

# Express 250

Specifications and Ordering Information



**High Power in a Small Footprint**

## Ordering Information

The order codes below represent specific product configurations. Other product options are available. Please contact ChargePoint Sales for information and order codes.

### Hardware

Description		Order Code
Model	Express 250 Station includes 2x Power Modules, 1x CCS1 cable, 1x CHAdeMO cable (NA)	CPE250C-625-CCS1-CHD
	Express 250 Station includes 2x Power Modules, 1x CCS2 cable, 1x CHAdeMO cable (EU)	CPE250C-625-CCS2-CHD
Connector Options	Cable connectors available include CCS1, CCS2, and/or CHAdeMO. Cables can be ordered with a single connector or a combination.	Please contact ChargePoint Sales
Buy America	The Express 250 is compliant with the Federal Transportation Authority (FTA) and Federal Highway Administration (FHWA) Buy America Options.	Please contact ChargePoint Sales

### Software & Services

Description		Order Code
ChargePoint Enterprise Cloud Plan <i>Note: Station activation is included in this plan.</i>		CPCLD-ENTERPRISE-DC-n*
ChargePoint Assure® — Prepaid Assure Plan for one Express 250 station. Includes Parts and Labor Warranty, Remote Technical Support, On-Site Repairs when needed, Unlimited Configuration Changes, and Reporting.		CPE250-ASSURE-n*
ChargePoint Assure® — Assure Plan for one Express 250 and invoiced annually. Includes Parts and Labor Warranty, Remote Technical Support, On-Site Repairs when needed, Unlimited Configuration Changes, and Reporting.		CPE250-ASSURE-n-COMMIT*

## ChargePoint Express 250 Datasheet

Commissioning Service: includes on-site validation and inspection of electrical, mechanical, installation, wiring and civil parameters for the Express 250 station.	CPE250-COMMISSIONING
Commissioning Service: includes both the installation and commissioning of the Express 250 station.	CPE250-INSTALL-COMMISSIONING

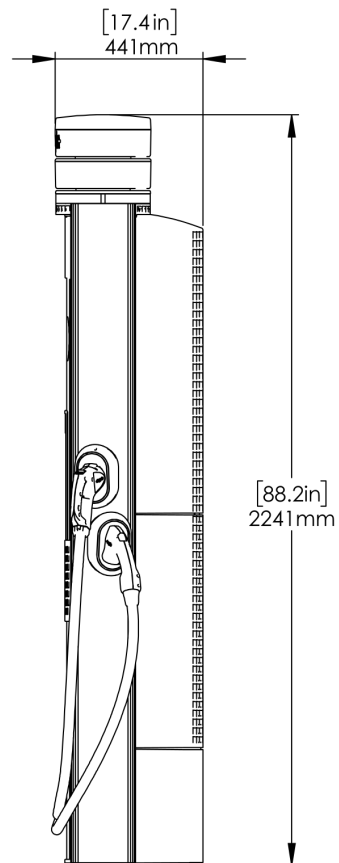
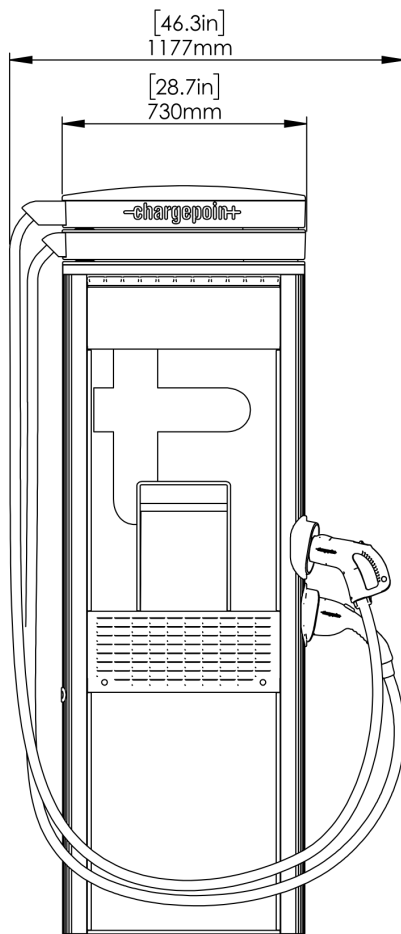
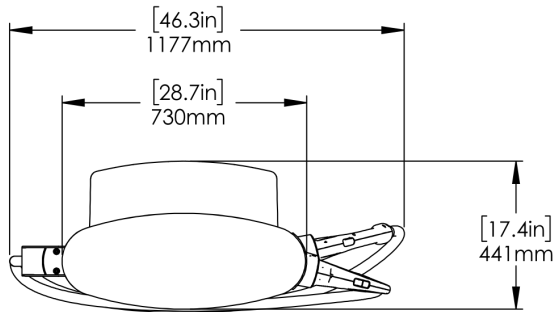
Note: All Express 250 stations require a cloud plan.

\*Substitute *n* for desired years of service (1, 2, 3, 4 or 5 years).

### Order Code Information

If ordering this...	...the order code is
Express 250 Station includes 2x Power Modules, 1x CCS1 cable, 1x CHAdeMO cable (NA)	CPE250C-625-CCS1-CHD

## Architectural Drawings (Dimensions)



## General Specifications

### Station Electrical Input

Input Rating	400V AC, 3-phase, 96A, 50 Hz 480Y/277V AC, 3-phase, 80A, 60 Hz
Wiring	L1, L2, L3, Neutral & Earth

### Station Electrical Output

Max Output Power	62.5 kW
Output Voltage, Charging	200–1,000V DC
Max Output Current	156A
Max Modules per Station	2

### Paired Station Electrical Output

Paired Max Output Power	125 kW
Paired Max Output Current	CCS1: 174A or 200A CCS2: 200A CHAdeMO; US: 140A, EU: 125A

### Power Module

Max Output Power	31.25 kW
Max Output Current	78 A
Power Conversion Efficiency	> 95%
Power Factor	0.99 at full load
Harmonics	iTHD < 5% (Complies with IEEE 519 Requirements)
Power Module Cooling	Liquid Cooling Technology

## Functional Interfaces

Max Connector Types per Station	Up to two different connector types per station
Supported Connector Types	CHAdeMO, CCS1 (SAE J1772™ Combo), CCS2 (IEC 61851-23)
Cable Length with Swing Arm*	Full Horizontal Reach: 4.27m (14')
LCD Display	Full-color 254 mm (10 in) display for driver interaction
Top Display	Full-color 508 mm (20 in) LED display for notifications
Authentication	RFID: ISO 15693, ISO 14443, NEMA EVSE 1.2-2015 (UR) Tap to Charge (NFC on Apple & Android): 15118-2 (EIM) Remote: Mobile and in vehicle (if supported by vehicle)

\*Horizontal reach to typical vehicle charging port: 3.76 (12'4")

## Connectivity Features

Vehicle Safety Communication	CHAdeMO – JEVS G104 over CAN, CCS1 – SAE J1772 over PLC and CCS2 — IEC 61851-23
Plug-Out Detection	Power terminated per JEVS G104 (CHAdeMO), SAE J2931 (CCS1) and IEC 61851-23 (CCS2)
Local Area Network	2.4 GHz and 5 GHz WiFi (802.11 b/g/n)
Wide Area Network	4G LTE (fall back to 3G GSM)
Supported Communication Protocols	OCPP
Service and Maintenance	Remote system monitoring, diagnostic, and proactive maintenance

## Safety and Operational Ratings

Station Enclosure Rating	Type 3R, IP54
Station Impact Rating	IK10
Safety and Compliance	UL and cUL listed: complies with UL 2202, UL 2231-1, UL 2231-2, CSA 107.1 CE marking: complies with IEC 62196, IEC 61851

## ChargePoint Express 250 Datasheet

Station Surge Protection	Tested to IEC 6100-4-5, Level 5 (6 kV @ 3,000A). In geographic areas subject to frequent thunder storms, supplemental surge protection at the service panel is recommended.
EMC Compliance	U.S.: FCC part 15 Class A; EU: EN55011, EN55022 and IEC61000-4
Storage Temperature	-40°C to 50°C (-40°F to 122°F)
Operating Temperature	-40°C to 50°C (-40°F to 122°F)
Operational Altitude	<3,000 m (<9,800 ft)
Operating Humidity	Up to 95% @ 50°C (122°F) non-condensing

### Generic Specifications

Station Enclosure Dimensions	2,241 mm H x 730 mm W x 441 mm D (7'4" x 2'5" x 1'5")
Power Module Dimensions	760 mm H x 430 mm W x 130 mm D (2'6" x 1'5" x 5")
Station Weight (without Power Modules)	250 kg (551 lb)
Power Module Weight	45 kg (98.5 lb)

### Energy Management Features

Dynamic Power Management	Allows a fixed maximum power output per station or lets the system dynamically manage the power distribution per station
Remote Energy Management	Manage output power via the ChargePoint Admin Portal, API, and Open ADR 2.0b VEN

ChargePoint, Inc. reserves the right to alter product offerings and specifications at any time without notice, and is not responsible for typographical or graphical errors that may appear in this document



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\* Listed by Underwriters Laboratories Inc.





# Express 250

DC Fast Charging Station

Installation Guide for  
Standalone and Paired Stations



# IMPORTANT SAFETY INSTRUCTIONS: SAVE THESE INSTRUCTIONS



## WARNING:

- 1. Read and follow all warnings and instructions before installing and operating the ChargePoint® Charging Station.** Install and operate only as instructed. Failure to do so may lead to death, injury, or property damage, and will void the Limited Warranty.
- 2. Only use licensed professionals to install your ChargePoint charging station and adhere to all national and local building codes and standards.** Before installing the ChargePoint® charging station, consult with a licensed contractor, such as a licensed electrician, and use a trained installation expert to ensure compliance with local building and electrical codes and standards, climate conditions, safety standards, and all applicable codes and ordinances. Inspect the charging station for proper installation before use.
- 3. Always ground the ChargePoint charging station.** Failure to ground the charging station can lead to risk of electrocution or fire. The charging station must be connected to a grounded, metal, permanent wiring system, or an equipment grounding conductor shall be run with circuit conductors and connected to the equipment grounding terminal or lead on the Electric Vehicle Supply Equipment (EVSE). Connections to the EVSE shall comply with all applicable codes and ordinances.
- 4. Install the ChargePoint charging station on a concrete pad using a ChargePoint approved method.** Failure to install on a surface that can support the full weight of the charging station can result in death, personal injury, or property damage. Inspect the charging station for proper installation before use.
- 5. This charging station is not suitable for use in or around hazardous locations, such as near flammable, explosive, or combustible materials.**
- 6. Do not use this product if the enclosure, EV cable, or the EV connector is broken, cracked, open, or shows any other indication of damage.**
- 7. Do not put fingers into the electric vehicle connector.**



**Important:** Under no circumstances will compliance with the information in this manual relieve the user of his/her responsibility to comply with all applicable codes or safety standards. This document describes the most commonly-used installation and mounting scenarios. If situations arise in which it is not possible to perform an installation following the procedures provided in this document, contact ChargePoint, Inc. **ChargePoint, Inc. is not responsible for any damages that may result from custom installations that are not described in this document or for any failure to adhere to installation recommendations.**

## Product Disposal

To comply with Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), devices marked with this symbol may not be disposed of as part of unsorted domestic waste inside the European Union. Enquire with local authorities regarding proper disposal. Product materials are recyclable as marked.



## No Accuracy Guarantee

Commercially reasonable efforts were made to ensure that the specifications and other information in this manual are accurate and complete at the time of its publication. However, the specifications and other information in this manual are subject to change at any time without prior notice.

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## Symbols Used in This Document

This guide and product use the following symbols:



**DANGER:** Risk of electric shock.



**WARNING:** Risk of personal harm or death.



**CAUTION:** Risk of equipment or property damage.



**Important:** Crucial step for installation success.



Read the manual for instructions.



Ground/protective earth.



# Contents

<b>1</b>	<b>Prepare for Installation</b> . . . . .	<b>1</b>
	Check Site Readiness . . . . .	2
	Check Express 250 Shipping Crates . . . . .	5
	Bring Tools and Materials . . . . .	8
<b>2</b>	<b>Secure Anchors and AC Wiring</b> . . . . .	<b>11</b>
	Prepare the Express 250 for Mounting . . . . .	11
	Mount and Secure the Express 250 . . . . .	14
	Connect the AC Wiring . . . . .	16
<b>3</b>	<b>Pair the Charging Stations</b> . . . . .	<b>21</b>
	Install New Labels . . . . .	21
	Install DC Cables . . . . .	22
	Install the Ethernet Wiring . . . . .	25
<b>4</b>	<b>Install Cover Panels</b> . . . . .	<b>29</b>
	Install the Left Extrusion . . . . .	29
	Connect the Right Extrusion's Holster Light Cables . . . . .	31
	Install the Right Extrusion . . . . .	32
	Install the Power Modules and EMI Shields . . . . .	35
	Fill the Coolant Reservoir . . . . .	40
	Install the Rear Cover Panels . . . . .	42
	Install the Front Cover Panels . . . . .	44
	Install the LED Display and Area Light Bar . . . . .	47
<b>5</b>	<b>Complete the Installation</b> . . . . .	<b>49</b>
	Complete the Installation Wizard: Standalone Installations . . . . .	49
	Complete the Installation Wizard: Paired Installations . . . . .	50
	Pinpoint the Station(s) . . . . .	52
	Run a Test Charging Session . . . . .	53
	<b>Appendix A Removing the Express 200 Adapter</b> . . . . .	<b>55</b>



# Prepare for Installation 1

This document describes how to install a ChargePoint® Express 250 DC fast charging station. An Express 250 can be installed to operate by itself (called “Standalone”) or to share power with one other Express 250 for higher throughput (called “Paired”).



**Important:** You must be a licensed electrician and complete an online training course to become a ChargePoint certified installer. **If you do not complete installation training, you cannot access the ChargePoint Network to complete pinpointing and station setup.**

To complete online training and become a certified installer, refer to ChargePoint University at: [chargepoint.com/installers](https://chargepoint.com/installers) or [chargepoint.com/eu/installers](https://chargepoint.com/eu/installers)

Access ChargePoint documents online for each phase of the project:

Document	Content	Audiences
<i>Express 250 Data Sheet</i>	Full station specifications	Site designer, installer, and station owner
<i>Express 250 Site Design Guide</i>	Civil, mechanical, and electrical guidelines to scope and construct the site	Site designer or engineer of record
<i>Concrete Mounting Template Guide</i>	Onsite instructions for installing the CMT with anchor bolts and conduit placement	Site construction contractor
<b>This document</b>	<b>Anchoring, wiring, and powering on</b>	<b>Installer</b>
<i>Express 250 Operations and Maintenance Guide</i>	Operation and preventative maintenance	Station owner or facility manager
Full set of Field Replacement Guides	Component replacement procedures	Station owner or third party servicer



**CAUTION:** Do not install the charging station in inclement weather. If you must complete the installation in rain or wind, you must use a weather-proof shelter that covers all boxes and components.



**CAUTION:** Do not use power tools during installation or servicing. Over-torquing can damage the equipment.

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**Note:** For all charging station specifications other than dimensions and weights, refer to the *Express 250 Data Sheet* found online at [chargepoint.com/support/guides](https://chargepoint.com/support/guides).

For assistance, go to [chargepoint.com/support](https://chargepoint.com/support) and find your region's technical support number.

Installing the Express 250 requires two people and takes approximately 3-4 hours. This time estimate does not include the time needed to pull DC and Ethernet cable for a Paired installation if it is not already done. Paired installation also requires contacting a ChargePoint support technician to perform any required software updates and configuration.



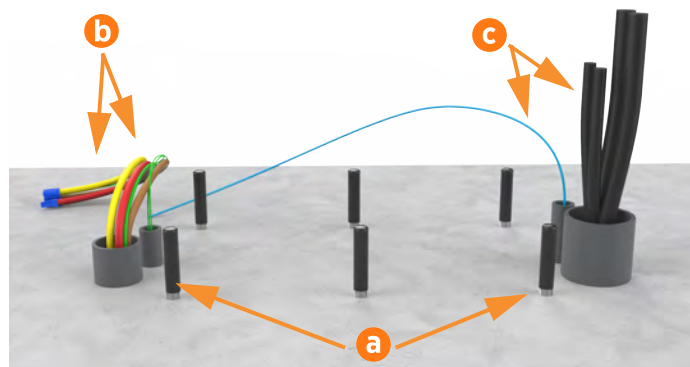
**Important:** Always ensure that the installation complies with all applicable codes.

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## Check Site Readiness

The Express 250 is installed on a concrete pad. Details on how to prepare this pad are described in the *Express 250 Site Design Guide*.

All installations require anchor bolts (a). Standalone installations only require the two conduit stub-ups on the left side, for AC wiring and shunt trip wiring (b). Paired installations also require the wiring shown on the right: DC wiring and Ethernet communication (c).



**Important:** Only the four corner anchor bolts are required for station stability. Newer charging stations are designed to only use the four corner anchor bolts. If the site is already designed with six anchor bolts, removing the middle bolts is not required. Always use the leveling nuts on three corner bolts to level the system, then complete torquing instructions for all four corner nuts as described in a later section.

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**WARNING:** If not installed correctly, the ChargePoint® Charging Station may pose a fall hazard, leading to death, personal injury, or property damage. Always use the provided Concrete Mounting Template shown pre-installed here, or a ChargePoint-approved surface mounting solution, to install the ChargePoint® Charging Station. Always install in accordance with applicable codes and standards using licensed professionals. Non-approved installation methods are performed at the risk of the contractor and void the Limited One-Year Parts Exchange Warranty.

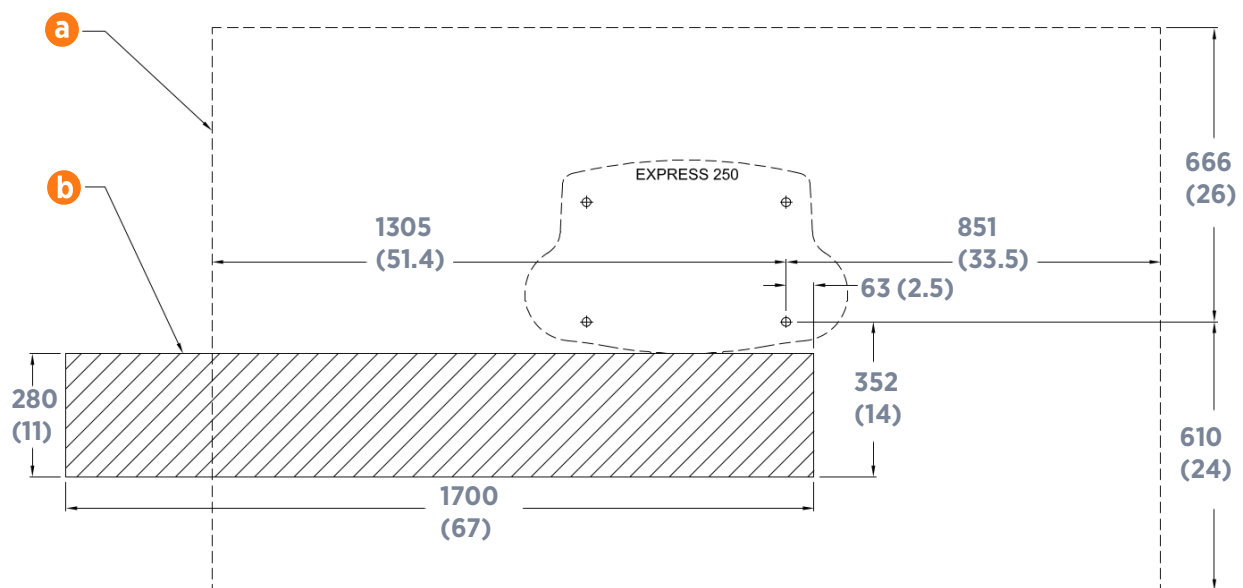
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Before beginning work, check that the site meets these civil and mechanical requirements outlined below, as illustrated in the following image. Measurements are in mm (in):

- The concrete pad is ready and the concrete is fully cured and level.
- The concrete pad either has a site drawing approved by a structural engineer for this specific site, OR conforms to these specifications:
  - At least 305 mm (12 in) deep (or deep enough to be 305 mm (12 in) below the frost line)
  - At least 1296 mm (51 in) on each side
- Walls, fences, or slopes do not prevent water from draining from the pad.
- The concrete mounting template (CMT) is installed in the concrete pad, 50.8 mm (2 in) below the concrete surface, with anchor bolts in place in the CMT.
- The AC conduit (max 50.8 mm/ 2 in trade size) and shunt trip conduit (max 19.1 mm/ ¾ in size) are positioned correctly in the CMT and cut down to 76.2 mm (3 in) above grade.
- Paired only: The DC conduit (max 76.2 mm/ 3 in trade size) and Ethernet conduit (max 19.1 mm/ ¾ in size) are positioned correctly in the CMT and cut down to 76.2 mm (3 in) above grade.
- The service clearance of open space (not necessarily at system grade) extends a minimum of 610 mm (24 in) beyond the station in front, 1276 mm (50 in) total front to back, 2156 mm (84.8 in) side to side centered on the station, and 305 mm (12 in) above the station (image callout a).
- The front of the station has 352 mm (14 in) of space at grade from the front right anchor, extending 1700 mm (67 in) to the left, without any permanent obstructions (bollards, wheel stops, etc) (b).
- Charging station sites are positioned so that each station is centered on a parking space (unless curbside), with the front of the station facing the vehicle. (This maximizes cable reach.)
- The charging station is at least 305 mm (12 in) from any wall as its rear clearance. Stations positioned back to back are no closer than 610 mm (24 in) shared clearance.

If the site does not meet these basic requirements, contact ChargePoint before continuing.



- Enough space is available around the installation pad to use a forklift and other lifting equipment, unpack crates, remove packing materials, and allow two people to freely move throughout the area.



**Important:** Remove any concrete that is not level with the rest of the surface, or you cannot level the Express 250. Use a grinder or a hammer and chisel to remove any bumps in the concrete.

Also ensure that these electrical requirements are in place:

- The appropriate circuit protection, and metering is in place at the installation site.
- A grounding conductor that complies with local codes is properly grounded to earth at the service equipment or, when supplied by a separate system, at the supply transformer.
- A correctly rated, dedicated breaker is installed for each station, per this table:

Nominal Voltage	Max AC Current	Breaker Size
400 V (EU)	96 A	125 A
480 V (N. America)	80 A	100 A (125% continuous load required for N. America)

- Breakers have shunt trip capability if the site drawing calls for shunt trip wiring.
- All necessary electrical infrastructure has been completed per local codes and ChargePoint specifications for 3-phase power plus ground, with properly sized wire at the station. (Neutral is not required for system operation.)

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals
EU non-armored: 600/1000 V	90°C	35 mm <sup>2</sup>
EU armored: 600/1000 V	90°C	35 mm <sup>2</sup> multi-core
N. America: 600 V	90°C	2 AWG

- Cellular signal strength is consistently strong to allow installation and station operation. Use a cellular signal detection device (such as a Snyder, Octopus, or similar) to ensure the signal is -85 dBm or better. (Note that these numbers are negative, so -70 dBm is stronger than -85 dBm, and -90 dBm is weaker.) If the signal is below -85 dBm, install multi-carrier, multi-band repeaters to boost signal strength. Repeaters are often required for installations in underground garages or enclosed parking structures.
- **Paired only:** All four DC copper conductors are installed between stations as follows:

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals	Insulation Type
EU non-armored: 600/1000 V	90°C	120 mm <sup>2</sup>	XLPE
EU armored: 600/1000 V	90°C	120 mm <sup>2</sup> 4-core	XLPE
N. America: 1000 V	90°C	4/0 AWG	XHHW-2

- **Paired only:** Outdoor rated Ethernet Cat5e or Cat6 cable, without terminations, is pulled between the two stations with 3050 mm (10 ft) of service loop at each end.

