Eaton® Green Motion DC EV Charger

50 – 150 kW DC Electric Vehicle Charger
User's Manual

p/n: P-164001189
Revision 04

PowerPedestals INCORPORATED

Powering Business Worldwide

Dear Customer,

On behalf of everyone at Eaton & Power Pedestals Inc., we thank you for partnering with us, for trusting us to maintain your business continuity and for preventing downtime at your facility.

Our suite of backup power, power distribution and power management products are designed to protect you from a host of threats including power outages, surges, and lighting strikes, and enable you to monitor and control your power infrastructure.

We trust that our products will deliver high quality, reliable power for your business, and we are committed to your success.

Please read this manual, which details the installation and operation processes for your new Eaton product.

Thank you for choosing Eaton & Power Pedestals Inc.!

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Chapter 1 Introduction

1.1 Brief Introduction

The Eaton® Green Motion 50 - 150 kW DC Electric Vehicle Charger is used to charge electric vehicles with battery voltages ranging from 200V to 1000VDC. The product is comprised of an outdoor enclosure housing the power electronics and controls, a 7-inch industrial touch screen to provide a user interface and single or dual cables with CCS1 connector interfaces. The DC EV Charger is offered in different power output capacities ranging from 50 kW to 150 kW in 25 kW increments.

The primary application for the Green Motion 50 - 150 kW DC EV Charger is private fleet charging. Other applications include any EV charging needs that do not require a credit card reader for payment processing.

Eaton Charging Network Manager (CNM)

Drivers primarily interact with charge stations through their smart phone. The Eaton CNM bypasses the traditional app download and works directly with the mobile phone's browser.

Simply approach the charge station, scan the QR code and the phone will automatically open the station information on a web page.

For detailed information on the Eaton Charging Network Manager, review the latest version of the Eaton CNM Site Host Guide: Eaton Charging Network Manager Site Host Guide.

For ease of operation, the Eaton Green Motion DC EV Charger is equipped with:

- 7-inch industrial touch screen
- Embedded RFID reader
- Standard 4G or Ethernet connection to enable communication with LAN routers, vehicles, action devices, and other chargers

Figure 1. Eaton Green Motion DC EV Charger

1.2 Fleet Vehicle Estimated Charging Times

As an example, for a fleet vehicle, like a delivery truck, it would require only 40 minutes to recharge the battery from 20% capacity to the optimal 80% level (see Table 1 for estimated charging times for various fleet vehicles).

Table 1. Fleet Vehicle Estimated Charging Times

Vehicle Model	Vehicle range, miles	Miles per kWh	Usable battery capacity, kWh	20% capacity	80% capacity	Max. charger power, kW	Estimated recharge time 20 to 80% in Minutes	Miles of range added
Daimler eCascadia	220	0.5	438	87.6	350.4	150	180	132
Ford e-Transit van	110	1.6	67	13.4	53.6	115	30	66
F-150 EV	230	2.3	98	19.6	78.4	-	41	138
Freightliner EM2, class 6	180	0.9	194	38.8	155.2	-	60	108
Freightliner EM2, class 7	250	1.0	262	52.4	209.6	-	90	150
Freightliner MT50e	170	0.8	226	45.2	180.8	-	120	102
Kenworth K270E	100	0.7	141	28.2	112.8	75	90	60
Kenworth K370E	200	0.7	282	56.4	225.6	150	120	120
Kenworth T680E	150	0.4	396	79.2	316.8	120	180	90
Mack MD Electric	230	1.0	240	48	192	80	180	138
Mercedes eSprinter	248	2.2	113	22.6	90.4	115	52	149
Navistar eMV	135	0.7	200	40	160	125	120	81
Peterbilt 220EV	150	0.5	282	56.4	225.6	150	132	90
Peterbilt 520EV	100	0.4	277	55.4	221.6	150	180	60
Peterbilt 579EV	150	0.4	360	72	288	150	180	90
Volvo VNR	150	0.6	237	47.4	189.6	-	70	90
Zevo 600	250	1.8	148	29.6	118.4	-	53	160

NOTE Charging times and values are based on 2023 model year specifications.

1.3 DC Charger Components

The Eaton Green Motion 50 - 150 kW DC EV Charger is a stand-alone cabinet electric vehicle charging station.

Figure 2. DC EV Charger Component Locations

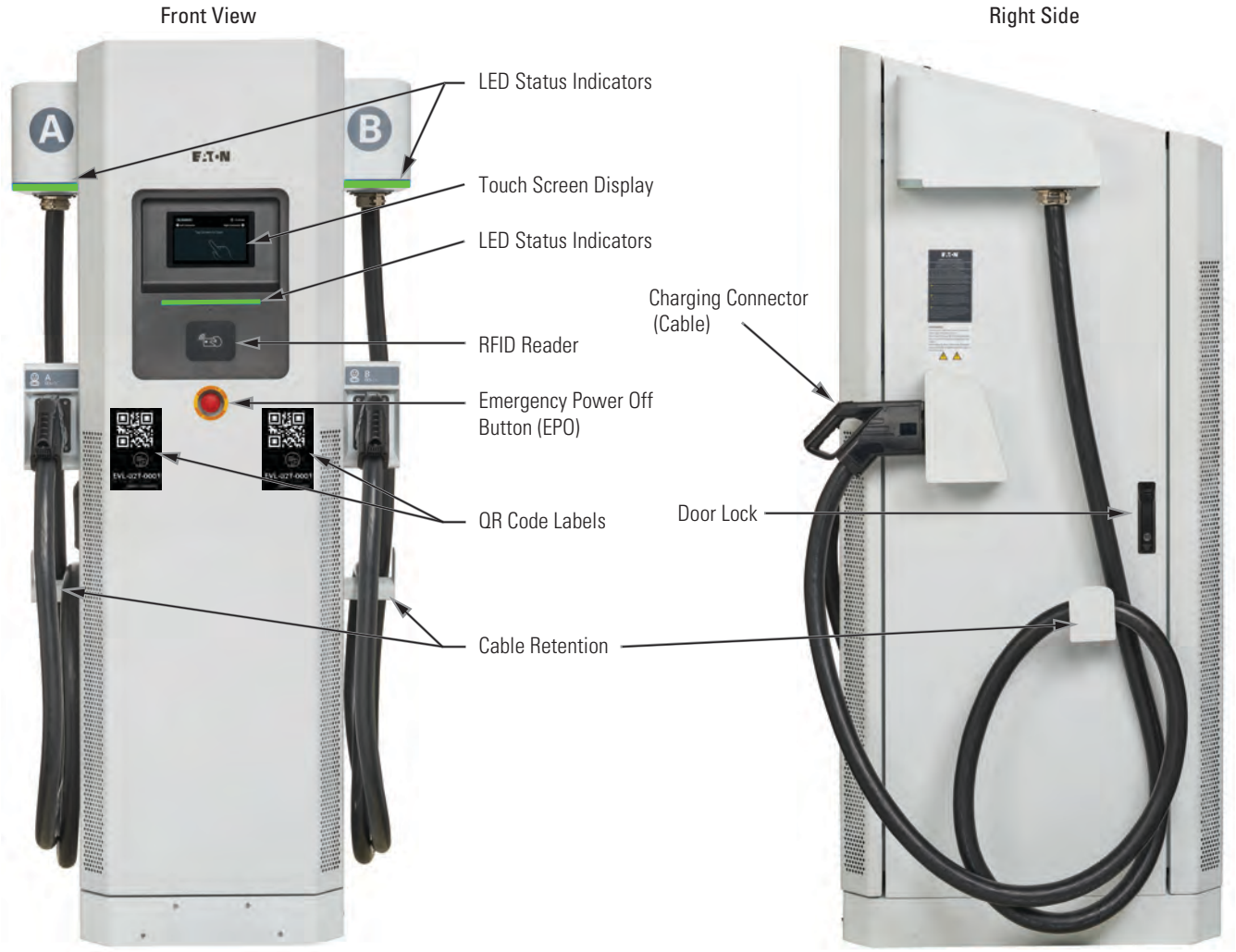
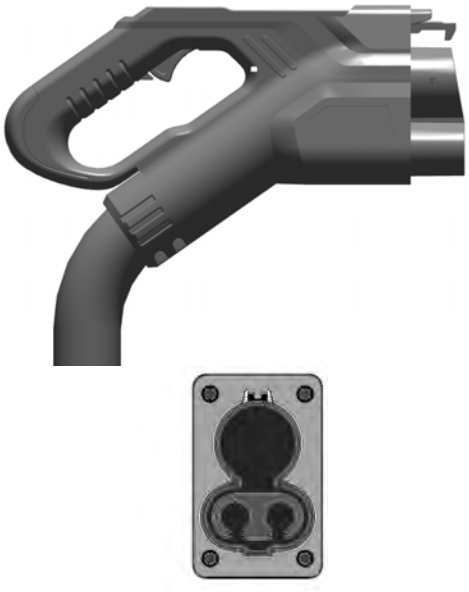


Figure 3. DC Charger CCS1 Charging Connector Detail

Left Side CCS1 Charging Connector

Right Side CCS1 Charging Connector



1.4 Using This Manual

This manual describes how to install and operate the Eaton Green Motion 50 - 150 kW DC EV Charger. Read and understand the procedures described in this manual to ensure trouble-free installation and operation.

The information in this manual is divided into sections and chapters. Read through each procedure before beginning the work.

1.5 Conventions Used in This Manual

This manual uses these type conventions:

- **Bold type** highlights important concepts in discussions, key terms in procedures, and menu options, or represents a command or option that you type or enter at a prompt.
- Italic type highlights notes and new terms where they are defined.
- `Screen type` represents information that appears on the screen or LCD.

Icon	Description
Note	Information notes call attention to important features or instructions.
[Keys]	Brackets are used when referring to a specific key, such as [Enter] or [Ctrl].

NOTE Left and right side notations are referenced standing in front of the cabinet.

1.6 Getting Help

If help is needed with any of the following:

- Technical assistance with charger installation
- Technical assistance with charger operation
- Regional locations and telephone numbers
- A question about any of the information in this manual
- A question this manual does not answer

Please call the Customer Reliability Center at:

24x7 EV Driver Support:	**1-800-796-0478**
24x7 Technical Support:	**1-800-843-9433**
Installation Support:	**1-800-843-9433**

Please use the following e-mail address for manual comments, suggestions, or to report an error in this manual:

E-ESSDocumentation@eaton.com

1.7 Equipment Registration

Please visit www.eaton.com/pg/register to register your new Eaton Green Motion 50 - 150 kW DC EV Charger.

Model Number: _____

Serial Number: _____

Chapter 2 Safety Warnings

IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

This manual contains important instructions that should be followed during installation and maintenance of the Eaton Green Motion 50 - 150 kW DC EV Charger system. Read all instructions before operating the equipment and save this manual for future reference. The Eaton Green Motion 50 -150 kW DC EV Charger system is designed for outdoor usage. The product is a sophisticated power system and should be handled with appropriate care.

DANGER

This system contains LETHAL VOLTAGES. All repairs and service should be performed by AUTHORIZED SERVICE PERSONNEL ONLY. There are NO USER SERVICEABLE PARTS inside the Eaton Green Motion DC EV Charger. Doors are to be kept closed and opened by AUTHORIZED SERVICE PERSONNEL ONLY.

Please follow the below safety precautions to prevent bodily injuries and property damages.

HAZARD OF ELECTRIC SHOCK, EXPLOSION, OR ARC FLASH	
	**WARNING:** Damaging fumes
	**WARNING:** Do not install or operate this product in the presence of explosive mixtures of dust or gases, corrosive gases, or conductive or radiant heat from adjacent sources.
	**WARNING:** Product should be protected, or screened to block fungus, insects, vermin.
	**WARNING:** Do not install or operate this product in a location where salt-laden air or contaminated cooling refrigerant are present.
	**WARNING:** Do not install or operate this product in an environment where pollution degree is higher than 2, according to IEC 60664-1.
	**WARNING:** Avoid exposure to abnormal vibrations, shocks, and tilting.
	**WARNING:** Avoid exposure to adjacent heat sources, or strong electromagnetic fields.

	**WARNING:** Avoid installation in places with frequent occurrence of dust storms, rainstorms, lightning and other severe weather.
	**WARNING:** During installation, if any abnormal phenomena such as cracking of the housing, loose door lock, or water leakage are observed; stop all operations immediately and notify an authorized service provider.
	**WARNING:** Do not put inflammable, explosive or combustible materials, chemicals, combustible steam and other dangerous goods near the charger.
	**WARNING:** Please keep the connector clean and dry. If there is any dirt, wipe it with a cleaning cloth with mild detergent. It is strictly prohibited to touch the charging cable terminals when it is powered.
	**WARNING:** It is strictly prohibited to use the charger when the connector or charging cable is defective, cracked, worn, and/or the connector internal wiring is exposed. If these conditions are observed, contact an authorized service provider immediately.
	**WARNING:** In case of heavy rain and thunder, please use caution when operating the charger. Consider delaying charging until the storm subsides.
	**WARNING:** Do not attempt to disassemble, repair or modify the charger. For repairs or modifications, please contact an authorized service provider.
	**WARNING:** It is forbidden to insert and/or disconnect the charging port (cable) during the charging process. This is to ensure the safety of the operator and the vehicle during the charging process.
	**WARNING:** It is strictly prohibited to continue to use this product for charging when a failure condition is shown on the display.
	**WARNING:** When performing maintenance on the Eaton Green Motion DC Charger, safety and maintenance signage shall be set up. Lockout/Tagout (LOTO) and protection measures shall be utilized to ensure safety of the operators. Follow all Eaton safety protocols during maintenance and repair operations.
	**WARNING:** The charger requires an approved air filter to prevent large foreign objects or debris from blocking the module air duct. Component damage caused by unapproved filters or infrequent filter changes is not covered by the warranty.

CAUTIONS	
	CAUTION: Improper installation and initial testing of the charger may cause damage to the vehicle battery, assembly, and the charger itself.
	CAUTION: To reduce the risk of fire, connect only to an appropriately sized branch circuit, see Table 3, for overcurrent protection in accordance with the National Electrical Code, and the Canadian Electrical Code, Part I, C22.1.
	CAUTION: Do not operate the charger in temperatures outside its operating range of -35°C to + 50°C for the 50 kW to 125 kW DC EV Chargers and -35°C to + 50°C for the 150 kW DC EV Chargers..
	CAUTION: The charger should meet the protection level requirements in chapter 10.5.1 of GB T 18487.1-2015 and the environmental protection requirements of chapter 7.3 of NB/T33001-2018.

