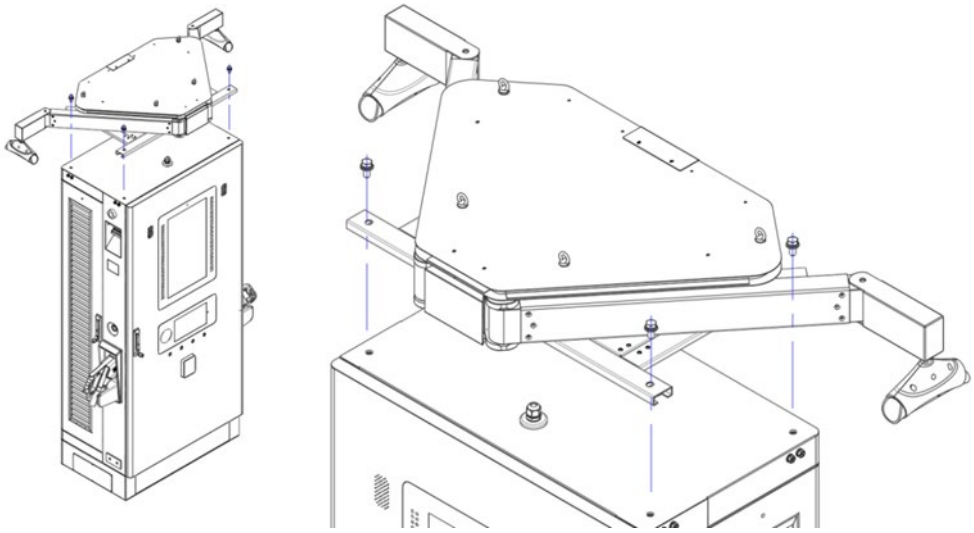
La FCC des éltats-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son functionnement.

10. Completion Documents

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

11. Appendix

11.1 Installation of Cable Management System



1. Use the cardan shaft fixing bracket to fix the cardan shaft to the short shaft of the cable management system.
2. Fix the 2 chucks to the cardan shaft with pins.

3. Put the connector line rubber ring on the connector line about 2m away from the connector line outlet, and snap the connector line rubber ring to the left bracket of the line holder.
4. Hang the left bracket of the wire support on the chuck.
5. Close the right bracket and the left bracket of the wire support, and lock them with M4 screws and M4 nuts.
6. The connector line is fixed.

Recommended cable distance:

- The distance from the cable outlet at the cabinet end to the bracket of the cable management system is 2 meters.
- The distance from the connector head to the bracket of the cable management system is 3 meters.

11.2 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	

11.3 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	The grid capacity meets the requirements in 5.4		
Cable Type	1	The input power cable meets the requirements in 5.2.1		
	2	The terminals meet the requirements in 5.2.2		
	3	The network cable meets the requirements in 5.2.3		
Cement Foundation	1	Dimensions meet the requirements		
	2	The cement foundation meets the requirements in 5.7		
Installation Plan	1	The space requirements meet the requirements in 5.6		
Conclusion:				
Note: (1) The acceptance record is filled with "√" or "×" 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: _____

11.4 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	○	○	○	○	○	○

ο : 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.

× : 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.

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:

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

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
Scope of application: Integrated connector EVSE