For any questions about site specifications, refer to the *Express 250 Data Sheet* and *Express 250 Site Design Guide*.



**Important:** The Express 250 charging station is tested to IEC 61000-4-5, Level 5 (6 kV @ 3000 A) standards. In geographic areas that experience frequent thunderstorms, supplemental surge protection must be installed at the service panel.

## Check Express 250 Shipping Crates

Each Express 250 ships in at least two crates. Ensure you have all crates at the installation site.

Contents	Max. Shipped Dimensions	Max. Shipped Weight*
Express 250 Charging Station	1270 x 1104.9 x 2438.4 mm (50 x 43.5 x 96 in)	494 kg (1089 lb)
Power Module crate: holds 1 Power Module	901.7 x 571.5 x 368.3 mm (35.5 x 22.5 x 14.5 in)	49.9 kg (110 lbs)

\*Includes the weight of the crate - for the weight of the component, see the *Express 250 Data Sheet*



**Important:** Always transport and store the Express 250 in its original packaging. Use appropriate lifting equipment (forklift, crane and lifting straps, etc). Ensure the load rating of all lifting equipment is adequate for the weight of the crated Express 250 as shown above.

## Express 250 Charging Station Crate



**Important:** Leave components in the shipping crate until needed. When removing, protect them from damage (such as scratches) by placing them flat on a blanket or tarp, face up. Do not stand up cover panels, as they may be knocked or blown over. Cover charging connectors to prevent damage or ingress.

1. Express 250 main body
  - a. Swing arms
  - b. Touchscreen
  - c. Charging connectors (in bin for shipment)
  - d. Forklift handles and crane lift guides (removed during installation)

2. Rear cover panels (x3)

3. Area light bar

4. LED display

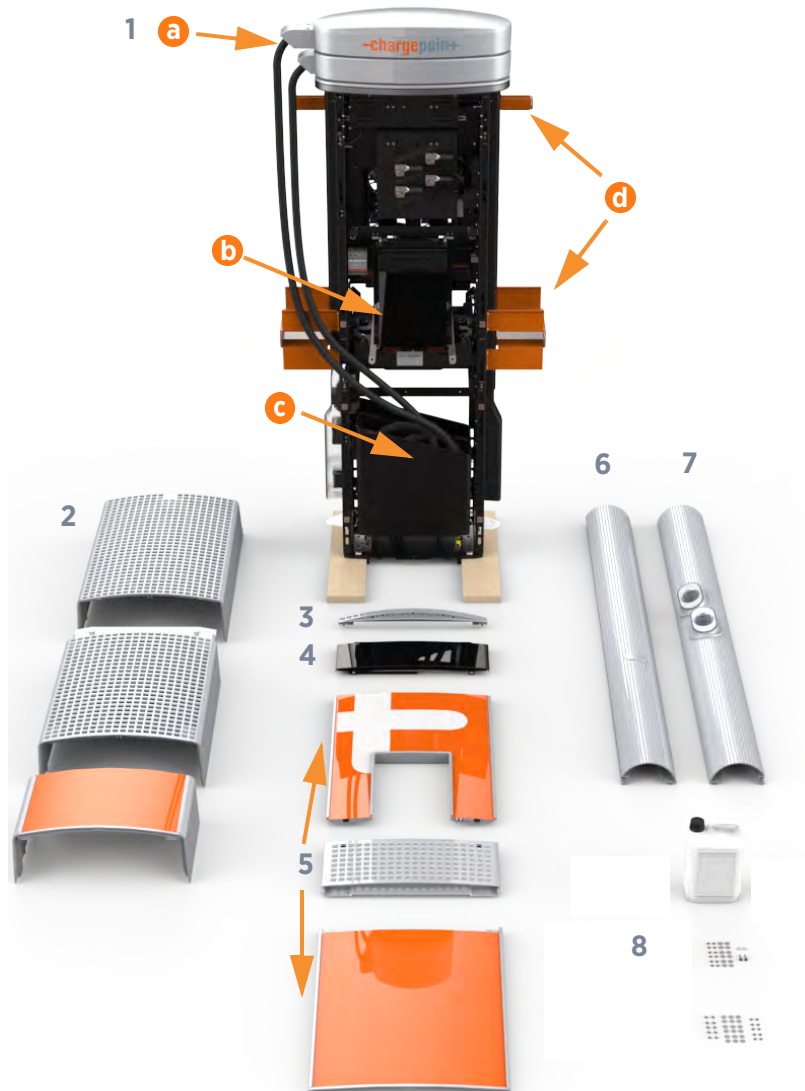
5. Front cover panels (x3)

6. Left extrusion

7. Right extrusion

8. Installation kit:

- 16 mm (5/8 in) -11 nuts (x12)
- 16 mm (5/8 in) washers (x12)
- M5x8 T25 Torx screws (x10)
- M5 washers (x10)
- Plastic caps (x2, 2 extra)
- M5 x 10 T25 Torx shoulder screws with retained washers (x2, 2 extra)
- Duct seal compound
- EMI shields (x2) (not shown)
- Propylene glycol coolant (the coolant label references its Safety Data Sheet if needed)
- Ethernet connector that accommodates up to 6 mm (0.24 in) OD jacketed Cat5e or Cat6 cable (for Paired installations only)
- Dielectric grease (for Paired installations only)
- Labels for panel breakers (for Paired installations only)
- Rodent guard bracket grommets for DC (x1 73 mm (2 7/8 in) OD, x1 22 mm (7/8 in) OD) (for Paired installations only)



ChargePoint also provides a tool kit (not shown):

- T20 Torx security driver
- T25 Torx security driver
- T27 Torx security driver
- Wago driver
- Coolant funnel
- 2.5 cm x 183 cm (1 in x 6 ft) lifting straps
- Printed Installation Guide

## Power Module Shipping Crate

Each Power Module crate holds one Power Module each. It also contains a fastener kit that includes:

- Ground stud brackets (x2)
- M5x6 mounting screws (x8)

These brackets are only needed for Power Module replacements in older stations. New charging station installations can ignore these parts.



**CAUTION:** Always rest a Power Module flat on the ground until it is being installed. Power Modules are not stable in any other position. Images of Power Modules standing with the handles on top are only to illustrate the proper installation position.

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## Bring Tools and Materials

In addition to the tools and materials provided by ChargePoint in product crates, an approved installer needs:

- Lifting equipment (forklift or crane)
- Lockout/tag out equipment
- Step ladder
- Cut-resistant gloves
- Safety glasses
- Head-mounted flashlight
- Torque wrenches capable of 4 to 95 Nm (3 to 70 ft-lbs)
- 10 mm (3/8 in) deep socket wrench
- 18 mm (11/16 in) wrench
- 24 mm (15/16 in) wrench (x2)
- 8 mm (5/16 in) nut driver
- 10 mm (3/8 in) nut driver
- 5 mm (3/16 in) hex driver
- #2 Phillips screwdriver with long handle
- Cellular signal detection device, such as a Snyder, Octopus, or similar
- Standard electrical equipment such as wire cutter, wire stripper, and cable ties
- Level
- Isopropyl wipes
- Wire brush
- If not already installed for this site, and if applicable, shunt trip wiring: size 0.08 to 2.5 mm<sup>2</sup> (28 to 14 AWG), fine stranded or solid
- If not already installed for this site, AC and ground conductors with these specifications:

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals
EU non-armored: 600/1000 V	90°C	35 mm <sup>2</sup>
EU armored: 600/1000 V	90°C	35 mm <sup>2</sup> multi-core
NA: 600 V	90°C	2 AWG

**If this is a Paired installation, the certified installer also needs these tools and materials:**

- Cable puller or fish tape (if not already completed on site)
- DC conductors (x4):

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals	Insulation Type
EU non-armored: 600/1000 V	90°C	120 mm <sup>2</sup>	XLPE
EU armored: 600/1000 V	90°C	120 mm <sup>2</sup> 4-core and cable gland sized to local code (such as Cablecraft CCG-CW50 or similar)	XLPE
NA: 1000 V	90°C	4/0 AWG	XHHW-2

- **NOTE:** 95 mm<sup>2</sup> (3/0 AWG) is sufficient for most sites unless ambient temperatures are  $\geq 40^{\circ}\text{C}$  per regional code (ASHRAE Table D101 Summer Dry Bulb Temperature for North America or IEC 60364-5-54 in Europe)
- 2 positive and 2 negative conductors; 1 positive and 1 negative in each direction
- USA/Canada: Copper only, minimum current carrying capacity 160 A
- EU/UK: Rated at 1000 V conductor to conductor (+/-500 V conductor to ground, LV), copper only, minimum current carrying capacity 160 A
- DC cable run must be continuous, with no joints or splices
- Consult site drawings for site-specific conductor size and length (*Express 250 Site Design Guide* provides conductor size calculation examples for reference)
- Leave 61 cm (2 ft) of each conductor above grade at each end
- DC lugs (x4): lug specifications are:
  - Silver plated copper compression lug (2-hole specified for North America); tin plated is acceptable if used with dielectric grease
  - Holes for an M6 (1/4 in) stud at 19 mm (3/4 in) stud hole spacing
  - Maximum width 30 mm (1.18 in)
  - **NOTE:** 95 mm<sup>2</sup> (3/0 AWG) is sufficient for most sites unless ambient temperatures are  $\geq 40^{\circ}\text{C}$  per regional code (ASHRAE Table D101 Summer Dry Bulb Temperature for North America or IEC 60364-5-54 in Europe)
  - North America lug size: 3/0 or 4/0 AWG
  - Example UK/EU lugs for average conductor size are Weidmuller 1494410000 120 mm<sup>2</sup> or similar
  - Contact ChargePoint if the installer requires lugs for 3/0 (kit 99-002644-01) or 4/0 (kit 99-002645-01) conductors

- 
- DC cable lug crimper and die that is compatible with lug size and brand (**NOTE:** The lug die and crimp tool must match the lug manufacturer. Always review the lug manufacturer's instructions for compatibility)
  - Multimeter with toner attachment, such as Fluke 117 or similar
  - Ethernet wiring for DC:
    - Minimum of CAT5e or better
    - Outdoor or plenum rated wiring
    - Maximum run length of 100 m (328 ft)
    - Leave 3.2 m (10.5 ft) of wire above grade at each end
    - Field crimp using straight-through pattern 568B
  - Ethernet crimper
  - Ethernet crimp tester capable of testing for correct 568B (split pair) pattern, such as a Klein Tools VDV526-052 VDV LAN Scout Jr. Tester or similar
  - Permanent marker
  - Torque paint pen



# Secure Anchors and AC Wiring **2**

This section describes how to receive and anchor a new Express 250 charging station, and wire the AC conductors. These steps are the same for both Standalone and Paired installations.

## Prepare the Express 250 for Mounting

**Note:** The Express 250 is equipped with both forklift handles and crane lift guides to move and mount the Express 250. Lifting straps, supplied with the crate, can be used for either configuration.



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**Important:** Only the four corner anchor bolts are required for station stability. Newer charging stations are designed to only use the four corner anchor bolts. If the site is already designed with six anchor bolts, removing the middle bolts is not required. Always use the leveling nuts on three corner bolts to level the system, then complete torquing instructions for all four corner nuts as described in a later section.

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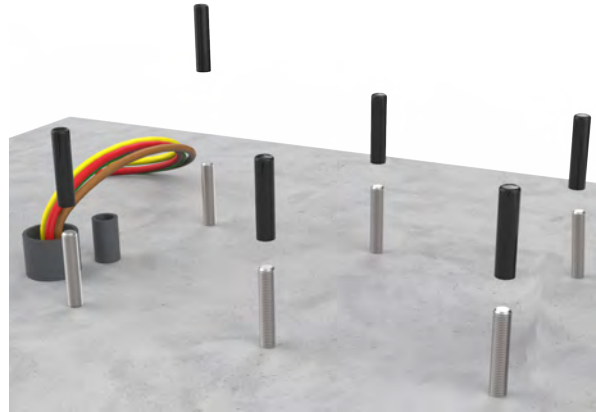
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**Important:** If you are replacing an Express 200, skip Step 1. The Express 200 adapter must be removed as described in [Removing the Express 200 Adapter \(page 55\)](#) prior to Step 2.

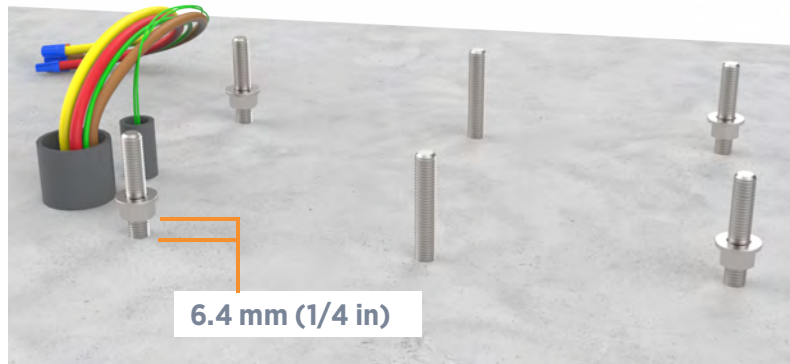
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1. Ensure all four AC and DC conduit stub-ups (if applicable) are trimmed to a height within reach of the adjustable rodent guard brackets: a minimum of 60 mm (2.4 in) from the ground, maximum 160 mm (6.3 in). If the site is using armored cable, strip the outer jacket to within the same height.
2. Ensure no bell ends are left on any conduit after all wires are pulled. Bell ends can interfere with station placement.

3. Remove the plastic caps from all mounting bolts on the concrete installation pad.
4. Use a wire brush to clean out threads if any concrete is on the upper bolts.



5. Place a leveling nut and washer on each of the four corner bolts.
6. Leave approximately 6.4 mm (1/4 in) between the bottom of the leveling nuts and the concrete. Check nut positions relative to each other with a level.



**WARNING:** THE CRATE IS HEAVY AND CAN CAUSE INJURY OR DEATH IF DROPPED. DO NOT STAND OR MOVE BENEATH THE CRATE AS IT IS BEING TILTED. TAKE PRECAUTIONS AGAINST THE CRATE TIPPING OR SLIDING.



7. Retrieve the lifting straps from either the toolkit or the main crate. If there is no separate toolkit: rest the crate in a stable position and unlatch the lid. Retrieve the lifting straps just inside and securely re-fasten the lid.
8. Transport the crate close to the installation site. If using a forklift, position the forks at least 762 mm (30 in) apart to assist with stability.

9. If the crate is horizontal:
  - a. Thread the lifting straps through the 25 mm (1 in) lifting holes in the left and right skids of the crate (a).
  - b. Fasten the other ends of the straps to an appropriately-rated forklift or crane.
  - c. Using the forklift or crane, carefully tilt the crate up until vertical. Use the lifting straps to stabilize the crate and prevent it from tipping.
10. Once the crate is vertical, unlatch the lid and set it aside.
11. Remove the wooden braces that secure the Express 250 in the crate.



**Note:** In early versions of the crate, one top swing arm brace is secured with 8 screws (4 per side) from the outside of the crate. If needed, remove this brace using a #2 Phillips screwdriver.

12. Remove the foam pad from the ceiling of the crate and the foam packaging from the top of the swing arms.
 

**Note:** For crane access, or for extra room while forklifting, remove the top screws and top panel of the crate.
13. Loosen (but do not remove) the wingnuts holding the boards that secure the charging station base. Slide the support boards away from the charging station.



**WARNING:** The Express 250 has a high center of gravity. Take care to prevent tipping when moving the Express 250.

14. Using either a forklift or crane, remove the Express 250 from its crate. Move it to its mounting location and keep it elevated:
  - Using an overhead crane: Thread the supplied lifting straps through the forklift handles, then through the crane lift guides at the top. DO NOT put the straps through the crane lift guides only.
  - Using a forklift: Insert the forklift blades inside the forklift handles. Position the blades approximately 70 cm (27.5 in) apart (inside to inside), and the bottom of the blades approximately 114 cm (45 in) above ground. These measurements vary depending on the type of forklift used.

**Note:** If a wall is located behind the installation pad, ensure the forklift blades do not protrude far enough to hit the wall when moving the Express 250 onto the pad.

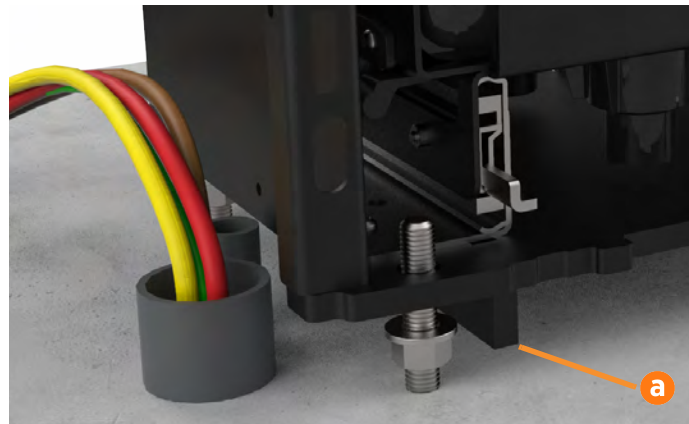


**Important:** To protect the charging connectors from damage, keep them wrapped throughout the installation process.

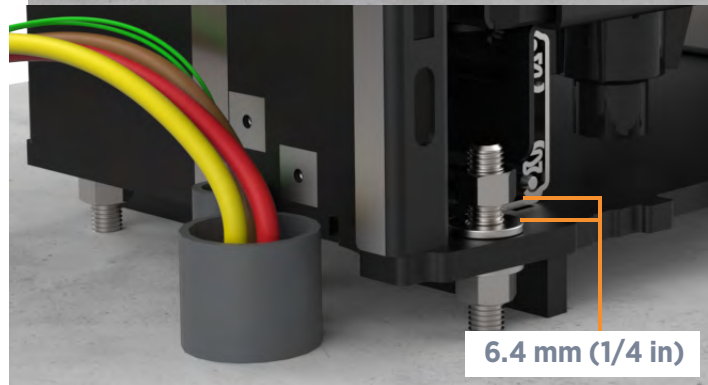
## Mount and Secure the Express 250

1. While the Express 250 is elevated, use a 24 mm (15/16 in) hex wrench to remove the bolts and wooden stands from the bottom of the charging station.
2. Lift the Express 250 over the mounting bolts on the installation pad, ensuring the bolts align with the corresponding holes in the bottom of the Express 250. Move the service wiring out of the way to ensure it is not pinched or trapped.
3. Lower the Express 250 onto the anchor bolts.

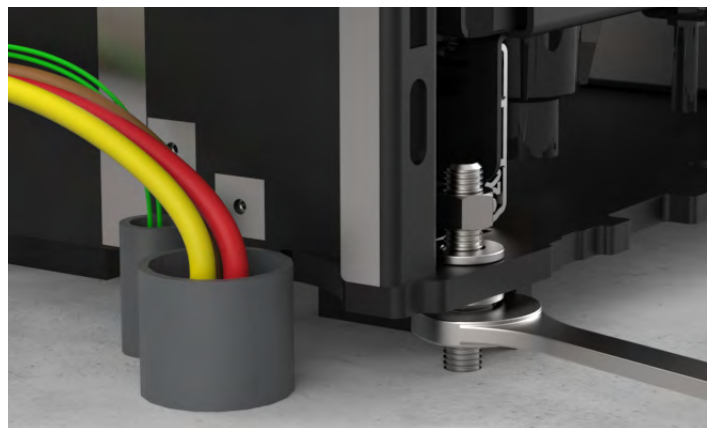
**Note:** The Express 250 should rest on the leveling nuts and washers, not on the rails (a). The purpose of the rails is to ensure the Express 250 is installed a minimum height from the concrete, allowing the front and rear panels to sit flush with the concrete surface.



4. Install a washer and nut onto each of the four corner mounting bolts to secure the Express 250. For easier leveling, leave a 6.4 mm (1/4 in) gap between the bottom of these top nuts and the baseplate of the frame.
5. Remove the lifting equipment from the installation area.



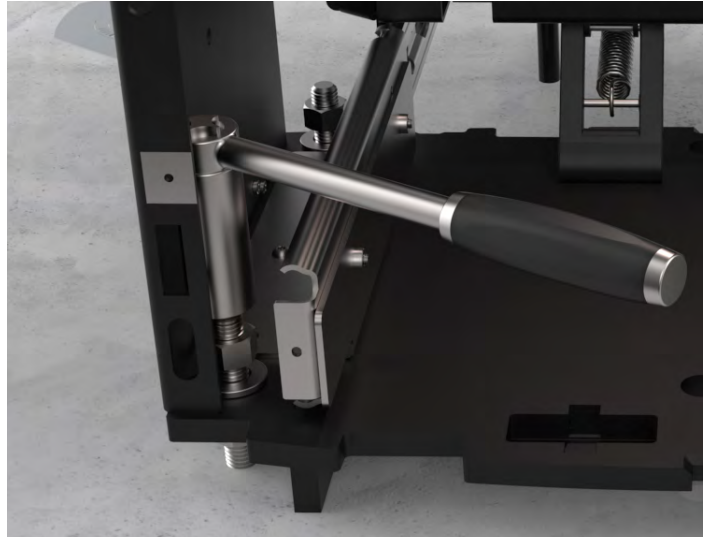
6. Using a level on all four sides, adjust three of the bottom corner leveling nuts as needed to ensure that the Express 250 is both horizontally and vertically level.
7. When level, tighten leveling top nuts by hand. Then raise the remaining (non-leveling) lower nut by hand-turning until flush against the Express 250's frame.



8. Tighten the final top nut by hand. Torque all top nuts to 94.9 Nm (70 ft-lbs).

**Note:** For easier access to the nuts, press down on the Power Module yellow release latch and slide the tray out.

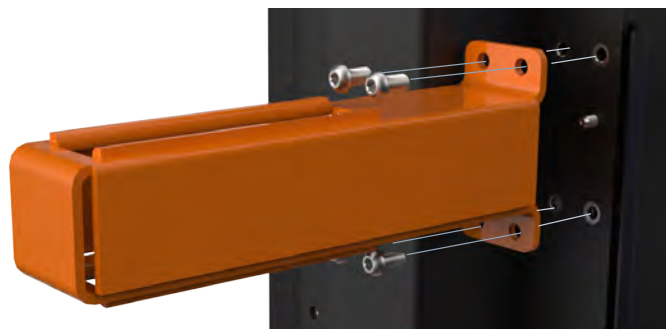
9. Using a level, re-check the vertical and horizontal alignment to ensure the tightening of the nuts did not cause the Express 250 to shift. Make any adjustments to ensure the Express 250 is level while all nuts are tightly secured.



10. Use the supplied T27 Torx driver to remove the right and left forklift handles from each side of the Express 250.



11. Use the supplied T27 Torx driver and the step ladder to remove the right and left crane lift guides near the top of each side of the Express 250.



12. Remove the HDPE plastic shipping bag from the Express 250 and recycle it.



---

## Connect the AC Wiring



**DANGER: RISK OF SHOCK.** Before performing this procedure, disconnect the power to the Express 250 at the service panel. Keep power off for this circuit until all cover panels are correctly reinstalled and the work scope is completed. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

---



**CAUTION:** Ensure a grounding conductor that complies with local codes is properly grounded to earth at service equipment or, when supplied by a separate system, at the supply transformer.

---

1. Follow standard practice and local code to de-energize the applicable circuit and lock out/tag out the disconnect before proceeding. Use a multimeter to test that power is off.
2. If not already done, pull service wiring through the conduit in the installation pad as described in the *Express 250 Site Design Guide*.



