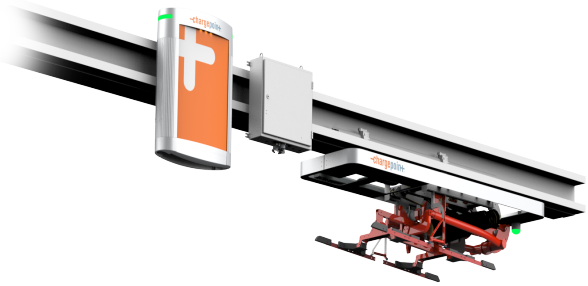
Pantograph Down 2000

Express Plus DC Fast Charging Solution for Electric Buses

Site Commissioning Form

75-001703-01 R0



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions for ChargePoint® products that shall be followed during installation, operation, and maintenance of each product.

WARNING:

1. **Read and follow all warnings and instructions before servicing, installing, or operating the ChargePoint® product.** 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 product and adhere to all national and local building codes and standards.** Before installing the ChargePoint product, 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 product for proper installation before use.
3. **Always ground the ChargePoint product.** A touch currrent of >3.5 mA AC RMS is possible in case of a fault condition of loss of electrical continuity of the earthing conductor. Failure to ground the product can lead to risk of electrocution or fire. The product 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 product using a ChargePoint-approved method.** Failure to install on a surface that can support the full weight of the product can result in death, personal injury, or property damage. Inspect the product for proper installation before use.
5. **The product is not suitable for use in Class 1 hazardous locations, such as near flammable, explosive, or combustible vapors or gases.**
6. **Supervise children near this device.**
7. **Do not put fingers into the electric vehicle connector or connector adapter. Do not touch fingers to charging rails.**
8. **Do not use this product if any cable is frayed, has broken insulation, or shows any other signs of damage.**
9. **Do not use this product if the enclosure, the flexible output cable, the vehicle inlet, the electric vehicle connector, or the electric vehicle connector adapter is broken, cracked, open, or shows any other signs of damage. Do not use this product if internal parts are accessible, including wiring.**
10. **Wire and wire terminal information are provided in the ChargePoint product Site Design Guide and Installation Guide.**
11. **Torques for installation of wire terminals are provided in the ChargePoint product Installation Guide.**

12. **The ChargePoint product maximum operating temperature is 50 °C (122 °F).**
13. **Do not use an electric vehicle connector adapter with any charger or EV that is capable of exceeding the adapter's rated voltage of current capacity. Some EVs and EVSE combinations are capable of multiple voltages or limited durations of current overloading designed for normal EVSE-to-EV connections. Use of an electric vehicle connector adapter in these situations could result in unsafe conditions such as fire, burns, or exposure of high voltage.**
14. **Site operator is responsible for making sure that no mechanical damage occurs and the installation is done in a location that doesn't present a safety risk. If used carelessly, the equipment could critically injure someone just from the extension force.**

IMPORTANT: Under no circumstances will compliance with the information in a ChargePoint guide such as this one relieve the user of the responsibility to comply with all applicable codes and safety standards. This document describes approved procedures. If it is not possible to perform the procedures as indicated, contact ChargePoint. ChargePoint is not responsible for any damages that may result from custom installations or procedures not described in this document or that fail to adhere to ChargePoint recommendations.

Product Disposal

Applicable to NA - Do not dispose of as part of unsorted domestic waste. Inquire with local authorities regarding proper disposal. Product materials are recyclable as marked.

Applicable to EU - 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.

Document Accuracy

The specifications and other information in this document were verified to be accurate and complete at the time of its publication. However, due to ongoing product improvement, this information is subject to change at any time without prior notice. For the latest information, see our documentation online at ChargePoint Product Reference Documentation.

Copyright and Trademarks

Symbols

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

NOTE: Helpful information to facilitate installation success

Read the manual for instructions

Ground/protective earth

Illustrations Used in This Document

The illustrations used in this document are for demonstration purposes only and may not be an exact representation of the product. However, unless otherwise specified, the underlying instructions are accurate for the product.

Revision History

This page provides a summary of revisions made, listing the month and year of each update along with a brief description of the changes made.

Month & Year	Version Number	Description
October, 2025	v1	Initial release.

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Review Product Documentation

Complete the steps listed here to ensure it is commissioned as specified. The detailed datasheets, site design guides, and installation guides defining ChargePoint specifications and procedures are available online at: ChargePoint Product Reference Documentation.

Before Beginning Work

ChargePoint charging stations must be installed and serviced only by qualified personnel equipped with appropriate personal protective equipment and adhering to proper electrical and work practices.

DANGER: RISK OF SHOCK. Before performing any procedure, the technician must disconnect the power to the charging station at the service panel. Follow local code to de-energize the applicable circuit and lock out/tag out the disconnect before proceeding. Use a multimeter and check that the power is off. Keep power off for the circuit until all cover panels are correctly reinstalled and the work is complete. FAILURE TO FOLLOW THESE INSTRUCTIONS CAN RESULT IN SERIOUS INJURY, LOSS OF LIFE, OR PROPERTY DAMAGE.

