

# ***EV Quick Charger – DC 30 kW Model EVQC030-3xxx***

## ***Installation and Operation Manual***



MNL212

## **READ THIS MANUAL CAREFULLY**

### **SAVE ALL INSTRUCTIONS**

## **INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ**

### **CONSERVER CES INSTRUCTIONS**

This manual contains important information regarding Power Innovations International products or processes listed on the title page. Please read all instructions carefully before assembling, installing, or operating equipment. Keep this manual handy for easy reference.

This manual may accompany other instructional guides or manuals for standard installation and operations of the supported products. Please contact Power Innovations if you need additional guides or manuals and have not received them.

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# 1—Product Overview

This section provides product overview for EVQC030-3xxx, Power Innovations DC 30 kW Quick Charger.

## 1.1 Introduction

This quick charger is an all-in-one electric vehicle (EV) power supply and charging authorization terminal. Once installed and operational, an operator can plug the EV charging cable into their electric vehicle, use an RFID payment card to tap on, be authorized by the system, and start a charging session.

Although some assembly is required, each 30 kW quick charger ships with all parts required for installation except the electrical conduit and wires (provided by installer) and a supported mounting solution (sold separately). The supported mounting solutions for this quick charger include a wall-mount kit with a bracket that mounts on a solid surface wall, and a pedestal kit that mounts on a concrete pad or driveway. The chosen kit for each charger sold must be specified as a separate line item when placing the charger order.

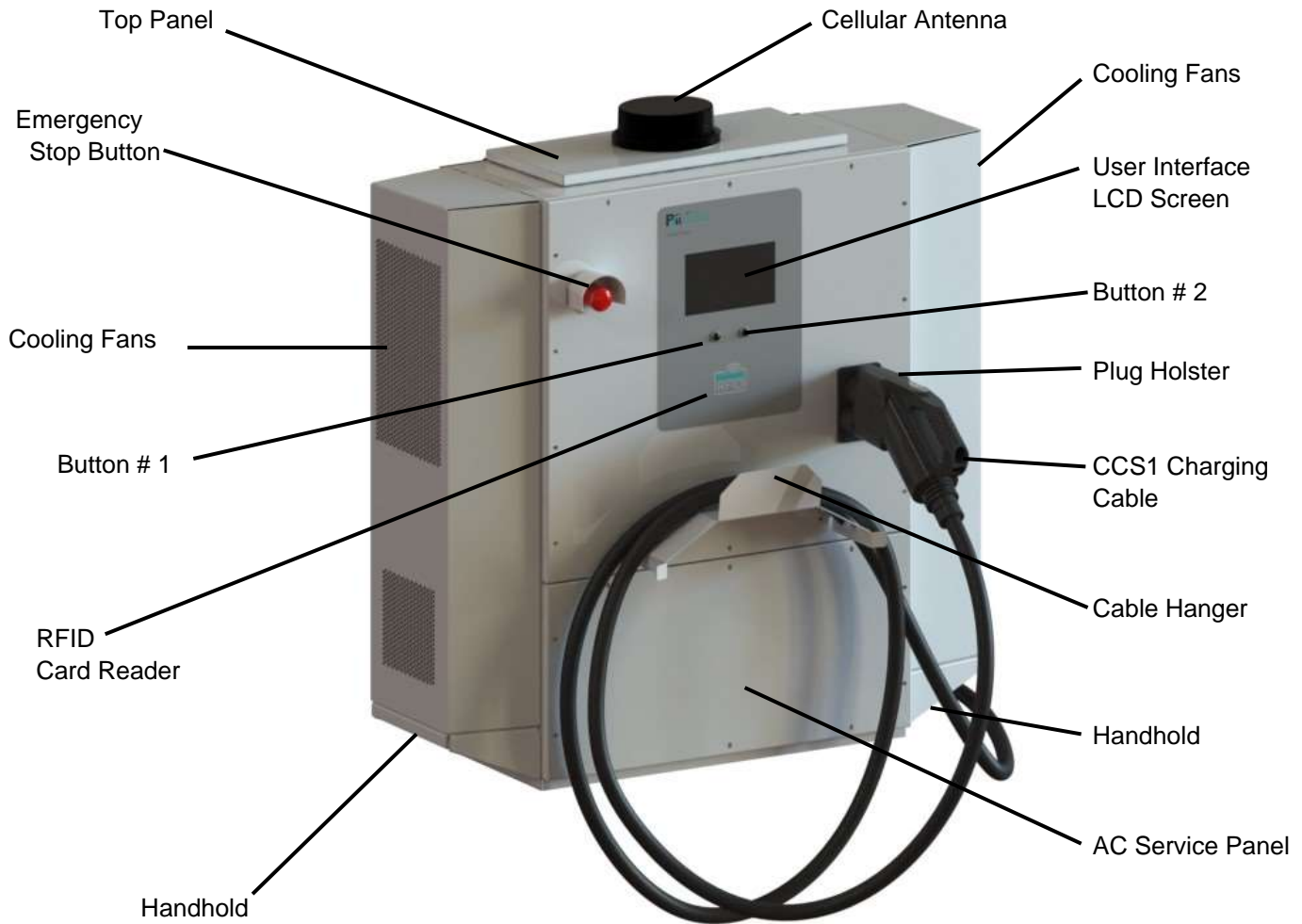
Use this document to help you:

1. Safely prepare installation site
2. Mount wall-mount bracket or pedestal
3. Attach charger to wall-mount bracket or pedestal
4. Install power modules and shelf controllers
5. Configure cellular modem and register charger on network
6. Configure and wire AC input power to quick charger
7. Operate EV quick charger (Charge an electric vehicle)
8. Maintain EV quick charger

## 1.2 Highlighted Features

Feature	Description
AC Input Power Options	240V single-phase 208/240V 3-phase Delta (3-wire + PE) 480V 3-phase Wye (3-wire + Neutral + PE)
DC Output Power	30 kW
Communication	Cellular 4G LTE Network, Wi-Fi
User Interface	Emergency Stop Button LCD Screen RFID Card Reader 2 Buttons
Mounting Options	EVQC030-WMK Wall-mount Kit (sold separately): Includes wall-mount bracket set and mounting hardware for mounting charger on a solid-surface wall, such as cement or steel.  EVQC030-PEDP Pedestal Kit (sold separately): Includes powder-coated steel pedestal and hardware for mounting charger on a 4 inch or thicker concrete pad or driveway.





### 1.3 Charger Features Identified



*Figure 1—EV Quick Charger Model EVQC030-3xxx*

## 1.4 Symbols Used in this Manual

Icons or symbols are occasionally used throughout this manual to help identify safety warnings and other pertinent content contained here. These icons are described in the table below.

<i>Icon</i>	<i>Type of Warning</i>	<i>Description</i>
	<b>ELECTRICAL WARNING!</b>	<b>WARNING! RISK OF ELECTRIC SHOCK!</b> ADDITIONAL TEXT THAT FOLLOWS THIS SYMBOL PROVIDES MORE INFORMATION ABOUT THE SPECIFIC WARNING.
	<b>WARNING!</b>	<b>WARNING! RISK OF ELECTRIC SHOCK!</b> ADDITIONAL TEXT THAT FOLLOWS THIS SYMBOL PROVIDES MORE INFORMATION ABOUT THE SPECIFIC WARNING.
	<b>CAUTION!</b>	<b>CAUTION!</b> Indicates a potentially hazardous situation which, if not avoided, can result in minor to moderate injury, or serious damage to the equipment. Important safety measures may also be described in Cautions.
	<b>Note</b>	<b>Note</b> Offers practical advice that may be helpful but can be disregarded.

## 1.5 Acronyms Used in this Manual

<i>Acronym</i>	<i>Explanation</i>
AC	Alternating Current
ADA	American Disabilities Act
DC	Direct Current
EV	Electric Vehicle
PSU	Power Supply Unit (described in Section 3.7)
SC	Shelf Controller (described in Section 3.7)

## 2—Safety and Specifications

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The following safety instructions apply throughout the EV Charger installation process. Be familiar with them before moving on to the next section to complete the installation.