**Important:** The AC terminal block on the Express 250 accepts 35 mm<sup>2</sup> (2 AWG) wires only. If using a larger gauge wire to accommodate a long run, reduce the wire size at the local external disconnect.

---

3. Remove the AC wiring cover on the left side of the Express 250 by pressing on its sides and sliding it downward. Pivot the bottom away from the Express 250 frame.
4. Measure the length needed to extend the wiring from the conduit opening to the Express 250's terminal block (approximately 61 cm/2 ft). Trim the excess wire.



**CAUTION:** Installing the rodent guard brackets as described below protects the system against pest ingress from under the station or along the wiring. Pest ingress in AC and DC terminal areas can damage the system and/or result in system downtime. Rodent guard bracket installation is required.

---

5. For North America and other regions using *conduit*:

a. Use a T25 Torx to loosen the two M5 screws attaching the rodent guard bracket to the charging station.

b. Route the AC wiring bundle through the larger rodent bracket grommet and the ferrite stack.

**Note:** If the cable's bend radius does not allow it to thread through the ferrite mounting, use a T25 Torx to temporarily remove the mounting from the station. Immediately reinstall it once the conductors are in place.

c. Route the shunt trip wiring only through the smaller rodent bracket grommet, not through the ferrite stack.

d. Slide the rodent guard bracket down to leave no gap above the conduit openings. Tighten the T25 screws on the adjustable rodent guard bracket to secure it in place. Multiple screw holes are available to fasten the bracket at different heights.

e. Skip to step 7.



6. For the UK and other regions using *armored cable*:

a. Use a T25 Torx to loosen the two M5 screws attaching the rodent guard bracket to the charging station.

b. Remove the larger grommet in the rodent guard bracket, to avoid interference with the cable gland.

c. Use the smallest cable gland appropriate for the AC conductor size. The bracket can support up to a CW63 size gland.

d. Install the lower cable gland half on the armored cable, below the rodent guard bracket.

e. Route the AC wiring bundle through the rodent guard bracket grommet and the ferrite stack.

**Note:** If the cable's bend radius does not allow it to thread through the ferrite mounting, use a T25 Torx to temporarily remove the mounting from the station. Immediately reinstall it once the cable is in place.

f. Route the shunt trip wiring only through the smaller grommet in the rodent guard bracket, not through the ferrite stack.

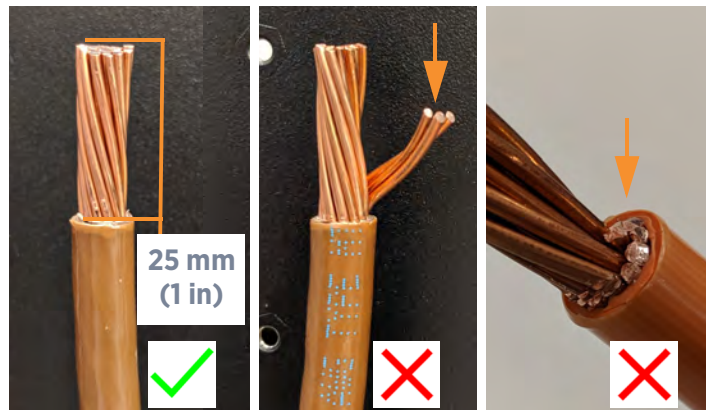


g. Complete installation of the cable gland. Once secure, tighten the T25 screws on the adjustable rodent guard bracket to secure it in place. Multiple screw holes are available to fasten the bracket at different heights.

7. Strip each wire end 25 mm (1 in).



**CAUTION:** Stripping the wire **less** than 25 mm (1 in) can prevent the Wago port from adequately securing the wire. **This can cause arcing or a similar electrical hazard that could result in property damage, injury, or death.**



8. Bundle the strands of each wire tightly. DO NOT remove strands to fit the wire into the terminal.

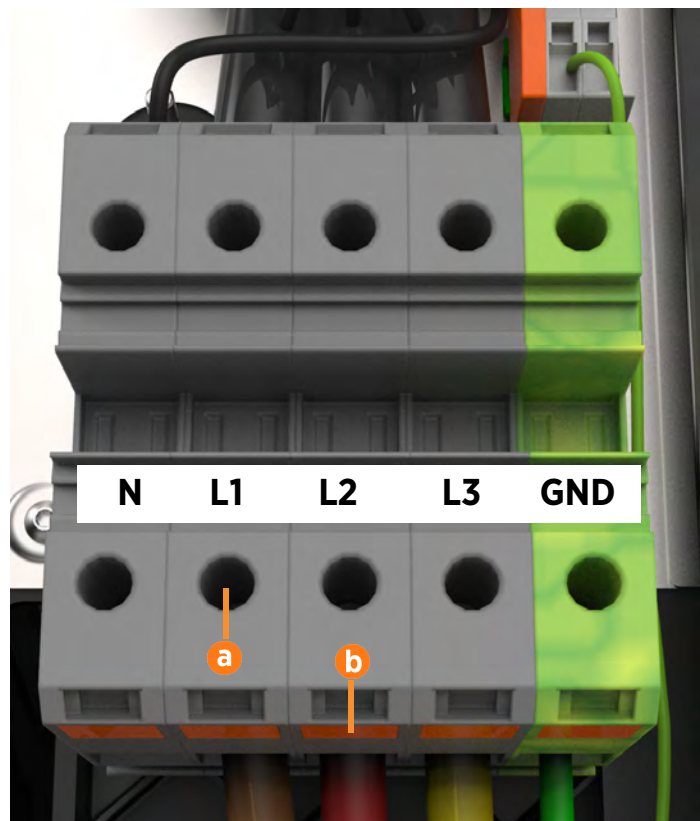


**CAUTION:** Ensure the exposed wires are tightly bundled with no loose strands. Loose or missing strands **can cause arcing or a similar electrical hazard that could result in property damage, injury, or death.**

9. Connect the L1, L2, L3, and GND (protective earth) service wiring to the terminal block. Check local code to see if Neutral is needed. Neutral connection is not required for service equipment operation and the terminal is provided for convenience only.

To connect each wire:

- Fully insert the supplied Wago tool into the Wago port (a) and rotate the tool firmly counter-clockwise 90° to open the connector.
- Lock the connector in the open position by firmly pressing the orange button below it (b).
- Insert the wire fully until it hits the connector's back stop.
- Insert and rotate the Wago tool counter-clockwise again to close the connector. The connector clicks as it closes onto the wire and the orange button is released.





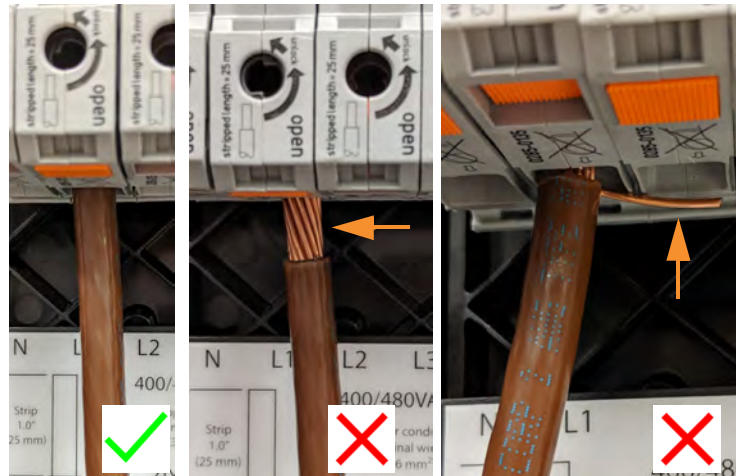


**Important:** Ensure the L1, L2, and L3 cables are installed in the correct order. Incorrect installation creates a phase rotation error later in the process. Phase rotation must be counter-clockwise.

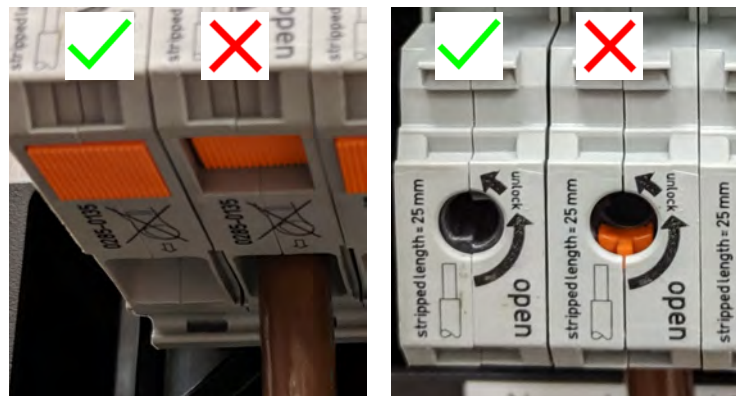
10. Inspect the wiring and Wago terminals before proceeding:
- Ensure no copper is exposed below the terminal.
  - Verify that all strands were fully inserted into the terminal, without being bent back.



**CAUTION:** Ensure NO copper is exposed below the terminal once installed.



- Verify that all Wago connectors are fully closed. A fully closed connector has an orange button in the flush (released) position, and shows no orange in the tool port.
- Confirm each wire is held securely inside its connector by performing a pull-push test.



11. For each of the two shunt trip terminals above the AC terminal block, use a screwdriver to open the locking tab and insert the shunt trip wiring from the smaller conduit. (Only one wire is shown in the example.) Shunt wires are interchangeable. Release the terminal tab and confirm each wire is held securely by performing a pull-push test.
12. Use cable ties to bundle the wires in one or two places.
13. Use the supplied duct seal compound to completely seal all AC openings against pest ingress:
- The inside of the conduit opening
  - Within the rodent guard bracket openings for wiring
  - Around the edges of the rodent guard bracket where it will meet the extrusion



**Important:** The conduit opening must be sealed to protect the wiring from the environment.

---

**14.** Install the AC wiring cover.

- a.** Tilt the narrow end of the cover under the side panel.
- b.** Slide the tabs near the bottom of the cover into the slots on the Express 250. Squeeze the sides of the wiring cover as you guide these tabs into the slots.
- c.** Slide the wiring cover upward until the tabs click into place.



# Pair the Charging Stations 3

This section describes the steps needed to install labels, connect the DC conductors, and connect Ethernet communication if the charging station is being paired.

If the Express 250 is being installed as a Standalone station, skip this section and continue to [Install Cover Panels \(page 29\)](#).

## Install New Labels

1. Identify the ratings label area at the rear of the charging station, just under the charging cable swing arms.
2. Peel the backing and the protective front strip from the new ratings label. Affix the ratings label over the top of the existing ratings. The new label reflects the updates in charging station capacity.
3. Identify the two charging stations to be paired. For each pair, check site plans to see which charging station is designated Station 1 and which is Station 2. If the plans do not define it, designate them now.
4. Affix the AC disconnect labels in the site's main language to the disconnect responsible for AC power to this charging station and the disconnect for its Paired partner.
5. Using permanent marker, write in the last three numbers of both Paired stations' serial number (found next to the ratings) on each disconnect label, so that future technicians know which disconnect to power off for service. This is especially important for sites with multiple pairs of charging stations.



**DANGER: RISK OF SHOCK.** Power must be disconnected at the service panel to BOTH Express 250 paired charging stations when servicing. FAILURE TO CORRECTLY MARK THIS FOR FUTURE TECHNICIANS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.



**Important:** Disconnect numbers must be written in permanent marker. Normal ballpoint pen ink does not stay legible on the label.

## Install DC Cables

The wiring on the DC side (the right side of the charging station) is only connected for Paired installations. Do not connect this wiring for Standalone installations.



**DANGER: RISK OF SHOCK.** Leave the power disconnected at the service panel to BOTH Express 250 charging stations to be paired. Keep power off for both circuits until all cover panels are correctly installed and the work scope is completed. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

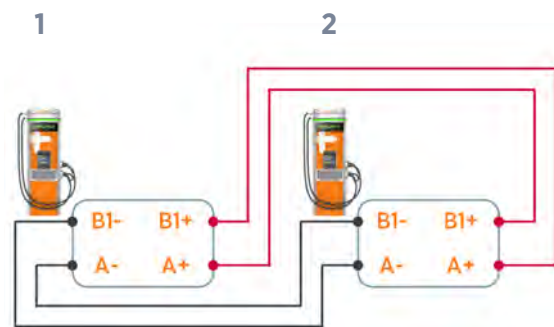


**Important:** The DC terminal blocks on the Express 250 can accept up to 120 mm<sup>2</sup> (4/0 AWG) maximum wire size. Check site plans and local code for site-specific requirements.

1. Remove the plastic DC wiring cover on the right side of the Express 250 by pressing on its sides and pulling it outward.



2. If not already done, label each end of each DC conductor to aid installation as follows:
  - “Station 1 A+” on one end and “Station 2 B1+” on the other end
  - “Station 1 A-” on one end and “Station 2 B1-” on the other end
  - “Station 1 B1+” on one end and “Station 2 A+” on the other end
  - “Station 1 B1-” on one end and “Station 2 A-” on the other end





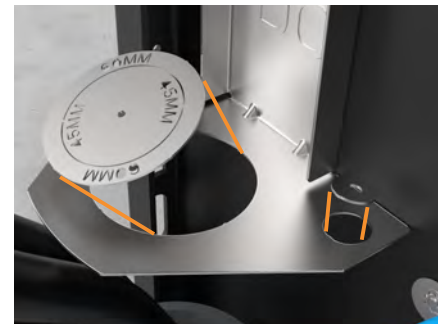
**CAUTION:** Be sure to connect positive to positive, and negative to negative, on the same wire. Do not reverse the polarity.

3. If not already done, pull DC conductors through the DC conduit and Ethernet wire through the communications conduit in the installation pad, as described in the *Express 250 Site Design Guide*.
4. Use the multimeter and toner attachment to test each DC conductor for continuity. If any errors are found, adjust the conductor labels.
5. Measure the length needed to extend the DC conductors from the conduit opening to the Express 250's terminal blocks (approximately 61 cm/2 ft at each end). Do not trim wires closely yet.



**CAUTION:** Installing the rodent guard brackets as described below protects the system against pest ingress from under the station or along the wiring. Pest ingress in AC and DC terminal areas can damage the system and/or result in system downtime. Bracket installation is required.

6. Use a flathead screwdriver to push out both punch-out discs in each DC rodent guard bracket.



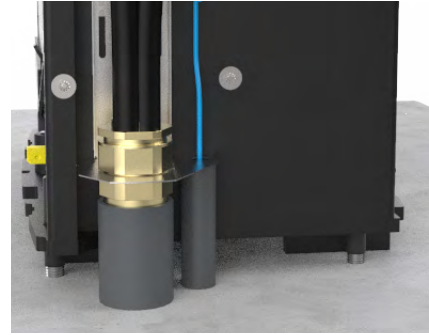
7. For North America and other regions using *conduit*:
  - a. Install the included grommets into both bracket holes, to protect wiring from the edges of the metal bracket.
  - b. Route the conductors through the larger bracket hole.

**Note:** If the cable bend radius does not allow them to thread through the rodent guard bracket, use a T25 Torx to temporarily remove the bracket from the charging station. Immediately reinstall it once the cables are in place.

- c. Route the Ethernet wire through the smaller bracket hole.
- d. Pull enough Ethernet wire to reach the port (approximately 317.5 cm/ 125 in at each end).
- e. Use a T25 Torx to loosen the two M5 screws attaching the rodent guard bracket to the charging station. Slide the bracket down to leave no gap above the conduit openings. Secure the T25 screws.
- f. Strip the DC wiring outer jackets as needed for wire management.



8. For the UK and other regions using *armored cable*:
  - a. Install the included small grommet into the smaller bracket hole, to protect the Ethernet wiring from the edges of the metal bracket. Do not install the larger grommet, to prevent interference with the cable gland.
  - b. Use the smallest cable gland appropriate for the DC conductor size. The bracket can support up to a CW63 size gland.
  - c. Use a T25 Torx to loosen the two M5 screws attaching the rodent guard bracket to the charging station.
  - d. Install the lower cable gland half on the armored cable, below the rodent guard bracket.
  - e. Route the DC wires through the rodent guard bracket.



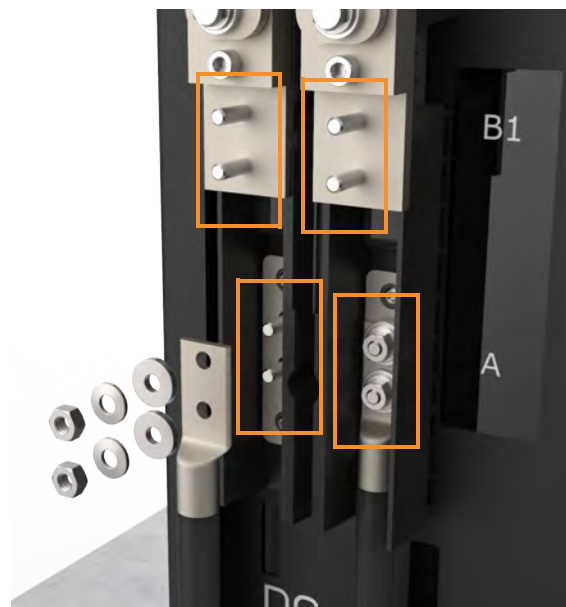
**Note:** If the cable bend radius does not allow them to thread through the bracket, use a T25 Torx to temporarily remove the bracket from the charging station. Immediately reinstall it once the cables are in place.

- f. Route the Ethernet wire through the smaller hole in the bracket.
- g. Pull enough Ethernet wire to reach the port (approximately 317.5 cm/ 125 in at each end).
- h. Use a T25 Torx to loosen the two M5 screws attaching the rodent guard bracket to the charging station. Slide the bracket down to leave no gap above the conduit openings.
- i. Complete installation of the cable gland. Tighten the T25 screws on the bracket to secure it in place.



**Important:** Begin cutting, crimping lugs, and landing the DC conductors on one station only as described below, then cut and crimp lugs for the other station. Trimming and crimping for lugs on both sides at once can create misalignments from wire movement within the conduit.

9. Complete these steps for Station 1:
  - a. Measure the height of the A and B1 terminals. Trim the corresponding conductors to length.
  - b. Field-crimp the end of each DC wire with a compression lug that meets the lug specifications in Section 1, [Bring Tools and Materials \(page 8\)](#). Use the directions found with the crimp tool. If required, heatshrink or tape the crimp area to meet local code.
  - c. Remove the installed washers and nuts from the DC A terminal blocks and keep them for installation use.
  - d. Apply a thin coating of the specified dielectric grease on each lug.
  - e. Land the DC lugs on the terminal blocks. Land the A lugs on the bottom terminal blocks, and the



B lugs on the top B1 terminal blocks. Fasten each lug in this order: terminal block, lug, M6 flat washer, M6 Belleville washer with the cup facing the station, 10 mm M6 nut.

f. Use a 10 mm (3/8 in) nut driver to torque DC lugs to 5.5 Nm (48.7 in-lbs). Mark all DC connections with a paint pen.

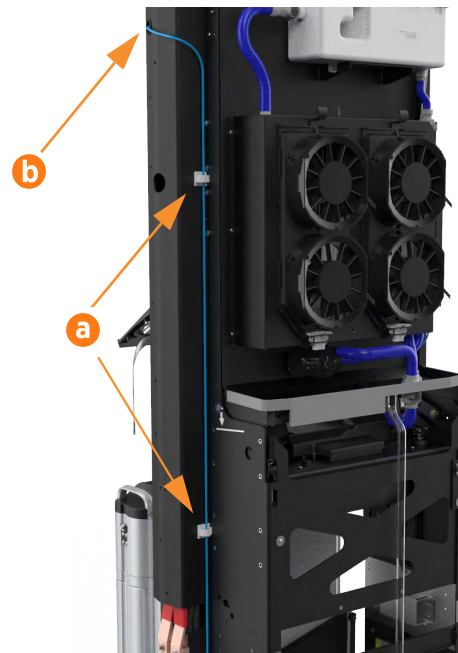


**CAUTION:** Do not under- OR over-torque the DC fasteners. Excess torque, even with hand tools, can damage the terminal blocks.

10. Complete the above steps for Station 2.

## Install the Ethernet Wiring

1. Measure the length needed to extend the Ethernet wiring from the conduit opening, up the side of the frame, and into the Express 250's Station Management Unit, located on a rail under the touchscreen (approximately 317.5 cm/ 125 in). Trim the excess wire.
2. Route the Ethernet wire up the rear side of the frame, through the plastic P-clips (a), and into the top wiring hole (b).



3. Route the Ethernet wire across the charging station from right to left between the auxiliary power supply and the contactor assembly. Zip tie the Ethernet wire to the existing cable bundle at each corner (c).
4. Route the Ethernet wire down behind the touchscreen adjustment bar.
5. With hand pressure, swing the bottom of the touchscreen out to a 45 degree angle (d).



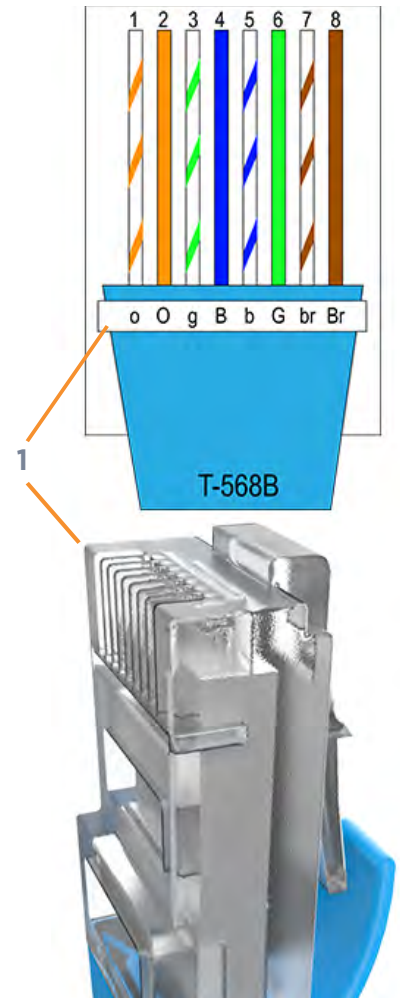
**Important:** The bottom edge and corners of the touchscreen are sharp. Take care when moving underneath the raised screen.

6. Re-measure the distance to the “Ethernet” port of the Station Management Unit (e) and trim excess wire.



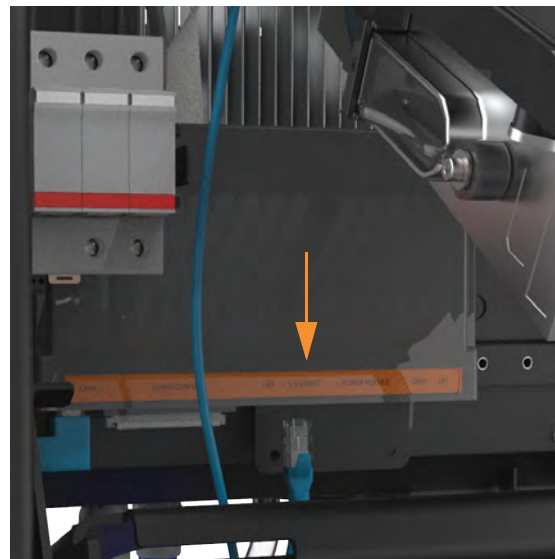


7. Strip the end of the Ethernet insulation.
8. Crimp the Ethernet wire in a straight-through pattern into RJ45 connectors at both ends. Note the location of Pin 1 relative to the clip in the image, and the order of the blue and green wires in the pattern.
9. Test the Ethernet wire for functionality.



10. Plug the Ethernet wire into the **Ethernet** port of the Station Management Unit.

**Note:** It is easier to access the Ethernet port if the Power Module mechanism handle is temporarily in the down position.



