AC Wiring Verification

Service Bulletin

- **Bulletin Published:** November 8, 2019
- **Affects Models:** ChargePoint Express 250, both Standalone and Paired installations
- **Range of Affected Units:** All currently installed ChargePoint Express 250 stations
- **Required Action:** Proactive inspection of AC wiring for all affected stations
- **Required Technician Level:** ChargePoint technician or ChargePoint Approved Technician only
- **Failure:** Incorrect installation of AC conductors into the Wago connectors, that does not follow ChargePoint installation documentation, could result in severe equipment damage
- **Repair Summary:** Remove all cover panels for access. Verify correct installation of suitable conductors, rodent guard bracket, and duct seal compound, and correct if necessary.

This service bulletin applies to already installed ChargePoint Express 250 charging stations. For ChargePoint Express 250 stations that are not yet installed by November 8, 2019, refer to the *ChargePoint Express 250 Installation Guide* that ships in the main crate with the station. Documents are also available online at chargepoint.com/installers or chargepoint.com/eu/installers. Ensure that all quality steps are followed.

Important Safety Information for Professional Installers

DANGER: RISK OF SHOCK. Before performing this procedure, disconnect the power to the Express 250 at the service panel. 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 before inspection.** 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 DEATH.**

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

CAUTION: If you must perform service in rain or wind, you must use a weather-proof shelter that covers all boxes and components.

Important: You must be a licensed electrician and complete online training to become a ChargePoint Approved Installer or Technician and get a login for ChargePoint. If you do not complete this training, you will be unable to complete the installation process.
Go to: chargepoint.com/installers or chargepoint.com/eu/installers

Important: You must document proper installation and submit the documentation to ChargePoint Support with your dispatch or activation ticket at the completion of your inspection. Take photos of each completed step as you complete it.

Note: When replacing a part, ChargePoint recommends taking a photo before removing each part so you can refer to the photo when reassembling.

Do not discard any parts you replace. Use the new part's packaging whenever possible, and return all removed parts to ChargePoint.

For assistance, go to chargepoint.com/support and find your region's technical support number.

Tools and Materials

Important: Do not proceed before you have verified you have all required tools.

- Headlamp
- Cut-resistant gloves
- Safety glasses
- Step ladder
- T25 Torx security driver
- Torque wrench capable of 4 Nm (35 in-lbs)
- Phillips screwdriver
- Small flathead screwdriver
- 8 mm nut driver
- Drill
- 8 mm (5/16 in) drill bit
- 45 mm or 60 mm (1 12/16 in or 2 3/8 in) coring drill bit to match AC conductor size
- Wago tool (contact ChargePoint Support if this tool is needed)
- Duct seal compound
- Phase rotation tool
- Standard electrical tools such as wire cutter, wire stripper, and cable ties

Prepare the Charging Station

Important: Detailed instructions for station components are found in the *Express 250 Installation Guide* and Express 250 online training, both previously supplied to approved installers and technicians. Documents and training courses are available at:
chargepoint.com/installers from North America browsers
chargepoint.com/eu/installers from European browsers

1. Power off the charging station, and its associated station if Paired, at the breaker panel before continuing work. Use a multimeter to test that power is off.

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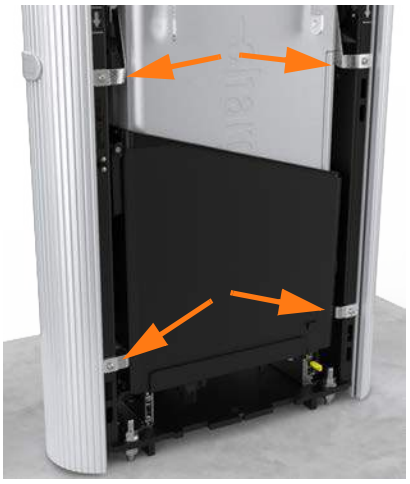
2. Remove the area light bar.
3. Remove the LED display.
4. Remove all front cover panels.
5. Remove all rear cover panels.
6. Determine the method of EMI control used on this charging station. Power Module holders might have either EMI shields or ground straps installed. Whichever solution is present, reinstall it after service.