### 2.1 IMPORTANT SAFETY INSTRUCTIONS – SAVE THESE INSTRUCTIONS

#### INSTRUCTIONS IMPORTANTES CONCERNANT LA SÉCURITÉ CONSERVER CES INSTRUCTIONS



##### **ELECTRICAL WARNINGS – WARNING! RISK OF ELECTRIC SHOCK!**

##### **WARNING! RISK OF ELECTRIC SHOCK!**

**ONLY QUALIFIED ELECTRICAL PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS TYPE OF EQUIPMENT AND THE HAZARDS INVOLVED SHOULD ADJUST, MODIFY, AND SERVICE THIS EQUIPMENT. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

##### **WARNING! RISK OF ELECTRIC SHOCK!**

**READ THIS MANUAL THOROUGHLY PRIOR TO INSTALLING AND ENERGIZING THE EQUIPMENT. INSPECTION AND MAINTENANCE OF THIS EQUIPMENT SHOULD BE PERFORMED IN ACCORDANCE WITH THE PROCEDURES DETAILED IN THIS MANUAL.**

##### **WARNING! RISK OF ELECTRIC SHOCK!**

**THIS UNIT CONTAINS NO INTERIOR PARTS THAT CAN BE SERVICED WITHOUT QUALIFIED PERSONNEL. IF MAINTENANCE PROCESSES SPECIFIED IN THIS MANUAL FAIL TO SOLVE THE PROBLEM, QUALIFIED PERSONNEL MUST SERVICE THE UNIT.**

##### **WARNING! RISK OF ELECTRIC SHOCK!**

**THE PURPOSE OF THIS MANUAL IS TO PROVIDE YOU WITH INFORMATION NECESSARY TO SAFELY INSTALL, OPERATE, AND MAINTAIN THIS EQUIPMENT. KEEP THIS MANUAL FOR FUTURE REFERENCE.**

##### **WARNING! RISK OF ELECTRIC SHOCK!**

**SHUT OFF POWER SUPPLY BEFORE BEGINNING INSTALLATION ACTIVITIES OR MAINTENANCE WORK. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

##### **WARNING! RISK OF ELECTRIC SHOCK!**

**THIS EV QUICK CHARGER CONTAINS HIGH VOLTAGE POWER THAT IS POTENTIALLY DANGEROUS IF NOT HANDLED PROPERLY.**



**CAUTION! The installer is responsible for conforming to all local and national electrical codes and standards applicable in the jurisdiction this equipment is installed in, including providing suitable wire sizes per NEC for the input configuration.**



## 2.2 Specifications - EV Quick Charger Model EVQC030-3xxx

Electrical Specifications	
AC Input	
AC Input Power Options (Field configuration patent pending)	240V single phase 208V/240V 3-phase Delta (3-wire + PE) 480V 3-phase Wye (3-wire + Neutral + PE)
AC Input Voltage Operating Range and Current	240V single phase: 216V to 252V, 150A max, 60 Hz 208V/240V 3 phase Delta: 190V to 252V, 100A max, 60 Hz 480V 3 phase Wye: 432V to 504V, 45A max, 60 Hz
Recommended upstream overcurrent protection device rating	240V single phase: 200A 208V/240V 3 phase Delta: 125A 480V 3 phase Wye: 60A
Power factor	> 0.98
Efficiency	> 95% @ full load
DC Output	
Maximum DC Output Power	30 kW
DC Output Voltage Range	250V – 920V
Maximum DC Output Current	75A with DC output < 450V 38A with DC output > 450V
DC Connector	CCS1
DC Charging Cable Length	5 m (16.4 ft.) standard
Dimensions and Weights	
Dimensions (H x W x D) – EV charger only	972 x 933 x 459 mm (38.3 x 36.7 x 18.1 in.)
Dimensions (H x W x D) – Pedestal	490 x 636 x 308 mm (19.3 x 25 x 12.1 in.)
Dimensions Pedestal Baseplate (W x D)	457 x 286 mm (18 x 11.3 in.)
Dimensions Mounting Hole pattern (W x D)	415 x 244 mm (16.4 in. x 9.6 in.)
Weight – 30 kW EV Charger	Pre-install 94 kg (208 lbs.); Fully Loaded 118 kg (260 lbs.)
Weight – Pedestal for 30 kW EV Charger	21.4 kg (47 lbs.)
Weight – Wall-mount Kit	23.7 kg (52.3 lbs.)
Environment Specification	
Operating Temperature Range	-30°C to +50°C
Storage Temperature Range	-40°C to +80°C
Ingression Protection of Enclosure	IP54, NEMA 3S
Relative Humidity	95%
Altitude - Operation	2000 m (6560 ft.)
Certificate/Compliance	
Complies with UL and CSA Standards for Safety	cETLus listed to UL 2202, UL2231-1 & -2, and CSA C22.2 No. 281.1, 281.2 and 346

### 3—Installing EV Charger



**ELECTRICAL WARNINGS – WARNING! RISK OF ELECTRIC SHOCK!**

**WARNING! RISK OF ELECTRIC SHOCK! SHUT OFF POWER SUPPLY BEFORE BEGINNING INSTALLATION ACTIVITIES AND BEFORE REMOVING EV QUICK CHARGER’S AC SERVICE PANEL FOR ANY INSTALLATION OR MAINTENANCE WORK. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

**WARNING! RISK OF ELECTRIC SHOCK! DO NOT INSTALL CHARGER IN A HAZARDOUS LOCATION!**

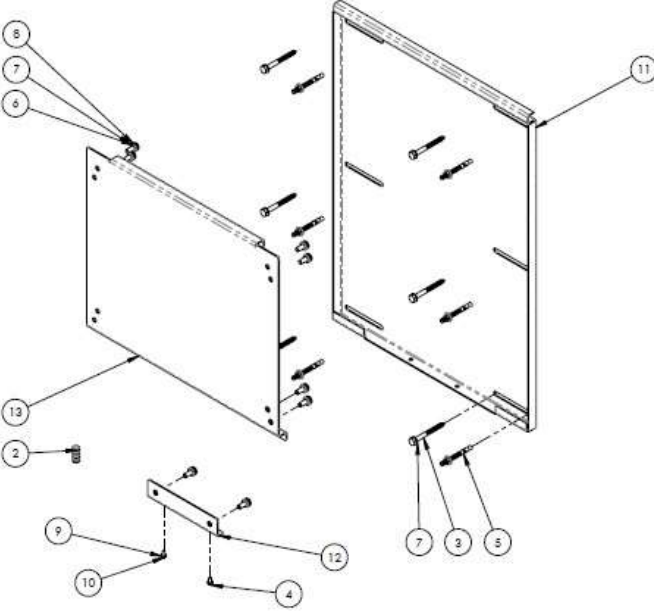
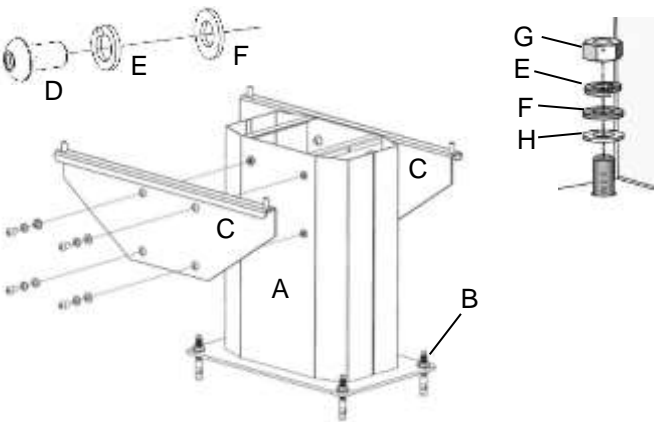
**WARNING! RISK OF ELECTRIC SHOCK! ONLY QUALIFIED ELECTRICAL PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS TYPE OF EQUIPMENT AND THE HAZARDS INVOLVED SHOULD ADJUST, MODIFY, AND SERVICE THIS EQUIPMENT. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

**WARNING! RISK OF ELECTRIC SHOCK! DO NOT CONNECT POWER SUPPLY TO THE EV QUICK CHARGER UNTIL THE WIRING AND BUS BAR CONFIGURATION IS COMPLETE AND THE AC SERVICE PANEL IS IN PLACE AND SECURE.**

#### 3.1 What’s Provided with Charger

P/N	Description
EVQC030-3xxx	1 EV Quick Charger for DC 30kW output, fully assembled exterior
	3 Shelf Controllers (SCs)
	9 Power Supply Units (PSUs)
	3 Bus Bars, each uniquely configured <i>Note: These ship in a storage position, secured inside bottom of charger.</i>
MNL212	“EV Quick Charger – DC 30 kW Model EVQC030-3xxx, Installation and Operation Manual”