- 
11. Use the duct seal compound included in the crate to completely seal all DC openings against pest ingress:
    - a. The inside of the conduit opening
    - b. Within the rodent guard bracket openings for wiring, to pad any sharp edges and block ingress
    - c. Around the edges of the rodent guard bracket where it will meet the extrusion



**Important:** The conduit opening must be sealed to protect the wiring from the environment.

12. Install the DC wiring cover on the left side of the Express 250 by pressing on its sides and pushing it inward.

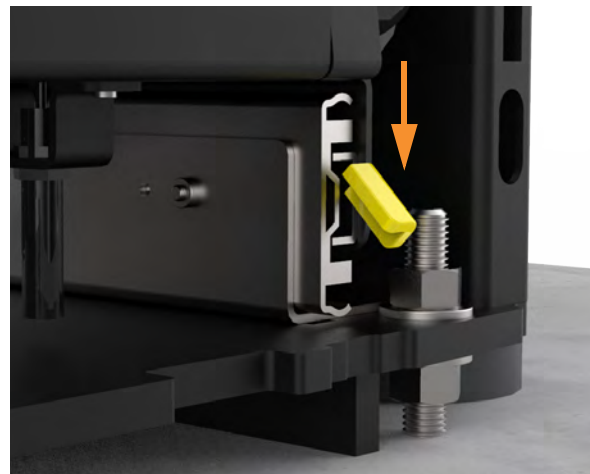


# Install Cover Panels 4

This section describes how to correctly attach all cover panels. This is required to prevent any electrical shock hazard before powering on the charging station. These steps are the same for both Standalone and Paired installations.

## Install the Left Extrusion

1. At the bottom right corner of the Express 250, press and hold the yellow release latch while pulling the Power Module tray out of the station.
2. Carefully lift the charging cables/connectors out of the Power Module tray and rest them gently on a padded surface out of the way.
3. Slightly tilt the left extrusion and slide its top edge under the bottom edge of the area light bar. Align the holes in the extrusion with the guide pins on each side of the Express 250's frame. This temporarily holds the extrusion in place.

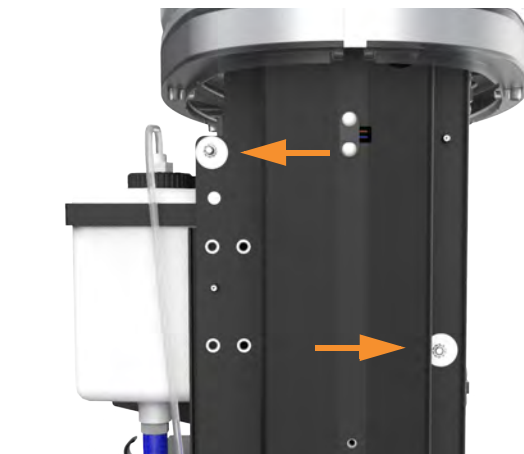


- Using one hand, hold the extrusion and loosely secure the top two captive screws using the supplied T25 Torx driver.

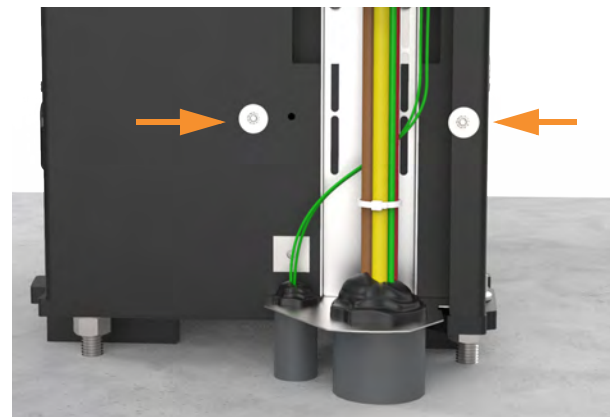
**Note:** The step ladder is needed to reach the top screws.



**Note:** The top and middle screws are asymmetrical.



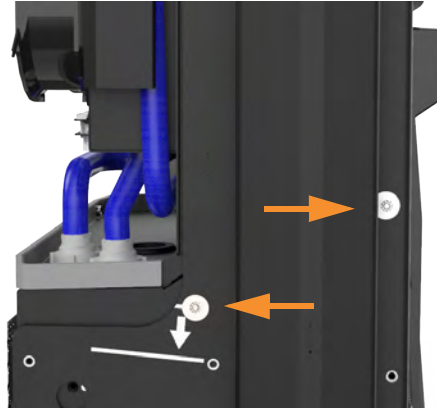
- Use the supplied T25 Torx driver to loosely secure the bottom two screws next. The Power Module holders must not be inside the charging station to have access to the bottom screws.



- Use the supplied T25 Torx driver to loosely secure the middle two screws, just above the Power Module mechanism.

**Note:** Access to the middle screws is easier with the Power Module mechanism handle in the closed (down) position.

- Tighten all left extrusion screws.



## Connect the Right Extrusion's Holster Light Cables

- Locate the P-clip mounted to one of the holsters (top or bottom holster varies by product version).
- Remove the P-clip hardware from the extrusion holster:
  - Generation 1, attached with screw: use a T25 Torx driver to remove the screw and all its components. Carefully note the order of the components.
  - Generation 2, attached with nut (shown): Use an 8 mm nut driver to remove only the nut and the P-clip.
- Identify the holster light cable hanging from the right side of the dispenser.
- Insert the shielded holster cable into the opening in the P-clip to complete the ground path.



5. Connect the shortest cable to the top holster.
6. Connect the next-longest cable to the bottom holster.

**Note:** If there is a third, longer cable, bundle it to avoid pinch points during installation. The third cable is not currently used.



**Important:** Check that these connections are correctly seated, or the system will not operate.

7. Reinstall the P-clip hardware stack:
  - Generation 1: holster, star washer, ground cable lug, P-clip with light power cable routed through, M5 T25 screw head.
  - Generation 2: holster stud, P-clip with light power cable routed through, nut. Torque the nut to 5.5 Nm (48.7 in-lbs).



## Install the Right Extrusion

1. Slightly tilt the right extrusion and slide its top edge under the bottom edge of the area light bar. Align the holes in the extrusion with the guide pins on each side of the Express 250's frame.



- Using one hand, hold the extrusion and loosely secure the top two captive screws using the supplied T25 Torx driver.

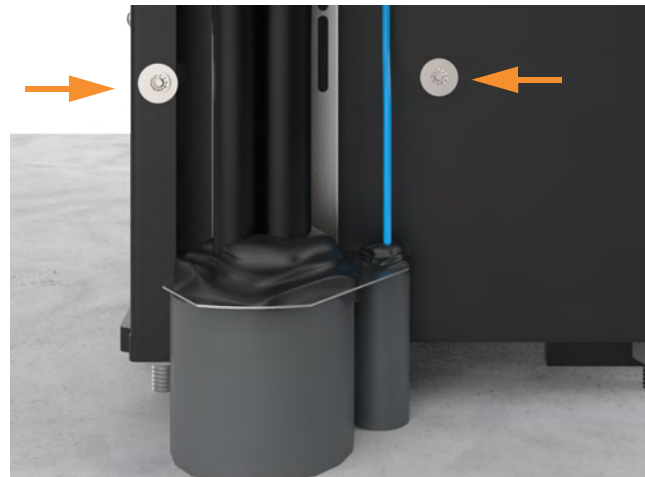
**Note:** The step ladder is needed to reach the top screws.



**Note:** The top and middle screws are asymmetrical.



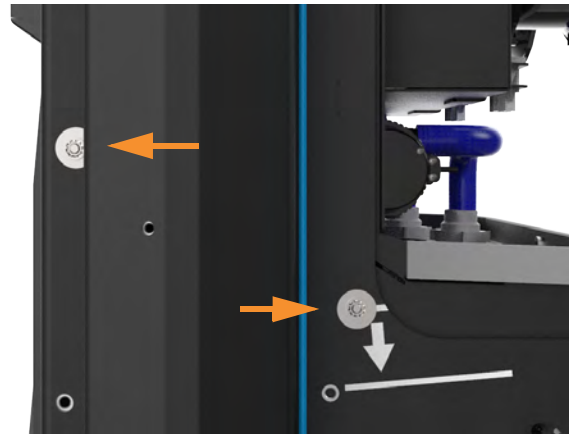
- Use the supplied T25 Torx driver to loosely secure the bottom two screws next. The Power Module holders must not be inside the charging station to have access to the bottom screws.



4. Use the supplied T25 Torx driver to loosely secure the middle two screws, just above the Power Module mechanism.

**Note:** Access to the middle screws is easier with the Power Module mechanism handle in the closed (down) position.

5. Tighten all right extrusion screws.



6. Secure each holster to the frame using a T25 Torx to fasten a supplied rubberized washer and M5 shoulder screw.
7. Align a supplied plastic cap over each holster opening and snap it into place.





## Install the Power Modules and EMI Shields



**CAUTION:** Power Modules are 45 kg (98.5 lb) each. Two people are needed to install or replace a Power Module.



**CAUTION:** Always rest a Power Module flat on the ground until it is being installed. Power Modules are not stable in any other position. Images of Power Modules standing up with the handles on top are only to illustrate the proper installation position.

1. Tilt both Power Module holders down to the ground and rest them on their kickstands (highlighted).

**Note:** The kickstands must rest on a surface that is level with the bottom of the Express 250.

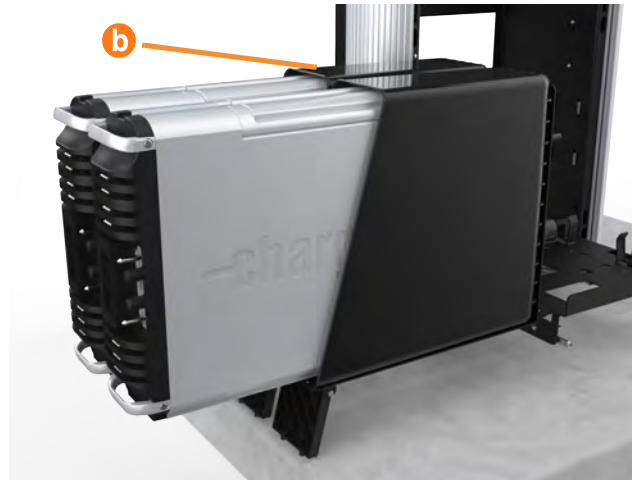


2. Install the rear Power Module first. Using two people, lift the Power Module by its top handles and gently slide it into its holder with its connections facing outward (a). Once the Power Module is positioned partially inside its holder, fold the handles down to slide it in completely.

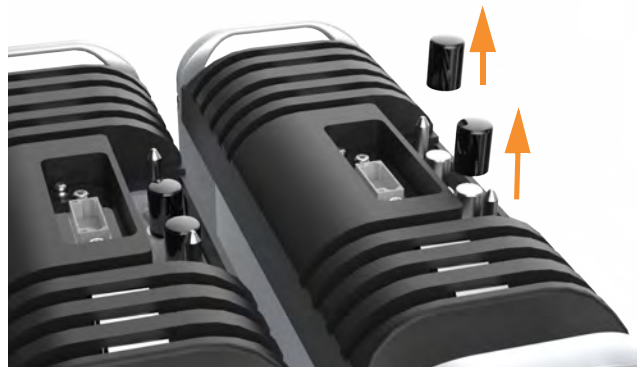


**Note:** If only one Power Module is being installed, it must be installed in the rear holder (b).

3. Repeat the step for the second Power Module if applicable.
4. Lift each Power Module to the upright position one at a time.



5. If not already done, remove the safety caps from the coolant ports.



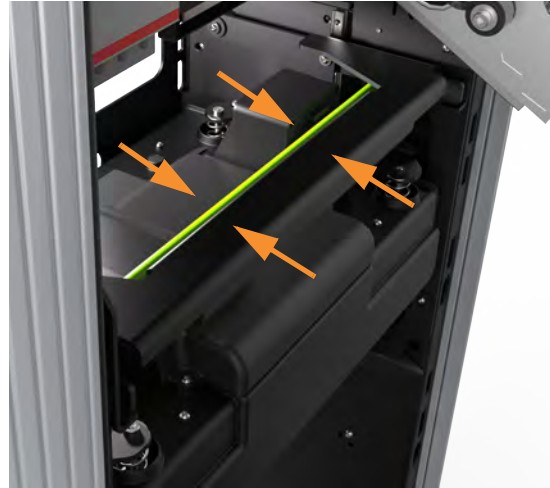
6. With hand pressure, swing the bottom of the touchscreen out to a 45 degree angle.



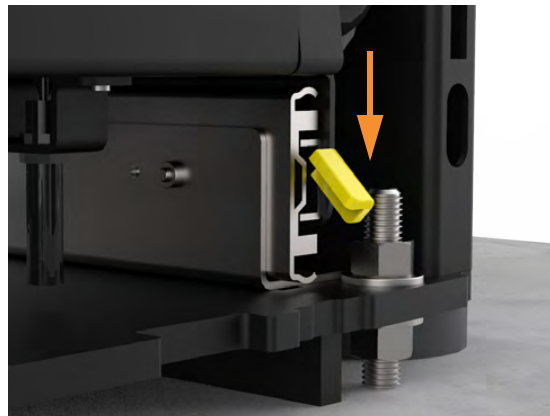
**CAUTION:** The bottom edge and corners of the touchscreen are sharp. Take care when moving underneath the raised screen.



- Using two hands, squeeze the Power Module mechanism's release bar against the flange. Raise the bar to fully raise the Power Module mechanism upward to the lock position. This ensures enough clearance for the Power Modules to slide under the mechanism.



- At the bottom right of the Express 250, press and hold the yellow release latch while pushing the Power Module tray into the station until it locks into place.



- 
9. Using two hands, squeeze the Power Module mechanism's release bar and lower it halfway to check alignment with the ports and guide posts.



10. Lower the Power Module mechanism until you hear a click as the mechanism locks into place. Ensure the mechanism is fully engaged with all Power Module connectors. The ridges on the Power Module's top edge should not be visible. If the mechanism does not engage, raise it again and push the Power Modules to the back of the station to realign, then try again.



**Important:** Do not apply excessive force.

11. Identify the places on the front and back of the frame that show silver grounding locations instead of the normal black of the frame.



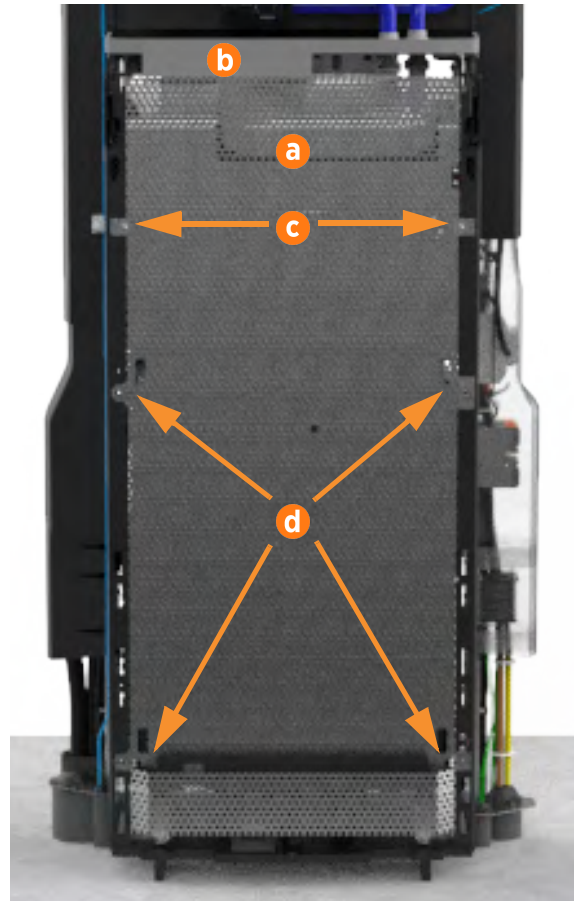
**CAUTION:** The metal EMI shield edges can be sharp. Take care when moving and installing the shields.

12. Position the rear EMI shield (a) over the closed Power Module holder, the drain hose, and the cooling controller cover (b). Ensure the cutout on the long edge is on the right side, leaving the sensor wire clear.

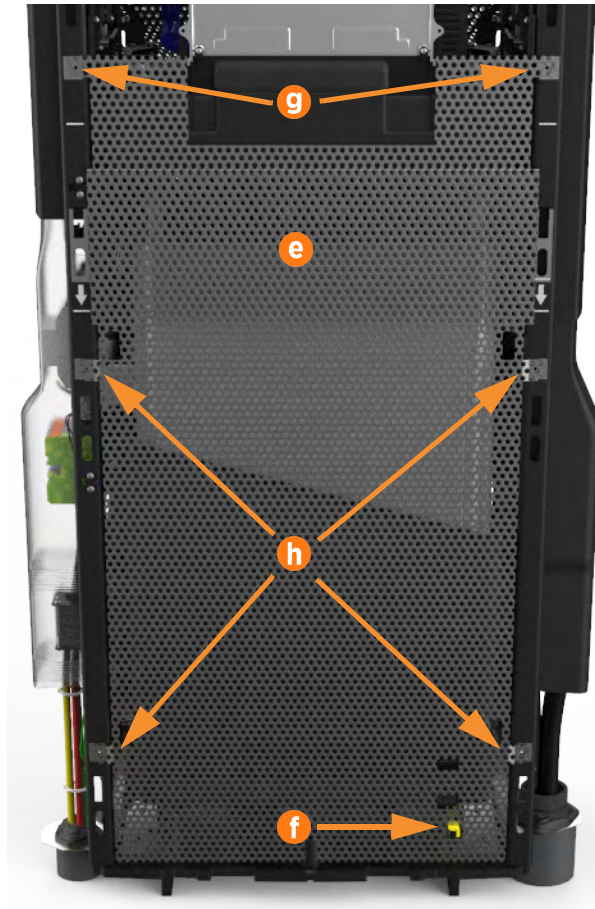


**CAUTION:** If the top edge of the EMI shield risks contact with the wiring below the cooling controller or the drain hose, pad the edge of the shield with electrical or duct tape to prevent abrasion.

13. Remove the two T20 screws (c) that align with the top EMI shield tabs. Discard the star washers beneath them, if present.
14. Use isopropyl wipes to clean the frame grounding locations and both sides of the rear EMI shield tabs.
15. Reinstall the T20 screws with an M5 flat washer from the installation kit to secure the top tabs of the shield on each side.
16. Use a T25 Torx, an M5 screw, and an M5 washer to attach the rear EMI shield to each middle and bottom grounding location on the rear of the frame (d). Torque to 4 Nm (35 in-lbs).



17. Use isopropyl wipes to clean the frame grounding locations and both sides of front EMI shield tabs.
18. Remove the two T25 screws and washers that align with the top front EMI shield tabs (g).
19. Position the front EMI shield (e) over the closed Power Module holder, ensuring the bottom cut-out is positioned over the yellow release latch (f).
20. Reinstall the T25 screws and washer to secure the top tabs of the shield (g) on each side.
21. Use a T25 Torx, an M5 screw, and an M5 washer to attach the front EMI shield to each middle and bottom grounding location on the front of the frame (h). Torque to 4 Nm (35 in-lbs).



## Fill the Coolant Reservoir

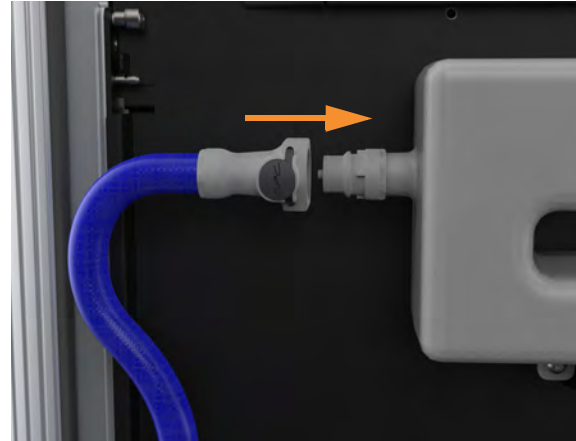
The Express 250 is shipped with an empty coolant reservoir. Coolant and a funnel are included with the product. Most coolant lines are already connected to the reservoir with quick connect fittings, except the ones shown below.

**Note:** Always fill the coolant reservoir after installing the Power Modules, which are part of the coolant path. Filling the reservoir first does not allow full station coolant levels.

1. Attach the quick connect line on the right side of the coolant reservoir. The line audibly clicks when connected.



2. Attach the quick connect line on the left side of the coolant reservoir.



3. Using a step ladder if needed, unscrew the reservoir cap.
4. Use the funnel to fill the reservoir to the marked Max line with coolant.
5. Replace the reservoir cap.



6. Cut and remove the three zip ties that secure the fan trays during shipment.



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## Install the Rear Cover Panels



**Important:** When installing the rear panels, take special care to ensure that each panel is correctly positioned. Failure to do so can prevent station operation.

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**Important:** Small gauge wiring routed on the sides of the frame could be sheared if caught by panel tabs. Ensure wiring is cleared from guide holes when installing bottom and middle rear panels.

---

1. Using two hands, one on each side of the lower rear panel, align the guide tabs (inset image) on the lower rear panel to the matching slots on the Express 250. Squeeze the sides of the panel inward to fit the tabs into place in the C-channel, inside the watertight gasket. Carefully push the panel down.



**Note:** The charging station has guide marks on the frame, to show initial and final cover locations.





- Using two hands, align the guide tabs on the panel to the matching slots on the enclosure frame. Squeeze the sides of the panel inward to fit the tabs into place in the C-channel, inside the watertight gasket. Carefully push the panel down.

**Note:** Newer cover panels do not have signs on the rear panels, only the front panels.



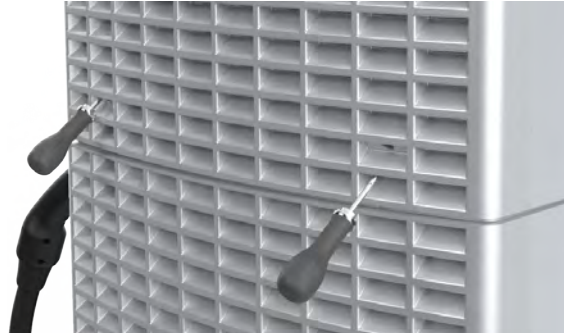
- Using two hands, hold the top rear panel at an angle and slide into place beginning with the top edge. Squeeze the sides of the panel inward to fit the tabs into place in the C-channel, inside the watertight gasket.

**Note:** This panel is easier to install with two people.

- Using the supplied T25 Torx driver, loosely secure the top of the top rear panel to the enclosure frame with the two screws.



5. Using a T25 Torx, tighten the two hidden captive screws located in the panel's vents, 2 squares up and 2 squares over from each bottom corner.
6. Use the T25 Torx driver to tighten the top two screws.



## Install the Front Cover Panels

1. Align the guide tabs on the front bottom panel to the matching slots on the Express 250's frame, and slide the panel down carefully.

**Note:** Ensure the panel installation does not tear or break the gaskets on the inner edges of the side extrusions.



2. On the middle vent panel, route both proximity wires under the sheet metal edge, to hang in front of the panel on the right side (as you face the front of the charging station).



3. Align the guide tabs on the middle vent panel to the corresponding slots on the Express 250's frame. Ensure the lower sign is correctly captured as you carefully push the middle panel down until it is fully seated.



**Important:** The fins on the back surface of the middle vent panel are sharp. Take care when handling the panel.

4. Remove the packaging tape and material from the touchscreen.
5. Connect the proximity sensor wires on the middle vent panel to the corresponding connectors on the bottom of the touchscreen: left wire to left port and right wire to right port.
6. Route any excess wiring through the wire management rings under the touchscreen, to prevent it being pinched in the panels.