NOTE:
Commissioning inspection protocols, measurements, and photo documentation must be completed at the same time as station installation and via the ChargePoint Installer app once it is available.

Before removing any station parts:

- Consult with site personnel for access to site and equipment.
- Verify de-energization and lock out / tag out of all power sources to the station as stated in the shock danger warning above.
- Wear appropriate Personal Protective Equipment (PPE) and verify the station is de-energized.

CAUTION: For all sections below, items marked as Critical are essential to prevent hazards or equipment damage.

- If a Critical item does not pass, complete the full inspection but DO NOT energize the site. Contact ChargePoint for next steps. If all Critical item passes, complete the inspection and energize the site as authorized.
- All checks must be completed. Items marked as Optional are optional and might not fail commissioning if they are not applicable or separate action can be taken. If an (Optional) item is incomplete, describe the reason.
- Items that require photos must be shared according to the following
    - All photos should be sharp and focused on the item being documented.
    - All photos should be JPEG format. Apple's standard HEIC format is NOT acceptable.
    - The aspect ratio should be 16:9 or 4:3 and resolution should be between 5.0 - 12.1 MP.

After Work

- For ChargePoint managed installations, the Site Commissioning Form and related attachments, such as photos and documents, can be submitted via the Work Order associated with the specific installation.
- The Installer must always keep a copy of the Site Commissioning Form and related attachments, such as photos and documents, to be submitted to ChargePoint on request.

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Site Inspection

Customer Information	
Customer name	
Customer contact name	
Customer contact phone	
Customer contact email	

Site Information	
Street and number	
City	
State	
Country	
Zip code	
Number of stations to be installed	
Number of paired stations to be installed (if applicable)	
Estimated construction start date	
Estimated installation and commissioning date	

Site Preparation (Make Ready) Performed by	
Contractor company name	
Contractor site lead name	
Contractor site lead phone	
Contractor site lead email	
Contractor type	◯ ChargePoint recommended ◯ Customer hired

Station Installation Performed by	
Installation company name	
Lead installer contact name	
Lead installer contact phone	
Lead installer contact email	
Installer type	◯ ChargePoint recommended ◯ Customer hired

Station Commissioning Performed by	
Technician name	
Technician phone	
Technician email	
Commissioning start date (mm/dd/yyyy)	
Commissioning end date (mm/dd/yyyy)	

Pantograph Down Mast

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Item	Status/Comments
Is a mast installed on site?	Yes ◯ No ◯
What type of mast is installed? Valmont Mast or other	

PD Controller

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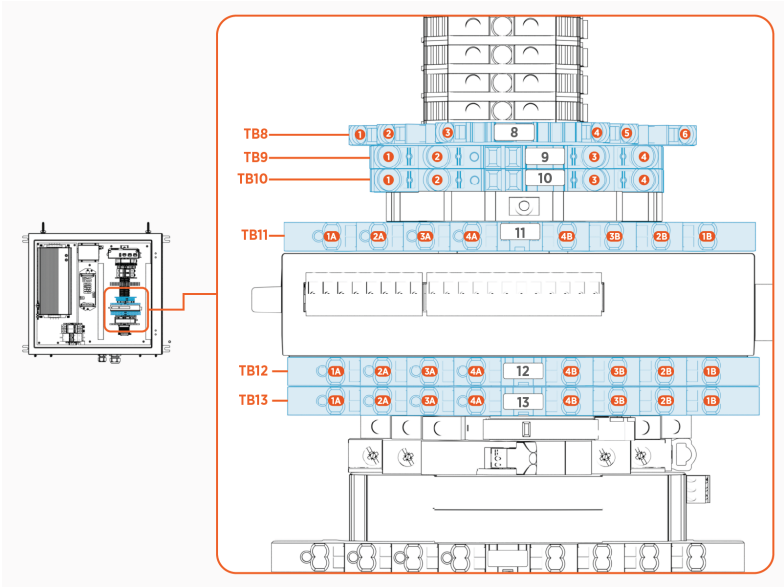
	Item	Status/Comments
	1. If the Valmont Mast is installed, verify the distance between Power Link 2000 and PD Controller does not exceed 100 m (328 ft).	☐
	2. Confirm PD Controller is mounted upright (not ceiling). [Attach Photo]	☐
	3. Record the AC conduit size	◯ 3/4 inch ◯ 1 inch
	4. Record the AC conduit type	◯ PVC ◯ EMT ◯ Rigid ◯ Non-Metallic Flexiable ◯ Metallic Flexiable
	5. Record the LV DC conduit size	◯ 3/4 inch ◯ 1 inch
	6. Record the LV DC conduit type	◯ PVC ◯ EMT ◯ Rigid ◯ Non-Metallic Flexiable ◯ Metallic Flexiable
	7. Verify duct seal is installed in PD Controller conduit openings. [Attach Photo]	☐
	8. Verify that the PD Controller is mounted with fasteners (x4). Fasteners are specified by the site plan. Torque to the specification indicated in the site plan. [Attach Photo]	☐
	9. Is the PD Controller readily accessible?	◯ Yes ◯ No
	10. Verify than an external AC power source is supplying the PD Controller	☐