## 3.2 Mounting Options (sold separately)

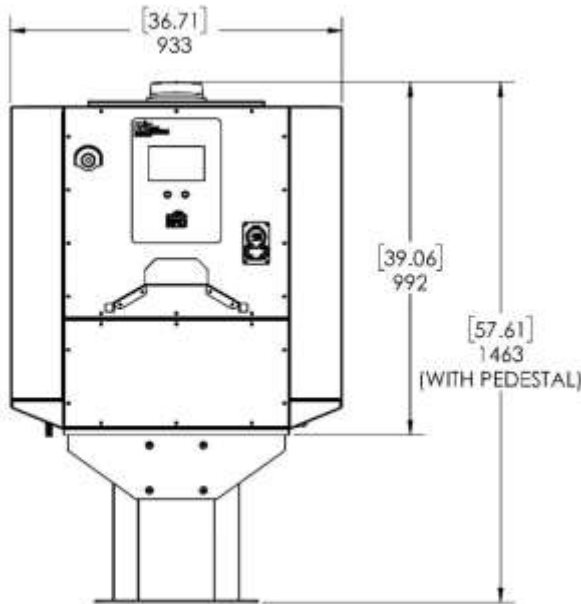
P/N	Description	Qty.
EVQC030-WMK	<b>Wall-mount Kit for EVQC030-3xxx, includes:</b>	
	2. Push-in Hole Plug, Plastic, ½ in. ID	4
	3. Lag Screw, Hex Head, M10, 10mm, ZINC	6
	4. Screw, Tamper-resistant Torx, M6-1, 16mm, Black Oxide	2
	5. Wedge Anchor, 3/8-16 x 3 ¾ in., Zinc	6
	6. Screw, M10-1.5 X 25mm, Hex-head bolt, Zinc-plated	10
	7. Washer, Flat, M10, Zinc	16
	8. Washer, Lock, Split, M10, Zinc	10
	9. Washer, Flat, 6.4mm ID, 13mm OD, 2.0-2.9 mm THK, Black Oxide, Steel	2
	10. Washer, Split, 6.5 mm ID X 9.9 mm OD X 1.5-1.7 mm thick, Black Oxide, Steel	2
	11. 30KW Wall Mount Hanging Bracket	1
	12. 30KW Wall Mount Retaining Bracket	1
	13. 30KW Wall Mount Enclosure Bracket	1
EVQC030-PEDP	<b>Pedestal Kit for EVQC030-3xxx, includes:</b>	
	A. Pedestal weldment	1
	B. Wedge anchor, ½ in. x 3 ¾ in., concrete	4
	C. Mounting plate	2
	D. M10 x 20 mm socket button-head bolt	8
	E. M10 split washer	12
	F. M10 flat washer	12
	G. M10 hex nut	4
	H. M10 silicone rubber washer	4

## 3.3 Additional Tools and Supplies Required

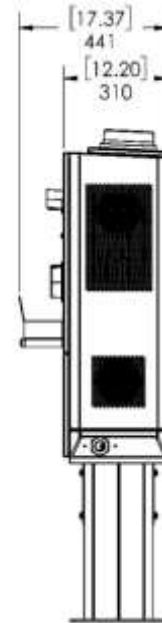
- Level
- Pencil
- Tape measure
- Hand drill
- T25 Torx T-handle screwdriver
- T27 Torx T-handle screwdriver
- Philips screwdriver
- Metric Allen wrench set
- Electrical conduit and wires
- (Optional) Duct Seal
- (Optional) Cable Gland, appropriately sized for AC input cable

### 3.4 Prepare Installation Site

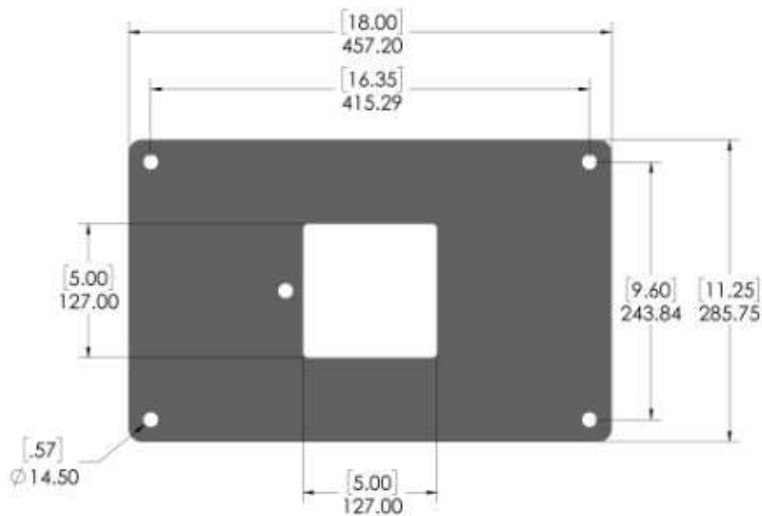
1. Become familiar with essential dimensions of EV Quick Charger Model EVQC030-3xxx, Pedestal Model EVQC030-PEDP, and Wall-mount Bracket EVQC030-WMK as shown in Figures 2.1, 2.2, 2.3, and 2.4.



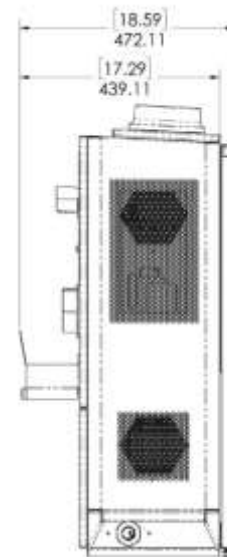
**Figure 2.1—Height and Width of 30kW Charger and Pedestal**



**Figure 2.2—Depth of 30kW Charger when mounted on Pedestal**



**Figure 2.3—Dimensions of Pedestal Baseplate**



**Figure 2.4—Depth of 30kW Charger when mounted on Wall-mount Bracket**

2. Do not install or plan to install the quick charger in a hazardous location.



**ELECTRICAL WARNING - WARNING! RISK OF ELECTRIC SHOCK!**  
**DO NOT INSTALL OR PLAN TO INSTALL CHARGER IN A HAZARDOUS LOCATION!**

3. Best practices for both wall-mounted and pedestal-mounted chargers installation locations:

- a. Select location where charger will not be in direct sunlight.
- b. The minimum space between two installed EV quick chargers should be 36 inches (914 mm) to help ensure good air flow and user accessibility around charger (Figure 3).
- c. When laying out placement of two or more 30 kW chargers, note that the 30 kW charger width is 36.7 inches. Ensure the center mark for first charger's hanging bracket or pedestal is at least 72.7 inches (1854 mm) from the center mark of second charger's hanging bracket or pedestal.

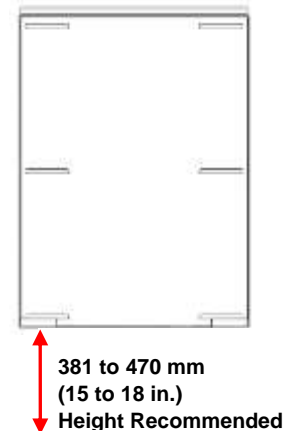


**Figure 3—Minimum space between mounted chargers should be 36 in. (914 mm)**

#### 4. Wall-mounted Installation only:

The Wall-Mounting Kit includes a wall-hanging system made up of hardware and 3 brackets: Hanging, Enclosure, and Retaining. The Hanging bracket will be secured to the wall using hardware provided, either wedge anchors (for concrete walls) or lag screws (for wood studs). *Note: Enclosure bracket and Retaining bracket will later be secured to back of the charger before mounting the charger on the Hanging bracket.*

- a. Solid Surface: Fully-loaded 30 kW charger weighs 260 lbs. and wall-mount kit weighs 52.3 lbs. Hanging bracket must be mounted on a solid wall surface that can support the total weight of wall-mount kit and charger (over 312 lbs.).
- b. Height: Select height for bottom of Hanging bracket (Figure 4) and mark wall. Recommended height is 15-18 inches (381 to 470 mm).



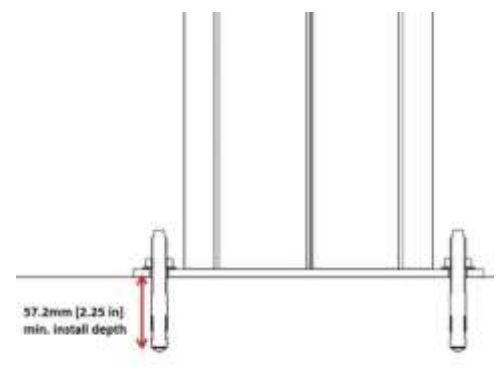
**Figure 4—Recommended height from ground to bottom of Hanging Bracket**

#### 5. Pedestal-mounted installation only:

- a. Pedestal should be mounted on a concrete pad or driveway that is 4 inches thick or thicker. The wedge anchors will secure the charger to the concrete when the anchors are installed to a depth of 2.25 inches (Figure 5).
- b. If laying out placement using a pedestal baseplate template, have center of two baseplates be at least 1854 mm (73 in.) apart (Figure 6) and then mark the ground.