NOTICE

Electrical equipment should only be installed and operated by qualified personnel. The equipment should only be serviced and maintained by qualified Eaton personnel. No responsibility is assumed by our company for any consequences arising out of the use of this material.

A qualified person is one who has skills and knowledge related to the construction, installation, and operation of electrical equipment and has received safety training to recognize and avoid the hazards involved.

Chapter 3 Installation Plan and Unpacking

Use the following basic sequence of steps to install the Eaton Green Motion DC EV Charger:

1. Create an installation plan for the DC EV Charger.
2. Prepare your site for the DC EV Charger.
3. Inspect and unpack the DC EV Charger.
4. Unload and install the DC EV Charger, and wire the system, see Chapter 4 *Installation*.
5. Have authorized service personnel perform preliminary operational checks and start up the system, see Chapter 4 *Installation*.

NOTE Startup and operational checks must be performed by an authorized Eaton Customer Service Engineer, or the warranty terms specified on the product's resources page become void. See Warranty for details. This service is offered as part of the sales contract for the Eaton Green Motion DC EV Charger. Contact an Eaton service representative in advance (a minimum two-week notice is required) to reserve a preferred startup date.

3.1 Creating an Installation Plan

Before installing the Eaton Green Motion DC EV Charger, read and understand how this manual applies to the system being installed. Use this chapter's procedures, illustrations, and those in Chapter 4 *Installation* to create a logical plan for installing the system.

3.2 Preparing the Site

For the Eaton Green Motion DC EV Charger to operate at peak efficiency, the installation site should meet the environmental parameters outlined in this manual. The operating environment must meet the weight, clearance, and environmental requirements specified.

⚠WARNING

Ignoring environmental conditions when handling electricity can lead to hazardous situations.

Location Selection

Consider the following before choosing the installation site:

1. Ensure selected location meets all criteria regarding charger placement and location. See Chapter 2 *Safety Warnings* for further details.
2. Make sure the installation location complies with cellular signal strength standards (-90dBm or greater).
3. Avoid use in coastal locations or land-based outdoor environments near strong pollution or corrosive substance sources and in environments with insufficient shelter. Otherwise, corrosion of the product could occur, allowing water ingress and other problems that result in shortened product life or frequent module failure. This can lead to abnormal functioning or component damage that is not covered by the warranty. A likely source of contamination is defined as an area within the following radius:
   - 0.5 km away from salt water (e.g. ocean).
   - 3 km away from heavy pollution sources such as metallurgy, coal mines, and thermal power plants.
   - 2 km away from medium pollution sources such as chemical, rubber, electroplating, etc.
   - 1 km away from light pollution sources such as food, leather, heating pots, etc.

4. Please consult the relevant specifications outlined in Chapter 9 *Product Specifications*, and an authorized service department for questions.
5. The installation environment shall meet the environmental characteristics specified in the technical data detailed in Chapter 9 *Product Specifications*.

Location Conditions

Verify the following:

1. Area is dry and well ventilated.
2. The area is not exposed to dust, high temperatures, explosive gases, flammable materials or corrosive fumes.
3. Wiring and conduit needed to connect the charger is appropriately sized and located properly to allow connection to the charger.
4. The charging connectors can reach the charging ports of parked vehicles in the adjacent spots.
5. Space clearance requires minimum dimensions for airflow, front and read door swing, and service access.

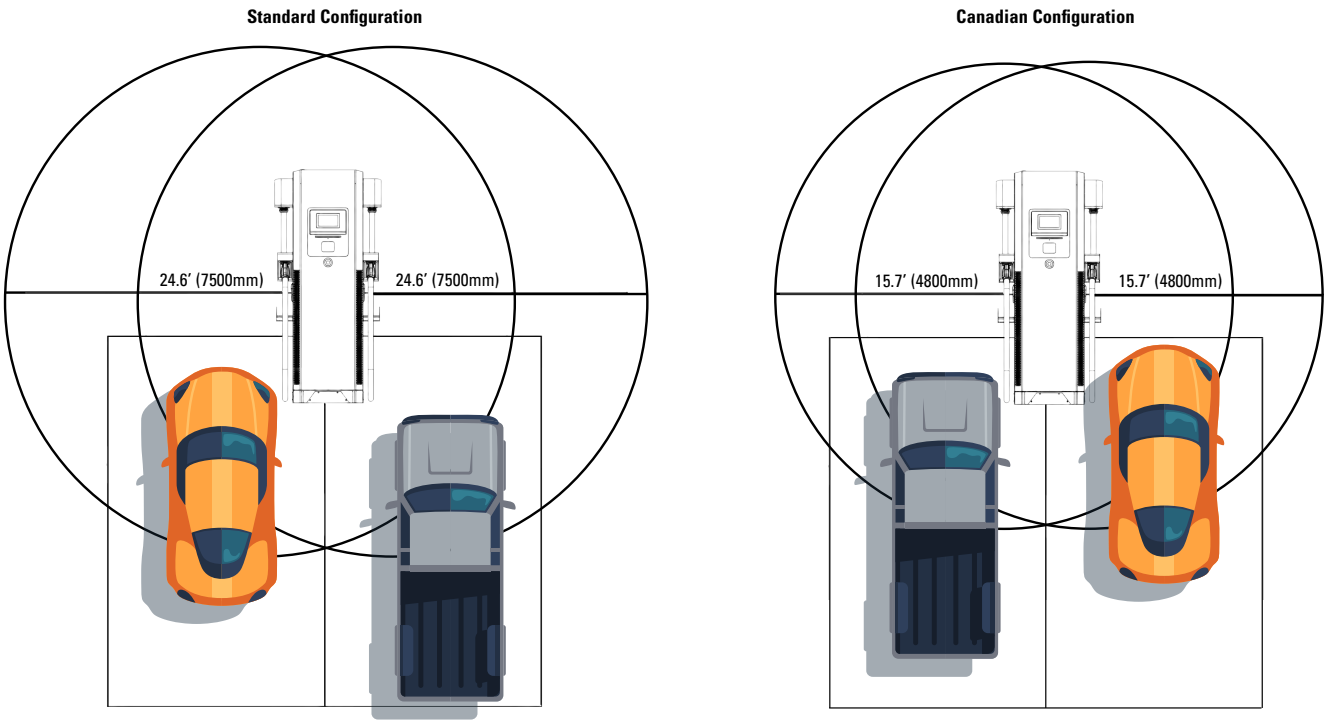
3.2.1 Cable Reach

In the standard configuration, the charger comes with a cable length of 24.6' (7500mm).

In Canada, the charger cable length is 15.7' (4800mm).

The operating radius of the charger is detailed in Figure 4.

Figure 4. Charger Operating Radius

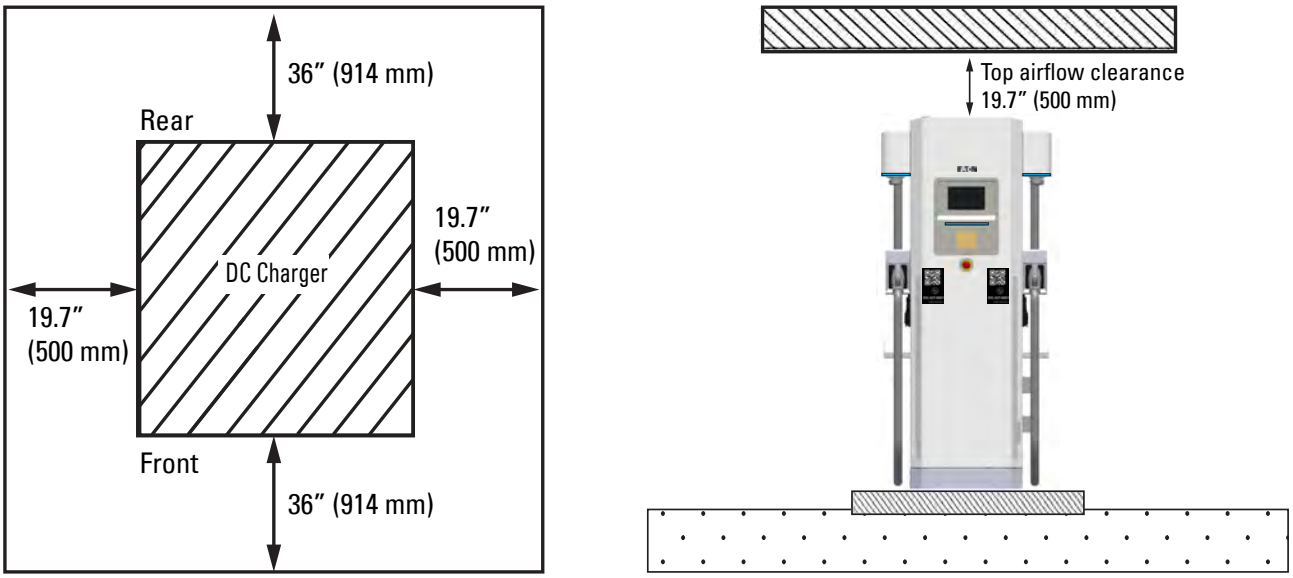


3.2.2 Required Clearances

When installing the charger, ensure a minimum distance from possible objects around the charger to allow sufficient airflow, and secondly, to leave room for possible service or maintenance operations.

Figure 5 details the recommended minimum distance to be maintained during the site installation:

Figure 5. Charger Installation Clearances



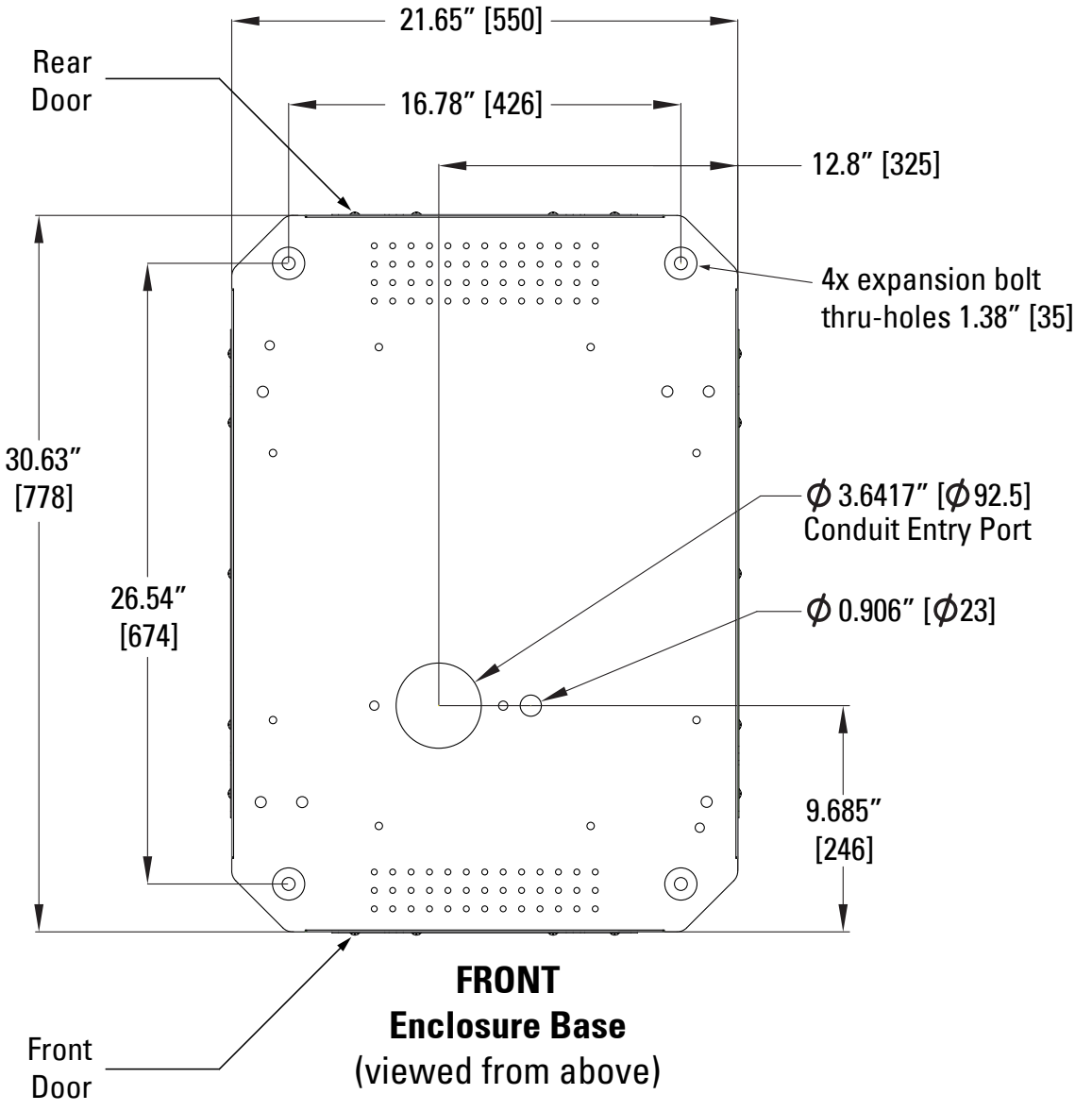
Top View **Front View**

	NOTE 1	The space requirements when the door is open have been included.
	NOTE 2	Clearance dimensions are published for airflow and service access only. Consult with the local safety codes and standards for additional requirements in your local area.

3.2.3 Construct the Foundation

- The charger should be built on a concrete foundation. Foundation footprint should be at least 22 inches wide by 31 inches horizontal depth (550mm wide by 776mm horizontal depth)
- When preparing the foundation and cabling, pay attention to cable through-hole and expansion bolt locations. See Figure 6 for details.