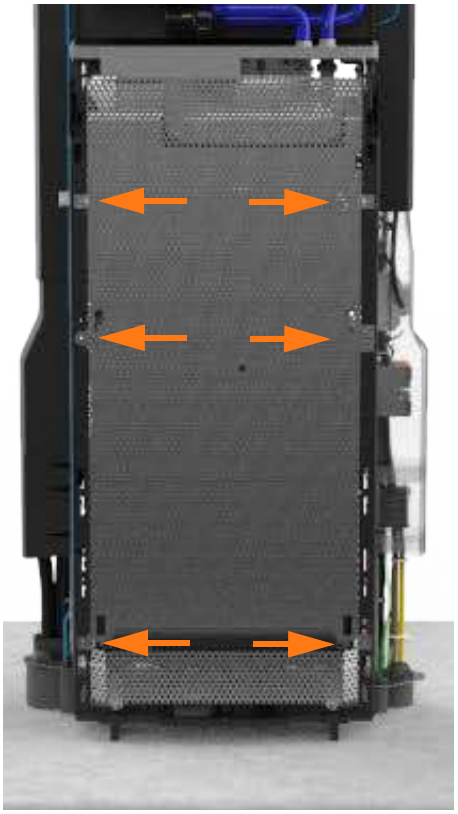
   • If ground straps are present, use a T25 Torx to remove the front and rear M5 screws and washers attaching the Power Module holder and Power Module ground straps to the Express 250 frame (eight screws total). Keep the screws and washers for use in a later step.



- If front and rear EMI shields are present, use a T25 Torx driver to remove the screws and washers holding each shield over the closed Power Module holder. The rear shield might be in one or two parts, depending on system generation.

  Note: During later re-installation, position the cutout on the rear shield long edge on the right side, leaving the sensor wire clear.

  Note: During later re-installation, torque all screws to 4 Nm (35 in-lbs).



7. Open the Power Module holders.

   Note: It is not necessary to swap the Power Modules during service. These are pulled out to allow access to fasteners for the extrusion. Unless there is a site-specific reason to replace the Power Modules, leave them in their holders.

8. Remove the left extrusion.

   Note: Removing the right extrusion is not required.

Verify the AC Wiring Installation

1. As you perform this procedure, take pictures of any component that appears to have been incorrectly installed. If you observe any signs of damage, or any installation issue that you cannot repair in the field, contact ChargePoint Support before proceeding.
2. 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.

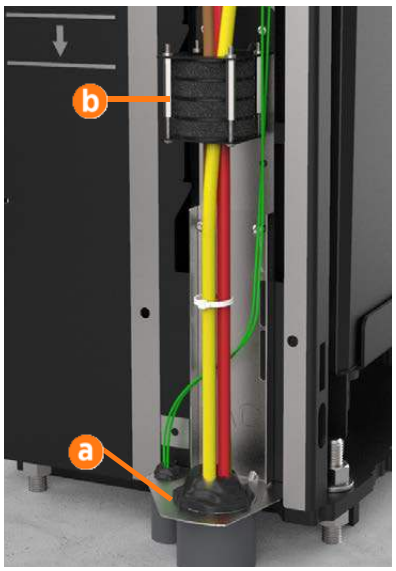
Important: The AC terminal block on the Express 250 accepts 35 mm^2 (2 AWG) wires only. If using a larger gauge wire to accommodate a long run, reduce the wire size at the local external disconnect.

Important: If any wiring cannot be reinstalled or repaired correctly in the field, contact ChargePoint Support.

3. Check for any signs of electrical or thermal damage.
4. Check that the AC rodent guard bracket (a) is installed. If it is not, contact ChargePoint Support to order a field replacement kit with AC and DC brackets.
5. Use a T25 Torx to temporarily remove the ferrite mounting (b) from the station, for easier wire movement. Save all fasteners for later re-installation.
6. **Before** removing any wires:

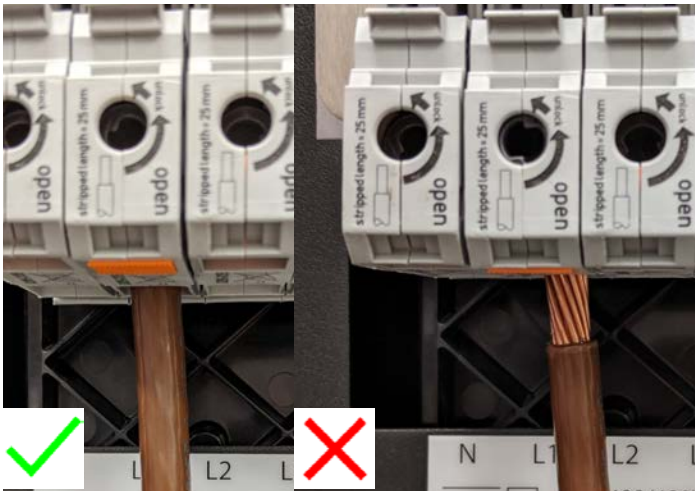
   a. Visually check each wire in the AC terminal block: L1, L2, L3, and GND (protective earth). Check local code to see if Neutral is needed. Neutral connection is not required for service equipment operation.

   b. Check that the L1, L2, and L3 cables were installed in the correct order for counter-clockwise phase rotation.