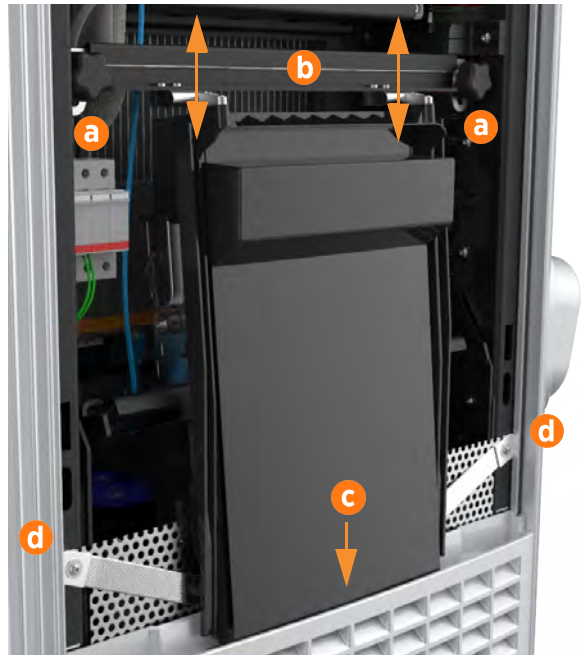


7. With hand pressure, swing the touchscreen down. Loosen both retention knobs (a), allowing the touchscreen beam (b) to slide up vertically. Re-tighten the knobs at the highest position.
8. Tilt the bottom of the touchscreen inside the slot in the middle vent panel, aligning the notch in the center of the bottom edge (c) to the guide ridge inside the panel slot.
9. Keeping pressure on the edge of the touchscreen to properly seat it inside the panel, loosen the knobs to lower the screen again. Re-tighten the knobs to secure it.
10. Use a T25 Torx driver, an M5 screw, and an M5 washer to attach each end of the touchscreen ground strap to the frame (d). Torque to 4 Nm (35 in-lbs).
11. Using two hands, align the guide tabs on the front upper panel with the corresponding slots. While pushing the panel into place, push the bottom edge and its sign inward to position them inside the groove in the middle vent panel and engage the edge of the sign. Carefully push the panel down until it is firmly seated.



**Important:** Ensure all five communication cables at the top of the Express 250 are not captured by this front upper panel, and are easily accessible.

**Note:** This panel is easier to install with two people.



## Install the LED Display and Area Light Bar

1. Unpack the LED display from its shipping box. While holding the LED display near the opening at the top of the Express 250, connect its five cables to their corresponding connectors on the back of the display (each connector is keyed to fit only into its matching port):
  - a. Communications cable (USB-A)
  - b. Holster light cable
  - c. Area light cable (x2)
  - d. Power cable (24 V)



**Important:** Before continuing, ensure all five cables are properly connected. Do not allow the LED display to hang from the cables once they are connected.

Leave the area light bar cable (e) loose.



- 
2. Angle the top edge of the LED display under the light bar on the Express 250. Starting at the top, align and slide the LED display guide tabs into the corresponding slots. Ensure the lower sign is correctly captured by the bottom edge of the LED display. Push the bottom into place until firmly seated.

**Note:** Keep the area light cable routed out the top of the display.

3. Ensure the gasket on each end of the area light bar is properly seated around the plastic tab.
4. Connect the power cable from the LED display to the area light bar.



5. Position the area light bar above the LED display with the lights facing downward. Align the area light bar and hold it in place with enough force to compress the gaskets.
6. Use the supplied T25 Torx driver to tighten the two captive screws on the bottom edge of the area light bar.
7. Unwrap the charging cable connectors and insert each connector into its corresponding holster.



8. Remove the protective tape from the swing arms, signs, and touchscreen.
9. Ensure the rating markings are visible above the light ring, located on the plastic just below the swing arm in the rear of the charging station. (The CE label is just below the swing arm on the left side of the charging station.)



**Important:** You have now completed the physical installation of the Express 250. Follow the steps in the next section to complete the installation. Do not leave the installation site until you complete all steps in the next section and verify the Express 250 is operating correctly.

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# Complete the Installation 5

After an Express 250 charging station (or pair of stations) has been successfully installed, follow the instructions in this section to complete the installation.

You need:

- A smartphone or laptop with a QR-code scanner, camera, and Internet connection. These are required to access the pinpointing dashboard at [m.chargepoint.com](https://m.chargepoint.com).
- Your ChargePoint certified installer user name and password.
- The exact installation location of the parking space where the Express 250 is installed.

## Complete the Installation Wizard: Standalone Installations

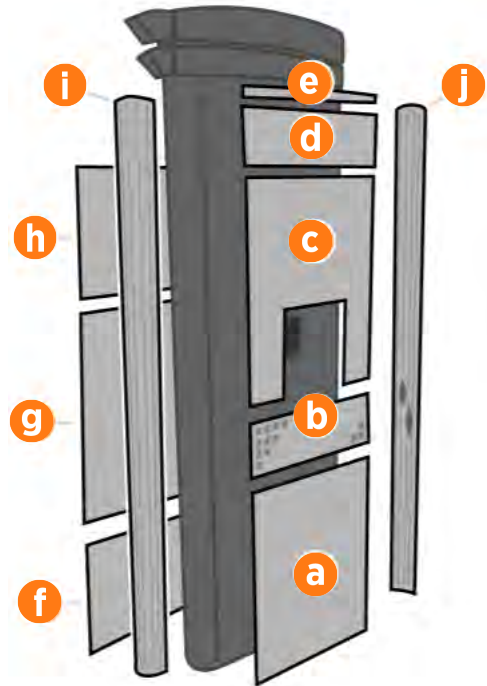
Follow the steps in this section if you are installing a Standalone charging station. For Paired installations, skip to the next section.

Once all cables are installed and all cover panels are in place, the on-screen Installation Wizard steps you through a series of tasks to set up the Express 250 and verify that it can operate properly.

1. Power on the Express 250 charging station at the breaker panel.
2. On the front touchscreen, select a language for the Installation Wizard (this does not permanently affect the Express 250's display language).

3. The next Installation Wizard test determines whether all cover panels are correctly installed and fully seated. Check the lower right corner of the screen for any error messages. If panel errors appear, match the panel letters to this illustration.

- a. Front bottom panel
- b. Middle vent panel
- c. Front top panel
- d. LED display
- e. Area light bar
- f. Rear bottom panel
- g. Rear middle panel
- h. Rear top panel
- i. Left extrusion
- j. Right extrusion



**DANGER: RISK OF SHOCK.** If a fault exists, turn the power off during work and keep it off until all panels are reinstalled. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

If any panel needs re-installation, review the procedures above to double-check that all panels are fully seated and that the edges of all signs are captured fully by the panels around them.

- 4. Select the option “New installation”.
- 5. Confirm you have all required materials to continue activation, and select Yes.
- 6. Skip the next section and continue with [Pinpoint the Station\(s\)](#) (page 52).

## Complete the Installation Wizard: Paired Installations

Follow the steps in this section if you are installing Paired charging stations. For Standalone installations, see the previous section.



**CAUTION:** Do not use either Paired station for a charging session, from the time work is begun to the point that both stations are confirmed as having Paired functionality. Equipment damage can result from plugging in a vehicle while the update is only partially complete.

Once all pairing cables are installed and all cover panels are in place, the on-screen Installation Wizard steps you through a series of tasks to set up the Express 250 and verify that it can operate



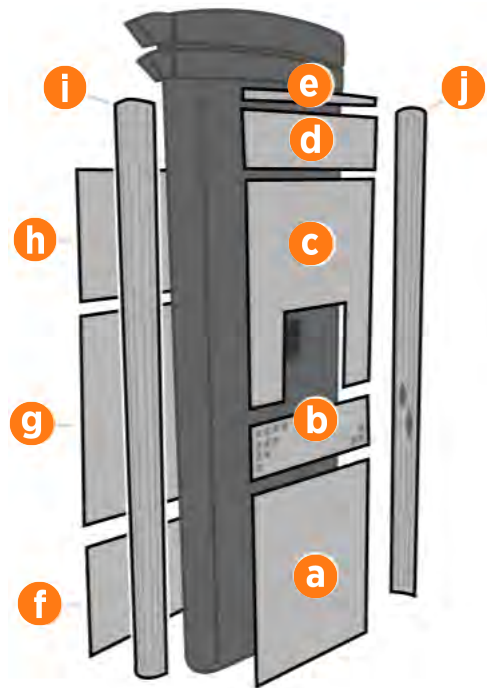
properly.

1. Power on both Express 250 charging stations at the breaker panel.
2. If the stations do not power on and begin their configuration automatically after a couple of minutes, go to [chargepoint.com/support](https://chargepoint.com/support) and find your region's technical support number. Identify the two stations you are installing or updating. Request confirmation that both charging stations are running firmware version 7.0.4.x or higher. If not, ask the support technician to do this now.



**Important:** Ensure both paired charging stations have the exact same version of firmware before continuing. For example, two stations running 7.0.4.24 and 7.0.4.25 are not sufficiently synced.

3. On the front touchscreen, select a language for the Installation Wizard (this does not permanently affect the Express 250's display language).
4. The next Installation Wizard test determines whether all cover panels are correctly installed and fully seated. Check the lower right corner of the screen for any error messages. If panel errors appear, match the panel letters to this illustration.
  - a. Front bottom panel
  - b. Middle vent panel
  - c. Front top panel
  - d. LED display
  - e. Area light bar
  - f. Rear bottom panel
  - g. Rear middle panel
  - h. Rear top panel
  - i. Left extrusion
  - j. Right extrusion



**DANGER: RISK OF SHOCK.** If a fault exists, turn the power off during work and keep it off until all panels are reinstalled. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY OR LOSS OF LIFE.

If any panel needs re-installation, review the procedures above to double-check that all panels are fully seated and that the edges of all signs are captured fully by the panels around them.

5. Select the option "New installation", whether you are installing two new stations or pairing with an existing station. (The other option, "Replace Existing Station", is only for stations where all settings remain the same as before.)

- 
6. Confirm you have all required materials to continue activation, and select Yes. If the Ethernet connection is detected, the Installation Wizard runs the paired connectivity check in the background and displays a notice if all tests have succeeded.
  7. If the Installation Wizard Ethernet test initially fails, it asks you to select Standalone or Paired configuration. Select Paired.
  8. Solve any displayed paired faults. If problems persist:
    - Ensure both stations are running the same (and latest) version of firmware.
    - Ensure all cover panels are correctly installed.
    - Power off both stations and check the Ethernet and DC conductor connections.
    - In the case of “Power Module Fault” or “timeout” errors, power off both stations and check DC conductor and Power Module connections.
    - If none of these measures work, contact ChargePoint Support.

## Pinpoint the Station(s)



**Important:** Pinpointing allows drivers to quickly locate the Express 250 on a map. Ensure you accurately pinpoint the Express 250 when prompted by the Installation Wizard.

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1. Using your smart phone, navigate to [m.chargepoint.com](https://m.chargepoint.com).
2. Log into the ChargePoint mobile site from your smart phone with your installer credentials.
3. Scan the QR code on the screen with your phone. Enter the activation password and touch Next.
4. Confirm that you are installing a new Express 250 charging station.
5. When prompted, touch OK to share your GPS location data with the ChargePoint mobile site.
6. When prompted, touch OK to review the station’s location on Google™ Maps.
7. Review the station address and zoom in to review the initial position of the station’s pin on the map.
8. Manually move the pin to the correct parking spot location on the screen.
9. If needed, adjust the address of the station’s location.
10. Take a picture of the station using your smart phone. Scroll down to “Upload a Station Picture” and choose the station picture.
11. Add helpful information for drivers, such as parking structure floor.
12. Touch SUBMIT to pinpoint the station on the ChargePoint map.

## Run a Test Charging Session

Before leaving the installation site, follow these steps to ensure the Express 250 is fully operational:

1. Connect the charging cable to a vehicle.
2. Use your ChargePoint card to start a charging session. The Express 250 displays instructions on how to plug in a vehicle.
3. Stop the charging session and return the connector to the holster.

If the Express 250 operates correctly and no errors are displayed, the installation is complete. If the Express 250 does not power up, or fails to begin a charging session, confirm the wiring is properly connected. If the Express 250 is properly wired but is not operating correctly, contact ChargePoint at [chargepoint.com/support](https://chargepoint.com/support) for assistance.



**Important:** Do not leave the installation site until the Express 250 is operating correctly.

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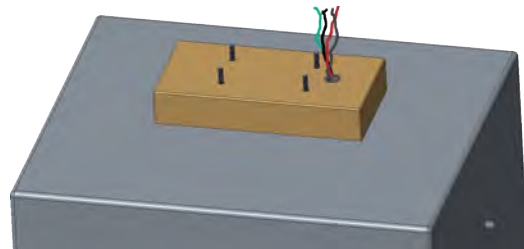
**Important:** Remove the crates and all packaging from the installation area. Make sure no materials in the area could potentially damage vehicle tires, such as nails or screws.

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# Removing the Express 200 Adapter

If you are installing an Express 250 to replace an existing Express 200, remove the Express 200 by reversing the instructions provided in the *CPE200 Installation Guide*. You must also uninstall the Express 200 adapter as described in this appendix.



## Tools Needed

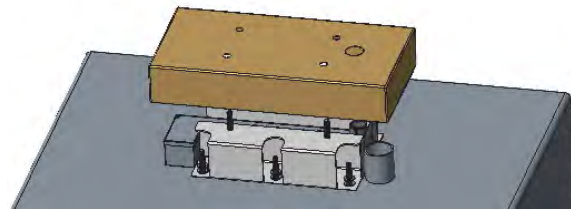
- Cut-resistant gloves to handle the cover
- #2 Phillips screwdriver
- 18 mm (11/16 in) wrench

## Follow These Steps

1. Remove the metal adapter cover by pulling it upward.



**WARNING:** Always wear cut-resistant gloves when handling the cover. The cover has sharp edges that can cause injury.



2. Using a Phillips screwdriver, unfasten the two screws to remove the L-shaped wiring cover.
3. Remove the conduit shield from the wiring cover by holding down the conduit connector release ring while pulling the conduit shield.
4. Remove the Express 200 adapter's base by removing the six nuts and washers from the mounting bolts using a 18 mm (11/16 in) wrench.

**Note:** The service wiring for the Express 200 was redirected through conduit because the Express 200 terminal block is located on the right (when facing the front of the installation pad). On the Express 250, the terminal block is on the left; run the wiring directly upward from the left conduit opening.



### **Limited Warranty Information and Disclaimer**

The Limited Warranty you received with your Charging Station is subject to certain exceptions and exclusions. For example, your use of, installation of, or modification to, the ChargePoint® Charging Station in a manner in which the ChargePoint® Charging Station is not intended to be used or modified will void the limited warranty. You should review your limited warranty and become familiar with the terms thereof. Other than any such limited warranty, the ChargePoint products are provided "AS IS," and ChargePoint, Inc. and its distributors expressly disclaim all implied warranties, including any warranty of design, merchantability, fitness for a particular purposes and non-infringement, to the maximum extent permitted by law.

### **Limitation of Liability**

CHARGEPOINT IS NOT LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOST PROFITS, LOST BUSINESS, LOST DATA, LOSS OF USE, OR COST OF COVER INCURRED BY YOU ARISING OUT OF OR RELATED TO YOUR PURCHASE OR USE OF, OR INABILITY TO USE, THE CHARGING STATION, UNDER ANY THEORY OF LIABILITY, WHETHER IN AN ACTION IN CONTRACT, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE) OR OTHER LEGAL OR EQUITABLE THEORY, EVEN IF CHARGEPOINT KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY EVENT, THE CUMULATIVE LIABILITY OF CHARGEPOINT FOR ALL CLAIMS WHATSOEVER RELATED TO THE CHARGING STATION WILL NOT EXCEED THE PRICE YOU PAID FOR THE CHARGING STATION. THE LIMITATIONS SET FORTH HEREIN ARE INTENDED TO LIMIT THE LIABILITY OF CHARGEPOINT AND SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

### **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 ChargePoint, 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 (optional) 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.

### **Industry Canada**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### **FCC/IC Compliance Labels**

Visit [chargepoint.com/labels/](http://chargepoint.com/labels/)



[chargepoint.com/support](https://chargepoint.com/support)

75-001379-01 r1



# Express 250

DC Fast Charging Station

## Site Design Guide for Standalone and Paired Stations



# IMPORTANT SAFETY INSTRUCTIONS: SAVE THESE INSTRUCTIONS



## WARNING:

- 1. Read and follow all warnings and instructions before installing and operating the ChargePoint® Charging Station.** Install and operate only as instructed. Failure to do so may lead to death, injury, or property damage, and will void the Limited Warranty.
- 2. Only use licensed professionals to install your ChargePoint charging station and adhere to all national and local building codes and standards.** Before installing the ChargePoint® charging station, consult with a licensed contractor, such as a licensed electrician, and use a trained installation expert to ensure compliance with local building and electrical codes and standards, climate conditions, safety standards, and all applicable codes and ordinances. Inspect the charging station for proper installation before use.
- 3. Always ground the ChargePoint charging station.** Failure to ground the charging station can lead to risk of electrocution or fire. The charging station must be connected to a grounded, metal, permanent wiring system, or an equipment grounding conductor shall be run with circuit conductors and connected to the equipment grounding terminal or lead on the Electric Vehicle Supply Equipment (EVSE). Connections to the EVSE shall comply with all applicable codes and ordinances.
- 4. Install the ChargePoint charging station on a concrete pad using a ChargePoint approved method.** Failure to install on a surface that can support the full weight of the charging station can result in death, personal injury, or property damage. Inspect the charging station for proper installation before use.
- 5. This charging station is not suitable for use in or around hazardous locations, such as near flammable, explosive, or combustible materials.**
- 6. Do not use this product if the enclosure, EV cable, or the EV connector is broken, cracked, open, or shows any other indication of damage.**
- 7. Do not put fingers into the electric vehicle connector.**



**Important:** Under no circumstances will compliance with the information in this manual relieve the user of his/her responsibility to comply with all applicable codes or safety standards. This document describes the most commonly-used installation and mounting scenarios. If situations arise in which it is not possible to perform an installation following the procedures provided in this document, contact ChargePoint, Inc. **ChargePoint, Inc. is not responsible for any damages that may result from custom installations that are not described in this document or for any failure to adhere to installation recommendations.**

## Product Disposal

To comply with Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), devices marked with this symbol may not be disposed of as part of unsorted domestic waste inside the European Union. Enquire with local authorities regarding proper disposal. Product materials are recyclable as marked.



## No Accuracy Guarantee

Commercially reasonable efforts were made to ensure that the specifications and other information in this manual are accurate and complete at the time of its publication. However, the specifications and other information in this manual are subject to change at any time without prior notice.

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## Symbols Used in This Document

This guide and product use the following symbols:



**DANGER:** Risk of electric shock.



**WARNING:** Risk of personal harm or death.



**CAUTION:** Risk of equipment or property damage.



**Important:** Crucial step for installation success.



Read the manual for instructions.



Ground/protective earth.



# Contents

<b>1</b>	<b>Site Design Guidelines</b>	<b>1</b>
	Pairing Two Express 250s	2
	Initial Site Guidelines	2
	Plan for Future Charging Capacity	2
	Charging Station Placement	3
<b>2</b>	<b>Civil and Mechanical Design</b>	<b>7</b>
	Pad	8
	Drainage	9
	Mounting Specifications	9
	Clearances	10
	Ventilation	11
	Wheel Stops	11
	Bollards	12
	Pairing Previously Installed Charging Stations	14
	Accessibility	15
	Signage	15
<b>3</b>	<b>Electrical Design</b>	<b>17</b>
	Upstream Components	17
	Transformer Configuration	18
	AC Disconnect Switch	18
	RCD Use	18
	Grounding/Earthing Requirements	19
	Shunt Trip Wiring	20
	Conduit	21
	Wiring Requirements for Standalone Stations	22
	Additional Wiring Requirements for Paired Stations	22
	Wiring Diagram	25
	Cellular Connectivity	26
<b>4</b>	<b>The Express 250 Concrete Mounting Template</b>	<b>27</b>
	Bring Tools and Materials	28

CPE250-CMT Overview . . . . .	29
Assemble the CPE250-CMT . . . . .	31
Install the CPE250-CMT. . . . .	32
<b>Appendix A Examples of Express 250 Paired Wire Sizing . . . . .</b>	<b>33</b>

# Site Design Guidelines 1

This document describes how to design an installation site for the ChargePoint® Express 250 DC fast charging station, and install the Concrete Mounting Template, before station installation.

The Express 250 is a DC fast charging station for electric vehicles. Each charging station communicates with ChargePoint using a cellular network. This connectivity is required for diagnostics and reporting, as well as communication with the online dashboard that allows the station owner to control its settings and commands. See the section [Cellular Connectivity \(page 26\)](#) for detailed information.



**Important:** Always follow all applicable local and national codes and requirements. A site drawing should be engineered for your specific site to reduce installation costs and ensure compliance with local codes. Local authorities might not allow a unit to operate if it is not installed to code.

Access ChargePoint documents online at [chargepoint.com/guides](https://chargepoint.com/guides) or [chargepoint.com/eu/guides](https://chargepoint.com/eu/guides) for each phase of the project:

Document	Content	Audiences
<i>Express 250 Data Sheet</i>	Full station specifications	Site designer, installer, and station owner
<b>This document</b>	<b>Civil, mechanical, and electrical guidelines to scope and construct the site</b>	<b>Site designer or engineer of record</b>
<i>Concrete Mounting Template Guide</i>	Onsite instructions for installing the CMT with anchor bolts and conduit placement	Site construction contractor
<i>Express 250 Installation Guide</i>	Anchoring, wiring, and powering on	Installer
<i>Express 250 Operations and Maintenance Guide</i>	Operation and preventative maintenance	Station owner or facility manager
Full set of Field Replacement Guides	Component replacement procedures	Station owner or third party servicer

Installing the Express 250 requires two people and takes approximately 3-4 hours. This time estimate does not include the time needed to pull DC and Ethernet cable for a Paired installation if it is not already done. Paired installation might also require contacting a ChargePoint support technician to perform any required software updates and configuration if a station is being

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retrofitted from Standalone to Paired.



**Important:** All installers must be licensed electricians and complete an online training course to become a ChargePoint certified installer. Installers who do not complete installation training cannot access the ChargePoint Network to complete pinpointing and station setup. To complete online training and become a certified installer, refer to ChargePoint University at: [chargepoint.com/installers](https://chargepoint.com/installers) or [chargepoint.com/eu/installers](https://chargepoint.com/eu/installers)

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## Pairing Two Express 250s

The Express 250 can be installed either as a standalone system, or paired with another Express 250 using a DC connection to more flexibly share load. The two Power Modules in the base of each charging station can be shared in any combination according to charging need. This allows high power output in sites with space constraints.

To pair two Express 250 charging stations, all of the following are required:

- Additional conduit, ducting, or armored cable (according to region) correctly installed between the two charging stations for DC conductors and Ethernet wiring
- Both Express 250s must have 62.5 kW power enabled (not allowed on stations only enabled for 50 kW)
- Both Express 250s must be provisioned for full power back to the panel (not allowed on “power select” stations)

## Initial Site Guidelines

An onsite evaluation is needed to determine conduit and wiring requirements from the panel to the proposed parking spaces, as well as to measure cellular signal levels and identify suitable locations for any necessary cellular signal booster equipment.

If you have pre-existing infrastructure or are using your own preferred electrical contractor to prepare your site, a completed Construction Signoff Form is required to certify compliance with electrical specification requirements, and to ensure everything was prepared to ChargePoint specifications.



**Important:** Always check local codes or consult an engineer to ensure the site is prepared in compliance with all applicable regulations. Local authorities might not allow a unit to operate if it is not installed to code.