Figure 6. Foundation Base Dimensions



NOTICE: The reserved bolts for the concrete base must be exposed at least 30mm

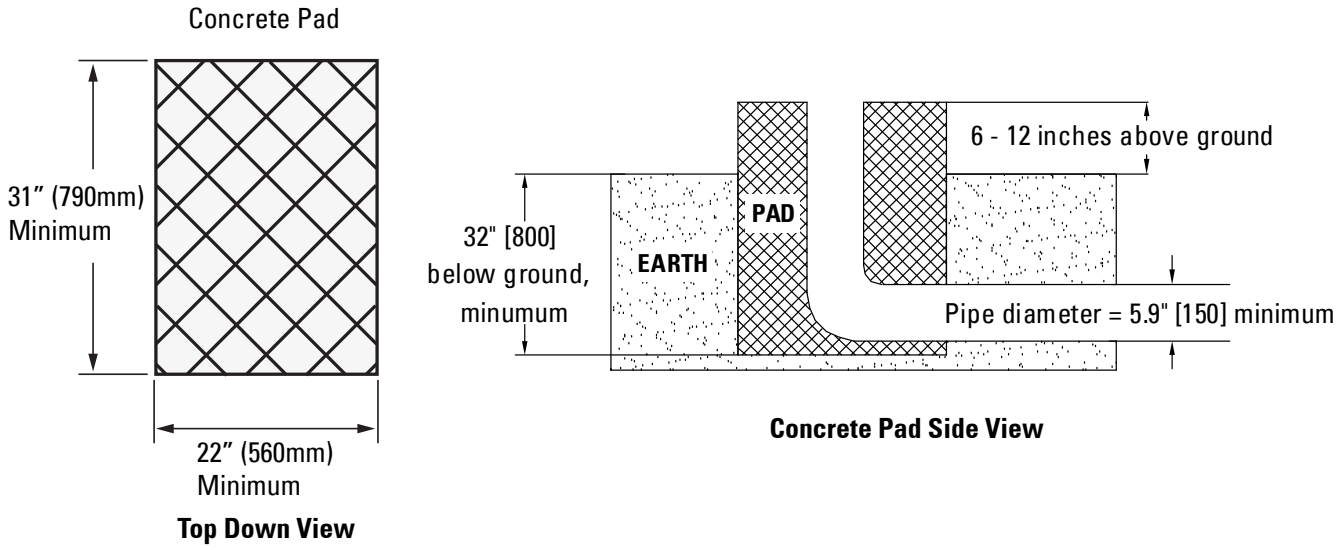
The height of the foundation is determined by the topography and natural environment of the site. Depending on rainfall and drainage a height between 6 inches (150mm) and 12 inches (300mm) above the ground is recommended. For frost-proofing, the foundation should extend approximately 31.5 inches (800mm) under the ground.

The recommended size for foundation conduit is 5.9 inches (150mm).

NOTE:

- The unit must be mounted on a level, solid, flat concrete slab.
- Some types of slabs require the use of expansion bolts, which may require drilling. Select suitable mounting hardware.
- The laying of power cables shall be in accordance with NEC guidelines and local electrical codes.
- Cable design shall be selected according to the number of chargers and the type, power, voltage and current level of the equipment installed.
- Laid cables must be properly enclosed in conduit adhering to all safety requirements.
- When the cable is buried directly, the buried depth should not be less than 32 inches (800mm) to prevent freezing.
- Power cable specifications should be selected according to NEC guidelines and shall consider environmental and fire code requirements.

Figure 7. Concrete Foundation Cross–Section



Dimensions are in inches [millimeters]

- Install protective bollards (guard posts): To protect the DC charger from vehicle collision, the protective bollards need to be installed 16 inches (400mm) away from the charger. The distance between two bollards on the same side of the charger is 34 inches (850mm) as shown in Figure 8.

Figure 8. Protective Bollard (Guard Post) Location

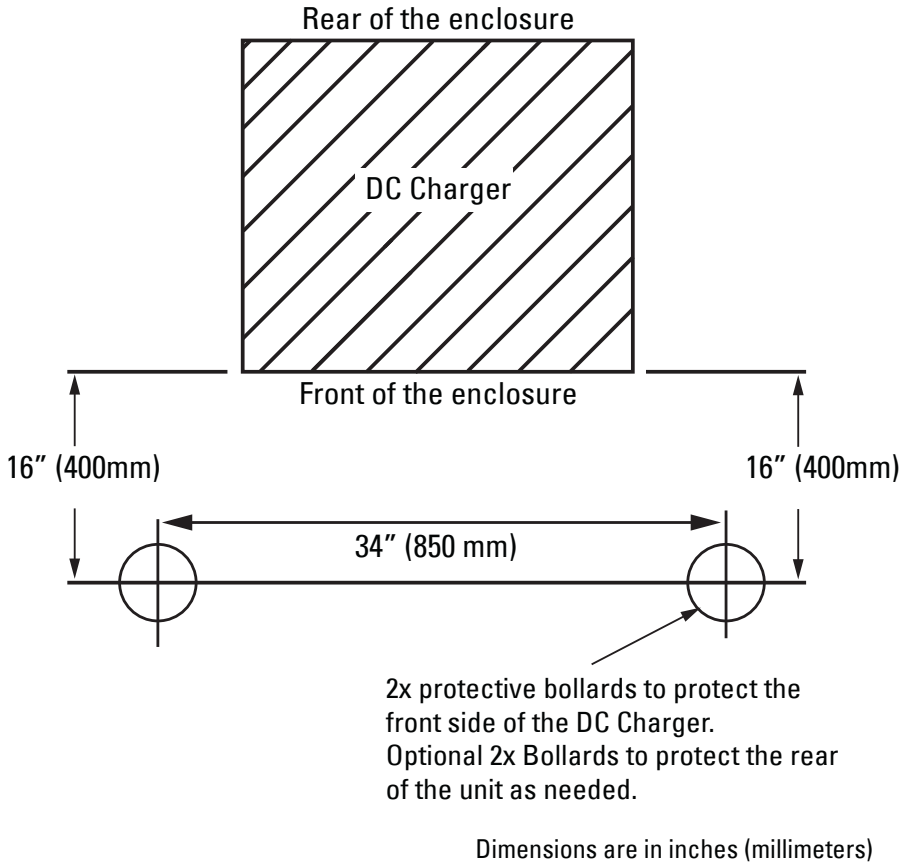


Figure 9. Protective Bollard (Guard Post) — Front View

3.3 Standard Wiring Preparation

Table 2. General AC Input Specifications

Parameter	Specification
Input AC power connection	3PH + Ground (WYE input)
Input voltage range	480 VAC +10%/- 15% (50/60 Hz)
Power factor at full load	> 0.98
Efficiency	> 94% at nominal output power
Input voltage A	480V
Input voltage B	277V

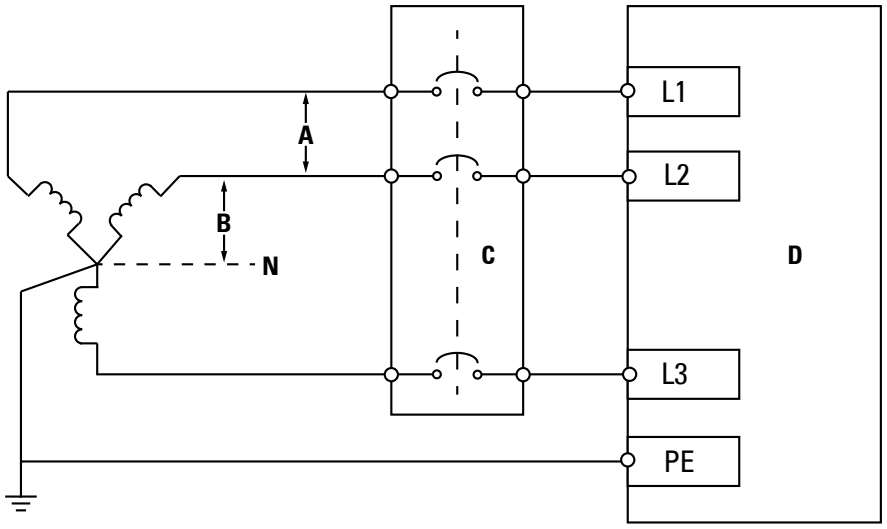
The Eaton Green Motion 50 - 150 kW DC EV Charger must be wired with a grounded WYE input, as shown in Figure 10.

NOTE The DC EV Charger communicates between the charger and the vehicle to monitor and adjusts the charging current to maximize efficiency, minimize charging times, maintain safe operation, and provide fault detection.

⚠CAUTION

Do not connect a neutral wire to the DC EV Charger.

Figure 10. DC Charger Wiring Diagram



Legend:

A Input voltage between two phases
B Input voltage between phase and neutral
C Upstream breaker in the power distribution board
D DC EV Charger

To connect the charger to the electrical panel, a professional installer or qualified electrician should consider the following guidelines and consult the table below.

Table 3. External Wiring and Upstream Protection Requirements

Charger rating	50 kW	75 kW	100 kW	125 kW	150 kW
Line cable size (AWG or Kcmil)	3	1/0	3/0	4/0	300
Line cable Torque Rating N x m [lb-in]	14 Nm [124 lb-in]				
Minimum ground cable size (AWG)	8	6	6	6	4
Ground Torque Rating N x m [lb-in]	20 Nm [177 lb-in]				
Circuit Breaker rating (A)	100	125	175	200	250

Table 4. Input Terminal Hardware Specification

Charger rating	50 kW	75 kW	100 kW	125 kW	150 kW
Line cable terminal block	M8				
Ground cable terminal block	M8				

The Cable sizes are based on table B.52.12 of IEC 60364-5-52 and are in accordance with NEC 310.16 with the following assertions:

- 90 °C conductors
- An ambient temperature of 30 °C
- Use of copper conductors
- Installation method F

PE cable size is based on table 54.2 of IEC 60364-4-54 and is in accordance with NEC 250.122.

If the ambient temperature is greater than 30 °C, larger conductors are to be selected in accordance with the correction factors of the IEC.

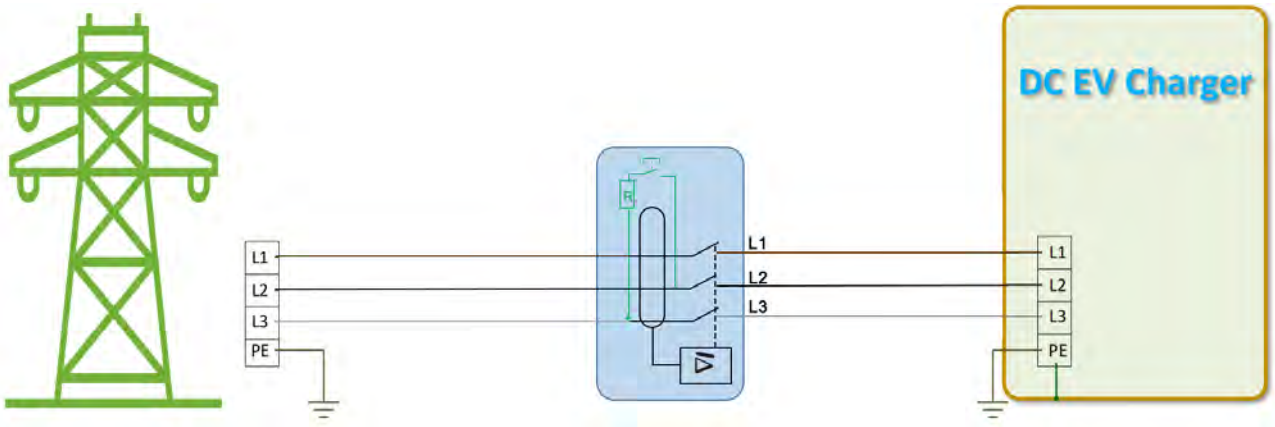
NOTICE

Do not use wire larger than 350 kcmil.

Standard wiring considerations:

- Certified Type A RCD (Residual Current Device) should be installed upstream of the charger.
- In accordance with the electrical installation standard IEC60364-7-722. Refer to local regulation.

Figure 11. Power Grid to Charger Diagram

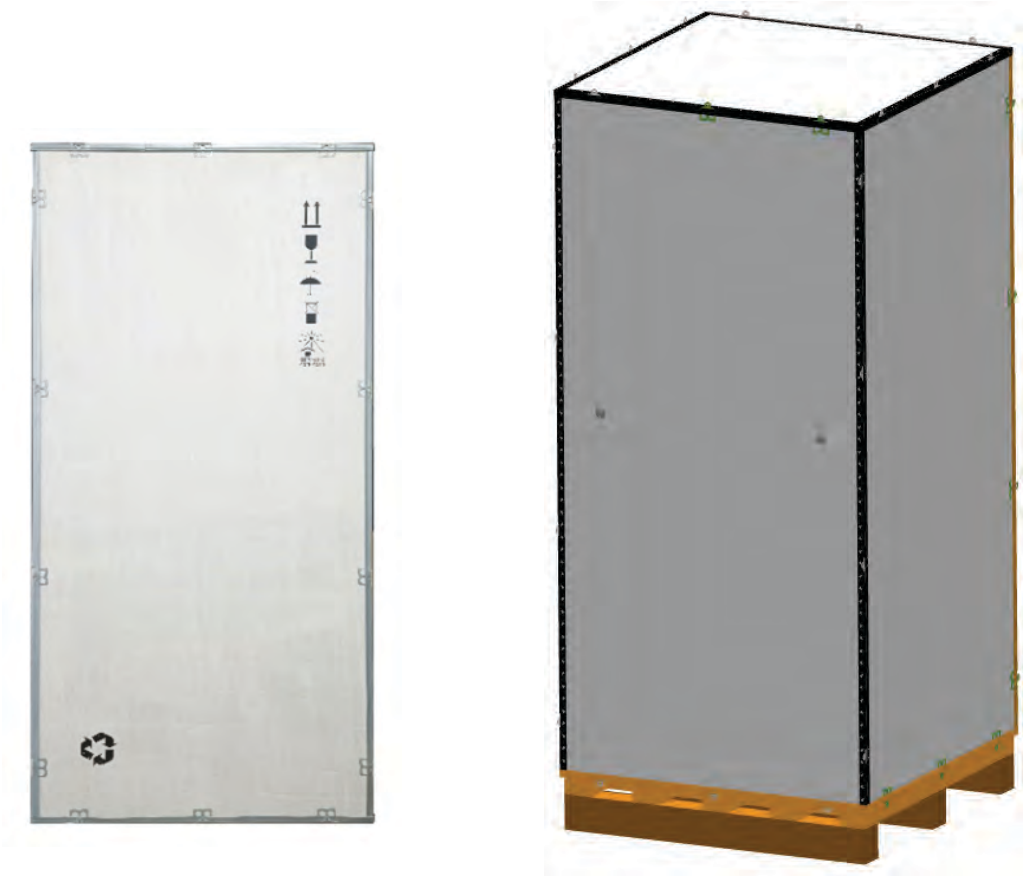


3.4 Inspect and Unpack the DC Charger

3.4.1 Packaging

The charger is delivered in a specialized wood packaging. The following figure shows the packaging, and size information for the charger.

Figure 12. DC EV Charger Transport Packaging



Front View
Packaging Only

Angled View
Packaging and Pallet

Table 5. Crate Packaging Dimensions

Model Name	W	D	H
	Feet [millimeters]		
50 – 150 kW	3.05′ [930]	3.05′ [930]	6.84′ [2085]

3.4.2 Transporting

Move the charger to the required installation location with a forklift truck or pallet jack rated to handle the shipping and installed unit weights listed in Table 17.