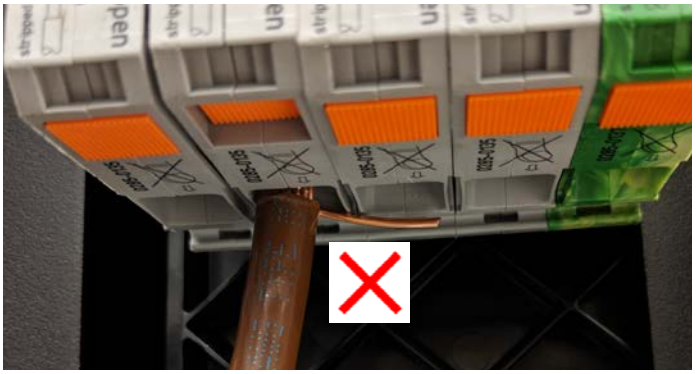


Important: Incorrect installation creates a phase rotation error later in the process. Phase rotation must be counter-clockwise.

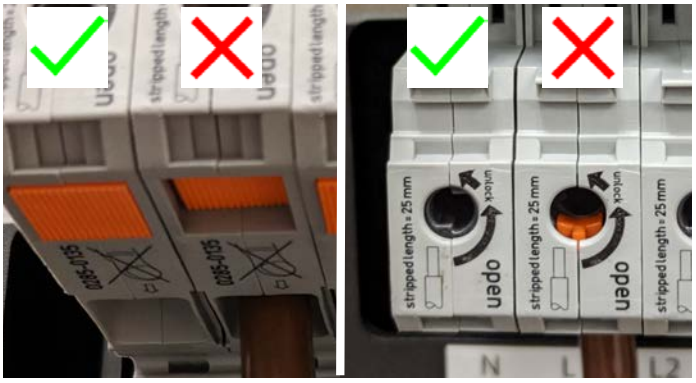
c. Check whether copper is exposed below the terminal.



d. Verify that all strands were fully inserted into the terminal, without being bent back.



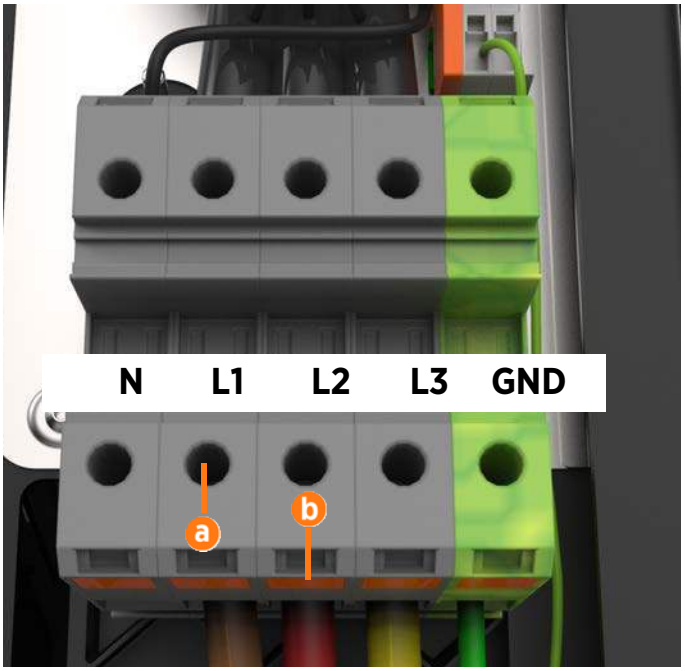
e. Verify that all Wago connectors were fully closed. A fully closed connector has an orange button in the flush (released) position, and shows no orange in the tool port.



7. Remove each AC and ground wire and inspect it:

   a. Fully insert the Wago tool into the Wago port (a) and rotate the tool firmly counter-clockwise 90° to open the connector.