**Figure 6—Minimum space between pedestal baseplate is 73 inches (1854 mm)**



**Figure 5—Wedge anchors secure Pedestal when installed in concrete 2.25 inches**

### 3.5 Mount (A) Wall-mounted Bracket or (B) Pedestal



Note: When mounting charger on wall or pedestal, follow mounting height and spacing recommendations provided in Section 3.4 to comply with guidelines outlined in the American Disability Act (ADA).

#### 3.5 A - Mount Hanging Bracket on Wall



Note: Fully-loaded 30 kW charger weighs 260 lbs. and its wall-mount kit weighs 52.3 lbs. Hanging bracket must be mounted on a solid wall surface that can support the total weight of wall-mount kit and charger (over 312 lbs.).

1. Mark drill holes for the bracket on the wall:

(a) Using a level, tape measure, and uninstalled hanging bracket, hold bracket against a solid surface wall (like concrete or wood) and ensure bottom of bracket is 381-470 mm (15-18 in.) off ground (Figure 7).



381 to 470 mm (15 to 18 in.)  
Height Recommended

**Figure 7—Height from ground to bottom of bracket**

(b) Level bracket and mark drill holes.

2. Using a drill, appropriate drill bit for wall surface, and hardware provided, mount hanging bracket on wall (Figure 8):

*For Concrete walls:*

Use 14 mm drill bit and six sets of wedge anchors and flat washers to a torque setting of 60 N-m.

*For Wood Stud Mounting:*

Use 6 mm drill bit and six sets of M10 lag screws and flat washers to a torque setting of 57.3 N-m.



**Figure 8—Lag screws and flat washers with hanging bracket**

3. Route AC power cables out of ground or wall below center of bracket (Figure 8); Leave cable long enough to reach AC connectors inside bottom of charger once charger is attached.



**Figure 9—AC power cables routed out wall**

4. (Optional) Add Duct Seal around opening of conduit or cable coming out of the ground or wall.

#### 3.5 B - Mount Pedestal on Concrete

1. Ensure AC power to EV Quick charger installation location is turned OFF at site's upstream AC breaker.
2. Route AC power-in cable up through concrete pad or driveway at center mark for pedestal baseplate, (Figure 10) leaving sufficient length to route cable up through pedestal and into mounting charger.



**Figure 10—AC power cables routed out of concrete**

3. (Optional) Add Duct Seal around opening of conduit/cable coming out of the ground.

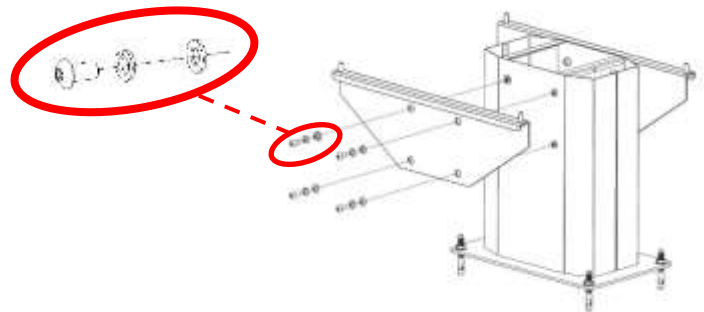
4. Use a 12 mm (1/2 in.) drill bit, drill holes in concrete for four corners of baseplate for wedge anchors, then align pedestal's baseplate with holes.

5. Secure pedestal to concrete using 4 wedge anchors provided, torque the anchors to 60 N-m and install them at least 2.25 inches (Figure 11).



**Figure 11—Anchor Pedestal to concrete**

6. Attached mounting plate to front and back of pedestal using 8 sets of M10 socket button-head bolt, split washer, and flat washer provided (Figure 12), and then tighten the bolts with a torque setting of 389±10 in.-lbs. (44±10 N-m).



**Figure 12—Attaching Pedestal's mounting plates**



### 3.6 Attach Charger to (A) Wall-mounted Bracket or (B) Pedestal



#### ELECTRICAL WARNINGS – WARNING! RISK OF ELECTRIC SHOCK!

**WARNING! RISK OF ELECTRIC SHOCK! SHUT OFF POWER SUPPLY BEFORE BEGINNING INSTALLATION ACTIVITIES AND BEFORE REMOVING EV QUICK CHARGER'S AC SERVICE PANEL FOR ANY INSTALLATION ACTIVITY. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

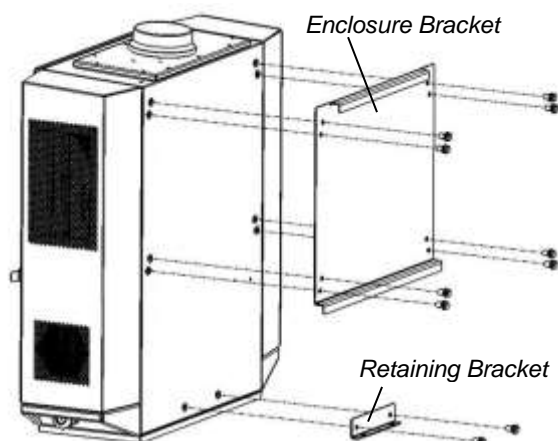
**WARNING! RISK OF ELECTRIC SHOCK! DO NOT PROVIDE LIVE POWER TO THE EV QUICK CHARGER UNTIL THE WIRING AND BUS BAR CONFIGURATION IS COMPLETE AND THE AC SERVICE PANEL IS IN PLACE AND SECURE.**



**CAUTION!** - This EV quick charger weighs at least 94 kg (208 lbs.) before installation and 118 kg (260 lbs.) after fully loaded with power supply units (PSUs) and shelf controllers (SCs). To help avoid injury, use a crane or forklift, eye bolts and straps, AND other lift supports, such as jacks, weight belts, lifting partners, and hand holds when lifting and setting charger onto pedestal studs.

#### 3.6 A - Attach Charger to Wall-mounted Bracket

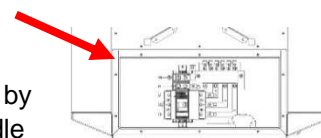
- Using hardware provided, secure Enclosure bracket and Retaining bracket on back of charger (see Figure 13).
  - Secure Enclosure bracket to charger using 8 sets of M10 hex bolt, split washer, and flat washer provided.
  - Secure Retaining bracket to charger using 2 sets of M10 hex bolt, split washer, and flat washer provided.
  - Tighten all 10 hex bolts to  $446 \pm 10$  in-lbs ( $50 \pm 10$  N-m) torque.



**Figure 13—Attaching Encloser bracket and Retaining bracket to back of Charger**

#### 3.6 B –Attach Charger to Pedestal

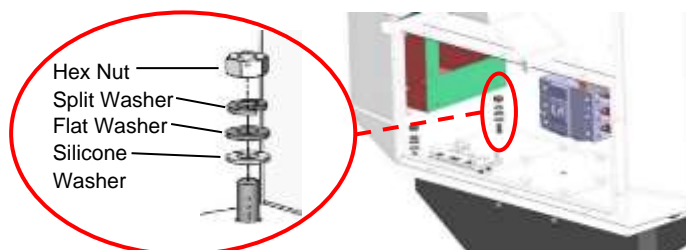
- On uninstalled charger, open AC Service Panel by using a T25 Torx t-handle screwdriver to remove all screws around panel's perimeter (Figure 14).
- Using a lifting partner, handholds, and weight belt(s) as needed, safety lift and move the 208 lb. unloaded charger over pedestal.
- Lower charger's mounting holes onto four pedestal studs (Figure 15).
- In bottom corners of charger, secure charger to pedestal studs using four sets of M10 silicone rubber washer, flat washer, split washer, and hex nut provided as shown in Figure 16; Tighten nuts to  $446 \pm 10$  in-lbs ( $50 \pm 10$  N-m) torque.



**Figure 14**

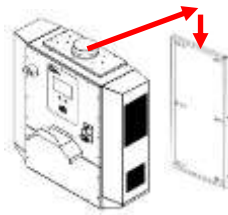


**Figure 15**



**Figure 16—Securing charger to pedestal**

2. Hang charger with brackets attached onto wall-mounted Hanging bracket: Use lifting partner(s), handholds, and weight belt(s) as needed to safety lift 208 lb. unloaded charger and hook charger's attached Enclosure bracket over top of Hanging bracket (Figure 17.1).




**Figure 17.1**

3. Using a T27 Torx t-handle screwdriver and the 2 black oxide M6 screws, split washers, and flat washers provided, secure Retaining bracket (attached to bottom of charger) to bottom of Hanging bracket (attached to wall) (Figure 17.2).