Please move the charger with the utmost caution!

⚠WARNING

Tilt restrictions: During transportation, equipment can be damaged if it tilts more than 10 degrees from its upright position. If unpacking and unloading instructions are not closely followed, the cabinet may tip and cause serious injury.

Figure 13. Moving the Charger

NOTE 1 The charger must be stored in its original packaging in a dry environment between -40 ° C and 70 °C.

NOTE 2 It is recommended to transport the charger to its final destination before removing the original packaging.

3.4.3 Inspecting and Unpacking

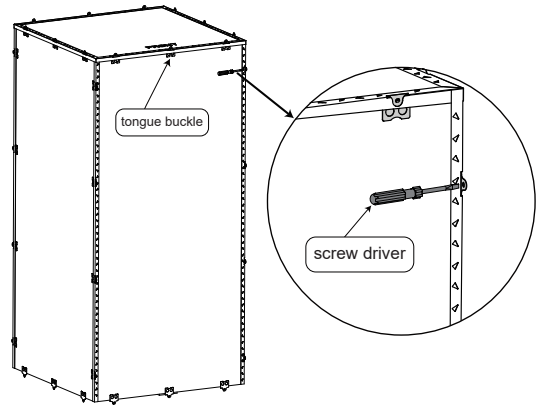
1. Carefully inspect the outer packaging for evidence of damage during transit.
2. Use a forklift to move the packaged cabinet to the installation site, or as close as possible, before unpacking.
3. Remove the protective covering from the cabinet.
4. Remove the packing material, and discard or recycle in a responsible manner.
5. Inspect the contents for any evidence of physical damage, and compare each item with the Bill of Lading. If damage has occurred or shortages are evident, contact an Eaton service representative immediately to determine the extent of the damage and its impact on further installation.

Chapter 4 Installation

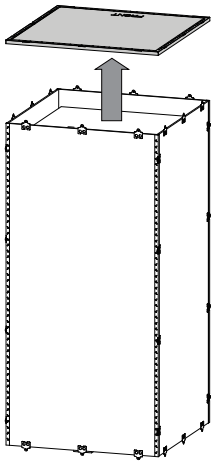
Step 1: Removal of steel box and foam packaging material

STEP -1

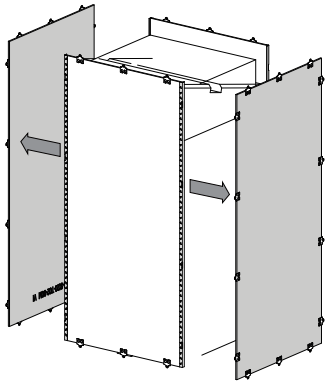
- Straighten all the tongue buckles on the steel belt box with a screwdriver.
- Remove the top steel strip planks.
- Remove the left and right steel strip planks.
- Remove the front and rear steel strip planks.
- Remove all foam and other packing material.



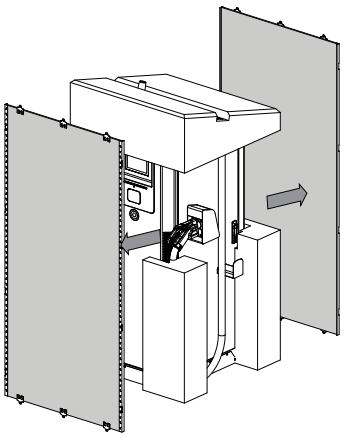
Step-A



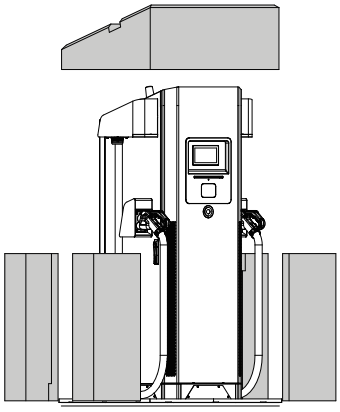
Step-B



Step-C

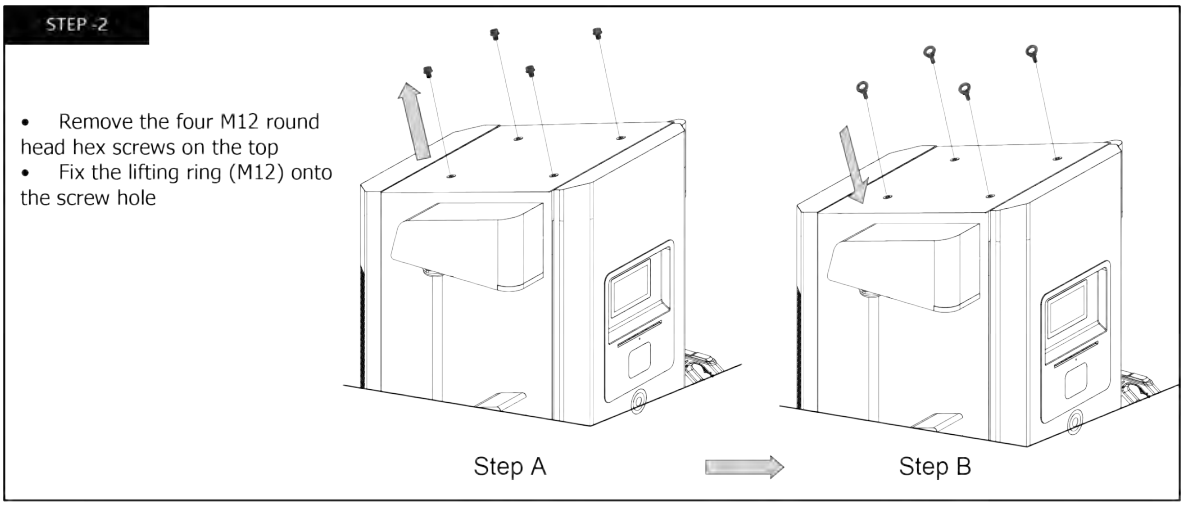


Step-D



Step-E

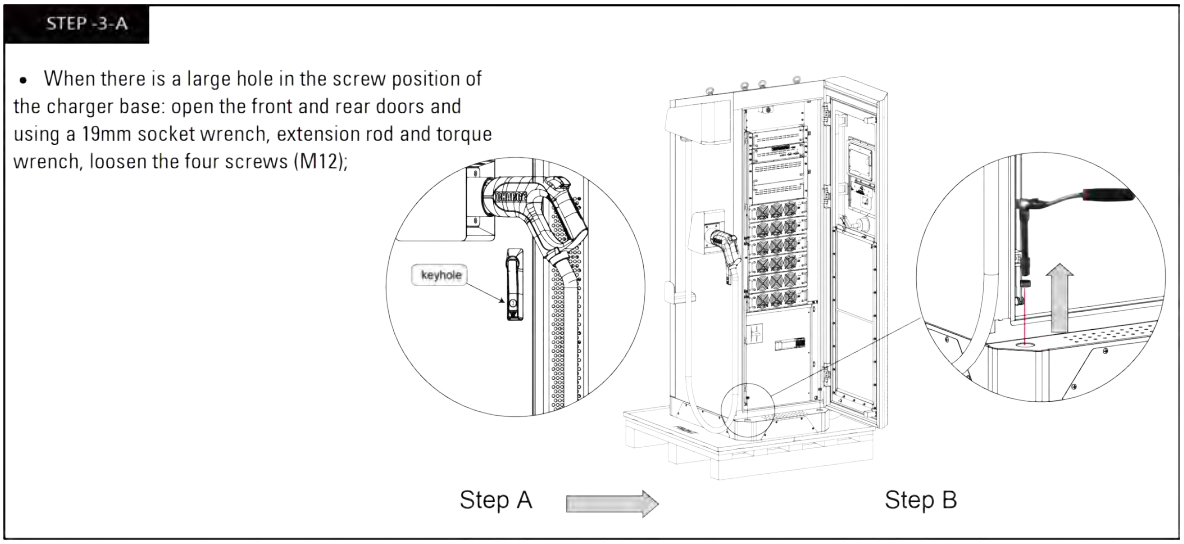
Step 2: Remove the top four ring hole screws



Step 3: Remove the fixing screws between the charger and the pallet.

NOTE There are two cases when removing the fixing screws between the charger and the pallet.

CASE 1: When there is a large hole in the screw position of the base of the charger:

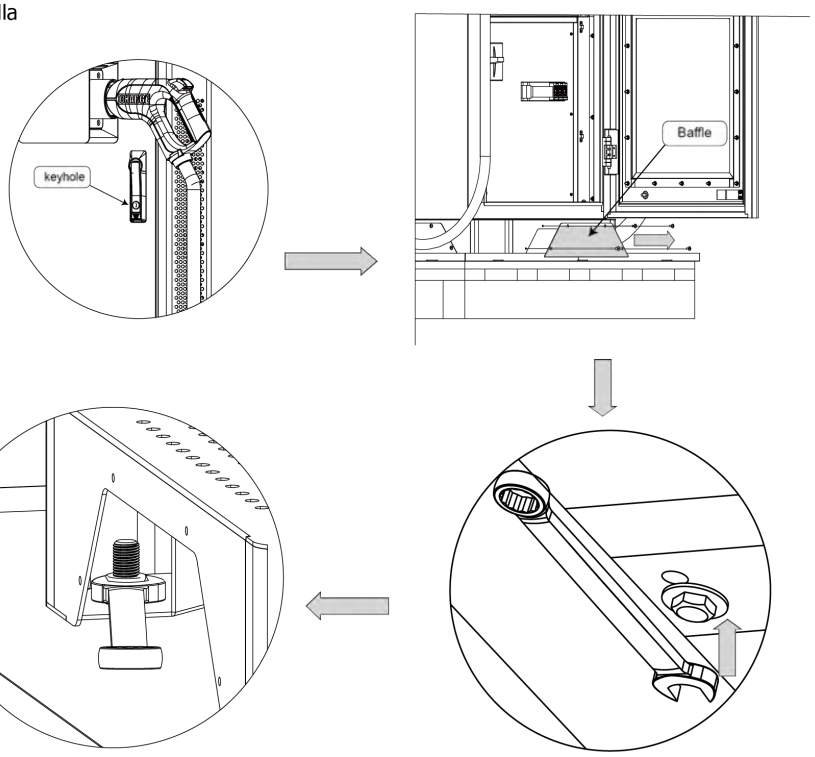


Step 3 continued:

CASE 2: When the hole in the screw position of the base of the charger is small and the socket cannot be inserted:

STEP -3-B

- Open the front and rear doors.
- Loosen the four M4 umbrella screws on the base, remove the baffle, secure the bottom screw with a 19mm ratchet wrench, and loosen the M12 nut with a 19mm ratchet wrench.

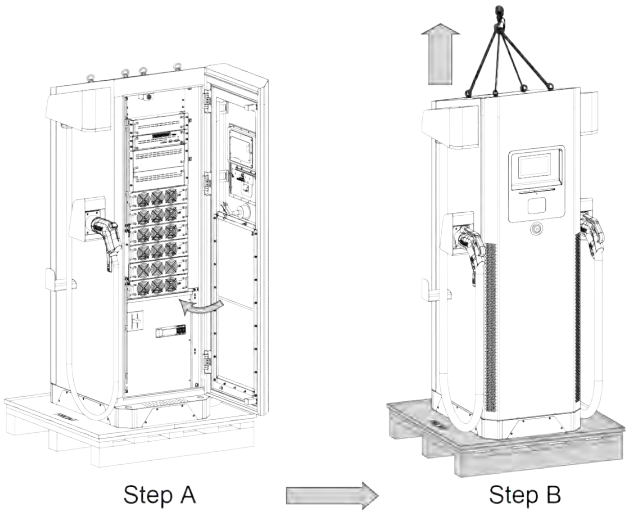


Step 4: Lift the charger to the cement platform

STEP -4-A

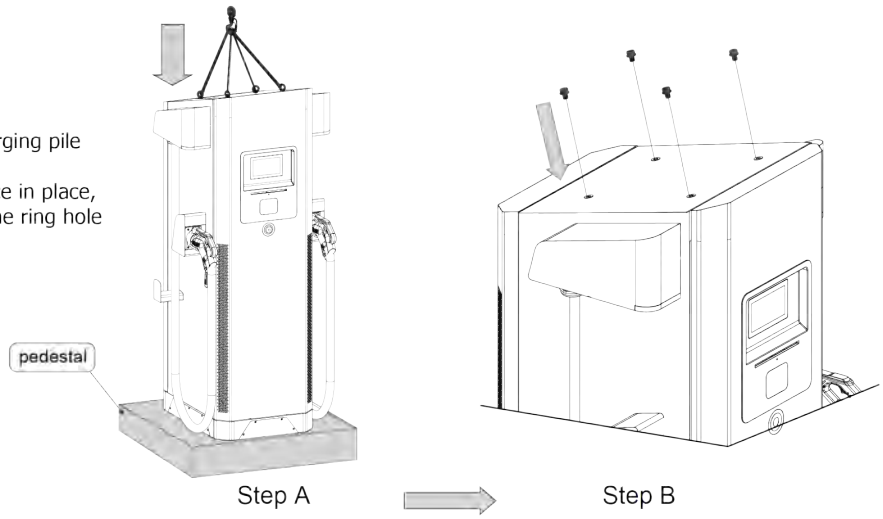
- Use the mounting plate and level tools to mark the mounting position in cement platform.
- Close the front and rear doors, and then lift the charger to the cement platform with steel wire ropes through lifting rings.

Note:
Each lifting ring needs to be evenly connected and evenly stressed.



STEP -4-B

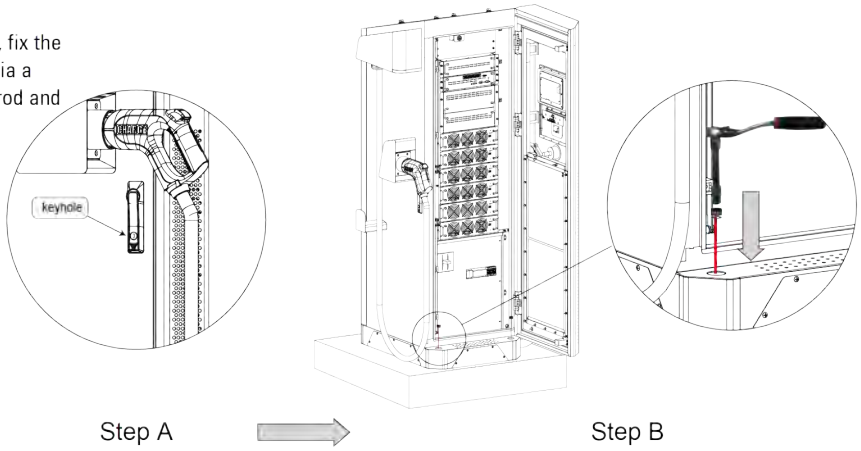
- Carefully lift the charging pile into the pedestal.
- Remove the ring once in place, install the M12 plug to the ring hole and screw it securely.