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## Plan for Future Charging Capacity

ChargePoint recommends that you plan to install charging stations for 5-10% of parking spaces, or



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10-15% for high EV adoption areas like California. Designing electrical infrastructure to support current and future needs for EV charging helps avoid costly upgrades later as demand for EV charging grows.

Consider these methods to prepare a site for future charging stations in a later phase of work:

- Add extra capacity if electrical panels are being upgraded now
- Use sub-panels as a way to shorten electrical paths
- Oversize the conduit between the main electrical panel and future stations
- Install pull or junction boxes at the end of an existing row of charging stations, to ease cable pulls for future stations
- If a junction box or disconnect will be installed between rows of stations, oversize the wiring between the main panel and the junction box to prevent needing to re-pull wire later

## Charging Station Placement

To help minimize costs, choose station locations that are as close as possible to the available electrical infrastructure. Selecting these types of locations helps minimize long conduit and wire runs, as well as any trenching work.



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**WARNING:** The ChargePoint charging station must be installed on a level concrete base. Asphalt cannot support the full weight of the charging station. Failure to install the ChargePoint charging station on a level concrete base may cause the charging station to tip over, resulting in death, personal injury, or property damage.

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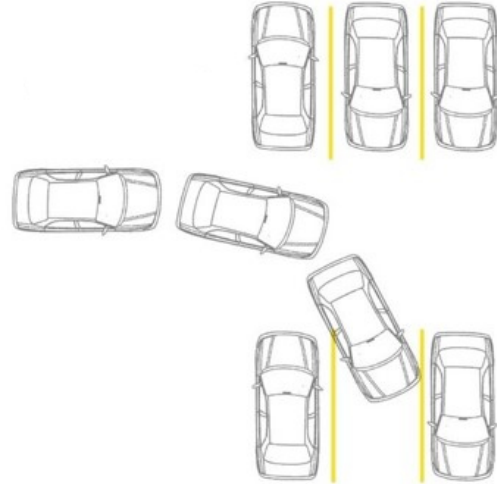
Layout considerations:

- Determine appropriate ground anchoring locations where concrete exists or can be installed (no asphalt surfaces).
- Consider locations where it will be easy to add future stations.
- Determine optimum conduit layout to minimize linear conduit costs to multiple parking spaces. If possible, avoid or minimize trenching requirements, especially more costly trenching to run conduit under asphalt surfaces.
- Evaluate existing electrical infrastructure to determine if the existing utility service and electrical panel capacity is sufficient. Identify costs for any necessary upgrades and/or a new dedicated electrical panel. ChargePoint recommends using a certified electrician to evaluate available capacity and identify any upgrades that may be required.
- If a dedicated EV electrical panel is required, choose a panel location in close proximity to the existing electrical supply.
- Measure cellular signal levels to ensure adequate cellular coverage at the station installation location. To ensure adequate signal strength in underground or enclosed parking structures, cellular repeaters may be required. For more information, see [Cellular Connectivity \(page 26\)](#).
- ChargePoint recommends to avoid locations under trees where sap, pollen, or leaves would fall on the charging station and increase the station owner's site upkeep workload.

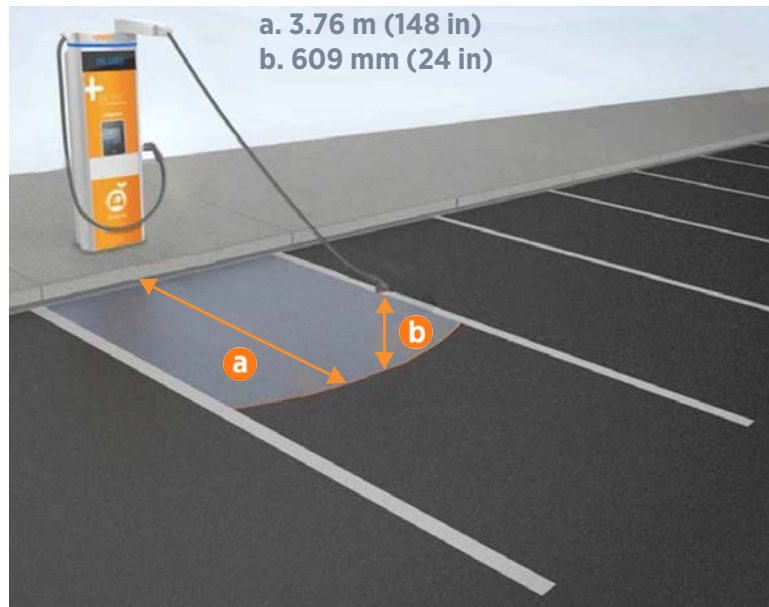
- For stall parking, ChargePoint recommends using perpendicular parking stalls that allow a vehicle to enter either front-first or rear-first, to better accommodate the varied charge port locations on different EVs. Diagonal stall parking is not advised.

**Note:** While ChargePoint tests charging stations with a majority of upcoming vehicles, ChargePoint cannot guarantee the port locations of future vehicles and cannot warrant the configurations proposed will work for all vehicles.

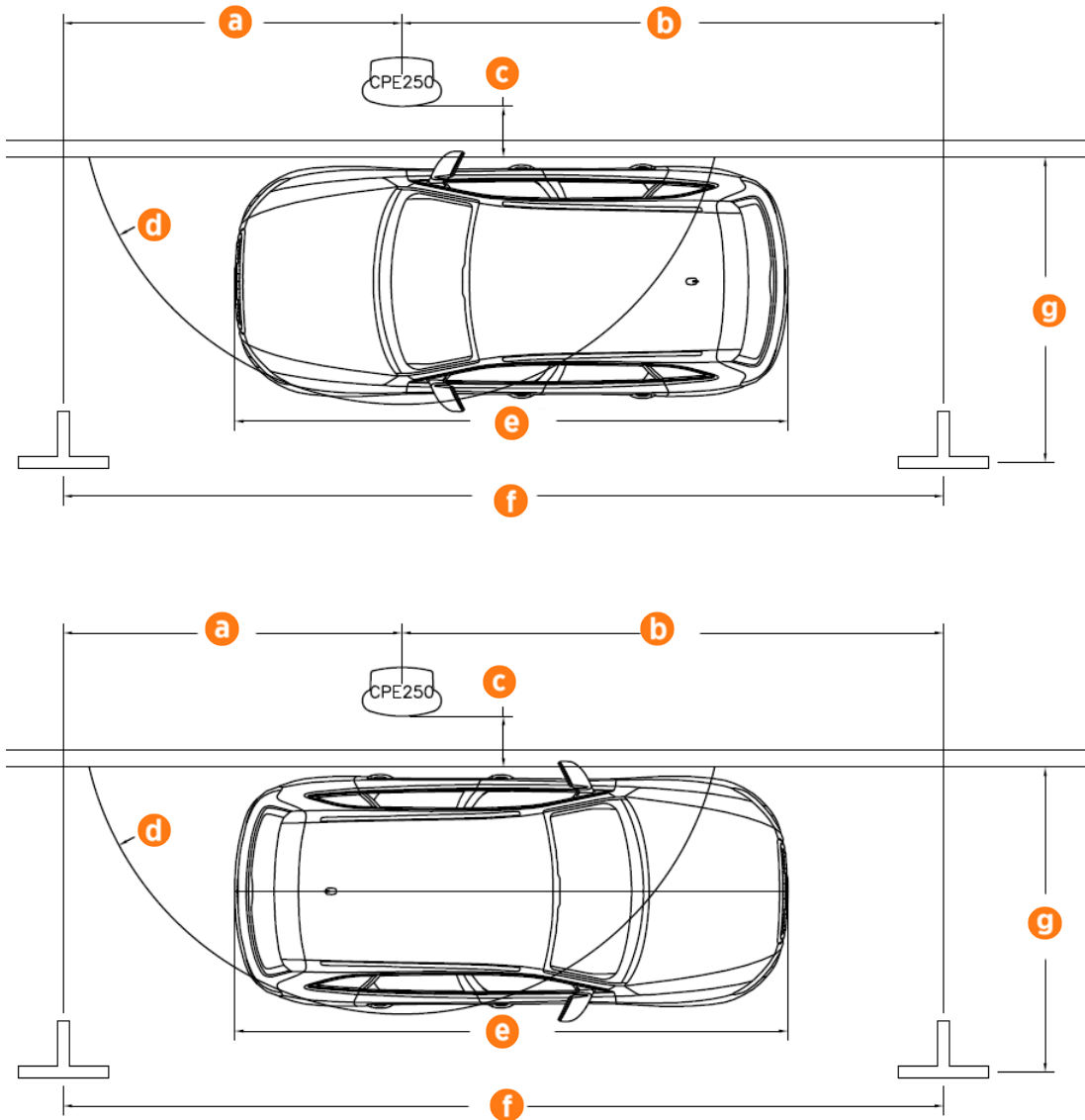
- Choose adjacent parking spaces in an area with adequate lighting.
- Consider how easily drivers can find the stations they need to access.
- Check local requirements for accessibility and pathway width, sometimes called “path of travel”, to ensure station placement does not restrict sidewalk use.
- Building a pad into the head of a parking space (instead of on the sidewalk) is allowed if a) local code allows it compared to the minimum parking space length, and b) the pad meets all pad requirements listed in this document.
- Note that the Express 250’s two charge cables are different types of connectors to maximize usability across EV models. The cables cannot both be used at the same time. Therefore, do not position an Express 250 to share two parking spots.



**Important:** Place each charging station centered at the head of its parking space, with the touchscreen facing the vehicle. This placement maximizes cable reach for the varied charge port locations on different EVs.



- Pull-through parking (gas station model) is not recommended. If pull-through parking is used, ChargePoint recommends placing at least one charging station on each side of the island. This avoids situations where the charging station is on the opposite side of the vehicle from the charge port. Guidance for station placement in island or curbside parking is shown below.



- a.** Distance from left space marking: 3048 mm (120 in) maximum
- b.** Distance from right space marking: 4876.8 mm (192 in)
- c.** Distance from curb: 457.2 mm (18 in)
- d.** Cable reach radius: 3.76 m (148 in)
- e.** Example EV length: 4978.4 mm (196 in)
- f.** Recommended parking space length: 7924.8 mm (312 in)
- g.** Recommended parking space width: 2743.2 mm (108 in)

---

# Civil and Mechanical Design 2

Use the guidance below to design the civil and mechanical aspects of the site.

## Component Dimensions and Weights

The Express 250 is a vertical enclosure with the dimensions shown here.

Component	Weight
Each Power Module	44 kg (97 lb)
Crated Power Module as shipped	49.9 kg (110 lbs)
Express 250 with two Power Modules, installed	339 kg (746 lb)
Crated Express 250 as shipped	494 kg (1089 lb)



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## Pad

The station can be installed on either a newly poured pad or an existing concrete surface. The mounting surface must be smooth and cannot exceed a slope of 6.35 mm per 304.8 mm (0.25 inches per foot).

The concrete pad must either be designed to be site-specific, or must meet these specifications:

- At least 305 mm (12 in) deep (or deep enough to be 305 mm (12 in) below the frost line)
- At least 1296 mm (51 in) on each side
- Contains #4 rebar or larger, top and bottom, 305 mm (12 in) on center
- Concrete 2500 PSI minimum

The above pad specifications are designed to meet these conditions:

- 170 mph wind speed
- Wind Risk Category I
- Wind Exposure D
- Seismic Importance Factor 1.0
- Hayward Fault with mapped spectral response accelerations  $S_s=2.45$   $S_1=1.019$
- Seismic Design Category E
- Foundation of Sandy Soil with allowable stress = 1500 psf,  $C_d = 1.33$

In some extreme conditions, a larger pad would be required. For sites with less stringent seismic, soil, or wind conditions, a smaller pad might be possible.

If the existing pad does not meet the specifications above, it must be inspected and approved by a structural engineer for the Express 250's dimensions and weight. If needed, give these structural design specifications to the structural engineer for verification:

Product Weight	340 kg (750 lbs)
Product Height from Ground	2.230 m (7.317 ft)
Product Width	0.71 m (2.33 ft)
Product Frontal Area	Height * Width
CG Height	1.12 m (3.66 ft)
Number of Anchor Bolts	4
Bolt Pattern	See dimensioned images in this section
Anchor Bolt Size	M16 (5/8 in)
Anchor Bolt Embedment	229 mm (9 in)



**WARNING:** If not installed correctly, the ChargePoint® charging station may pose a fall hazard, leading to death, personal injury, or property damage. Always use the provided Concrete Mounting Template or a ChargePoint-approved surface mounting solution to install the ChargePoint® charging station and install in accordance with applicable codes and standards using licensed professionals. Non-approved installation methods are performed at the risk of the contractor and void the Limited Warranty.

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## Drainage

Ensure any site slopes, walls, or fencing do not trap water around the charging station installation site. The system is only built to withstand 457.2 mm (18 in) of standing water.



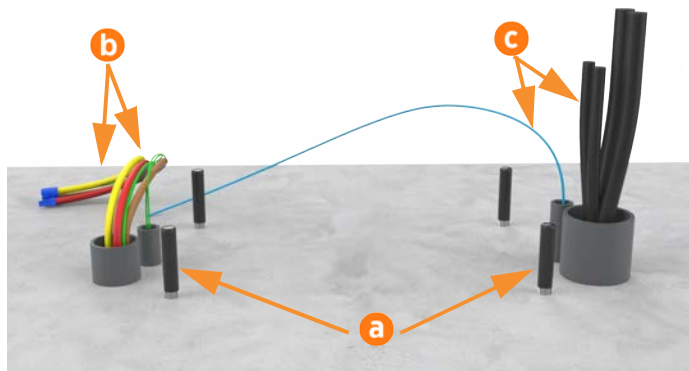
**WARNING:** Exposing the ChargePoint® charging station to over 18 inches (457 mm) of standing water could create an electrocution, shock, or fire hazard. Cut power to the charging station if it has been exposed to standing water and contact ChargePoint before the charging station is powered on.

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## Mounting Specifications

The Express 250 is installed on a concrete pad. Details on how to prepare this pad are described later in this guide.

All installations require four anchor bolts (a). Standalone installations only require the two conduit stub-ups on the left side, for AC wiring and shunt trip wiring (b). Paired installations also require the wiring shown on the right: DC wiring and Ethernet communication (c). For more detail, see [Conduit \(page 21\)](#).



**Important:** Although the Concrete Mounting Template was originally designed for six anchor bolts, only the four corner anchor bolts are required for station stability. Newer charging stations are designed to only use the four corner anchor bolts. If older sites were already designed with six anchor bolts, removing the middle bolts is not required.

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**WARNING:** If not installed correctly, the ChargePoint® charging station may pose a fall hazard, leading to death, personal injury, or property damage. Always use the provided Concrete Mounting Template shown pre-installed in the Introduction, or a ChargePoint-approved surface mounting solution, to install the ChargePoint® charging station. Always install in accordance with applicable codes and standards using licensed professionals. Non-approved installation methods are performed at the risk of the contractor and void the Limited One-Year Parts Exchange Warranty.

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## Clearances

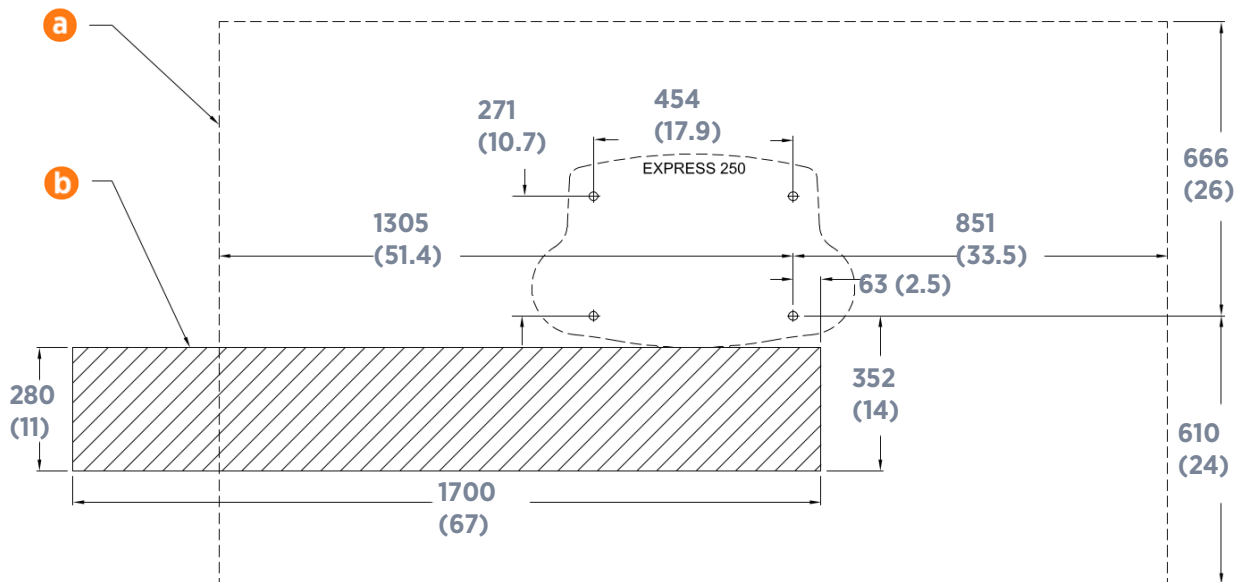
The Express 250 requires minimum functional and service clearances as listed in the table below.

Front Clearance	330.2 mm (13 in) at grade; 609.6mm (24 in) minimum open space
Side Clearance*	711.2 mm (28 in) required; 863.6 mm (34 in) recommended**
Rear Clearance	304.8 mm (12 in) required; 609.6 mm (24 in) recommended
Top Clearance	304.8 mm (12 in)

\* Side clearance is measured from extrusion to extrusion.

\*\* Side clearance can be shared between two charging stations. However, if the charge handles of both stations are facing each other, add an extra 254 mm (10 in).

Measurements are provided in millimeters (inches).



- a. Service clearance of open space (not necessarily at system grade)
- b. Power Module service clearance at grade from the front right anchor, extending 1700 mm (67 in) to the left, without any permanent obstructions (fencing, bollards, wheel stops, etc.)

**Note:** Listed side clearances are the minimum required for operation and service. For paired charging stations, the bend radius of the DC cable and conduit might require spacing them further apart.

Rear clearance, and the front and side clearance for Power Module service, must be at grade level +/- 25 mm (1 in).

Refer to the “Ventilation” section, and check local and regional code, for any additional clearance requirements.



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## Ventilation

Ensure that any installation, especially an indoor installation, has adequate airflow to dissipate the charging station's heat at maximum operation. Each Express 250 charging station emits approximately 3.3 kW of waste heat at maximum operation.

The charging station location must allow fresh ambient airflow. Restriction of airflow might result in reduced maximum performance. Do not install a station where it is exposed to air that is heated above ambient temperatures.

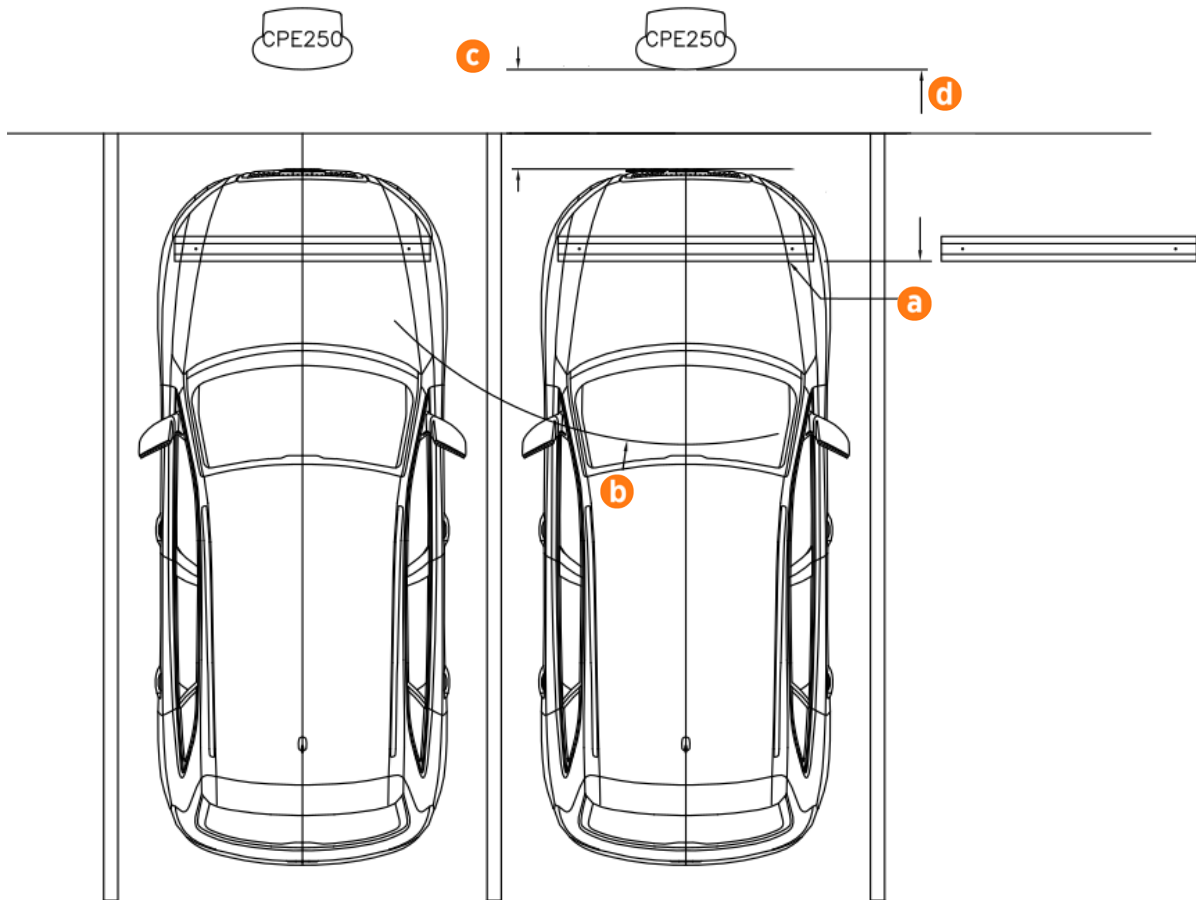
In addition to the service clearances listed in the "Clearances" section, consider these figures for site layout:

- If a charging station will have a wall directly behind it, minimum rear clearance is 305 mm (12 in).
- If two Express 250 charging stations will be positioned back to back, increase the rear clearance to a shared 610 mm (24 in) for both stations to reduce exhaust recirculation.

## Wheel Stops

Bollards and wheel stops are not explicitly required by ChargePoint. However, ChargePoint recommends these best practices and considerations when designing the site:

- Permanent bollards or wheel stops must not encroach upon the Power Module clearance listed in the clearance diagram above. Removable bollards are allowed if service personnel have the ability to move them as needed.
- Where permitted by code, wheel stops are preferred over bollards for head-in or back-in spaces.
- When using wheel stops, consider the average vehicle overhang distance from tire to bumper (passenger, bus, etc.), as well as leaving space for the driver to walk up and access the touchscreen. General recommended distances are shown in the wheel stop image below.
- Position wheel stops to actively block at least one wheel, without presenting a trip hazard to pedestrians walking between vehicles.



- a. Wheel stop, positioned to actively block at least one wheel
- b. Cable reach radius: 3.76 m (148 in)
- c. Recommended distance for walk-up access: 609 mm (24 in)
- d. Recommended distance between wheel stop and Express 250: 1371 mm (54 in) for passenger vehicles



**CAUTION:** Shorter wheel stops that are installed in the center of a parking spot can fit between the wheels of a larger vehicle and not prevent forward motion.

**Note:** For fleet or commercial use, measure the rear or front overhang of the largest vehicle in use, depending on charge port location.