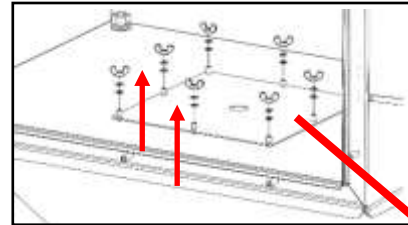
**Figure 17.2**



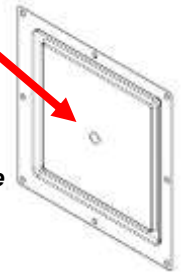
4. Open AC Service Panel by using a T25 Torx t-handle screwdriver to remove all screws around panel's perimeter.
- 
- Figure 18**
5. Remove 8 sets of M5 wingnut, split washer, and flat washer securing removable plate to charger (Figure 19), then remove plate (Figure 20), taking care not to damage gasket attached to down-side.
  6. Ensure center-hole in plate is large enough for required AC power-in cable. If you need to enlarge the hole, do so away from the charger.
  7. Feed AC power-in cable in center of pedestal up through removable plate, taking care not to damage gasket on down-side of plate, and lower plate back onto 8 small studs (Figure 21). Suggestion: We recommend you use a cable gland (installer supplied) appropriately sized for the cable being fed through plate to complete this step OR use duct seal later (to complete step 9).
  8. Return all eight sets of M5 wingnut, split washer, and flat washer to studs and hand-tighten to secure plate to charger (Figure 21).
  9. (Conditional) If not using cable gland described in step 7, use Duct Seal around conduit or cables fed into EV Quick Charger. This is especially helpful to help ensure water doesn't feed into charger when cable has an elevation change.
  10. Plug unused mounting holes in bottom of charger with 4 plastic plugs provided.



5. Remove all 8 sets of M5 wingnut, split washer, and flat washer securing removable plate to charger (Figure 19) and then remove plate while taking care not to damage gasket attached to plate's downside (Figure 20).

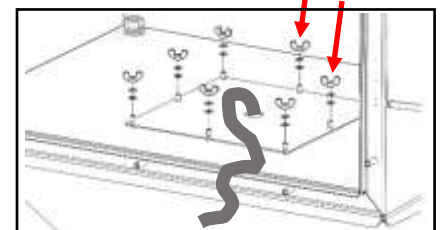


**Figure 19—Removable Plate inside bottom of charger**



**Figure 20—Down-side of Removable Plate**

6. Ensure center hole in removable plate is large enough to feed required AC power-in cable through. If you need to enlarge the hole, do so outside of and away from the charger.
7. Feed AC power-in cable in center of pedestal up through removable plate while taking care not to damage gasket attached to plate's downside, and lower plate back onto 8 small studs (Figure 21). Suggestion: Use a cable gland (installer supplied) appropriately sized for the cable being fed through plate to complete this step OR use duct seal later (in step 9) after securing plate to charger.
8. Return all eight sets of M5 wingnut, split washer, and flat washer to studs and hand-tighten to secure plate to charger (Figure 21).
9. (Conditional) If not using a cable gland described in step 7, use Duct Seal around conduit or cables fed into EV Quick Charger. This is especially helpful when the cable has an elevation change to help ensure water does not feed into charger.



**Figure 21—Placement of Removable Plate inside bottom of charger (optional Cable Gland not shown)**



## 3.7 Install Power Supply Units and Shelf Controllers



### ELECTRICAL WARNINGS – WARNING! RISK OF ELECTRIC SHOCK!

#### **WARNING! RISK OF ELECTRIC SHOCK!**

**ENSURE POWER SUPPLY IS SHUT OFF BEFORE STARTING OR CONTINUING INSTALLATION ACTIVITIES AND BEFORE OPENING EV QUICK CHARGER'S TOP PANEL. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

This EV Quick Charger ships with many of its components pre-installed, such as a cellular antenna, CCS1 charging cable, and empty power shelves. Essential charger components that do not ship preinstalled are shelf controllers (SCs) and power supply units (PSUs). These can be installed anytime and in any order prior to powering the charger on.



Note: BEFORE you install the SCs and PSUs, we recommend you first mount the wall-mount bracket to the wall or mount the pedestal to the ground (section 3.5) and then secure the charger to the bracket or the pedestal (section 3.6). This will lessen the weight of the charger while it is being lifted, placed, and secured.

To install shelf controllers (SCs) and power supply units (PSUs):

1. Ensure AC power to EV Quick charger is turned OFF at site's upstream AC breaker.
2. Open EV charger's Top Panel (Figure 22) by removing screws around perimeter using a T25 Torx t-handle screwdriver.
3. If necessary, temporarily disconnect cables from modem that tether top panel to modem and then set top panel and screws aside.



**Figure 22—Remove screws around Top Panel to open**

4. Insert 3 Shelf Controllers (SCs), 1 on each shelf in the slot provided (Figure 23.1); then secure each SC with its built-in screw to hand tight (Figure 23.2).

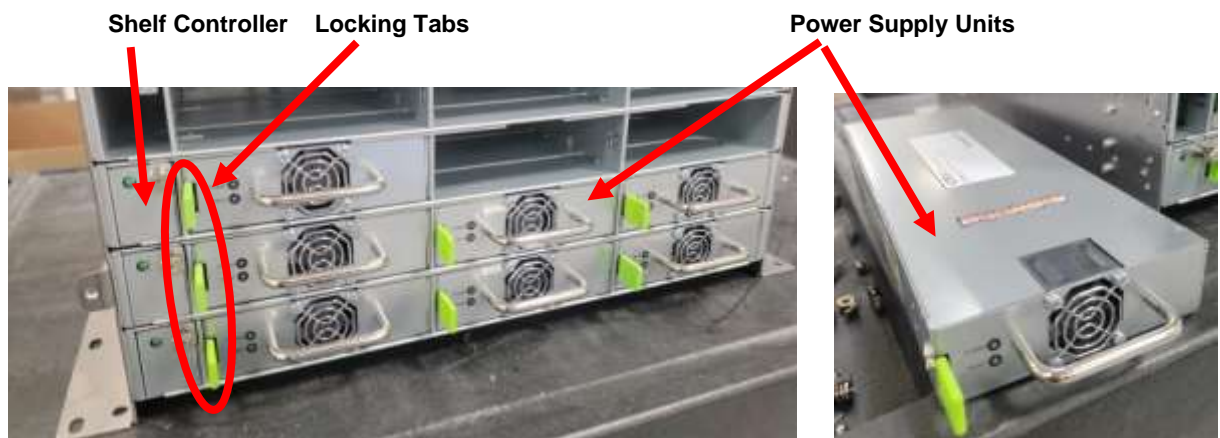


**Figure 23.1—Install Shelf Controllers**



**Figure 23.2—Secure Shelf Controller**

5. Insert 9 power supply units (PSUs), 3 on each shelf (Figure 24), so that locking tab side of each PSU is closer to its shelf controller than the PSU's other side AND so each locking tab clicks into the locked position.
6. (Optional) To configure cellular modem now, leave top panel open and skip to next section (3.8).
7. If modem cables were temporarily disconnected in step 3, reconnect cables to modem before continuing.
8. Return Top Panel to top of charger and secure with its original screws using T25 Torx t-handle screwdriver.



**Figure 24—Install Power Supply Units with Locking Tabs closer to Shelf Controllers**

### 3.8 Configure Cellular Modem and Registering Charger on Network



**WARNING! RISK OF ELECTRIC SHOCK!**

**DO NOT CONNECT POWER SUPPLY TO EV QUICK CHARGER UNTIL PHYSICAL SIM CARDS ARE INSERTED INTO CELLULAR MODEM AND TOP PANEL COVER AND SCREWS ARE REINSTATED.**



Note: Physical SIM cards for cellular modem must be provided by product owner or administrator.

To configure cellular modem with physical SIM card and register the charger on the backend network:

1. Ensure AC power to EV Quick charger is turned OFF at site's upstream AC breaker.
2. If EV charger's Top Panel is closed: (1) open it by removing screws around perimeter using T25 Torx t-handle screwdriver, (2) temporarily disconnect cables from modem as needed to free top panel, and (3) set top panel and screws aside (Figure 25).



**Figure 25—Remove Top Panel to access cellular modem**

3. Inside open top of charger, remove one or two screws from face of cellular modem (depending on the brand of modem included) as indicated in Figures 26 and 27, and then remove slot cover to expose modem's expansion slots.



**Figure 26 – For Amit Modem, remove 2 screws and slot cover to expose SIM card slots**



**Figure 27 – For Peplink Modem, remove 1 screw and small slot cover to expose SIM card slots A and B**

4. Insert a SIM card in slot A only.
5. Return slot cover to its original position on modem and secure it with original screw(s).