Step 5: Attach the charger to concrete pad

STEP -5

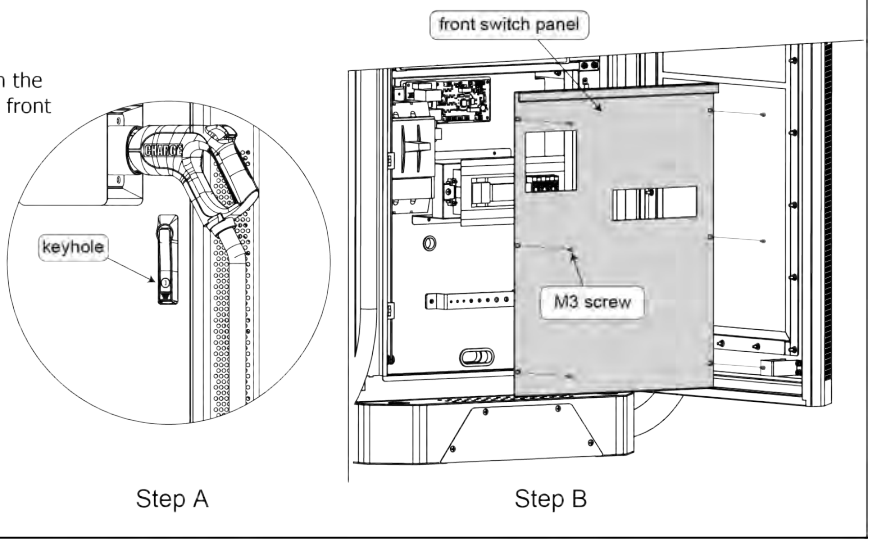
- Open the front and rear doors, fix the charger with four screws (M12) via a 19mm socket wrench, extension rod and torque wrench.



Step 6: Connect the charger

STEP -6-A

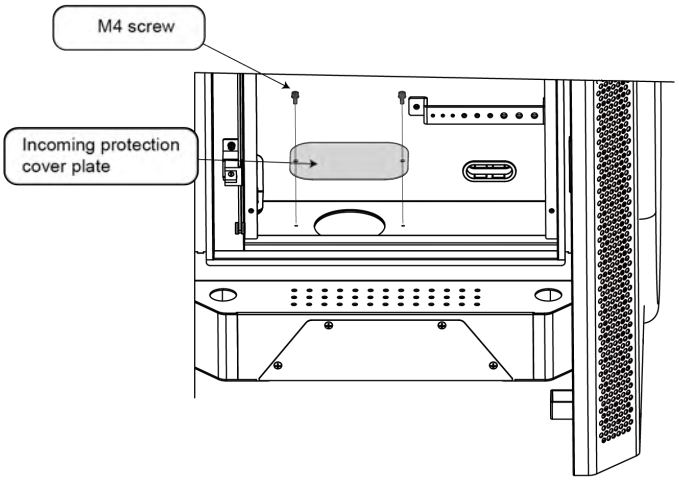
- Open the front door, loosen the six M3 screws, and remove the front switch panel.



Step 6 continued:

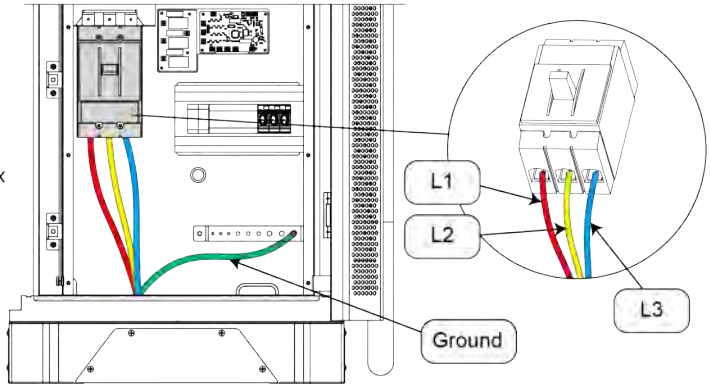
STEP -6-B

- Loosen the two M4 screws and remove the incoming protection cover plate.



STEP -6-C

- Feed the wires from the underside. Make sure the wiring can sufficiently reach the connectors before securing.
- Use M8 screws to connect the power wires L1, L2, L3, Ground, connected by hex allen key 8mm



NOTE 1 After wiring is complete, inspect all electrical connections prior to energizing the charger.

NOTE 2 When charger is powered on, the LCD screen will display the status of the charger.

Chapter 5 System Configuration

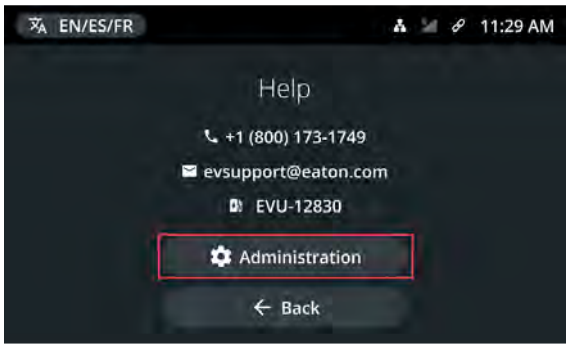
⚠WARNING

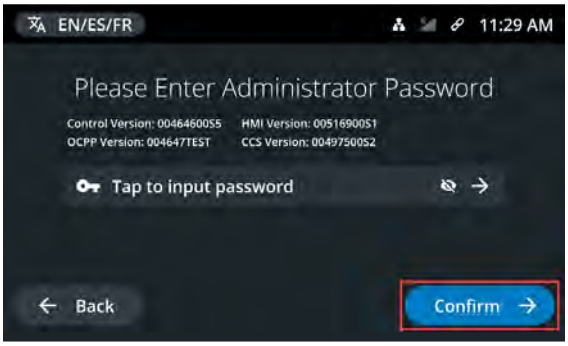
Perform charger system configuration activities when system is idle, otherwise charging session will be interrupted and/or cause charger session errors.

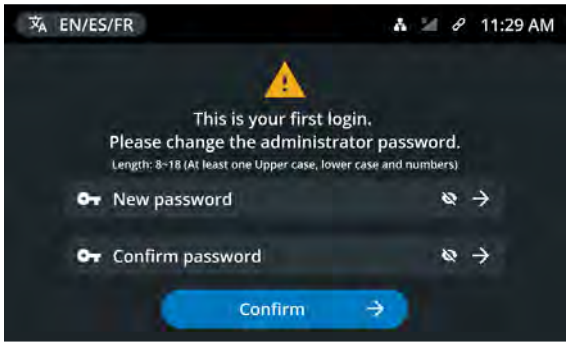
5.1 Setting Administrator Password

Select: Help > Administration > Enter Admin Password > Enter new password

NOTE The initial password is **eaton**





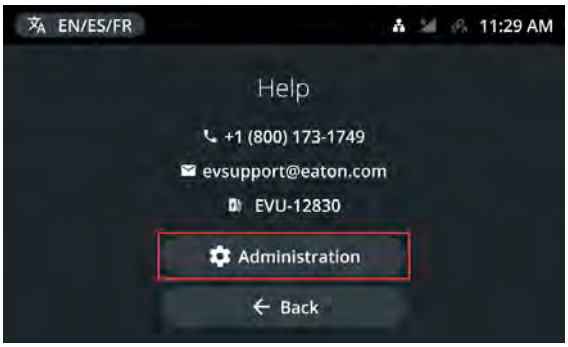


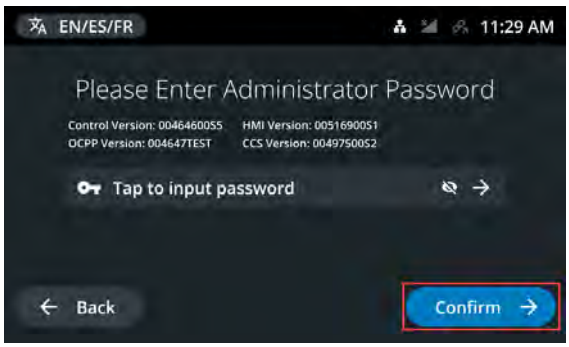
5.2 Cellular Network Settings

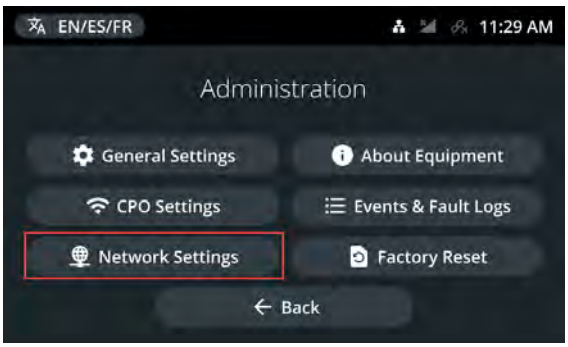
After the charger is powered on, set up 4G.

Step 1:

Select: Help > Administration > Enter Admin Password > Network Settings

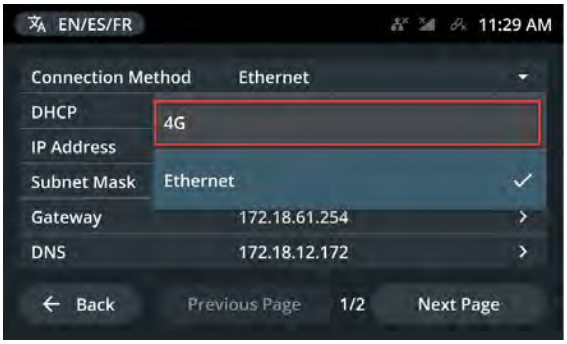






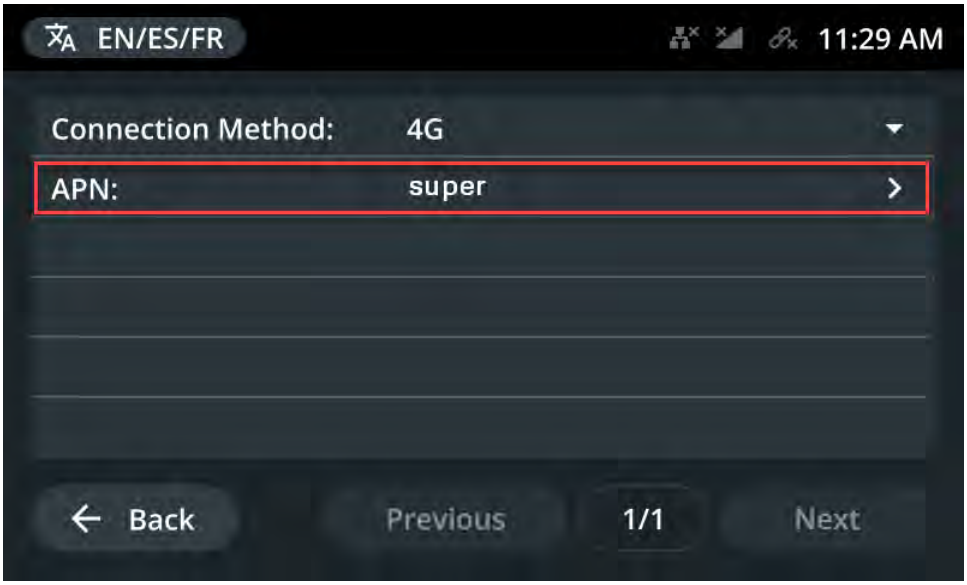
Step 2:

Select: Connection Method Select “4G”.



Step 3:

Select: APN > Enter: **“super”**.



Step 4:

Select: CPO Settings, then toggle the CPO Mode to ON, and enter the Eaton CNM OCPP URL: **wss://ocpp.io**

Step 5:

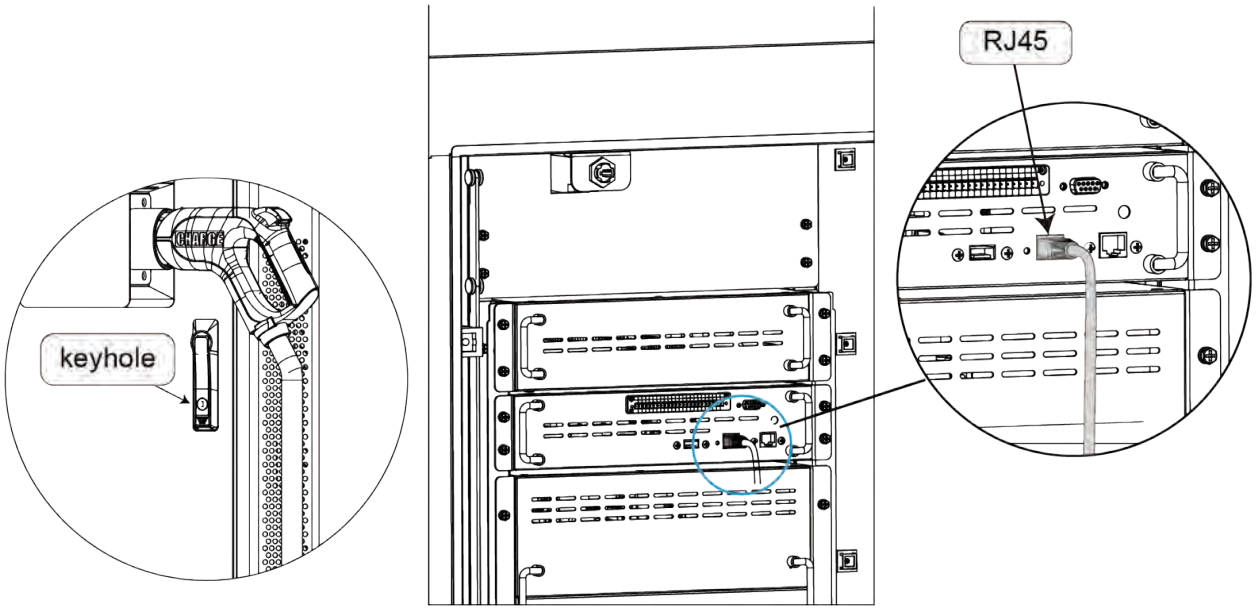
Wait approximately 1 ~ 2 minutes. If the signal icon is white as shown in the second image below, the 4G module has successfully been configured.

