Boost Charger™

DC Fast Charging Station

Operating and Maintenance Manual

Version 1.0

FREEWIRE

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The Boost Charger™ is designed for specific applications and should not be used for any purpose not expressly set forth in applicable FreeWire product documentation.

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Safety and compliance

The FreeWire Boost Charger is for Outdoor Use Only and to be mounted on a non-combustible surface such as a concrete pad that extends a minimum of 3 feet beyond the perimeter of the battery system/Boost Charger.

The Boost Charger should comply with all local and national codes and standards and only be installed by a licensed contractor and a licensed electrician.

It is the site owner's responsibility to comply with all local codes and safety laws. The most common installation method is discussed in this guide. If for any reason it is not possible to perform the installation following the guide, contact FreeWire Technologies, Inc. FreeWire Technologies, Inc. is not responsible for any damages that may occur resulting from deviations from the instructions outlined in this guide.

Lithium-Ion Battery

FreeWire Battery Pack 820-00114-01 is to be used exclusively with the Boost Charger.

FCC Compliance Statement

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 manufacturer's instruction manual, may cause harmful interference with radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case, you will be required to correct the interference at your own expense.

Important: Changes or modifications to this product not authorized by FreeWire Technologies, Inc., could affect the EMC compliance and revoke your authority to operate this product.

Exposure to Radio Frequency Energy: The radiated power output of the 802.11 b/g/n radio and cellular modem in this device is below the FCC radio frequency exposure limits for uncontrolled equipment. The antenna of this product, used under normal conditions, is at least 20 cm away from the body of the user. This device must not be co-located or operated with any other antenna or transmitter by the manufacturer, subject to the conditions of the FCC Grant.

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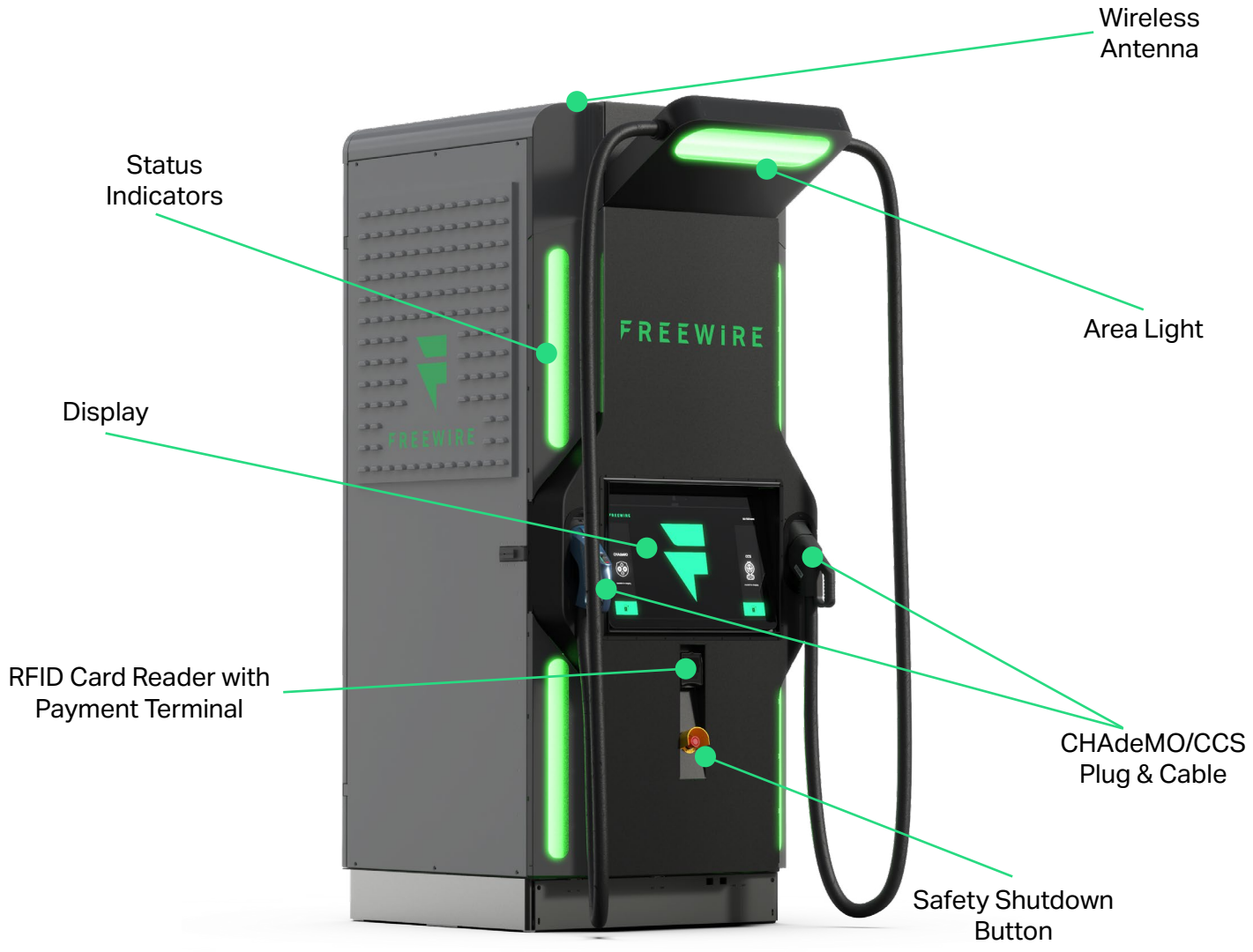
Table of Contents