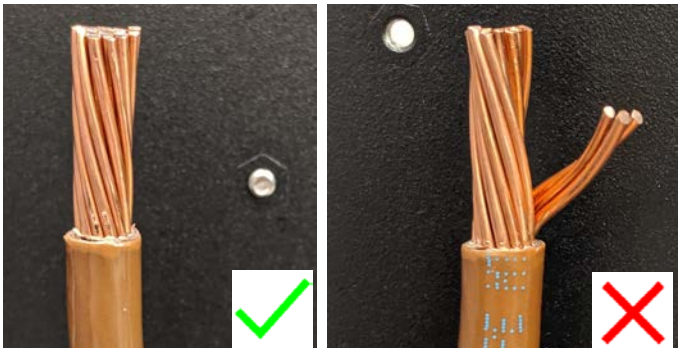
   b. Lock the connector in the open position by firmly pressing the orange button below it (b). Remove the wire.



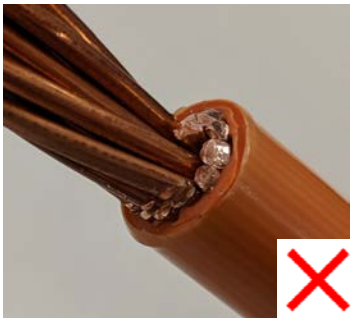
   c. Verify that the end was stripped 25 mm (1 in).

CAUTION: Strip each wire at least 25 mm (1 in). 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.**

   d. Verify that the wire was tightly bundled with no stray strands.

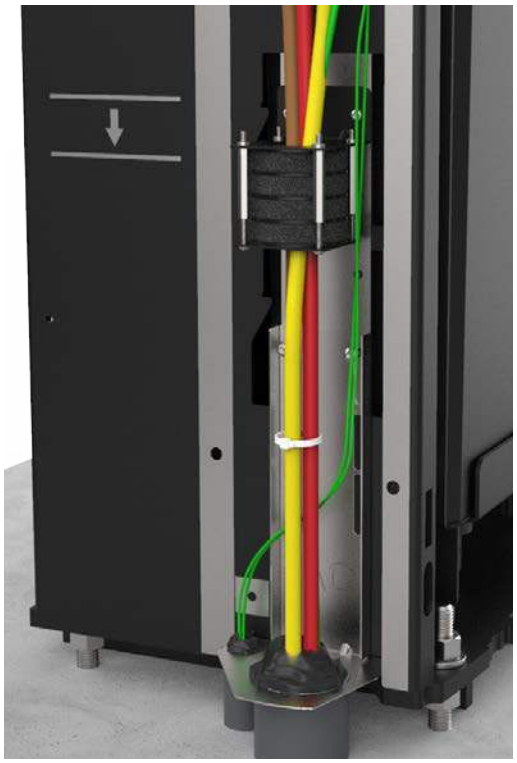


e. Verify that no strands of the wire were cut off to fit into the available terminal space.



8. Remove the duct seal to verify that nothing has damaged conductor insulation.
9. Verify proper routing of all wires:
   a. All AC wiring, but not the shunt trip wiring, is routed through the ferrite stack.
   b. The AC rodent guard bracket is fastened to the charging station.
   c. All AC and shunt trip wiring are routed through the rodent guard bracket holes.
   d. The bottom of the bracket rests against the conduit or armored cable below it.

   If the ferrite, duct seal, or bracket installation is incorrect, install them according to the next two steps. If they are all correct, skip to step 13. If a new AC rodent guard bracket is needed, contact ChargePoint for parts.
10. 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. Use a flathead screwdriver to push out the correct size punch-out disc for the AC conductors. The hole must be large enough for the AC conductors to pass through, but no larger than the conduit ID. If the bracket does not have punch-outs, use the closest size core drill bit and de-burr the edges, or contact ChargePoint Support to order a field replacement kit with AC and DC brackets.
    c. Route the AC wiring bundle through the cable bracket hole and the ferrite stack.
    d. Use a T25 Torx to replace the ferrite mounting.
    e. Route the shunt trip wiring only through the rodent guard bracket, not through the ferrite stack. If the bracket does not have a punch-out disc, use a 8 mm (5/16 in) drill bit to enlarge the hole.
    f. Slide the rodent guard bracket down to leave no gap above the conduit openings.



11. 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. Use a flathead screwdriver to push out the correct size punch-out disc for the contractor-provided cable gland. If the bracket does not have punch-outs, use the closest size core drill bit and de-burr the edges, or contact ChargePoint Support to order a field replacement kit with AC and DC brackets.

    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.