6. If you disconnected cables connecting modem to top panel, then reconnect cables to modem now.
7. Return Top Panel to top of charger and then use T25 Torx t-handle screwdriver again to secure panel with its original screws.
8. Register this EV charger as one of the supported devices on the owner's backend network. Later, after you have configured and wired the AC power input and you apply power to the charger, the modem will find the cellular network and attempt to automatically connect.
9. Continue to next section to configure and wire AC input power.

### 3.9 Configure and Wire AC Input Power



#### **ELECTRICAL WARNINGS – WARNING! RISK OF ELECTRIC SHOCK!**

**WARNING! RISK OF ELECTRIC SHOCK!**

**SHUT OFF POWER SUPPLY BEFORE BEGINNING INSTALLATION ACTIVITIES. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**

**WARNING! RISK OF ELECTRIC SHOCK!**

**DO NOT PROVIDE LIVE POWER TO THE EV QUICK CHARGER UNTIL BUS BAR CONFIGURATION AND AC WIRING IS COMPLETE AND THE AC SERVICE PANEL IS IN PLACE AND SECURE.**

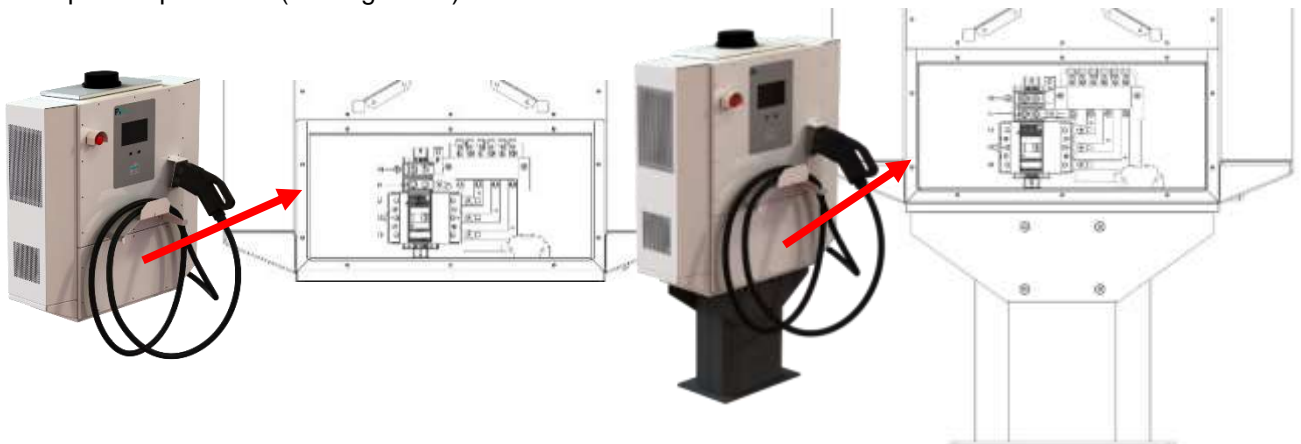
**WARNING! RISK OF ELECTRIC SHOCK!**

**ONLY QUALIFIED ELECTRICAL PERSONNEL FAMILIAR WITH THE CONSTRUCTION AND OPERATION OF THIS TYPE OF EQUIPMENT AND THE HAZARDS INVOLVED SHOULD ADJUST, MODIFY, AND SERVICE THIS EQUIPMENT. FAILURE TO OBSERVE THIS PRECAUTION COULD RESULT IN SEVERE INJURY OR DEATH.**



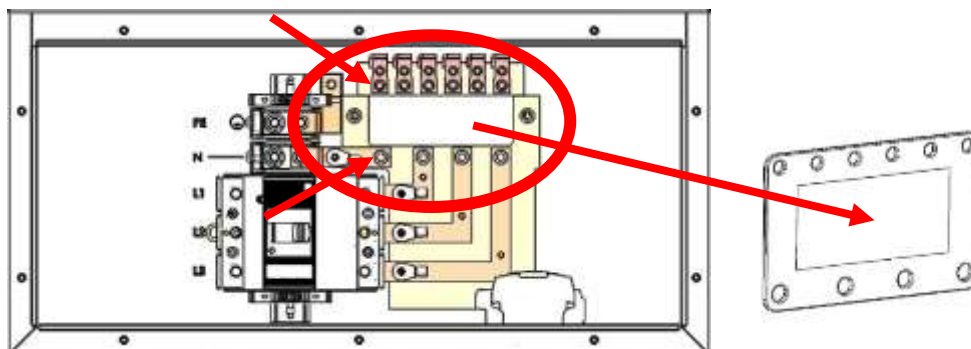
**CAUTION! The installer is responsible for conforming to all local and national electrical codes and standards applicable in the jurisdiction this equipment is installed in, including providing suitable wire sizes per NEC for the input configuration.**

1. Ensure AC power to EV quick charger is turned OFF at site's upstream AC breaker.
2. If AC Service Panel is closed, open it using a T25 Torx t-handle screwdriver to remove all screws around the front panel's perimeter (see Figure 28).



*Figure 28—Opening AC Service Panel by removing screws around panel's perimeter*

3. Locate the Bus Bar on the back wall of charger with a plastic spacer plate mounted (Figure 29).
4. Remove the six M6 and four M8 socket head cap screws that secure plastic spacer plate to the Bus Bar (Figure 29), remove spacer plate from the Bus Bar, and discard spacer plate.



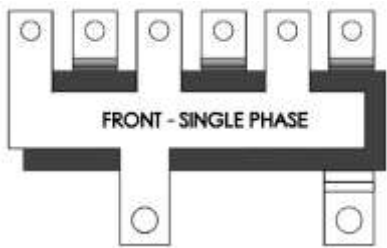
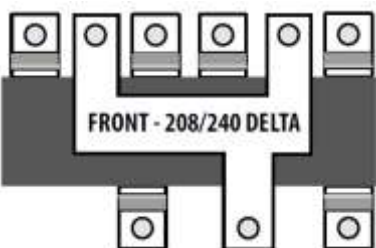
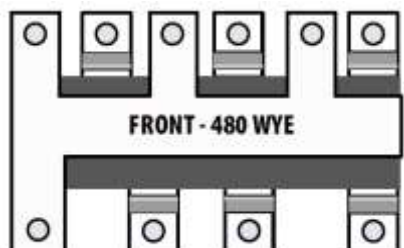


**Figure 29 - M6 and M8 socket head cap screws must be removed to remove plastic spacer plate**

5. Determine which of the three supported AC Input Power configurations is required for this installation (see Figure 30).

**240V (single phase):** Line 1, Line 3, Ground

**208V/240V 3-phase Delta (3-wire + PE):** Line 1, Line 2, Line 3, Ground

**480V 3-phase Wye (3-wire + Neutral + PE):** Line 1, Line 2, Line 3, Neutral, Ground

240 V (single phase)	208/240 V 3-phase Delta (3-wire + PE)	480 V 3-phase Wye (3-wire + Neutral + PE)
		
	 <b>CAUTION!</b> Do not use this Delta bus bar for a 480V 3-phase Wye (3-wire + Neutral + PE) source, which requires a neutral.	 <b>CAUTION!</b> This source requires the Neutral line to be supplied and connected to prevent damage to equipment.

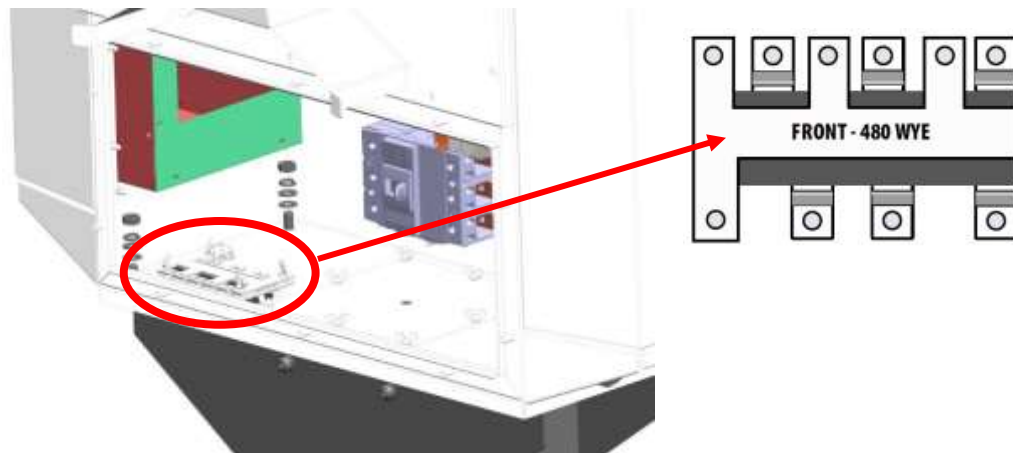
**Figure 30—Configuration Bus Bar to install for each supported AC Input Power Configuration**



**CAUTION!** Configuration Bus Bar must be loaded on and anchored to Bus Bar with the “FRONT” stamp facing out, as shown in Figure 30 and Figure 32.