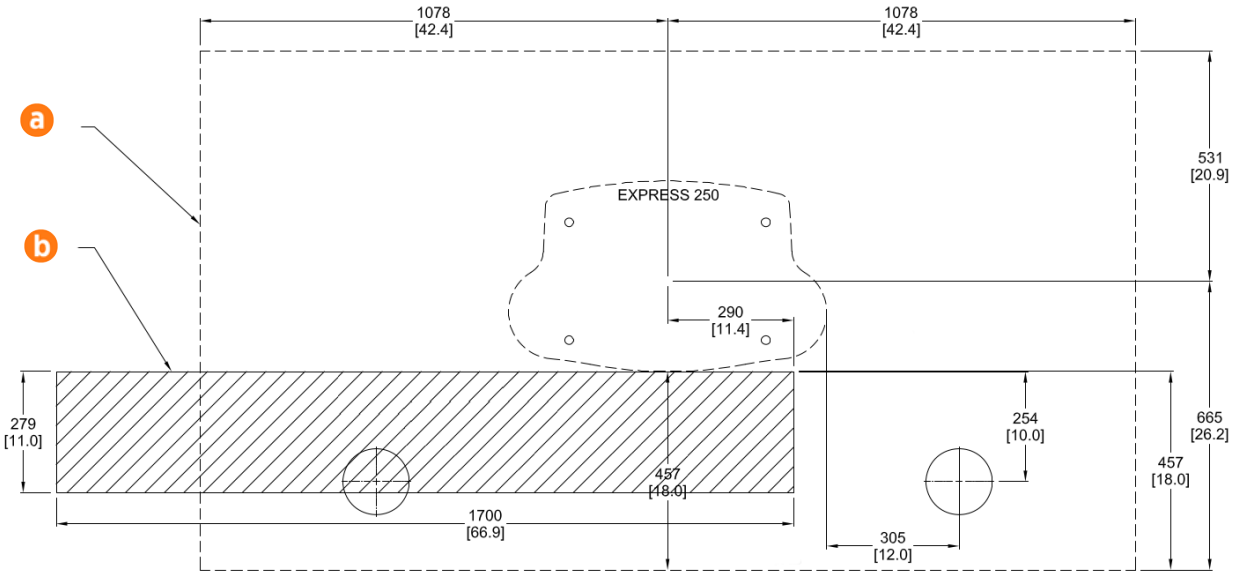
## Bollards

Bollards and wheel stops are not explicitly required by ChargePoint. However, ChargePoint recommends these best practices and considerations when designing the site:

- Permanent bollards or wheel stops must not encroach upon the Power Module clearance listed in the clearance diagram above. Removable bollards are allowed if service personnel have the ability to move them as needed.

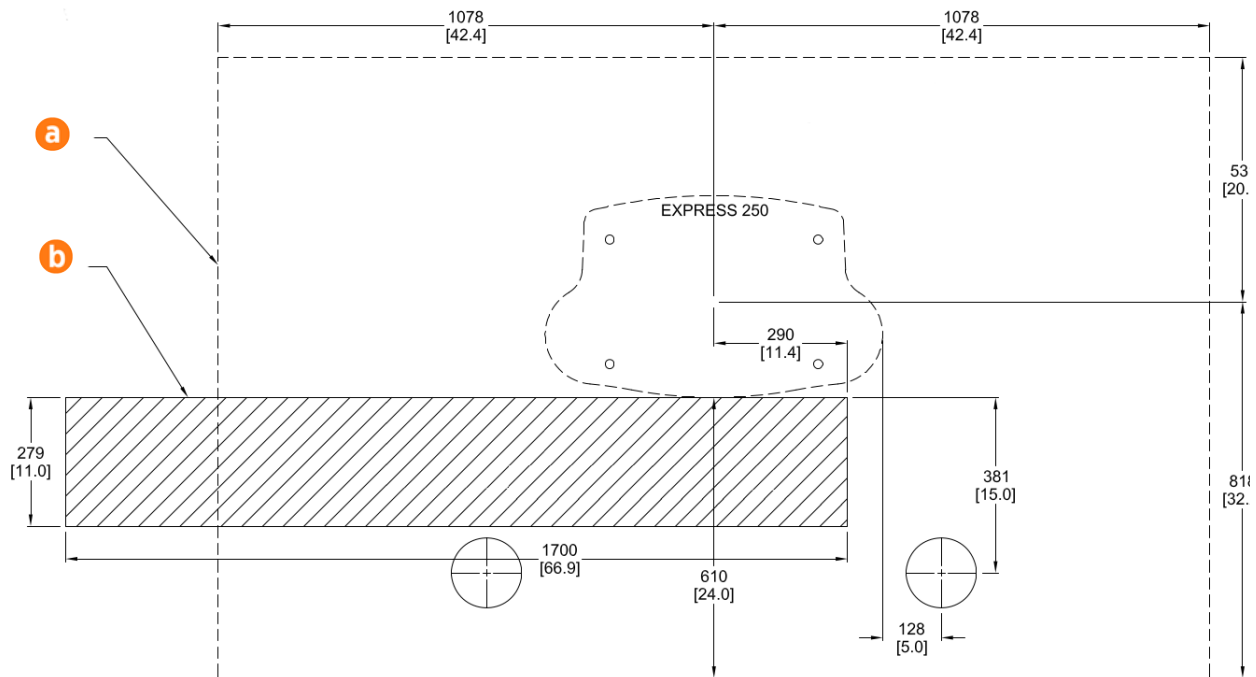
- Where permitted by code, wheel stops are preferred over bollards for head-in or back-in spaces.
- When bollards are required by code, needed for snowy areas, or needed for curbside spaces, ensure bollard placement does not interfere with removing and replacing charge cables in the station's side holsters. General recommended distances are shown in the bollard images below.
- Try to minimize bollard interference with the movement of charge cables between the station and the vehicle. Bollards are recommended to be no taller than 914 mm (36 in) where needed.
- No bollard can be placed within 457 mm (18 in) of the station, as measured on-center.

Curbside bollard installation:



- a.** Use and service clearance of open space (not necessarily at grade)
- b.** Unobstructed front service clearance at grade

Head-in or back-in space bollard installation:



## Pairing Previously Installed Charging Stations

If all site construction for paired charging is completed in advance, Express 250 stations can be initially installed as Standalone and paired at a later date. In that case, follow these additional steps:

- During initial site construction, install DC and communication conduit or ducting (as applicable by region) in advance.
- Extend side clearance at both DC conduit stub-up locations to 1.2 m (4 ft) to allow space for cable pulling equipment.
- Run a pull rope through the larger DC conduit before landing the charging stations. Do not pull DC cable in advance, as it is too thick to hide inside the cover panels without risking damage or unwanted electrical contact.
- Install a fishing tape in the smaller communication conduit to assist with routing the Ethernet cable later. If Ethernet is pulled in advance, leave 317.5 cm (125 in) of wire above grade at each end.
- Use duct seal compound to seal the ends of the DC and communications conduit stub-ups. Seal the ends of the fishing tape to hang outside the conduit.
- Install the cover panels and extrusions on the Express 250 stations over the stub-ups as normal.

By only connecting AC wiring (and shunt trip if applicable), each Express 250 can perform as a Standalone station until the station owner is ready to pair them. At a later time, the stations can be paired by installing DC conductors, connecting Ethernet communication, and performing a firmware update if required. Refer to the *Express 250 Installation Guide* for further details.

Once two Express 250s are correctly paired, operation of both stations is inhibited if Ethernet

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connectivity is lost or one station loses power. This is a safety feature to prevent one Paired station from accidentally powering the other during maintenance.



**WARNING:** Do not connect DC power between the charging stations until both stations are ready to complete the full pairing configuration. Station firmware updates are required to enable full Paired behavior. Connecting power before the charging station is properly configured can create a safety risk or can damage equipment.

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## Accessibility

The Express 250 touchscreen and charging cables are accessible at a height of less than 1219 mm (48 in) from the ground. This complies with American Disability Act (ADA) requirements, if the station is installed at grade. If your installation must comply with ADA standards, or the disability access regulations for other regions, consider this when designing the height of the pad.

Also consider site design factors such as placement of bollards, wheel stops, or other vehicle obstacles when planning charging station access for disabled parking stalls. Check disability access regulations for guidance on the clearances needed for wheelchair access to charging cables and user interfaces.

## Signage

Refer to local and regional code to design the following elements for the site:

- Any required re-striping of parking spaces
- EV or Accessible EV signs
- EV or Accessible EV paint markings on and around the parking spaces



# Electrical Design 3

The default Express 250 installation requires service wiring to be installed underground. (If a site requires surface mounting, contact ChargePoint before beginning work, to obtain an approved surface installation method.) Conduit and wire size are determined based on the length of runs from the electrical panel to the station location. Service wiring must be run through conduit or ducting, or use armored cable, as required to comply with local electrical codes. Consult national and local codes or a project engineer to determine the grade, quality, and size of the conduit or cable. The ChargePoint Concrete Mounting Template (CPE250-CMT) accommodates service wiring through the flare, conduit, or locally appropriate wiring method.

**Note:** All wiring and conduit is supplied by the contractor unless otherwise indicated.

**Note:** It is possible to pre-install Express 250 charging stations as Standalone initially and pair them at a later date, if desired. In this case, install the DC and Ethernet conduit per [Pairing Previously Installed Charging Stations \(page 14\)](#), and run a pull rope through the conduit before landing the charging stations. Contact ChargePoint for instructions to pair two charging stations when ready.

## Upstream Components

Charging stations are considered continuous load devices (EVs draw maximum load for long durations). Therefore, electrical branch circuits to EV chargers must be sized at 125% of the load on each leg of a 3-phase panel for North America installations, in accordance with National Electric Code requirements. For other regions, refer to local code.

When planning multiple EV charging stations, it is best practice to segment non-continuous and continuous loads, with all branch circuits for EV charging on a dedicated electrical panel assembly with adequate circuit breakers. When sizing new electrical panels dedicated for EV charging, all branch circuits must support continuous load.

Each Express 250 requires a service panel breaker as follows:

Nominal Voltage	Max AC Current	Circuit Breaker Size
400 VAC (EU)	96 A	125 A
480 VAC (NA)	80 A	100 A (125% continuous load required for N. America)

The Express 250 does not contain an internal breaker. Therefore, its KAIC rating (KiloAmps

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Interrupt) is related to the station's upstream breaker.



**CAUTION:** The Express 250 charging station is tested to IEC 61000-4-5, Level 5 (6 kV @ 3000 A) standards. In geographic areas that experience frequent thunderstorms, supplemental surge protection must be installed at the service panel to guard against product damage.

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## Transformer Configuration

Refer to the following tables to configure electrical service.

	North America	Europe
Input Rating	480 VAC, 3-phase, 80 A, 60 Hz	400 VAC, 3-phase, 96 A, 50 Hz
Electrical Service Configuration	277/480 4 wire WYE*	230/400 Y, L1, L2, L3, N, Ground
Product Connection	3-phase 480 plus ground (neutral not required)	3-phase 400 plus protective earth (neutral not required)

*\*Delta (floating or grounded) is not supported*

## AC Disconnect Switch

A local AC disconnect switch, separate from the shunt trip wiring, is recommended to be installed between each charging station and the electrical panel. This is especially important if the main electrical panel or utility room is distant, out of line of sight, or has restricted access. For North America installations, refer to disconnect switch requirements per NEC Article 625, "Electric Vehicle Charging and Supply Equipment Systems".



**WARNING:** If service is performed on either Paired charging station, both stations must be powered off at their AC disconnect switch(es) and locked out/tagged out for safety.

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Do not install a DC disconnect between Paired charging stations.

## RCD Use

The use of an RCD is not recommended. RCD use can create nuisance tripping, especially during transient conditions such as power restoration, line surge, line dips, or phase loss.

To reduce the risk of shock, the Express 250 provides:

- Galvanic (reinforced) isolation between the AC input and DC output. Current does not flow to earth ground, even in cases such as charge cable damage.
- An output isolation monitor interrupter (IMI).

If the isolation level is compromised, charging is halted or prevented from starting, and the output



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de-energized. The isolation monitor operates continuously during charging to ensure the output is always galvanically isolated. UL 2231-1 requires that an isolation monitor interrupter (IMI) is provided in the product and evaluated during operation as part of certification testing.

Although RCD/GFCI use is required in mode 1,2,3 AC charger installations, neither UL nor IEC mandate an RCD for a permanently installed mode 4 isolated output DC charger.

## RCD Settings

For Standalone Express 250 installations where the use of an RCD (RCCB or RCBO) cannot be avoided, use the following settings to minimize nuisance trips:

- Type: A, F or B (type B and F preferred)
- Trip threshold: 500 mA
- Trip delay: 150 ms

If an RCD must be employed for a Paired installation, contact ChargePoint.

## Region Specific Notes: UK

When discussing DC charging station installations with a UK DNO (utility), include these two considerations:

- Where possible, request TN-S earthing from the DNO (distribution network operator)
- The Express 250 represents a Class I construction, balanced 3-phase load greater than 500 W

Either statement allows UK DNOs to provide a PME earth terminal and avoids the requirement for a TT earthing arrangement and associated (300 mA) RCD. The second statement meets the clause in the IET Code of Practice for EV Charging Equipment Installation, 3rd Edition that allows the DNO to provide a PME connection for “on the street equipment”.

Installations at petrol stations are a special case that requires additional site planning. Contact ChargePoint for more information.

## Grounding/Earthing Requirements

- The Express 250 must be connected to a grounded, metal, permanent wiring system.
  - North America: A grounded service neutral conductor must be run with circuit conductors and connected to an equipment-grounding terminal on the Express 250.
  - Europe: Use TN-S or TN-C-S configurations. (TT is not recommended because it requires RCDs.)
- Ensure a grounding conductor that complies with local codes is properly grounded to earth at the service equipment or, when supplied by a separate system, at the supply transformer.

## Shunt Trip Wiring

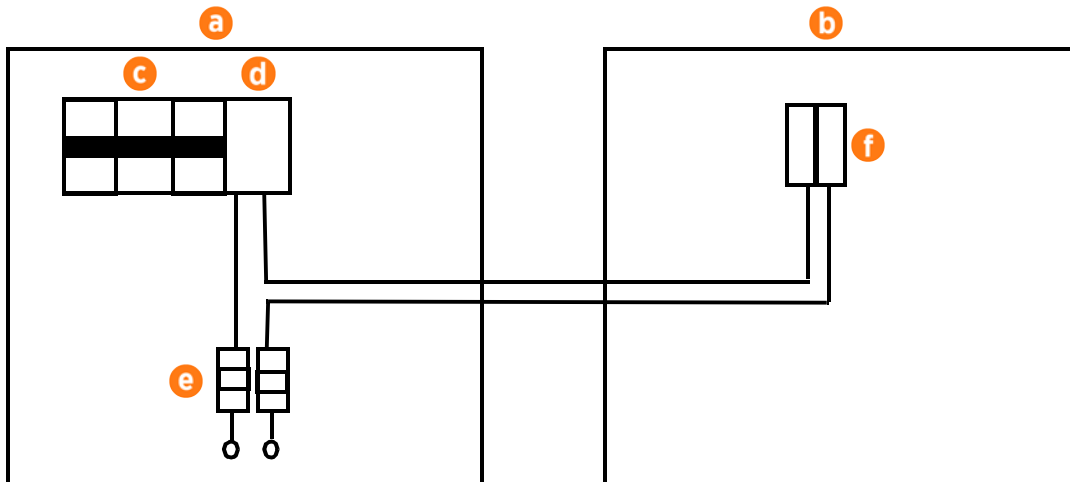
ChargePoint advises against installing an emergency stop (E-stop) button on charging stations. Drivers can unintentionally trip the emergency shutoff, causing inconvenience and downtime to site hosts. However, wiring to enable a remote shunt trip is standard on each Express 250. This shunt trip wiring is activated when unsafe conditions are detected, such as a missing cover panel or a severe impact. All shunt trip behavior is already hard-coded into the charging station and has no programmable variables.

The Express 250 provides a set of unpowered (dry pair) contacts near the AC input terminals, to connect to a shunt trip device. These contacts are rated to 440 VAC and 5 ARMS.

When a shunt trip is used, select a breaker with a shunt trip that is within the contact rating of the Express 250 shunt trip contacts. Common ratings available for shunt trips are 12, 24, or 48 VDC, or 110-240, 400 VAC depending on the installation region. 480 VAC rated shunt trips may not be used.

Follow the installation guide provided by the breaker or shunt trip vendor. Control power is derived at the electrical panel.

**Note:** For Paired charging stations, wire the connections so that a shunt trip activation on either station trips the breakers of both Paired stations.

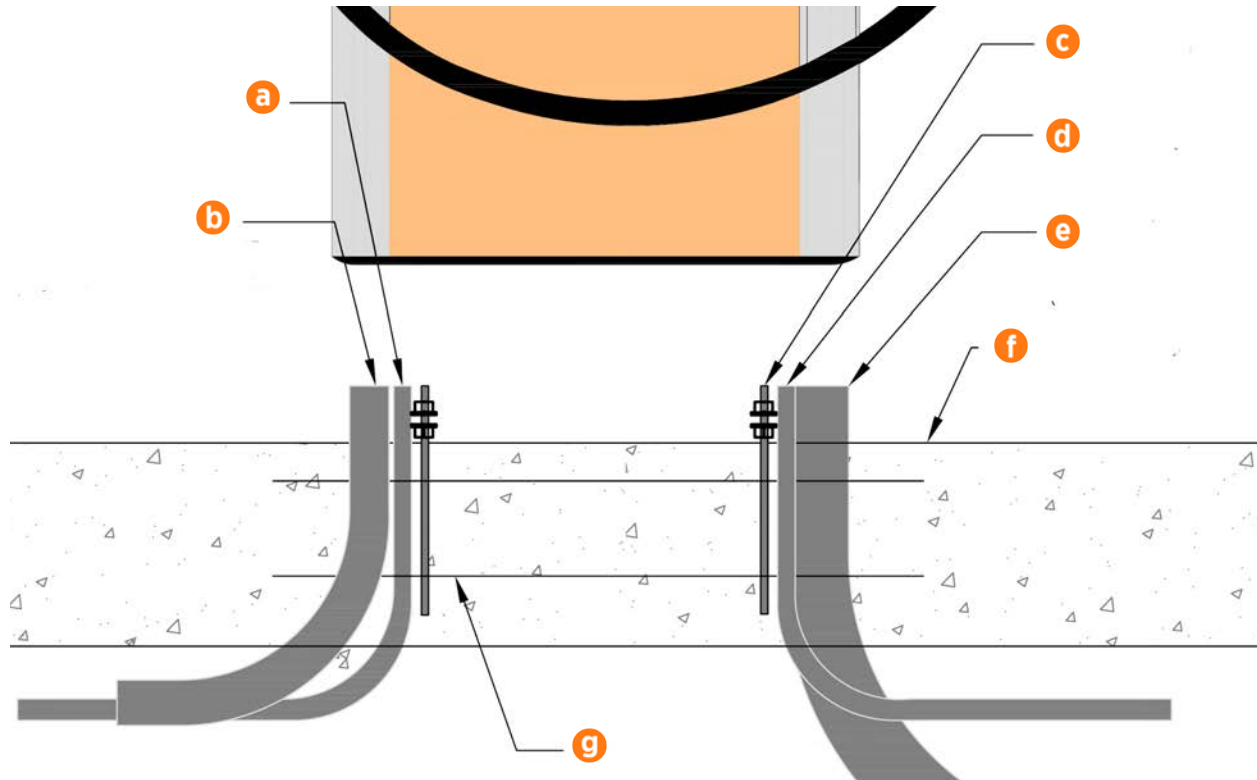


- a. Electrical panel
- b. Express 250
- c. Circuit breakers
- d. Shunt trip
- e. Control power (fused)
- f. Express 250 shunt trip terminal block (near AC terminals)

## Conduit

The outer diameter of conduit or armored cable must not exceed the sizes called out in the conduit layout drawing below. Conduit stub-ups cannot extend higher than 76.2 mm (3 in) above the surface of the concrete pad.

In regions that do not use conduit, armored cable may be laid in the same configuration to conform to the wire placement as shown in the section, “[The Express 250 Concrete Mounting Template \(page 27\)](#)”. Ensure a length of at least 61 cm (2 ft) is left free above grade at each end to allow the wiring to reach the charging station AC terminals.



- a. Shunt trip conduit: 19.1 mm (3/4 in trade size)
- b. AC conduit: 50.8 mm (2 in trade size)
- c. Anchor bolts
- d. Paired installations only: Ethernet conduit: 19.1 mm (3/4 in trade size)
- e. Paired installations only: DC conduit: 76.2 mm (3 in trade size)
- f. Concrete surface
- g. Concrete Mounting Template (embedded in concrete)

**Note:** Ensure no bell ends are left on any conduit after all wires are pulled. Bell ends can interfere with station placement.

**Note:** Depth of conduit or armored cable may vary by site. The image above does not dictate conduit depth, as long as the stub-ups are vertical and placed correctly.

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## Wiring Requirements for Standalone Stations



**Important:** The AC terminal blocks on the Express 250 accept a maximum wire size of 35 mm<sup>2</sup> (2 AWG) solid or stranded wires. If using a larger gauge wire to accommodate a long run, reduce the wire size at the local external disconnect.

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For full product specifications, refer to the *Express 250 Data Sheet*. Using that data, ensure that the installation location is equipped with service wiring that supports the Express 250's power requirements:

- Neutral conductor as required by region (a Neutral connection is not required for equipment operation and the terminal is provided for convenience only)
- Shunt trip wiring: size 0.08 to 2.5 mm<sup>2</sup> (28 to 14 AWG), fine stranded or solid
- AC conductors (L1, L2, L3) and ground per the following specifications:

Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals
EU non-armored: 600/1000 V	90°C	35 mm <sup>2</sup>
EU armored: 600/1000 V	90°C	35 mm <sup>2</sup> multi-core
NA: 600 V	90°C	2 AWG

## Additional Wiring Requirements for Paired Stations



**Important:** The DC terminal blocks on the Express 250 can accept a maximum wire size of 120 mm<sup>2</sup> (4/0 AWG). Check site plans and local code for site-specific requirements.

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For stations that will be installed as Paired, follow all AC wiring requirements above as well as the following additional wiring.

**Note:** Be sure to acquire, or alert the installer to acquire, lugs in advance of the site visit. Contact ChargePoint in advance if help is required to obtain lugs.