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

    f. Use a T25 Torx to replace the ferrite mounting.

    g. Route the shunt trip wiring only through the rodent guard bracket, not through the ferrite stack. If the bracket does not have a punch-out disc, use a 8 mm (5/16 in) drill bit to enlarge the hole.

    h. Complete installation of the cable gland.

12. 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.

13. If the AC conductors and ground wire are undamaged, reinstall them:

    a. Re-insert the wire fully into the Wago terminal until it contacts the back stop.

Important: Ensure the exposed wires are tightly bundled with no loose strands. Ensure NO copper is exposed below the terminal once installed.

    b. 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.

    c. Confirm each wire is held securely inside its connector by performing a pull-push test.

14. If shunt trip wiring is present (coming from the smaller conduit), confirm each wire is held securely by performing a pull-push test. If the wiring is not secure, use a screwdriver to open the locking tab and re-insert the wiring. Shunt wires are interchangeable. Release the terminal tab and confirm each wire is held securely by performing a pull-push test.

CAUTION: Install the rodent guard brackets as described to protect 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.**

15. Use cable ties to bundle the AC and ground wires in one or two places.

16. Use the supplied duct seal compound to completely seal all AC openings against pest ingress:

    a. The inside of the conduit opening

b. Within the rodent guard bracket openings for wiring
c. Around the edges of the rodent guard bracket where it will meet the extrusion

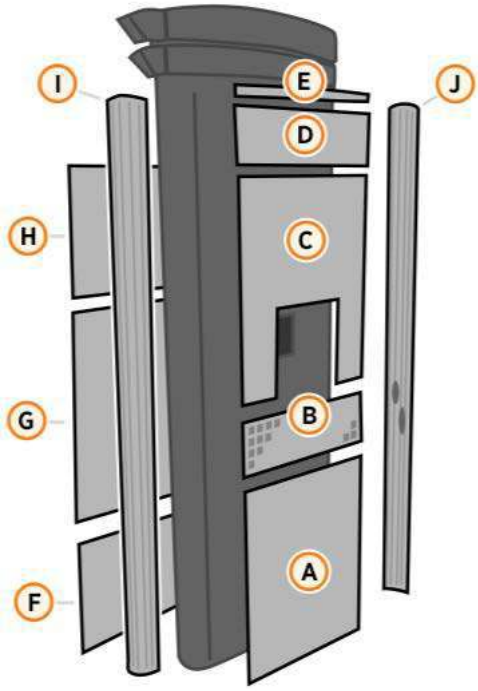
Important: The conduit opening must be sealed to protect the wiring from the environment.

17. Reinstall the AC wiring cover.
18. Reinstall all cover panels. Installation is the reverse of removal.

Power the System

Verify all cover panels are installed, then power on the Express 250. The on-screen Installation Wizard steps you through any required tasks to set up the Express 250 and verify that it can operate properly.

An Installation Wizard test checks that 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	Secondary display
E	Area light bar
F	Rear bottom panel
G	Rear middle panel
H	Rear top panel
I	Left extrusion
J	Right extrusion

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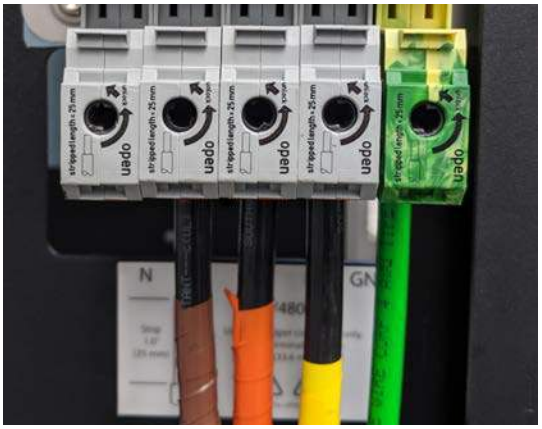
If any panel needs re-installation, review the procedures above to double-check that all panels are fully seated and that the edges of all signs are captured fully by the panels around them. For further details, refer to the *Express 250 Installation Guide*.

Report Completion to ChargePoint

Contact ChargePoint Support to report completion of the inspection and any negative findings during the station inspection. Prove completion by attaching these three photos to your ChargePoint Support dispatch or activation ticket (examples provided below):

- Correct strip length of all wires, tightly bundled, before insertion (tape measure is optional in photo)

- Wires fully inserted into the Wago terminals, with no copper visible, and ports showing no orange tabs



- All Wago buttons in the flush (fully closed) position