1 Introduction

This manual describes how to operate and maintain the FreeWire Boost Charger DC fast charging station and is intended for use by a station owner or facility manager.

1.1 Overview

Boost Charger is equipped with a 24-inch ruggedized touch screen that meets ADA accessibility requirements. A credit card terminal with NFC and RFID capabilities, as well as an emergency stop button, are located prominently below the screen.



2 Operating the Boost Charger

2.1 Powering on the Boost Charger

There is an emergency stop button, however there is no separate on/off switch for the Boost Charger.

Note: The emergency stop button should not be used as an on/off switch.

The Boost Charger fast charging station is powered on during the installation by energizing the site's electrical panel. Immediately after completing installation and the electrical breaker is turned on, the system will turn on and run a series of self-tests to ensure safe operation.

These tests include:

- Electrical component safety checks
- Lighting and display checks
- Battery charging system checks
- Component operation checks (such as fans, pumps, and contactors)
- Cellular connectivity checks

If any errors are found, the display will report that the charger is not available for use and the indicator lights will turn red. Contact EV Connect at (888) 780-0062 for assistance.

2.2 Shutting Down the Boost Charger

The Boost Charger only needs to be powered off during service by using the electrical breaker at the main panel. Otherwise, there is no separate power switch. No components will be damaged when the power is shut off, as the system is designed to be shut off by the breaker. Also, there is no need for any software commands to turn off the station.

The Boost Charger has the ability to be turned off by use of a remote shut off switch. See the *Boost Charger Installation Guide* for more details. Whether this feature is used and where the switch is located varies by site.

IMPORTANT: Only qualified technicians or FreeWire approved personnel are able to complete the installation of, or perform service on a Boost Charger. For more information please visit www.freewiretech.com

DANGER: RISK OF ELECTRIC SHOCK.

Before beginning any work on the Boost Charger, the power must be disconnected at the service panel. Standard practice must be followed as well as local codes to de-energize the circuit. Standard lock out/tag out procedures should also be followed. It is recommended to use a multimeter to test that the power is off before service. The power should remain off for the Boost Charger until all service doors and panels are properly reinstalled and the work is completed.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

2.4 Configure System Behavior

The site manager and/or station operator has the ability to customize a number of the Boost Charger software features. These include:

- Setting pricing for electric vehicle (EV) drivers
- Set different pricing/access policies for different groups

To configure or make changes to settings at any time, log in to your EV Connect Administrator Portal by visiting https://ops.evconnect.com/admin/login

For assistance with the Administrator Portal, please contact the EV Connect Site Host Support line by calling (888) 780-0062.

2.4.1 User Interface Branding

The Boost Charger user interface (UI) has space available for custom branding, promotions, etc. Contact FreeWire at marketing@freewiretech.com for more information.

2.5 Charging an EV

Pay, Plug, Go.

Step 1 Park vehicle as close as possible to available charge port. Connector type and location of charge port varies by vehicle model. Refer to individual vehicle owner's manual for specifications.

Step 2 Open vehicle charge port.

Step 3 Use the Boost Charger's touchscreen to start charging. Select the plug on the screen that corresponds to the port you wish to use. For an in-depth walk-through of the user interface, see section 3.

Step 4 Complete payment prompts.

Step 5 Press the button on the selected connector handle to release cable from the holster.

Step 6 Plug in connector to vehicle charge port. Confirm cable is fully inserted. Charging will initiate once connected.