5.3 OCPP Network Connection

NOTE OCPP (Open Charge Point Protocol) maintains communication between the charger and system network.

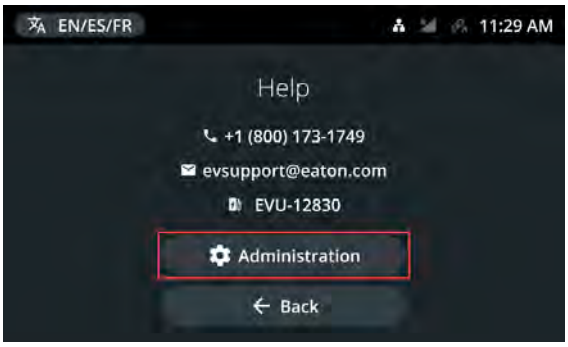
Figure 14. Connect Network Cable — RJ45 Port Location

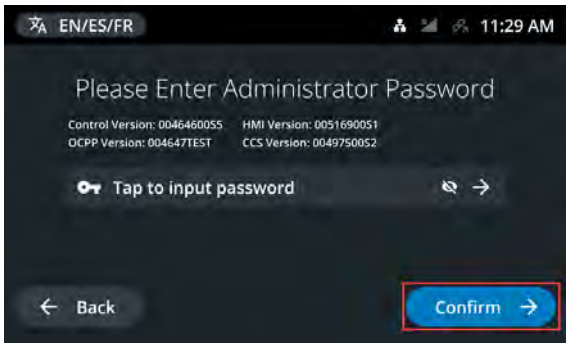
- Open the front door
- Insert network cable to the RJ45 port
- Close the front door

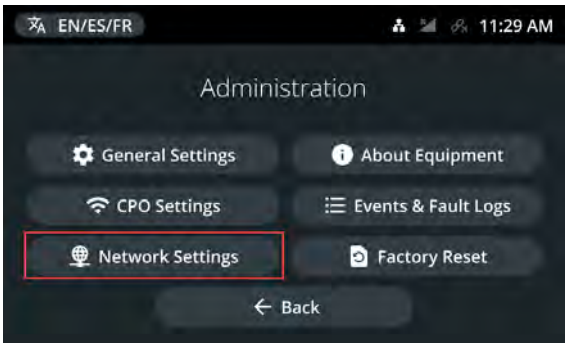


Step 1:

Select: Help > Administration > Enter Admin Password > Network Settings

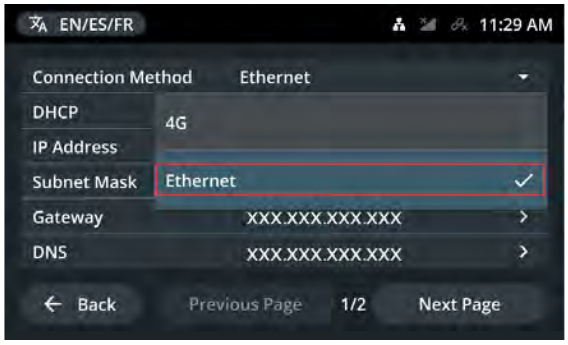






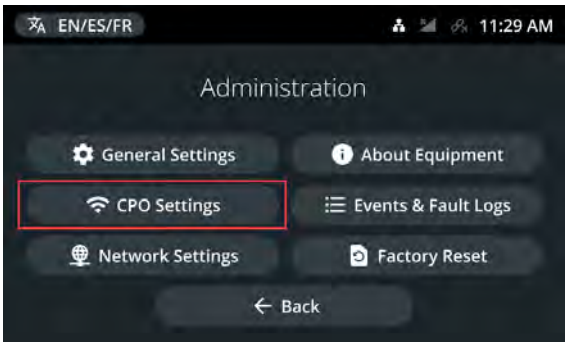
Step 2:

Connection Method Select "Ethernet", then open DCHP



Step 3:

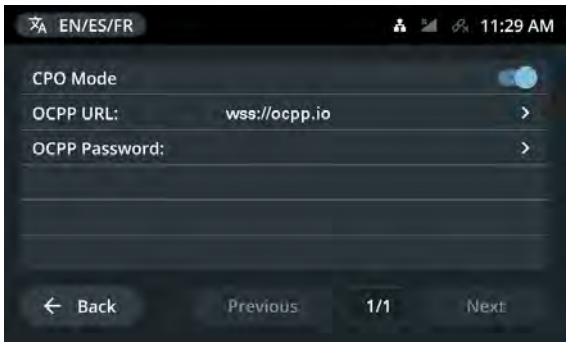
Select CPO Settings, then toggle the CPO Mode to ON, and enter the Eaton CNM OCPP URL: **wss://ocpp.io**



Step 4:

Turn the "DCHP" on and the URL is filled in with the cloud platform address obtained by the customer.

NOTE The URL of the cloud platform and the charger must be consistent, and the URL of each platform is inconsistent, so you need to fill in the URL according to the platform used by the user.



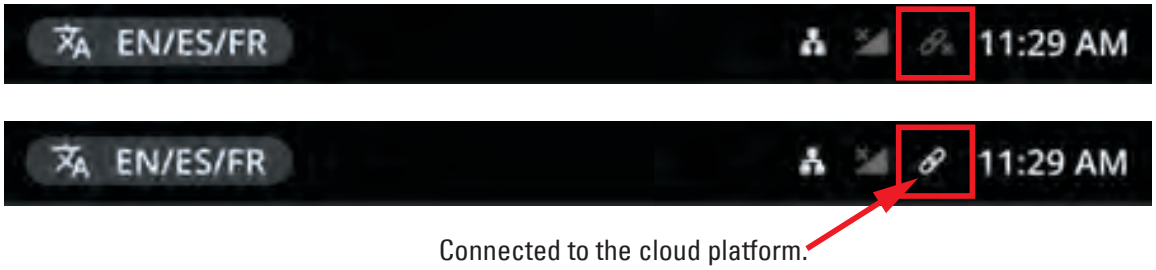
Step 5:

The MAC address does not need to be modified and each charger has been modified by the manufacturer before leaving the factory.

NOTE The MAC address is globally unique and cannot be changed.

Step 6:

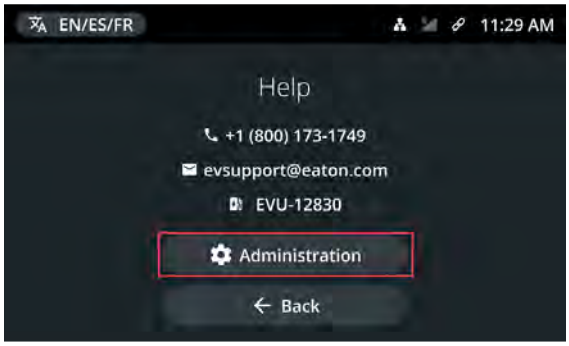
After the customer cloud platform is created, reboot the charger and wait approximately 1~2 minutes. If the signal icon is white as shown in the second image below, the charger has been successfully connected to the cloud platform.

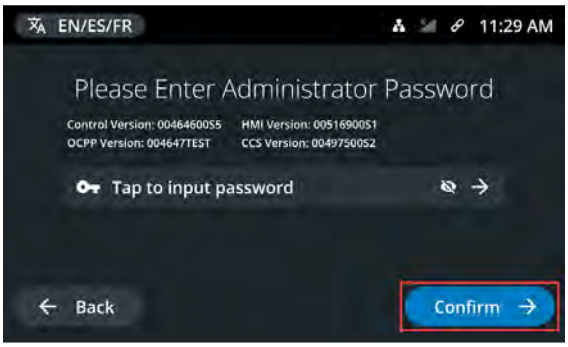


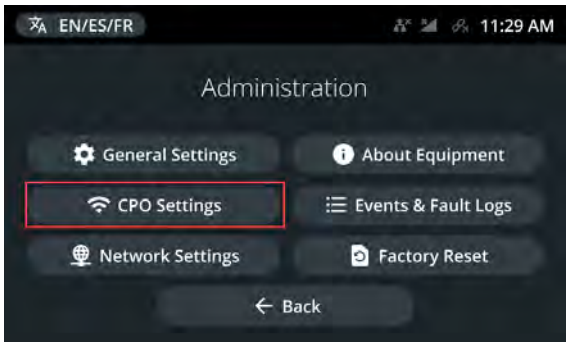
5.4 CPO settings

NOTE CPO (Charge Point Operators) is software that manages the charging transactions performed at the DC Charger.

Select: Help > Administration > Enter Password > CPO Settings > CPO Mode

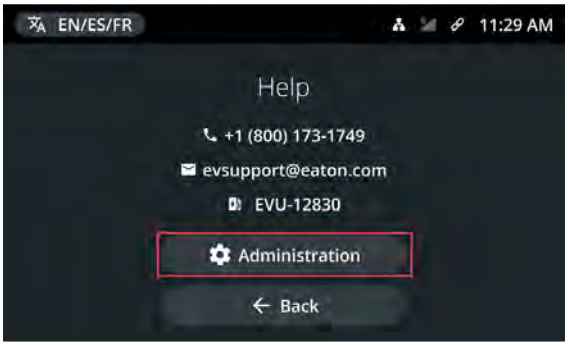






5.5 Querying the Software Version Numbers

Select: Help > Administration



Chapter 6 DC EV Charger Operation

6.1 LED Status Indicators

Figure 15. LED Status Indicators and Location

Table 6. LED Status Indicator States

Connector Status (Left Connector)	Connector Status (Right Connector)	DC Charger LED (Left / Center / Right)
Available	Available	Green solid / Green solid / Green solid
In use	Available	500ms 500ms White blink / 500ms 500ms White blink / Green solid LEDs flash White when not connected to the vehicle.
Connected (B1)	Available	500ms 500ms Blue blink / 500ms 500ms Blue blink / Green solid
Connected (B2)	Available	1s Blue blink / 1s Blue blink / Green solid

Table 6. LED Status Indicator States (Continued)

Connector Status (Left Connector)	Connector Status (Right Connector)	DC Charger LED (Left / Center / Right)
Charging	Available	Blue solid; Green solid; Green solid
Complete	Available	1s Blue blink; Green solid; Green solid
Session Terminated	Available	Red solid; Green solid; Green solid
Charging	In Use	Blue solid; 500ms 500ms White blink; 500ms 500ms White blink
Charging	Connected (B1)	Blue solid; 500ms 500ms Blue blink; 500ms 500ms Blue blink
Charging	Connected (B2)	Blue solid; 1s Blue blink; 1s Blue blink
Charging	Charging	Blue solid; Blue solid; Blue solid
Complete	Charging	1s Blue blink; Blue solid; Blue solid
Complete	Complete	1s Blue blink; 1s Blue blink; 1s Blue blink
Session Terminated	Charging	Red solid; Blue solid; Blue solid
Session Terminated	Session Terminated	Red solid; Red solid; Red solid Note: Charger is out of order, defective, unable to deliver power, etc.

6.2 DC EV Charger Behavior

The all-in-one charger platform uses 25 kW power modules. In models with one dispenser connector, 100% of the rated power (up to 300A) can be delivered via the dispenser during a charge session. With two dispenser connectors present, each connector can carry 100% of the rated power (up to 300A), but power sharing occurs when both connectors are used simultaneously.

Table 7. DC EV Charger Power Sharing Scenarios

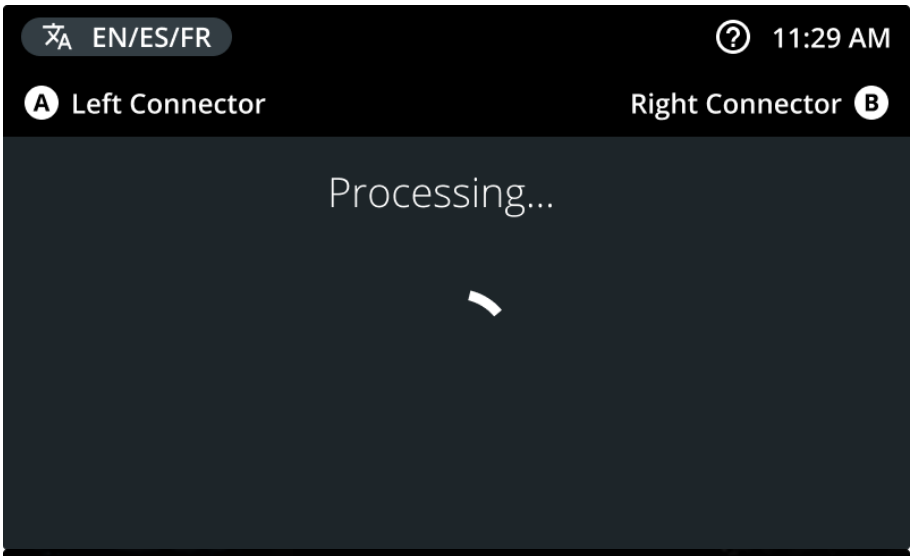
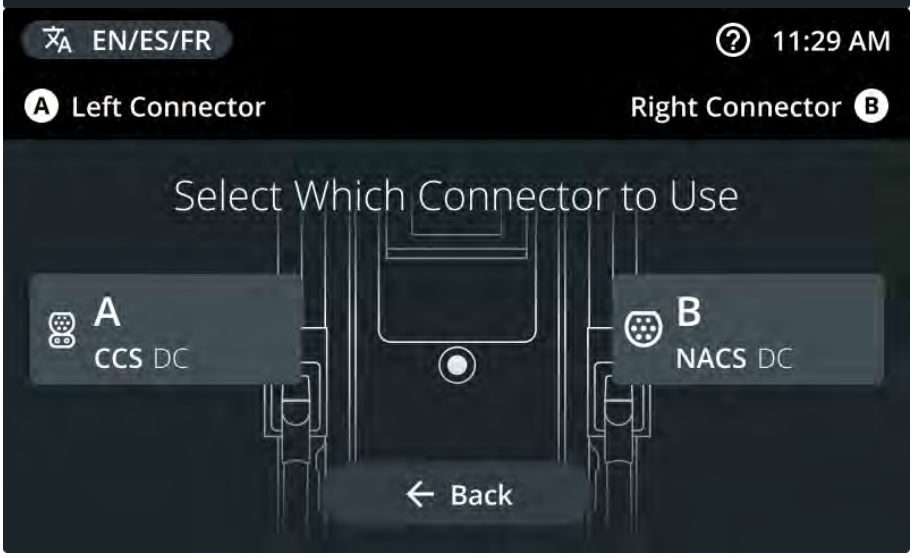
	Quantity of power modules available during power sharing	
Charger Model	Connector A (Left)	Connector B (Right)
50 kW	1 (25 kW)	1 (25 kW)
75 kW	2 (50 kW)	1 (25 kW)
100 kW	2 (50 kW)	2 (50 kW)
125 kW	3 (75 kW)	2 (50 kW)
150 kW	3 (75 kW)	3 (75 kW)