- Ethernet wiring for DC:
  - Minimum of CAT5e or better
  - Outdoor or plenum rated wiring
  - Maximum run length of 100 m (328 ft)
  - Leave 3.2 m (10.5 ft) of wire above grade at each end
  - Field crimp using straight-through pattern 568B

- DC conductors (x4):

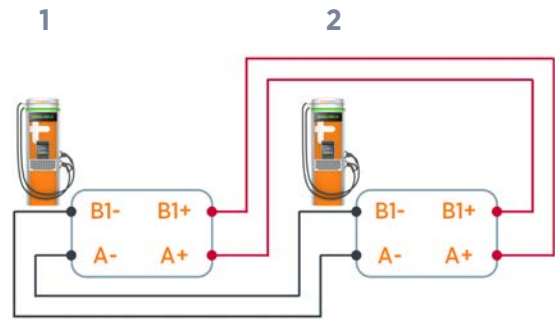
Voltage Rating	Temperature Rating	Maximum Conductor Size for Terminals	Insulation Type
EU non-armored: 600/1000 V	90°C	120 mm <sup>2</sup>	XLPE
EU armored: 600/1000 V	90°C	120 mm <sup>2</sup> 4-core and cable gland sized to local code (such as Cablecraft CCG-CW50 or similar)	XLPE
NA: 1000 V	90°C	4/0 AWG	XHHW-2

- **NOTE:** 95 mm<sup>2</sup> (3/0 AWG) is sufficient for most sites unless ambient temperatures are  $\geq 40^{\circ}\text{C}$  per regional code (ASHRAE Table D101 Summer Dry Bulb Temperature for North America or IEC 60364-5-54 in Europe)
- 2 positive and 2 negative conductors; 1 positive and 1 negative in each direction
- USA/Canada: Copper only, minimum current carrying capacity 160 A
- EU/UK: Rated at 1000 V conductor to conductor (+/-500 V conductor to ground, LV), copper only, minimum current carrying capacity 160 A
- DC cable run must be continuous, with no joints or splices
- Consult site drawings for site-specific conductor size and length (Appendix A provides conductor size calculation examples for reference)
- Leave 61 cm (2 ft) of each conductor above grade at each end
- DC lugs (x4):
  - Silver plated copper compression lug (2-hole specified for North America); tin plated is acceptable if used with dielectric grease
  - Holes for an M6 (1/4 in) stud at 19 mm (3/4 in) stud hole spacing
  - Maximum width 30 mm (1.18 in)
  - **NOTE:** 95 mm<sup>2</sup> (3/0 AWG) is sufficient for most sites unless ambient temperatures are  $\geq 40^{\circ}\text{C}$  per regional code (ASHRAE Table D101 Summer Dry Bulb Temperature for North America or IEC 60364-5-54 in Europe)
  - North America lug size: 3/0 or 4/0 AWG
  - Example UK/EU lugs for average conductor size are Weidmuller 1494410000 120 mm<sup>2</sup> or similar (always review the lug manufacturer's instructions for crimper tool and die compatibility)
  - Contact ChargePoint if the installer requires lugs for 3/0 (kit 99-002644) or 4/0 (kit 99-002645) conductors

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When DC conductors are pulled through conduit, label each end of each DC conductor to aid installation as follows:

- “Station 1 A+” on one end and “Station 2 B1+” on the other end
- “Station 1 A-” on one end and “Station 2 B1-” on the other end
- “Station 1 B1+” on one end and “Station 2 A+” on the other end
- “Station 1 B1-” on one end and “Station 2 A-” on the other end



**CAUTION:** Be sure to connect positive to positive, and negative to negative, on the same wire. Do not reverse the polarity.

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## Cellular Connectivity

A consistently strong cellular signal is needed before installers can activate the station. Do not rely on cell phone applications to measure cellular signals when conducting site surveys. Ensure the signal at the installation site is consistently strong. If RSRQ is measured at -10 dB or better, then RSRP can be -90 dBm or better. If RSRQ cannot be measured or is not adequate, RSRP must be -85 dBm or better.

Note that these numbers are all negative, so -70 dBm is stronger than -85 dBm, and -90 dBm is weaker. Use a cellular signal detection device (such as a Snyder, Octopus, or equivalent) to take signal strength readings at the exact proposed charging station locations.

If the signal is below -85 dBm, take cellular readings at the location where a cellular signal booster antennas will be installed, to ensure enough signal exists to be boosted. Install repeaters to boost the strength of the cellular signals. Repeaters are often required when installing charging stations in an underground garage or enclosed parking structure.

When repeaters are needed to boost signal, ChargePoint strongly recommends installing multi-carrier and multi-band units where allowed by local code. Weak or sporadic signal can affect crucial aspects of the charging station, including: accuracy in reporting, ability for drivers to use their mobile app, ability for customer support to troubleshoot problems, and support for advanced features such as Power Management or Waitlist. Strong signal is also required for the Assure maintenance and management program.

**Note:** Do not use microcells or femtocells, as they are inadequate for this use case.

In the US, the Express 250 supports AT&T 4G/LTE. There must be viable AT&T signal on one or more of the supported bands listed below. For other regions, contact your ChargePoint representative for more detail on carrier support.

- LTE 1900 (B2)
- LTE 1700 (B4)
- LTE 850 (B5)
- LTE 700 (B17)
- LTE 700 (B13)



# The Express 250 Concrete Mounting Template 4

The Express 250 is a DC fast charging station for electric vehicles. The default Express 250 installation requires service wiring to be installed underground and run to a concrete pad. (If a site requires surface mounting, contact ChargePoint before beginning work, to obtain an approved surface installation method.) The ChargePoint Express 250 Concrete Mounting Template (CPE250-CMT) correctly aligns anchor bolts and conduit openings to ensure the Express 250 can be easily installed and connected.



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**WARNING:** Use of a ChargePoint approved mounting method, such as the CPE250-CMT, is required for safe installation of the Express 250. Failure to use an approved mounting method may result in a risk of tip-over, which can cause death, personal injury, or property damage, and will void the Limited One-Year Parts Exchange Warranty.

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The CPE250-CMT, available from ChargePoint, includes:

- 16 mm (5/8 in)-11 thread, 305 mm (12 in) long threaded mounting bolts with plastic caps on one end
- 16 mm (5/8 in) nuts
- 16 mm (5/8 in) washers
- Printed specification detailing how to position an assembled CPE250-CMT in the concrete

**Note:** You must order the CPE250-CMT separately, with sufficient lead time before the site preparation. This kit is not included with the ChargePoint Express 250 charging station.

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## Bring Tools and Materials

In addition to the CPE250-CMT kit, the site construction team needs:

- Digging tools (shovel, spade, etc.)
- Materials to prepare the form for pouring concrete
- Concrete as specified by site drawings
- Rebar as specified by site drawings
- 24 mm (15/16 in) wrench (x2)
- Pliers to adjust the guide fingers on the CMT conduit openings (if needed)
- Level
- Cut-resistant gloves
- Conduit, ducting, or armored cable in the amounts and types specified by site drawings, that complies with local code (see the rest of this document for conduit sizes and routing)

## CPE250-CMT Overview

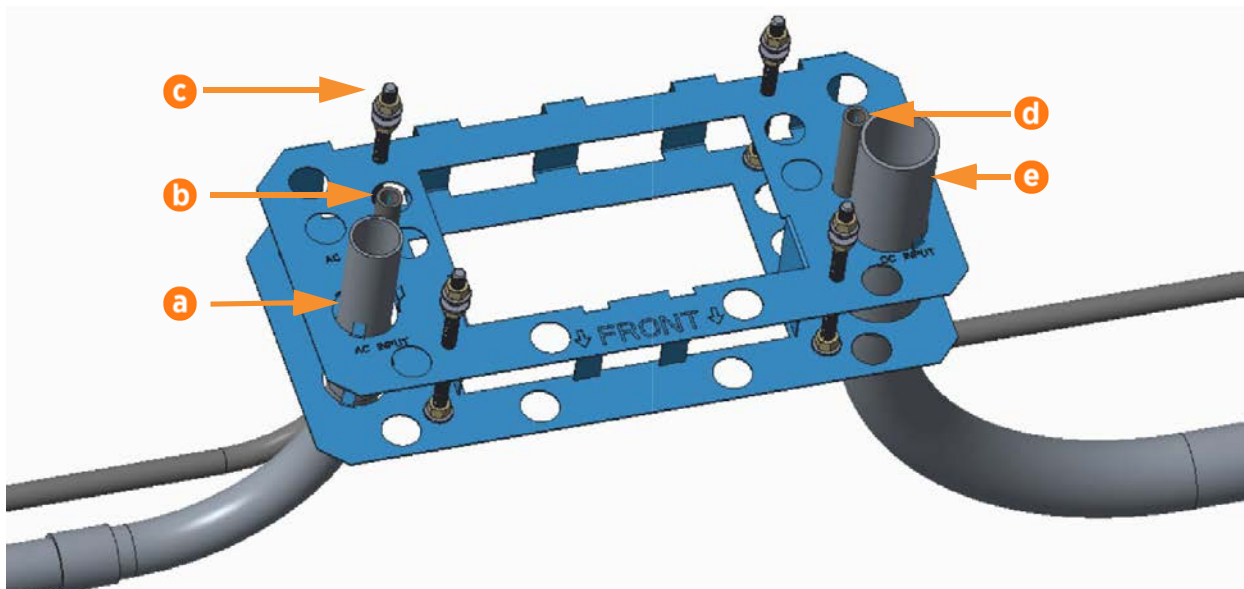
The Express 250 is a DC fast charging station for electric vehicles. It converts three-phase power from its associated building (callout a in the image below) to DC power to charge the vehicle. A ground conductor also runs in conduit a. Shunt trip wiring (b, optional) is run from the station to the breaker panel to automatically shut down the station if a fault or hazard is detected, such as a damaged cover panel or impact from a vehicle.

If two Express 250 stations are “paired”, they share DC power to allow faster (higher amperage) charging to a vehicle as needed. In this case, DC conductors (d) are run between the stations, as is an Ethernet wire (c) for communication.

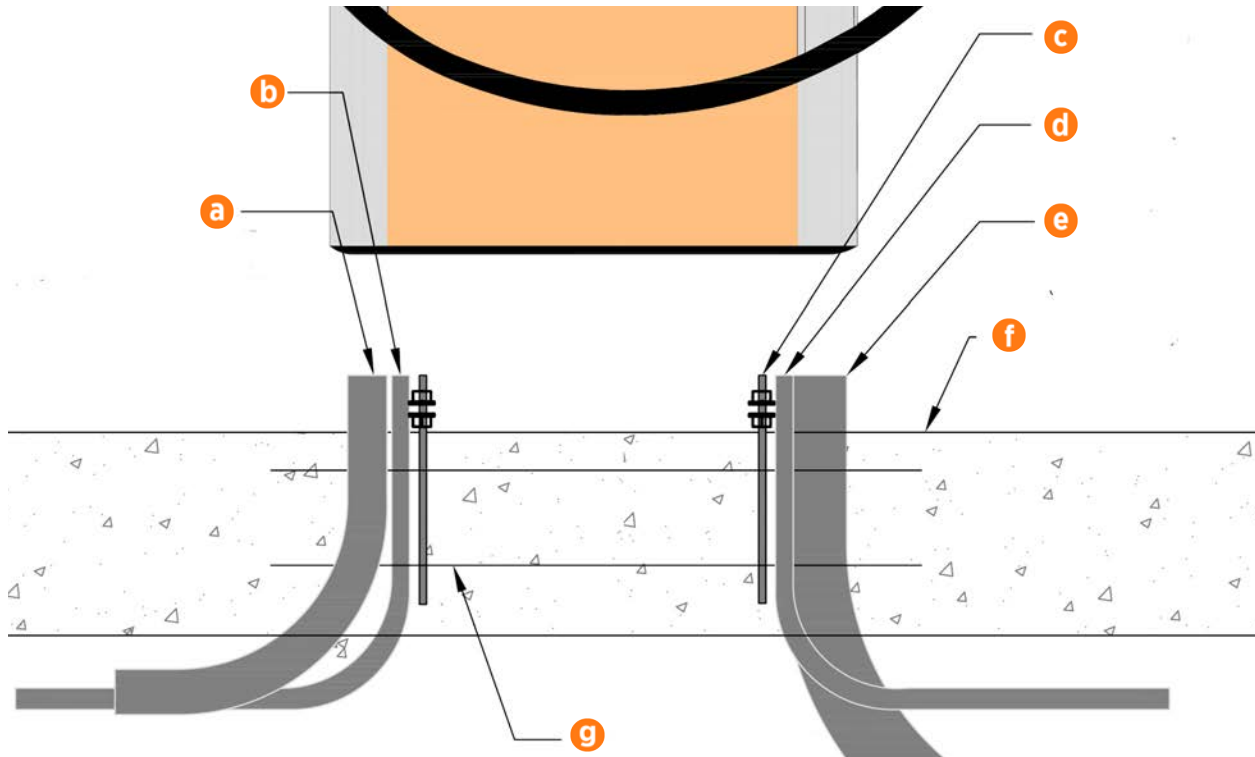
**Note:** Each Express 250 communicates with ChargePoint using a cellular network. No communication wiring is needed between the station and the building.

An assembled CPE250-CMT template is shown below with the positions of all conduit and anchor bolts.

**Note:** A separate CPE250-CMT is required for each charging station (two per Paired installation).



- a. AC conduit
- b. Shunt trip conduit
- c. Anchor bolts (x4)
- d. Ethernet conduit (Paired installations only)
- e. DC conduit (Paired installations only)



- a. AC conduit from the left side of each station to the breaker panel (possibly with an AC disconnect switch in the circuit): 50.8 mm (2 in trade size)
- b. Shunt trip conduit from the left side of each station to the breaker panel: 19.1 mm (3/4 in trade size)
- c. Anchor bolts (x4)
- d. **Paired installations only:** Ethernet conduit between the two stations to be paired, right side to right side: 19.1 mm (3/4 in trade size)
- e. **Paired installations only:** DC conduit between the two stations to be paired, right side to right side: 76.2 mm (3 in trade size)
- f. Concrete surface
- g. Concrete Mounting Template (embedded in concrete)

**Note:** Ensure no bell ends are left on any conduit after all wires are pulled. Bell ends can interfere with station placement.

**Note:** Depth of conduit or armored cable may vary by site. The image above does not dictate conduit depth, as long as the stub-ups are vertical and placed correctly.

## Assemble the CPE250-CMT



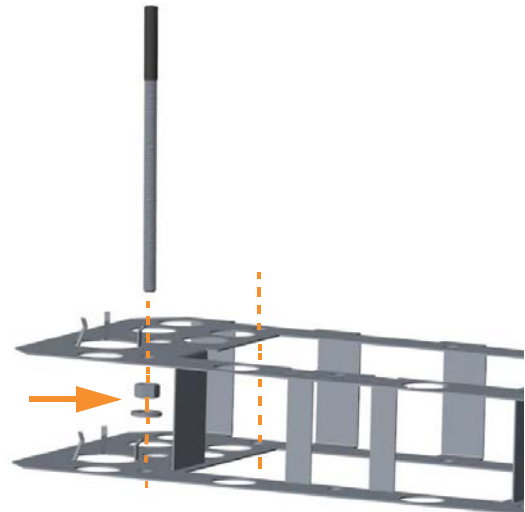
**CAUTION:** The CPE250-CMT can have sharp edges. Wear cut-resistant gloves.



**Important:** Although the CPE250-CMT was originally designed for six anchor bolts, only the four corner anchor bolts are required for station stability. Newer charging stations are designed to only use the four corner anchor bolts.

Before pouring concrete, assemble the CPE250-CMT with its anchor bolts, washers, and nuts.

1. Holding a mounting bolt by its plastic cap, insert the bare end into a corner bolt hole in the top plate of the template.
2. Before inserting the bolt through the bottom plate of the template, thread a nut onto the bolt and add a washer as shown.
3. Ensure the plastic cap is pressed fully down on the bolt.



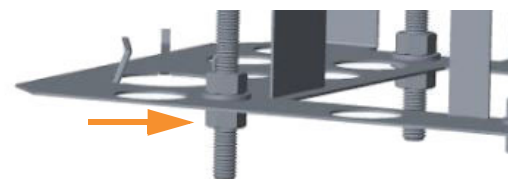
4. Holding the bottom nut and washer flush against the top surface of the bottom plate, thread the bolt onto the nut until the distance between the bottom of the plastic cap and the surface of the top plate is 51 mm (2 in).
5. Repeat Steps 1 to 4 for the remaining three corner bolts.

51 mm (2 in)



**Note:** Do not insert bolts into the center two holes. Only the four corner bolts are required for system stability.

6. Secure a second washer and nut onto the bottom of each bolt until it is flush with the bottom surface of the bottom plate. Torque each nut to 5.6 Nm (50 in-lb).



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## Install the CPE250-CMT



**WARNING:** Failure to install the ChargePoint® charging station in accordance with these instructions and all local building practices, climate conditions, safety standards, and all applicable codes and ordinances may lead to risk of death, injury, or property damage, and will void the Limited One-Year Parts Exchange Warranty.

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1. Trench and excavate an opening to accommodate the wiring conduit and the concrete mounting pad that meets local codes and requirements, per site drawings.
2. Run conduit to each station as needed. If the stations will be Paired, run DC and Ethernet conduit between stations as well.
3. Build the form and lay rebar for the foundation.



**Important:** It is critical that the conduits are positioned properly and plumb. The tolerance where the conduits enter the station is 2 mm (1/16 in).

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4. On the CPE250-CMT, locate the “FRONT” marking and the conduit guide fingers. Position the conduit guide fingers facing up.
5. Place the assembled CPE250-CMT so that the “FRONT” marking aligns with the specified front of the station.
6. Slide the CPE250-CMT over the conduit stub-ups until the top surface of the template is positioned 50.8 mm (2 in) below where the top surface of the concrete will be when poured. The surface of the concrete must align with the bottom of the plastic caps.
  - Carefully press the CPE250-CMT down onto the conduit to avoid flexing it.
  - Ensure the conduits are plumb.
  - Use a level to check that the CPE250-CMT is level from front to back and from side to side.
7. Tie or shim the CPE250-CMT to the rebar to prevent movement during concrete pouring.



**Important:** Before pouring concrete, the CPE250-CMT and the conduit must be secured in place to prevent them from rising or floating out of position while the concrete is poured and curing.

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8. Pour the concrete.

**Note:** Make sure the concrete surface between the conduits is completely level and free of any irregularities.

9. Complete the *Construction Signoff Form* provided by ChargePoint to verify that the site is correctly completed and ready for product installation.

# Examples of Express 250 Paired A Wire Sizing

The required DC wire gauge varies based on the specific site. Use these example scenarios to help you determine the correct wire gauge for your site.



**Important:** These scenarios are only examples, and are not intended to replace an assessment by a local electrician. Always follow all applicable local and national codes and requirements. A site drawing should be engineered for your specific site to reduce installation costs and ensure compliance with local codes.

## DC Interconnection, Example Calculation: Newark, NJ

### Assumptions:

- Breaker and equipment terminal rating minimum 75°C
- Electric Vehicle Charging Equipment rated for continuous duty per Article 625.41
- Maximum 50°C ambient rating
- Installation location: Newark, NJ, USA
- 90°C rated wire required
- Maximum station DC output/input current: 160 A
- Four conductors in conduit, only two current carrying conductors

The continuous duty derating per 625.41 is  $160 \times 1.25$ , or 200 A.

From the Appendix D ASHRAE, the table summer design temperature is 91°F for Newark, NJ.

Temperature derating from 2017 NEC Table 310.15(B)(2)(a) based on 30°C the derating factor for 91°F and 90°C rated wire is 0.96 (87-95°F row).

From the 90°C column of NEC Table 310.15(B)(16), a 3/0 copper conductor has an ampacity of 225 A.

Applying the temperature derating factor,  $225 \times 0.96 = 216$  A

200 A is the minimum rated ampacity this conductor must have per the NEC to prevent potential insulation damage and provide the ability of the conductor to dissipate heat caused by the current flow. After the temperature derating calculation, the resulting 216 A is greater than the 200 A required.

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A 3/0 copper conductor has an ampacity of 200 A at 75°C, which is the ampacity column required for equipment rated 100 A or greater per NEC 110.14(C)(1)(b). If, following the derating from the 90°C column, the resultant ampacity of the 3/0, 90°C wire is equal to or greater than the ampacity rating of the same size conductor in the 75°C, the conductor is permitted.

From NEC table 310.15(B)(16) in 90°C column, after the derating, the 3/0 conductor ampacity is 216 A which is greater than the minimum required 200 A. Thus the permitted copper conductor size is 3/0.

The permission to use the 90°C ampacity for ambient temperature adjustment comes from the general requirement in 110.14(C); Conductors with temperature ratings higher than specified for terminations shall be permitted to be used for ampacity adjustment, correction, or both.

## AC Mains Input Wiring, Example Calculation: Phoenix, AZ

### Assumptions:

- Breaker and equipment terminal rating minimum 75°C
- Continuous duty equipment
- Maximum 50°C ambient rating
- Installation location: Phoenix, AZ, USA
- 90°C rated wire required
- 480 VAC Input, 3 phase, no neutral
- Maximum station AC input rating: 80 A
- Three current carrying conductors in conduit

The continuous duty derating per 625.41 is  $80 \times 1.25$ , or 100 A.

From the Appendix D ASHRAE table, the summer design temperature is 107°F for Phoenix, AZ.

Temperature derating from 2017 NEC Table 310.15(B)(2)(a) based on 30°C the derating factor for 107°F and 90°C wire is 0.87 (from the 105-113°F row).

The allowable ampacity for a #3 AWG 90°C copper conductor per NEC Table 310.15(B)(16) is 115.

Applying the temperature derating factor from Table 310.15(B)(2)(a),  $115 \times .87 = 100.05$  A.

100 is the minimum ampacity this conductor must have per the NEC to prevent potential insulation damage and provide the ability of the conductor to dissipate heat caused by the current flow. After the derating is applied, the resulting ampacity of 100.05 A is greater than the 100 A required.

A #3 AWG copper conductor is rated at 100 A at 75°C, which is the ampacity column required for equipment rated 100 A or greater per NEC 110.14(C)(1)(b). However in this case, the equipment is only rated to 80 A. Since the equipment is listed and identified with a 75°C termination rating, we can use NEC Section 110.14(C)(1)(a)(3). As long as after derating from the 90°C column of table 310.15(B)(16) the resultant ampacity is equal to or greater than the ampacity rating of the conductor in the 75°C column, the #3 AWG conductor is permitted.

From NEC table 310.15(B)(16) in 90°C column, after the derating, the conductor ampacity is



100.05 A, which is greater than the minimum required 100 A. Thus the permitted conductor size is 3 AWG.

The permission to use the 90°C ampacity for ambient temperature comes from the general requirement in 110.14(C); Conductors with temperature ratings higher than specified for terminations shall be permitted to be used for ampacity adjustment, correction, or both.

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### **Limited Warranty Information and Disclaimer**

The Limited Warranty you received with your Charging Station is subject to certain exceptions and exclusions. For example, your use of, installation of, or modification to, the ChargePoint® Charging Station in a manner in which the ChargePoint® Charging Station is not intended to be used or modified will void the limited warranty. You should review your limited warranty and become familiar with the terms thereof. Other than any such limited warranty, the ChargePoint products are provided "AS IS," and ChargePoint, Inc. and its distributors expressly disclaim all implied warranties, including any warranty of design, merchantability, fitness for a particular purposes and non-infringement, to the maximum extent permitted by law.

### **Limitation of Liability**

CHARGEPOINT IS NOT LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, PUNITIVE OR CONSEQUENTIAL DAMAGES, INCLUDING WITHOUT LIMITATION LOST PROFITS, LOST BUSINESS, LOST DATA, LOSS OF USE, OR COST OF COVER INCURRED BY YOU ARISING OUT OF OR RELATED TO YOUR PURCHASE OR USE OF, OR INABILITY TO USE, THE CHARGING STATION, UNDER ANY THEORY OF LIABILITY, WHETHER IN AN ACTION IN CONTRACT, STRICT LIABILITY, TORT (INCLUDING NEGLIGENCE) OR OTHER LEGAL OR EQUITABLE THEORY, EVEN IF CHARGEPOINT KNEW OR SHOULD HAVE KNOWN OF THE POSSIBILITY OF SUCH DAMAGES. IN ANY EVENT, THE CUMULATIVE LIABILITY OF CHARGEPOINT FOR ALL CLAIMS WHATSOEVER RELATED TO THE CHARGING STATION WILL NOT EXCEED THE PRICE YOU PAID FOR THE CHARGING STATION. THE LIMITATIONS SET FORTH HEREIN ARE INTENDED TO LIMIT THE LIABILITY OF CHARGEPOINT AND SHALL APPLY NOTWITHSTANDING ANY FAILURE OF ESSENTIAL PURPOSE OF ANY LIMITED REMEDY.

### **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 ChargePoint, 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 (optional) 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.

### **Industry Canada**

This device complies with Industry Canada license-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

### **FCC/IC Compliance Labels**

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