Step 7 Tap 'Stop Charging' to end the charging session.

Step 8 Once charging has stopped, unplug vehicle by pressing the release button on the connector handle.

Step 9 Return the cable to the charging station holster.

Step 10 Tap 'Exit' to return to the home screen.

Note: The driver may select to plug in the vehicle first, then initiate charging on the screen. This is also supported by the Boost Charger (Plug, Pay, Go).

2.6 LED Status Indicators

The LED Status Indicators will change depending on availability and/or status of the charger.

- Solid Green - Available for charging.
- Blinking Green - Charging session initiating.
- Red - Out of order or unavailable for charging.
- Status Level Indicator - There are two sets of LEDs per side of the unit. During charging sessions, the top set of LED lights will fill from bottom to top to indicate the vehicle's state of charge (SOC). The fuller the bar, the fuller the EV's SOC.

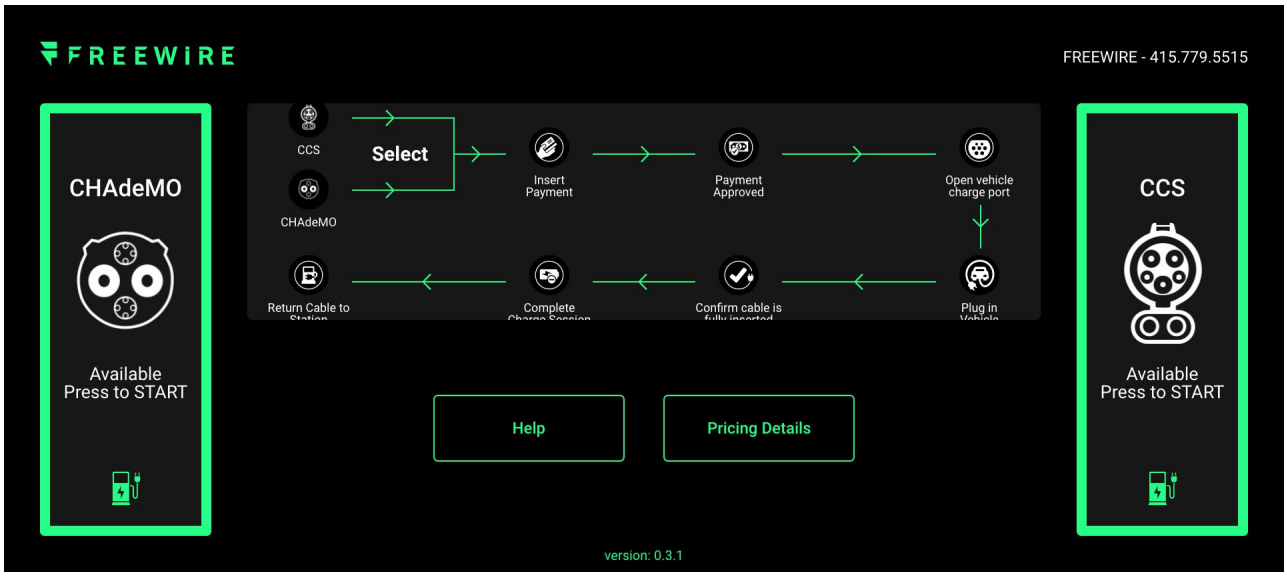
3 User Interface Walk-through

3.1 Getting Started

3.1.1 Home Screen

The Boost Charger home screen has four major components to welcome the user. Two panels on the far left and right sides of the screen specify the charger type, CHAdeMO and/or CCS, and availability. The 'Help' and 'Pricing Details' buttons on the bottom of the screen help you decide which connector to use and provides details on the cost per charge. And the driver support phone number is in the top right corner.

3.1.2 Pricing Details



'Pricing Details' will show an EV driver the cost to charge at your station. As a station owner, you control pricing and you can change it at any time by logging into your EV Connect Administrator Portal.

3.1.3 Initiate Charging

Connector availability is clearly noted under each CHAdeMO and/or CCS icon. The icons specify which side of the unit the connectors are located. Tap the corresponding panel to initiate the charging process. A user can simply pay, plug, go.

3.2 Payment

3.2.1 Payment Options

After selecting connector type, users can either (a) tap an EV Connect RFID card, if they have one, or (b) insert/swipe/tap a credit card on the reader available directly below the screen. 'Pricing Details' can be accessed on this page for more information on charging rates. This pricing table is also accessible on the home screen.