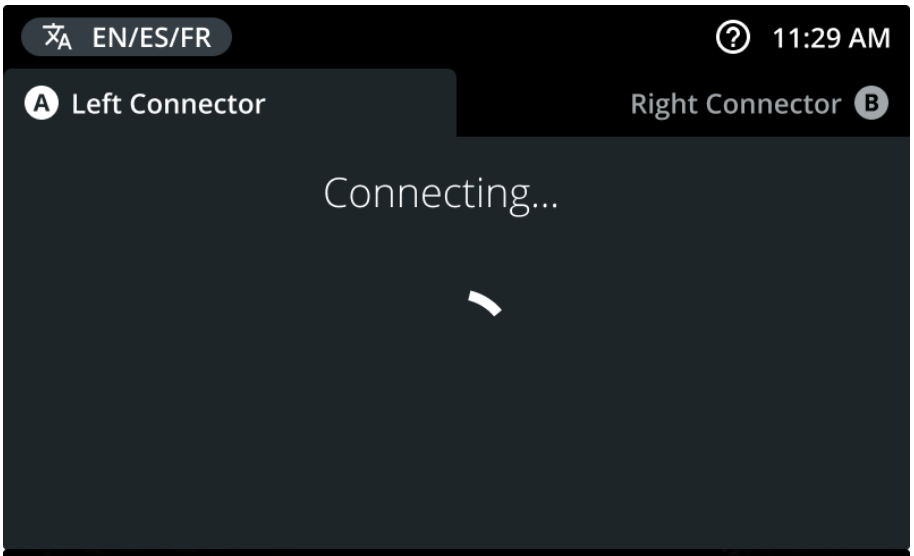
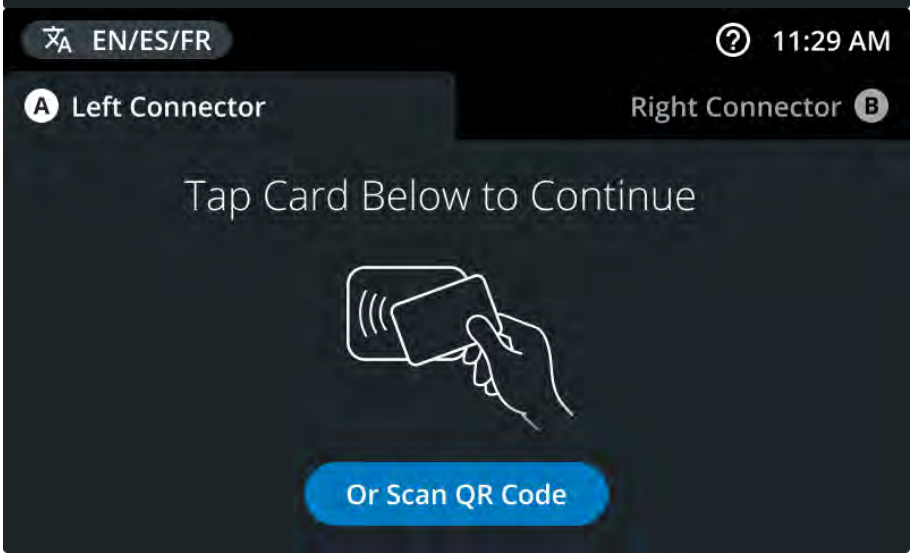
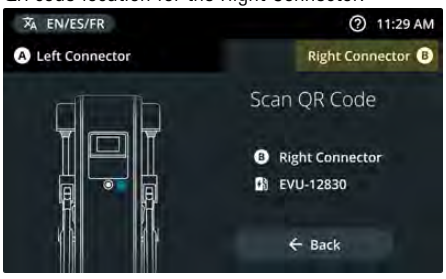
On dual dispenser models, if a connector is already charging with 100% rated power and the second connector begins charging, the first connector will decrease power delivery from full power to the power sharing schedule outlined in the table above. During simultaneous charging, after one of the two connectors finishes charging, full power is automatically restored to the other charger.

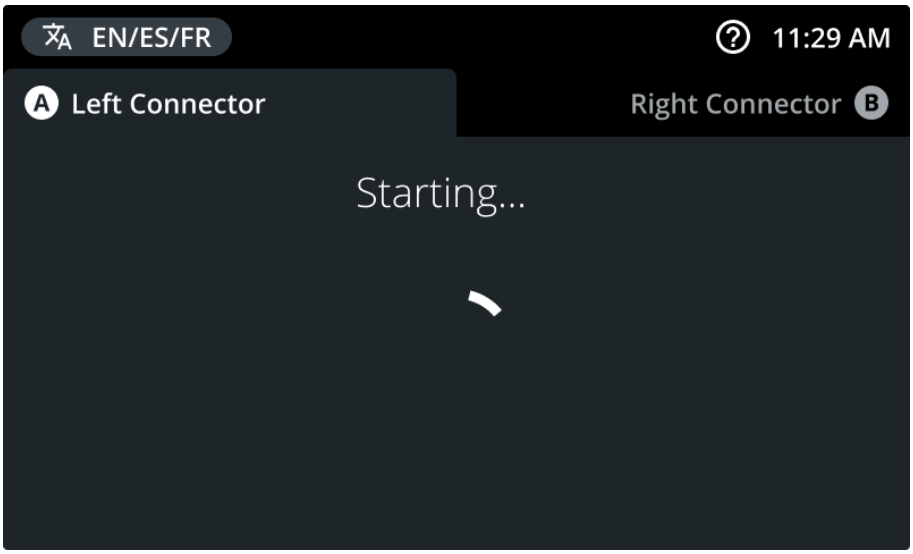
6.3 Operation Interface

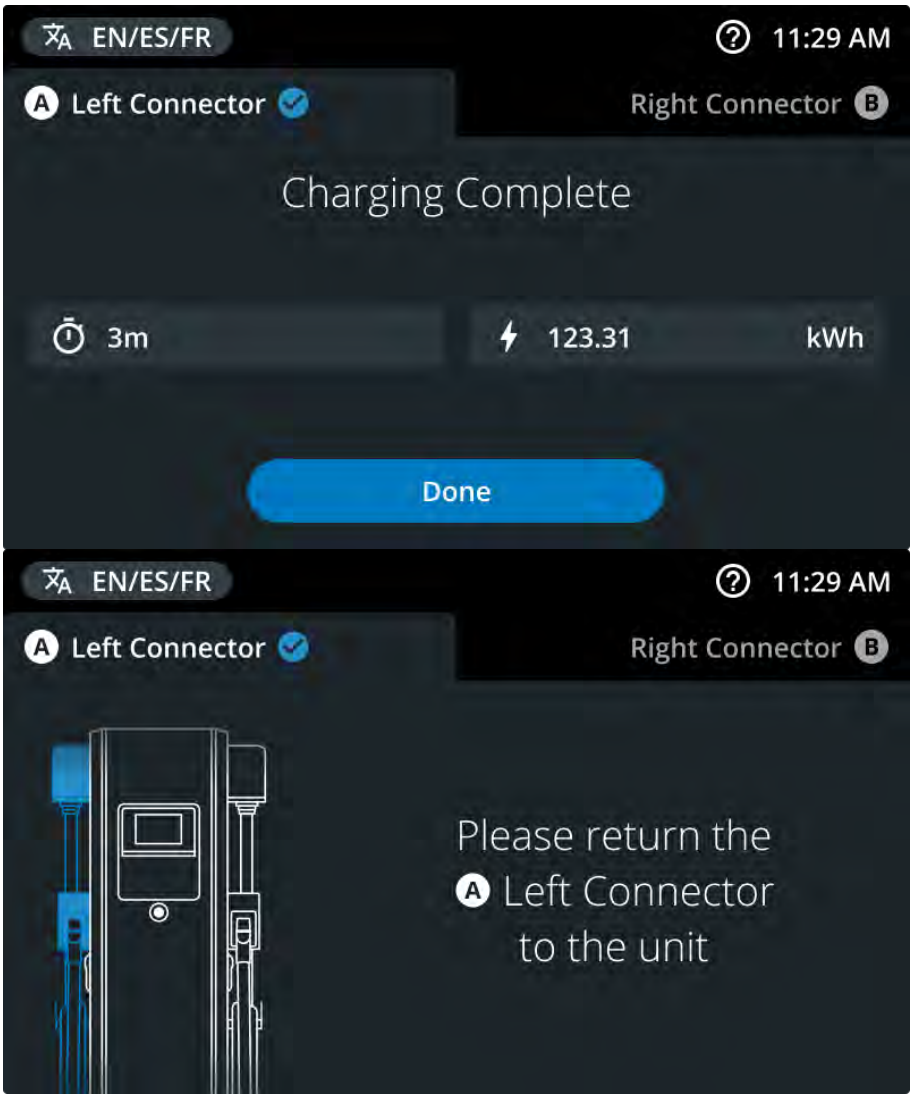
6.3.1 User Operation Steps

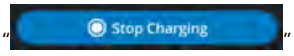
Operating Steps	Operating Interface
Step 1: • Tap the screen. • Select the connector (See step 2-1) * If card is tapped first, you should see step 2-1.	

Operating Steps	Operating Interface
Step 2-1: • If card is tapped first, wait for processing and then choose a charging connector.	 

Operating Steps	Operating Interface
Step 2-2: • If a charging connector has been connected to the vehicle, wait for the connection to register. The session can then be authorized by tapping your card **NOTE:** To order more cards, contact Eaton Support, see 1.6 *Getting Help* for details. or by scanning the QR code and following the instructions on your mobile device.	  QR code location for the Left Connector.  QR code location for the Right Connector. 

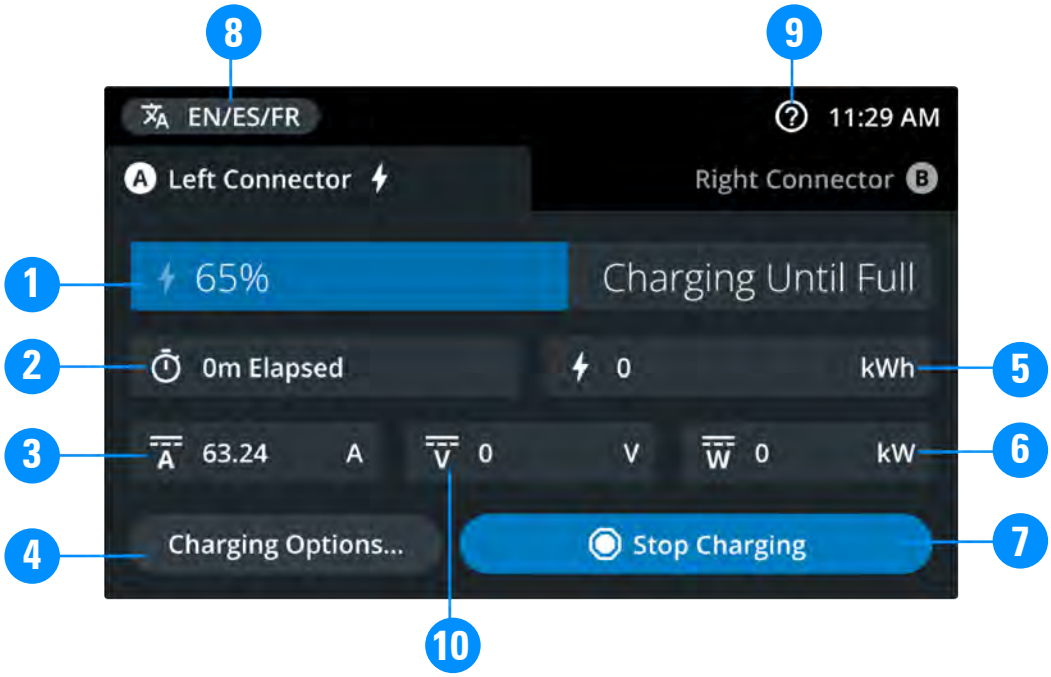
Operating Steps	Operating Interface
Step 3: Once the authorization is complete, the charging session will begin.	
Step 4: While the vehicle is charging, charging data can be viewed on the LCD screen via the touchscreen.	

Operating Steps	Operating Interface
Step 5: The charging time and charging capacity is displayed on the final screen. When the charging session has ended, return the connector to it's holder.	

NOTE If it is necessary to stop a charging session before it has been completed, touch the "  " icon on the bottom right corner of the display.

6.3.2 Charging Display Page Details

Figure 16. DC EV Charger Display — Real-Time Charging Details



1. Charging capacity of charged vehicle
2. Charging time
3. Charging current
4. Change charge type
5. Charging capacity
6. Charging power
7. Stop button
8. Language selection
9. Help
10. Charging voltage

6.4 Precautions

- If the screen shows a machine failure, do not operate, please contact Eaton or authorized service provider.
- Charging will be automatically terminated if the account balance is insufficient during the charging process.
- Follow the charger's operating instructions when operating.
- Be careful not to overexert when unplugging the charging cable.
- In case of emergency, press the emergency power off switch. Charging can not be carried out at this time.

6.5 Emergency Power Off (EPO) Operation

In the case of an emergency, press the Emergency Power Off (EPO) (also known as Emergency Stop) button to safely secure power to the charger. Once the EPO button has been pressed, the charging session will be stopped and a warning will be shown on the display. See Figure 17 for Emergency Power Off (EPO) button location.

Figure 17. Emergency Power Off (EPO) Button Location

NOTE If you press the button by mistake, simply turn the button to reset.

Chapter 7 Maintenance

The influence of ambient temperature, humidity, dust and vibration can cause wear on the internal devices of the charger, which has the potential to bring about failure of the charger. Therefore, it is necessary to carry out the following maintenance tasks regularly to ensure normal operation of the charger throughout its service life.

- Verify the structural integrity of the charger cabinet and doors.
- Ensure that there is no visible damage to the charging cables and ensure that the charging connectors are properly secured to the charger.
- Check internal components for signs of damage.
- Verify that the input power cables are securely connected to the input terminals.
- Check for and remove any dust accumulated in the cabinet once a month to allow for proper heat dissipation.
- Be sure to keep the cabinet doors closed and locked unless maintenance is being performed by qualified personnel.

NOTICE

Servicing and maintenance should be performed by qualified service personnel only.

⚠CAUTION

Do not leave screws, washers or other metal parts in the charger for maintenance, otherwise the equipment may be damaged. After the completion of equipment maintenance, it is necessary to check the cabinet to ensure no foreign objects have been left inside.