6. Locate shipping/storage location of 3 Configuration Bus Bars anchored with wingnuts in bottom of charger (Figure 31).

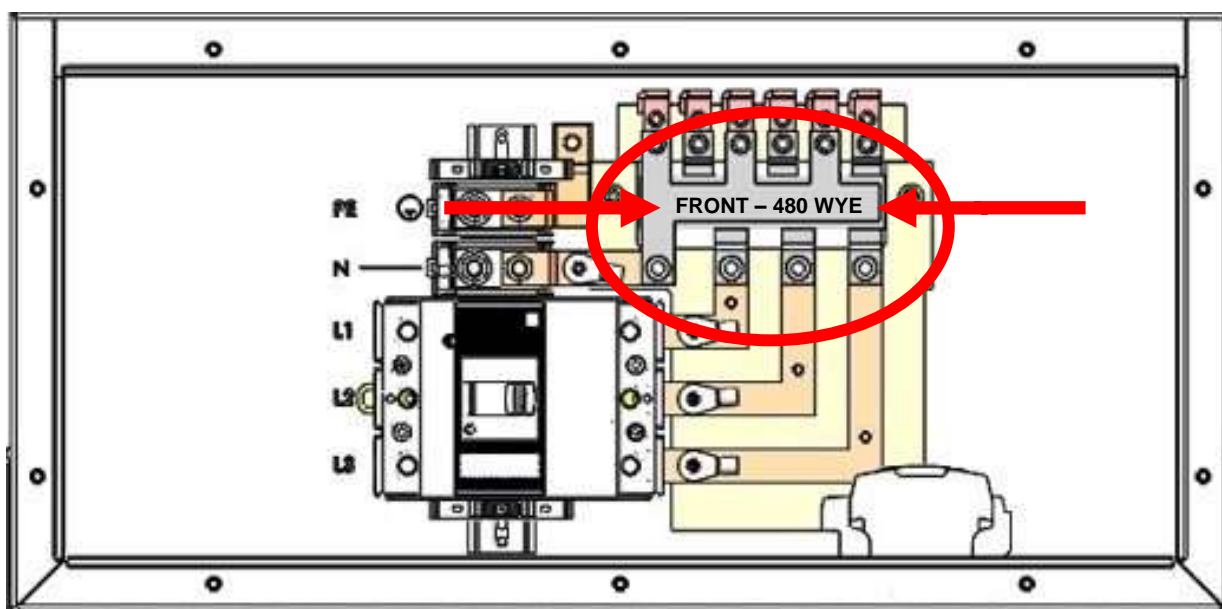


**Figure 31 – Shipping/Storage location of three Configuration Bus Bars shown, anchored with wingnuts in bottom of EV charger (top one showing its FRONT stamp)**

7. Remove wing nuts anchoring configuration bus bars together in the bottom of charger, select the one needed for this installation (refer to Step 5), such as the sample shown in Figure 31, and then re-anchor the two spare configuration bus bars in their original shipping/storage location.
8. Install the Configuration Bus Bar required for this charger's AC input power as follows:
  - a. Place selected Configuration Bus Bar on the Bus Bar with its “FRONT” stamp facing out (such as the “FRONT – 480 WYE” example shown in Figure 32).
  - b. Secure 6 upper socket head cap screws, hand tight only and not over 177 in-lbs (48 N-m).
  - c. Secure 4 lower socket head cap screws, hand tight only and not over 424 in-lbs (20 N-m).

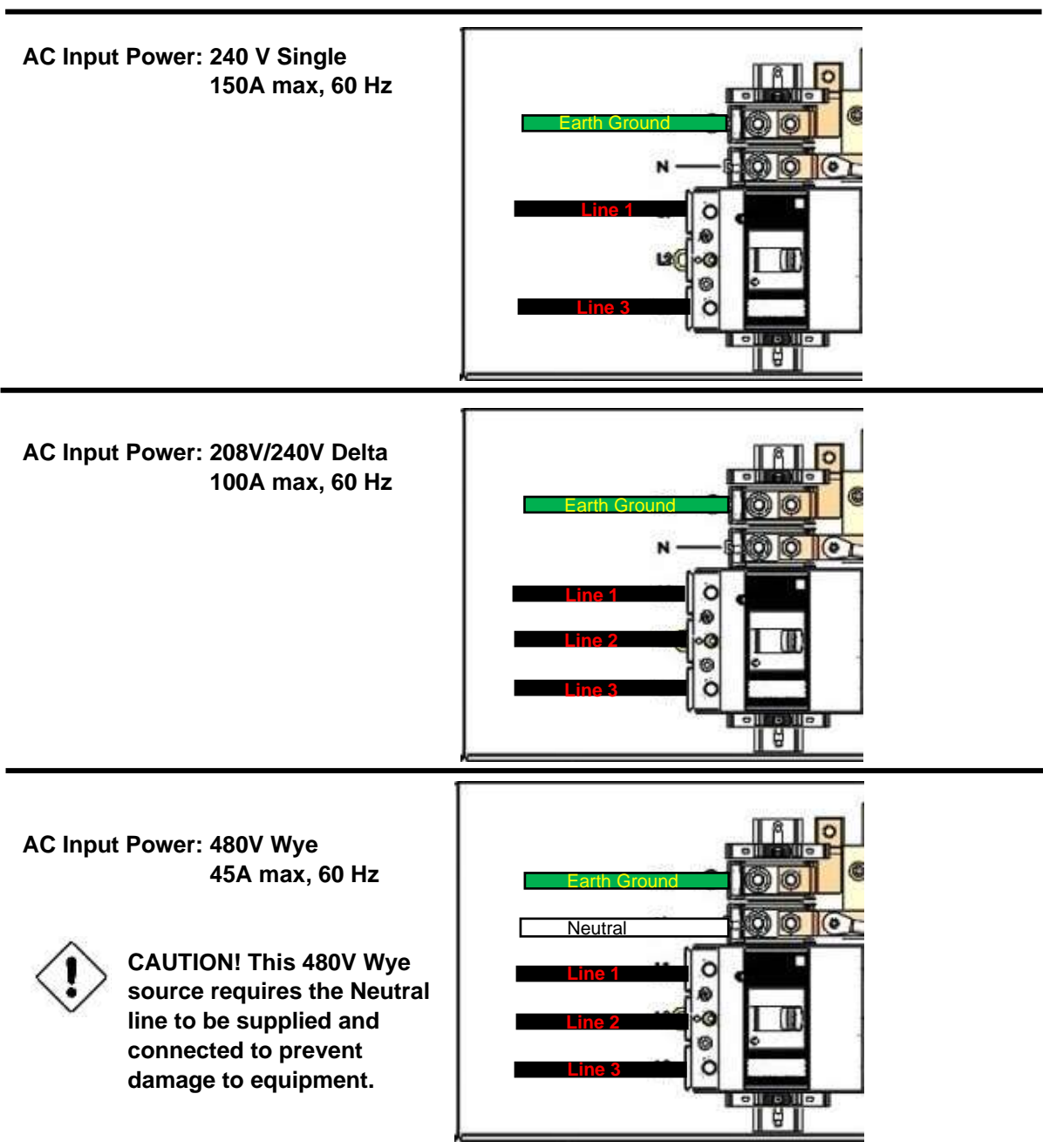


**CAUTION!** Configuration Bus Bar must be loaded and secured on Bus Bar with the “FRONT” stamp facing out, as shown in Figure 32.



**Figure 32 – Shown: “FRONT – 480 WYE” – Front side of 480 Wye configuration secured on Bus Bar; Not Shown: Spare configurations (for Delta and Single-phase) anchored together in the storage area**

9. Notice the three AC input power wiring configurations shown in Figure 33, then select the wiring configuration needed for this charger.