No Touch Authorization

The Boost Charger uses EV Connect to allow drivers to easily find, access, and securely pay for EV charging. To begin your charging session, follow the steps below:

Step 1 Download and launch the EV Connect app.

Step 2 Scan the QR code or type in the Station ID.

Step 3 Plug in your vehicle and tap 'Charge Now'.

3.2.2 Payment Processing

Once payment is initiated, Boost Charger will display information on the payment status. Selecting 'Cancel' will stop payment authorization and return to the home screen. If the payment authorization fails, the message "Error Auth Failed. Please try again" will appear. Select the desired port, then insert your payment or tap your RFID card to try again.

2.2.3 Payment Authorization

When the payment authorization is successful a screen with, "Authorization success", will appear, then the screen will instruct you to plug in the vehicle to initiate charging.

3.3 CONNECT TO THE EV

3.3.1 Plug in Vehicle Notification

The screen will display which connector had been selected from the home screen. Plug in the selected connector to the vehicle. If the wrong connector was selected, tap 'Cancel' to return to the home screen and begin the process again by selecting the correct connector.

3.3.2 Preparing to Charge

The Charging Start Up screen should say "Please Wait! Charging Session Starting Up" above a flashing lightning bolt.

3.4 Active Charging

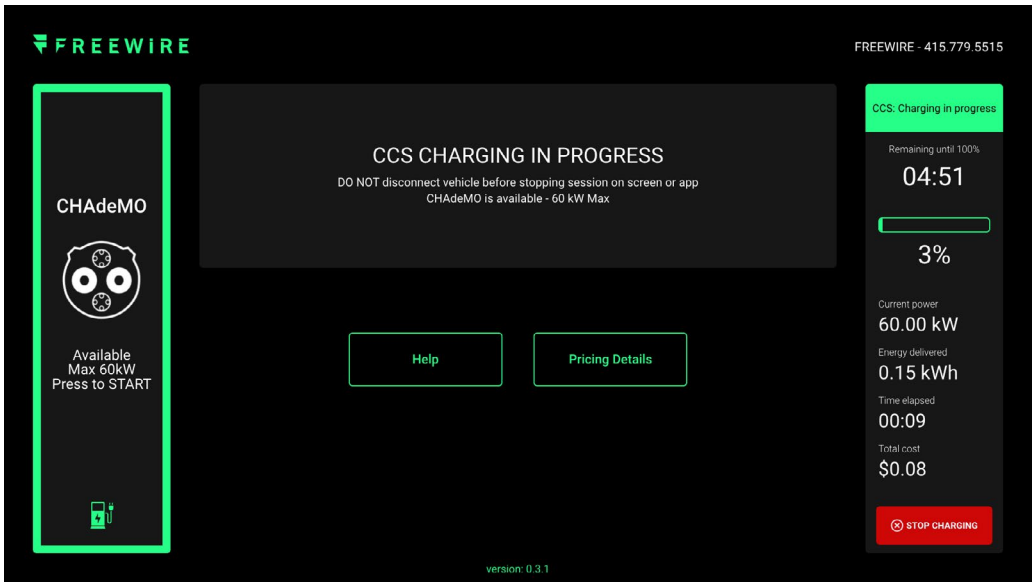
3.4.1 Charging Screen

When charging is in progress, charging information will be displayed on the side of the screen that corresponds with the active connector. Information includes:

- Current charge: Vehicle battery charge in percentage.
- Time elapsed: Time elapsed since charging was initiated in minutes and seconds.
- Energy delivered: Energy delivered to the vehicle in kilowatt-hours (kWh).
- Current power: Power delivered to the vehicle in kilowatts (kW).
- Total cost: Cost is contingent on the rate information provided in the 'Pricing Details' button available on the home screen.

'Stop Charging' button will end the charging session and allow safe disconnect from the vehicle.

NOTE: Do not attempt to remove the connector from the vehicle before you have selected the 'Stop Charging' button. See more details in section 3.6.



3.5 DUAL CHARGING

Boost Charger can charge up to two EVs at once. Follow the steps below for instructions on how to connect and charge a second vehicle.