⚠WARNING

During equipment maintenance, be sure to disconnect the AC power supply of the charger.

⚠WARNING

During equipment maintenance, ensure necessary measures are taken to prevent the charger from being energized by mistake.

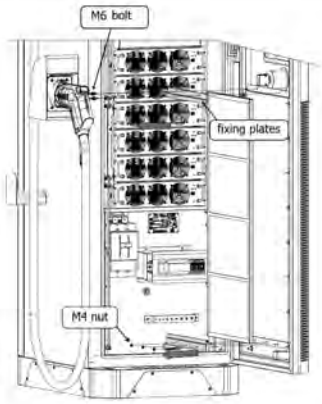
Table 8. DC Charger Maintenance Cycle

Maintenance Cycle	Maintenance Details
Quarterly (Every 3 Months)	Check the function of each fan regularly: verify there is no abnormal noise and that the fan turns smoothly.
	Regularly check the function of switches: switches, contactors and other switching devices in the circuit should be checked to see if there is any damage or metal corrosion.
	Clean regularly: clean front and back door vents with dust-proof cotton.
	Check the internal wiring regularly: Check for loose connections. Check connection terminals and insulation for discoloration or peeling, replace damaged or corroded terminals, and replace damaged cables.
	Check whether the warning label is firmly adhered and legible. Replace the label if needed.
	Regularly check for abnormal sounds during the operation of the charger.
	Verify the emergency stop function regularly: check whether the emergency stop switch stops and prevents further operation of the charger.
NOTE If the charger is used in a harsh environment, routine maintenance may be required at a greater frequency.	

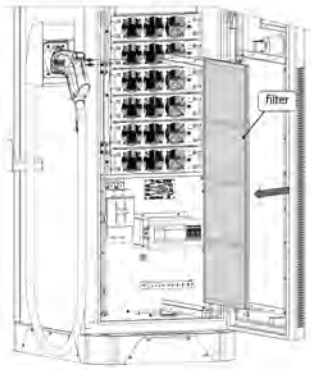
7.1 Filter Replacement

Filter Replacement

1. Open the front door.
2. Loosen the two M6 bolts, three M4 nuts and two fixing plates.
3. Remove the filter.



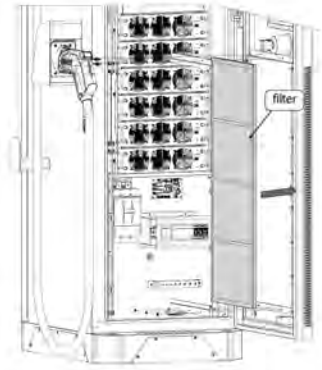
Step A



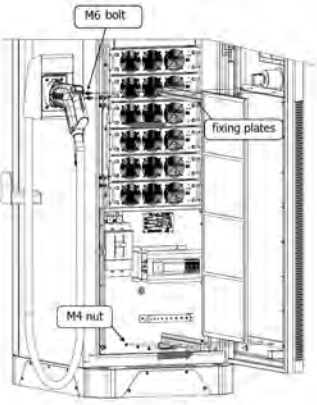
Step B

Filter installation

1. Install the new filter and two fixing plates.
2. Tighten the two M6 bolts and three M4 nuts to secure the two fixing plates in place.
3. Close the front door.



Step A



Step B

Chapter 8 Troubleshooting

The Eaton Green Motion DC EV Charger is designed for durable, automatic operation and also alerts you whenever potential operating problems may occur. Use the following troubleshooting chart to determine the alarm condition.

For further information and support contact details, see paragraph 1.6 *Getting Help*.

8.1 Typical Alarms and Conditions

Error Code	Display Information	Description	Troubleshooting Instructions
3	CM_INPUT_CONTACTOR_ACT_ FAULT	Input contactor malfunction	Please contact an Eaton service representative.
4	CM_K1K2_ACT_FAULT	Output contactor malfunction	
5	CM_Parallel_Contactor_FAULT	Parallel contactor malfunction	
8	CM_FUSE_FAULT	Output fuse fault	
10	CM_LCD_COMM_ERR	LCD communication fault	
11	FAULT_INS_BATU_NOT_ ReachSetValue	The insulation test voltage does not meet the preset value	
13	CM_GPRS_COMM_ERROR	Internal network communication error	
14	ARRESTER_FAULT	SPD fault	
15	STOP_SW_ACT	The emergency power off (EPO) button is pressed	Reset the emergency power off (EPO) button
16	AC_IN_LOST	The input breaker is open	Verify that the input circuit breaker is closed.
17	DOOR_OPEN	The door was opened	Verify that the front and rear doors are closed and properly latched.
18	CM_MODULE_FAULT	Charging module fault	Please contact an Eaton service representative.
20	CM_MODULE_CUT_ALARM	The charging module has no output in the insulation detection stage	
23	CM_CARD_NO_EXIST_ERR	Account does not exist	Please contact EV Driver support representative.
25	CM_CHARGE_BATU_ERR	Output overvoltage	Please contact an Eaton service representative.
26	CM_INS_CHECK_ERR	Insulation error	There is an insulation fault. Try rebooting the charger. If no improvement, please contact an Eaton service representative.
27	CM_LEAK_OVERTIME	The charging module's output discharge has exceeded the predefined limit	Please contact an Eaton service representative.

Error Code	Display Information	Description	Troubleshooting Instructions
29	CM_LINK_ERR	CP signal voltage error	There is a CP signal voltage error. Try reboot the charger. If there is no improvement, please contact an Eaton service representative.
33	CM_DL645_COMM_ERR	DL645 meter communication error	Abnormal communication on the DC meter. Try rebooting the charger. If the issue persists, please contact an Eaton service representative.
35	PRO_FAULT_GUN_OVER_TEMP	Charge coupler plug over temperature	Allow the connector to cool. If the issue persists, please contact an Eaton service representative.
36	PRO_AC_INPUT_OVER_VOLTAGE	AC input overvoltage	Please contact an Eaton service representative.
37	PRO_AC_INPUT_LOW_VOLTAG	AC input undervoltage	
38	PRO_DC_OUT_OVER_VOLTAGE	DC output overvoltage	
39	PRO_DC_OUT_UNDER_VOLTAGE	DC output undervoltage	
43	WATER_SENSING_FAIL	Water-dip detection was triggered	Check whether there is water in the cabinet
44	CM_INS_COMM_ERR	Insulation tester communication error	Try rebooting the charger. If there is no improvement, please contact an Eaton service representative.
45	CM_ACinput_COMM_ERR	AC input tester is error	Please contact an Eaton service representative.
46	PRO_ACinput_FREQ_OUT	AC input frequency out of range	
47	PRO_ACinput_LOSS_PHASE	AC input loss of phase	
48	PRO_PHASE_ERROR	AC input phase sequence error	
49	PRO_LOSS_PE	Program loss GROUND	
80	EV_COM_CLOSE	EV communications failure	The vehicle communication is turned off. Please try to plug and unplug the charging plug again and re-start. If the alarm still occurs, try rebooting the charger. If there is no improvement, please contact an Eaton service representative.
91	CP_STATUS_ABNORMAL	CP status abnormal	CP signal is abnormal. Try rebooting the charger. If there is no improvement, please contact an Eaton service representative.
98	CM_INS_CHECK_ALARM	Insulation detection alarm	Insulation detection alarm, Try rebooting the charger, if no improvement, please contact an Eaton service representative.

NOTE For further information and support contact details, see paragraph 1.6 *Getting Help*.

Chapter 9 Product Specifications

Table 9. Models

Eaton Catalog Number	GMDC50-CCS	GMDC50-CCSX2	GMDC75-CCSX2	GMDC100-CCSX2	GMDC125-CCSX2	GMDC150-CCS	GMDC150-CCSX2
Charger Power Rating	50 kW	50 kW	75 kW	100 kW	125 kW	150 kW	150 kW
Quantity of CCS1 Connector Cables	1	2				1	2
Current Rating of CCS1 Cabling	125A		200A	300A			
Quantity of 25 kW Charging Modules	2	2	3	4	5	6	6
Product Contents (Excluding Packaging Materials)	Single Charger Station and Single Charger Cable	Single Charger Station and 2 Charger Cables				Single Charger Station and Single Charger Cable	Single Charger Station and 2 Charger Cables

Table 10. Electrical Input

Charger Model # of CCS1 cables	50 kW 1	50 kW 2	75 kW 2	100 kW 2	125 kW 2	150 kW 1	150 kW 2
AC Input Voltage	3Ø 480 +10%/-15%						
Input Amp(s)	64	64	96	128	160	192	192
No. Of Phases	3 phases						
AC Input Frequency	50/60 Hz						
AC Frequency Range	±10%						
AC Input Connection Type (line cord/hard wire/etc)	3-Wire + PE, from grounded wye source						

Table 10. Electrical Input (Continued)

Charger Model # of CCS1 cables	50 kW 1	50 kW 2	75 kW 2	100 kW 2	125 kW 2	150 kW 1	150 kW 2
Input Current T.H.D.: Full Load Half Load	≤ 5% ≤ 10%						
Inrush Current (A) when input circuit breaker is closed	268A, 45.8µs						
Inrush Current (A) when AC contactor is closed	116A, 365µs	116A, 365µs	140A, 45.8µs	204A, 85µs	206A, 471µs	308A, 25.7µs	308A, 25.7µs
Input Power Factor: Full Load Half Load	0.98 0.95						
Input Voltage Swell	120% for 5 cycles						

Table 11. Electrical Output

Charger Model # of CCS1 cables	50 kW 1	50 kW 2	75 kW 2	100 kW 2	125 kW 2	150 kW 1	150 kW 2
DC Output Voltage	200 to 1000 VDC						
DC Output Amps	6 to 125 A		6 to 187.5A	8 to 250 A	10 to 312.5A	12 to 300 A	12 to 375 A
Output Watts Rating @ 500V	50 kW		75 kW	100 kW	125 kW	150 kW	
Metering	+/- 2.5% accurate metering						
Max Output Watts Temperature Derating	100% power output at maximum operating temperatures listed below: 75% power output at 55°C. Derating from max operating temperature to 55°C is linear.						
Simultaneous Charges	1	2*	2*			1	2*

Table 11. Electrical Output (Continued)

Charger Model # of CCS1 cables	**50 kW 1**	**50 kW 2**	**75 kW 2**	**100 kW 2**	**125 kW 2**	**150 kW 1**	**150 kW 2**
DC Charger Power Output	50 kW		75 kW	100 kW	125 kW	150 kW	
Single connector current limit	CCS1: 125 A		CCS1: 187.5A	CCS1: 250A	CCS1: 300A	CCS1: 300A	
*(Single connector can support full output power rating)							

Table 12. Operation

Efficiency (Full load)	> 94%
Efficiency (Half load)	≥ 92%
Bidirectional	No
Over Temperature Protection (Default value)	Connector detects ≥ 90°C: triggers alarm; Alarm resets when connector detects < 90°C. Connector detects ≥ 105°C: charging output disconnects and terminates current session of charging.
Surge Protection (Joules) - Detail	IEEE C62.41 Category B3/C1
Remote Upgrade	Yes, OTA (Over The Air)

Table 13. Environmental

Charger Model # of CCS1 cables	**50 kW 1**	**50 kW 2**	**75 kW 2**	**100 kW 2**	**125 kW 2**	**150 kW 1**	**150 kW 2**
Audible Noise	<70dB @1m						
Humidity	0 to 95% Relative Humidity, Non-Condensing						
Storage Temperature	-40 to +70 °C						
Operating Temperature	-35 to +50 °C					-35 to +45 °C	
Operating Elevation	Up to 2000m						

Table 14. User Interface and Control Parameters

User Access Control	RFID, QR Code
Network Interface	Ethernet; Cellular (4G LTE: AT&T, T-Mobile, Verizon)
User Interface	Charging Status Indicator, 7" Touch Screen Display

Table 15. Agency Standards

Approving Agency	UL
Safety Standards (Canada)	CSA-C22.2 No. 107.1, CSA C22.2 No. 281.1-12, CSA C22.2 No. 281.2-12
Safety Standards (U.S.)	UL 2202, UL 2231-1, UL 2231-2
Proposition 65	TBD
FCC/ICES Compliant	CLASS A; 47 CFR FCC PART 15 SUBPART B:2018; ICES-003:2016
EMI/EMC Standards	UL 2231-2
Energy Star Compliant (Y/N)	Y
Salt Spray	IEC 60068-2-11
Ingress Protection	IP54, NEMA-3R
Seismic Rating	AC156 or equivalent
Packaging Vibration/Drop/Shock	ISTA-3B
Other Certifications	Eaton Cybersecurity Standard, ISO/IEC 15118 ("Plug and Charge" portion only), DIN 70121 (SAE J2847/2), DIN 70122 (Conformance Tests to DIN 70121, no certification), SAE J1772, OCPP1.6J subset certificate, OCPP1.6J security certificate

Table 16. Communication Protocols

Charging protocol	CCS (see 'Other Certifications' for protocol standards)
Communication Protocol	**OCPP1.6J** - Core - Firmware Manager - Remote Trigger - Reservation - Smart Charging **OCPP1.6J Security** - Security General - Security Profile 2 and Profile 3

Table 17. Physical Information

Charger Model # of CCS1 cables	**50 kW 1**	**50 kW 2**	**75 kW 2**	**100 kW 2**	**125 kW 2**	**150 kW 1**	**150 kW 2**
Dimensions (D x W x H) Feet (millimeters)	30.7′ * 32.8′ * 71.8′ (780mm * 834mm * 1823mm)						
Installed Unit Weight kg (lbs)	312 (687.8)	325 (716.5)	342 (754)	378 (833.3)	395 (870.8)	373.5 (823.4)	412 (908.3)
Shipping Weight kg (lbs)	372 (820.1)	385 (848.8)	406 (895.1)	442 (974.4)	459 (1011.9)	437.5 (964.5)	476 (1049.4)
Output Cable Length (ft) (measured at exiting from enclosure)	Standard: CCS1: 24.6' (7.5 m) Canada Installation: CCS1: 15.7′ (4.8m)						

* Product specifications are subject to change without prior notice.

Chapter 10 Warranty

To view the Eaton Green Motion 50 - 150 kW DC EV Charger warranty please click on the link or copy the address to download from the Eaton website:

Limited Factory Warranty for Eaton Green Motion 50-150kW DC EV Fast Charger Products

https://www.eaton.com/content/dam/eaton/products/emobility/green-motion-dc-ev-chargers/eaton-green-motion-dc-ev-chargers-warranty.pdf

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