*Figure 33—AC Input Power Wiring for Different AC Input Power Configurations*

- 10.** Wire AC Input Power to charger's AC Main Switch lugs per Figure 33 and local and national regulations, then tighten all 5 lugs (PE, N, L1, L2, and L3) to 17 N-m (150 lbs.).
  - **Reminder: The installer is responsible for conforming to all local and national electrical codes and standards applicable in the jurisdiction this equipment is installed in, including providing suitable wire sizes per NEC for the input configuration.**
  - **This charger accepts Copper (Cu) and Aluminum (Al) wiring following ratings outlined on Main Switch's label per NEC codes.**
- 11.** After all input power wires have been secured to AC Main Switch lugs, at site's upstream AC circuit breaker, turn ON breaker and check voltage input. If voltage input is OK, turn ON charger's AC Main Switch (LCD screen will light). If voltage input is not OK, turn OFF upstream AC circuit breaker and trouble-shoot issue.
- 12.** Reinstall AC Service Panel with original screws using the T25 Torx t-handle screwdriver to 142±10 in-lbs (16±5 N-m).



## 4—Operating EV Quick Charger

To charge an electric vehicle (EV):

1. Click to release EV cable plug from docking station and plug into EV.



2. Use one of the payment methods your charger supports to initiate a charging session. For example, if using an RFID card provided for this charger, tap the card on the charger's RFID Reader.



3. Watch display for payment authorization:  
If payment method was accepted, the message "Authorized" displays and you can continue.  
If payment method was not accepted, leave EV cable plugged into EV and try payment method again.



4. Follow on-screen displays to ensure charger connects to vehicle and the charging cycle begins. Once charging cycle successfully starts, the charging progress displays.



5. The charger will automatically complete the charging cycle if left undisturbed. If you wish to stop charging cycle early, press any button. When the charging cycle ends or is stopped, the following prompt displays.



6. Click to release EV cable plug (gun) from EV and return it to docking station. An on-screen receipt displays.



## 5—Maintaining EV Charger



**ELECTRICAL WARNING! -  
WARNING! RISK OF ELECTRIC SHOCK!**

**WARNING! RISK OF ELECTRIC SHOCK!  
SHUT OFF POWER SUPPLY AT AC  
BREAKER BEFORE BEGINNING  
MAINTENANCE ACTIVITIES AND BEFORE  
REMOVING EV QUICK CHARGER'S AC  
SERVICE PANEL FOR ANY MAINTENANCE  
WORK. FAILURE TO OBSERVE THIS  
PRECAUTION COULD RESULT IN SEVERE  
INJURY OR DEATH.**

**WARNING! RISK OF ELECTRIC SHOCK!  
THIS EV CHARGER AND CHARGING  
CABLE ARE ENERGIZED. BEFORE  
SERVICING THE CHARGER OR CABLE,  
SHUT OFF POWER SUPPLY TO CHARGER,  
CLICK HANDLE TO RELEASE CABLE  
PLUG FROM EV, AND RETURN CABLE  
PLUG TO THE DOCKING STATION.**



**CAUTION! Maintenance tasks should only  
be completed as directed in this section.  
When in doubt, contact Power Innovations  
on how to proceed.**

**AVERTISSEMENT ÉLECTRIQUE ! -  
AVERTISSEMENT ! RISQUE DE CHOC ÉLECTRIQUE !**

**ATTENTION ! RISQUE DE CHOC ÉLECTRIQUE !  
ÉTEIGNEZ L'ALIMENTATION ÉLECTRIQUE AU  
DISJONCTEUR À COURANT ALTERNATIF AVANT DE  
COMMENCER LES ACTIVITÉS DE MAINTENANCE ET  
AVANT DE RETIRER LE PANNEAU D'ENTRETIEN CA  
DU CHARGEUR RAPIDE POUR VE POUR TOUT  
TRAVAIL DE MAINTENANCE. LE NON-RESPECT DE  
CETTE PRÉCAUTION POURRAIT ENTRAÎNER DES  
BLESSURES GRAVES OU LA MORT.**

**ATTENTION ! RISQUE DE CHOC ÉLECTRIQUE ! CE  
CHARGEUR DE VE ET CE CÂBLE DE CHARGE SONT  
SOUS TENSION. AVANT D'ENTREtenir LE  
CHARGEUR OU LE CÂBLE, COUPEZ  
L'ALIMENTATION DU CHARGEUR, CLIQUEZ SUR  
POIGNÉE POUR LIBÉRER LA PRISE DE CÂBLE DE  
L'EV ET RETOURNEZ LA PRISE DE CÂBLE À LA  
STATION D'ACCUEIL.**

**ATTENTION ! Les tâches d'entretien ne doivent être  
effectuées que conformément aux directives de la  
présente section. En cas de doute, contactez Power  
Innovations sur la façon de procéder.**

### 5.1 Clean Air Vents

To help maintain the life of your cooling fans, clean fans and vents as needed in the following manner:

- (1) Remove AC Service Panel and turn AC main switch power OFF.
- (2) Use large Allen wrench to remove screws in bottom of Cooling Fan covers, then gently remove covers.
- (3) Vacuum around fans and vents.
- (4) Return Fan Covers and secure with screws.
- (6) Turn the AC Power ON.

## 5.2 Restart after Emergency Stop



Any time the Emergency Stop button is pushed, it stays pushed in until it is reset for the next charging session. To reset the Emergency Stop button, simply pull the button out.

If the Emergency Stop button is pushed during a charging session, charging is stopped, an Error Message displays in LCD (see Figure 34), and the button stays pushed in.



**Figure 34—Error Message displays in LCD screen when Emergency Stop Button is pushed**

Before a new charging session can be started following this Error Message:

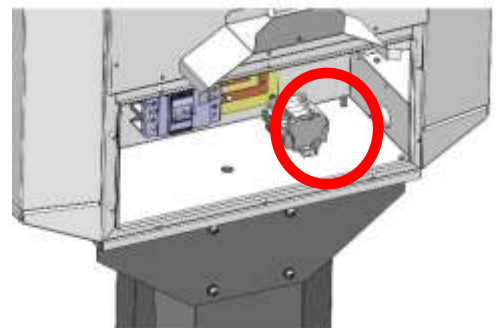
1. Charging cable must be unplugged from EV and returned to Docking Station.
2. Emergency Stop button must be reset (pulled out).

*Note: Resetting the button does not start a new charging session, but it prepares the charger to support the next charging session started.*

## 5.3 Replace Surge Modules in Surge Protective Device

This EV Quick Charger is equipped with a Surge Protective Device (SPD) that contains four replaceable Surge Modules (Figure 35).

**Figure 35—Surge Protective Device that contains replaceable surge modules**



A window in each module indicates its status by color (see Figure 36):

- Green = OK
- Red = Replace

If surge modules need to be replaced, the replacement modules should have:

- Same manufacturer as charger's original SPD
- Same MCOV value as charger's original SPD and modules

If you need assistance in ascertaining SPD manufacturer, MCOV value, or surge module replacement process, contact Power Innovations.

**Figure 36—SPD with four green modules**



## 6—Regulatory

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### UL & CSA

This product and its documentation comply with the following UL and CSA Standards:

- UL 2202 Standard for Safety: Electric Vehicle (EV) Charging System Equipment
- UL 2231-1 Standard for Safety: Personnel Protection Systems for Electric Vehicle (EV) Supply Circuits; Part 1: General Requirements
- CSA C22.2 346 (Canadian Standards Association) – DC Charging Equipment for Electric Vehicles
- CSA C22.2 281.1 – Personnel Protection Systems for Electric Vehicle Supply Circuits

## 7—Warranty

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Power Innovations International warrants that products purchased hereunder are free and clear of all liens and encumbrances.

Power Innovations International warrants that products are to be free from material or workmanship defect under normal use for a period of two (2) years from the invoice date.

In the event that any defect is found under normal usage conditions during the above warranty period, Power Innovations International will be responsible for repair or replacement at its sole discretion and subject to the replacement may be refurbished products.

All repair covered by this warranty must be done at Power Innovations International factory, or other repair facilities as designated by Power Innovations International unless Power Innovations International specifically directs that this service be performed at another location or service provider.

Customer shall, at its own costs, be responsible for shipping the defective products to the designated repair facilities subject to a RMA issued by Power Innovations International.

Power Innovations International will be responsible for shipping the repaired or refurbished unit back to the customer.

Power Innovations International shall not have any warranty obligations for claims: (i) caused by the misuse or abuse of products by end users; (ii) caused by modifications or repairs made to the products or disassembly of products by any person other than Power Innovations International, unless receiving Power Innovations International authorization; (iii) in relation to the appearance damage.

This Warranty Term states the exclusive liability of Power Innovations International and the exclusive remedy of buyer/customer with respect to any claim or defects of the products.

## 8—Contact Information

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If there are any questions or comments about this product, please feel free to contact us.

**Power Innovations International, Inc.**

**Web:** [www.powerinnovations.com/support](http://www.powerinnovations.com/support)

**Phone:** 801-785-4123

**Mailing Address:** 1305 South 630 East, American Fork, UT 84003

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