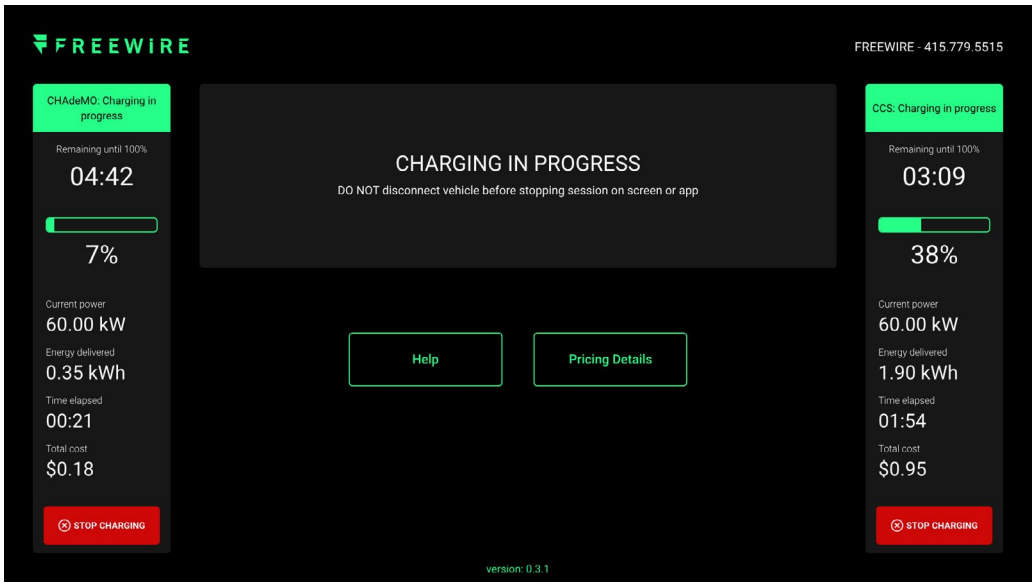
3.5.1 Select Connector not in Use

The connector not in use will display the message “Available for charging”. Select the panel for the available charger to initiate the charging process.

3.6 STOP CHARGING

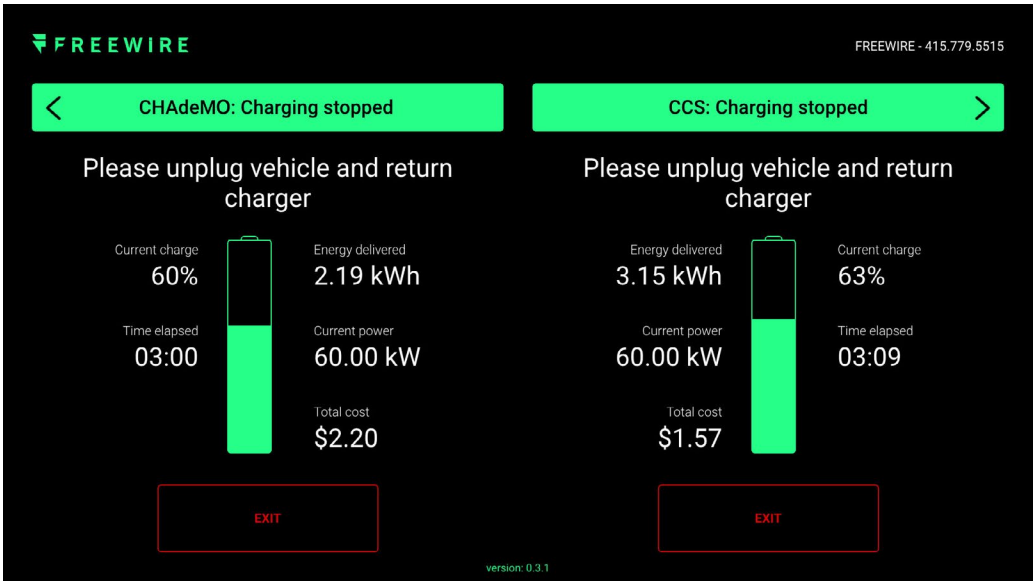
3.6.1 Stop Charging

Charging can be stopped at any time. Simply tap the ‘Stop Charging’ button on the corresponding connector panel. Power will stop at this time and the payment session will end.



3.6.2 Charging Stopped

A charging stopped confirmation screen will appear the end of the charging session. It is now safe to remove the connector from the vehicle. Tapping the 'Exit' button will return to the home screen.



3.7 Driver Support

If a user experiences any issues with using the Boost Charger, please contact EV Connect at (866) 816-PLUG.

4 Boost Charger Maintenance

4.1 Maintenance Overview

The FreeWire Boost Charger is designed for minimal maintenance over its lifetime. The network connection monitors the health of the system as well as any error codes or faults. An alert is sent when corrective maintenance or service might be required.

The Boost Charger Warranty includes preventative maintenance for the duration of the selected warranty. While the Boost Charger is under warranty, FreeWire Technologies, or a FreeWire approved contractor, will perform annual preventative maintenance. If additional maintenance is required, please contact EV Connect to arrange for the required work to be completed.

Only qualified technicians or FreeWire approved personnel can perform service and/or maintenance on the Boost Charger. Work performed by unqualified personnel can/will void the warranty on the Boost Charger.

For customer support or to schedule service and/or maintenance on the Boost Charger, please contact EV Connect support at (888) 780-0062.

4.2 Site Operator's Responsibilities

The items below outline the responsibilities of the site or facility manager when it comes to general site maintenance.

- In the event of smoke or fire, immediately call 9-1-1 to reach the fire department and refer to the *Fire Department Tip Sheet*.
- In case of emergency, the Boost Charger can be disabled by depressing the red emergency stop button located on the front of the unit or via a remote e-stop on site.
- If the emergency stop button on the front of the unit is accidentally engaged, pull out the button and the unit will automatically reboot.
- Make sure that the base and vents of the Boost Charger are clear of any blockage, debris, and snow.
- Keep the area free of any standing water or blocked drainage systems/sewers.
- Check to ensure that the charge cables are returned to their holsters to prevent damage from vehicles.
- Once a month, verify that the charging cables are free from any signs of wear or damage. If a cable appears damaged, please contact the EV Connect Site Host Support for a service visit.
- Check each station daily for vandalism or damage. If the station has been damaged, please contact the EV Connect Site Host Support to perform service or to replace parts.

⚠ **CAUTION:** Do not pressure wash the Boost Charger. High pressure water spray could cause damage to the system. Use a damp cloth to clean the Boost Charger.

4.3 Preventative Maintenance

Preventative maintenance is included in the Boost Charger warranty. FreeWire Technologies or FreeWire approved personnel should perform all service checks as defined below.

DANGER: RISK OF ELECTRIC SHOCK.

No user serviceable parts inside. Only authorized personnel may service this equipment. To reduce the possibility of injury, turn main disconnect switch “OFF” and padlock before servicing equipment.

FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

Preventative Maintenance, Years 1-4

- Diagnostics / Inspection
- Input air filter replacement.
- Top-off radiator fluid.

Preventative Maintenance, Year 5

- Diagnostics / Inspection
- Input air filter replacement.
- Cooling pump, 1/3 HP, 120/240 VAC replacement.
- Battery, lithium, 25.6 V (low voltage) replacement.

5 Boost Charger Specifications

System

Max Output Power	CHAdeMO: 100 kW CCS: 120 kW Combined: charge two vehicles up to 60 kW each
Max Output Current	CHAdeMO: 200 A CCS: 300 A
Dimensions	40 in x 43 in x 96 in
Weight	3,800 lbs
Output Voltage, Charging	200 VDC – 500 VDC

Electrical Input

Input Rating	240 (+/- 10%) VAC, split-phase, 4-Wire, 120 A, 60 Hz 208 (+/- 10%) VAC 3-phase, WYE, 5-Wire, 80 A 60 Hz
Wiring	For 240 V - 2 conductors (L1, L2) Ground For 208 V - 4 conductors (L1, L2, L3, Neutral) Ground
Required Service Panel Breaker	150 A 240 V 100 A 208 V

Interfaces

Supported Connector Types	CCS1 (SAE J1772™ Combo) CHAdeMO
Charge Cable Length	140 in
User Interaction Display	Full-color 24-inch LCD display for driver interaction
Authentication	RFID: ISO 15693, ISO 14443, NFC

Safety and Compliance

Safety Compliance	U.S.: complies with UL 2202, UL 2231-1, UL 2231-2, UL 991, UL 1973 (battery pack)
EMC Compliance	U.S.: FCC part 15 Class A

Safety: Electric Vehicle

- See the EV supplier's guide for proper care of the EV and follow directions carefully. Failure to follow EV care instructions can results in EV explosion and property damage, severe injury, or death during charging.
- Do not disconnect charger connector while the EV is charging.

Environmental Requirements

Location	Outdoor
Operating Temperature	-20° C to 55° C (-4° F to 131° F)
Storage Temperature	-20° C to 55° C (-4° F to 131° F)
Operating Humidity	Up to 95% at 55° C (131° F) non-condensing
Enclosure Rating	IP54

FREEWIRE

www.freewiretech.com

Any additional questions please contact:
(415) 484-9590
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