	Item	Status/Comments
	11. [Critical] Record the AC overcurrent protection (in Amps)	20 ◯ 15 ◯
	12. Give details describing where the PD Controller breaker is located. For example: Electrical Room 2 in Panel EV2	
	13. Provided photo of the AC overcurrent protection device. [Attach Photo]	☐
	14. [Critical] Verify the external AC power source is between 110 v - 277 v	☐
	15. Record the AC wire size. [Attach Photo]	
	16. Record the AC wire type. [Attach Photo]	
	17. Record the AC wire temp rating	
	18. Record the AC wire voltage rating	
	19. Record the AC Ground wire size	
	20. Verify the AC wire strip length is 12 mm (0.5 in)	☐
	21. Verify AC wires are fully seated with no exposed copper and tightened	☐
	22. Verify the AC Ground wire strip length is 10 mm	☐
	23. Verify the AC ground wire is fully seated with no exposed copper and tightened	☐
	24. Verify internal AC breaker is in the ON position	☐
	25. [Critical] Verify that AC wires comply with ChargePoint requirements [6 awg MAX, Copper, 600 VAC, and 75 °C (167 °F)]	☐
	26. Record the LV DC wire size. [Attach Photo]	
	27. Record the LV DC wire type. [Attach Photo]	
	28. Record the LV DC wire temp rating	
	29. Record the LV DC wire voltage rating	

	Item	Status/Comments
	30. Verify the LV DC wires are fully seated in the terminal with no copper exposed	☐
	31. [Critical] Confirm the LV DC wire polarity	☐
	32. Verify that DC wires comply with ChargePoint requirements [16 AWG, Copper, 1000 V , and 75 °C (167 °F)]	☐
	33. Record Ethernet wire type (CAT6 STP Outdoor Rated). [Attach Photo]	
	34. Verify the RJ45 connector at the PD Controller is ungrounded and in T568-B pattern	☐
	35. Does the Ethernet cable pass functionality testing? (From Power Link 2000 to PD Controller). [Attach Photo]	☐
	36. Verify the Communication cable is properly seated in the Surge Arrestor at the Power Link 2000	☐
	37. Verify the Communication cable is properly seated in the Surge Arrestor at the PD Controller	☐
	38. Verify that the Ethernet wire going to the PD Controller is wired from the same side as the HV DC (L/R)	☐
	39. Verify Chassis ground is wired from the Power Link 2000 to the PD Controller (recommended 12 AWG)	☐
	40. Confirm no alterations to provided RF coaxial cables	☐
	41. Confirm RF coaxial cables do not exceed 10 m	☐
	42. Confirm coax is not coiled inside PD Controller	☐
	43. Ensure WIFI coax passes functionality test	☐
	44. Ensure RFID coax passes functionality test	☐
	45. Push pull test on Pantograph control cable	☐
	46. Push pull test on Status LED cable	☐

	Item	Status/Comments
	47. Push pull test on RFID antenna cable	☐
	48. Push pull test on Wi-Fi antenna cable	☐
	49. Push pull test on Rest sensor cable	☐
	50. Push pull test on control pilot cable	☐
	51. Push pull test on Pantograph contact heater cable (if applicable)	☐
	52. Verify that the controller interface cable wires are connected in the PD Controller as per the below image. 	☐

Pantograph

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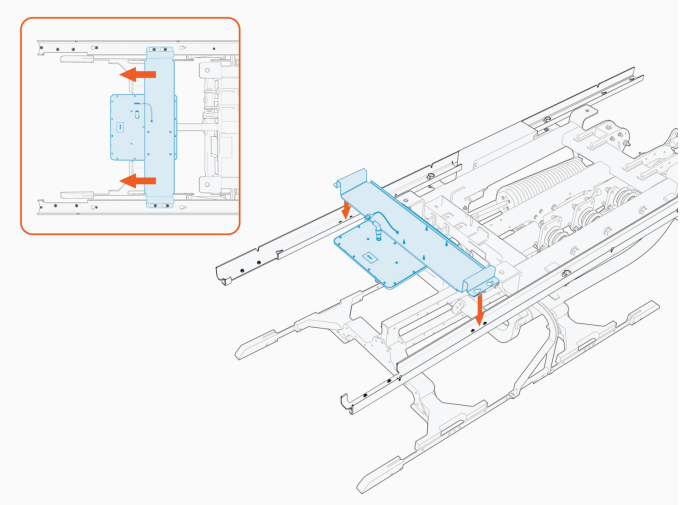
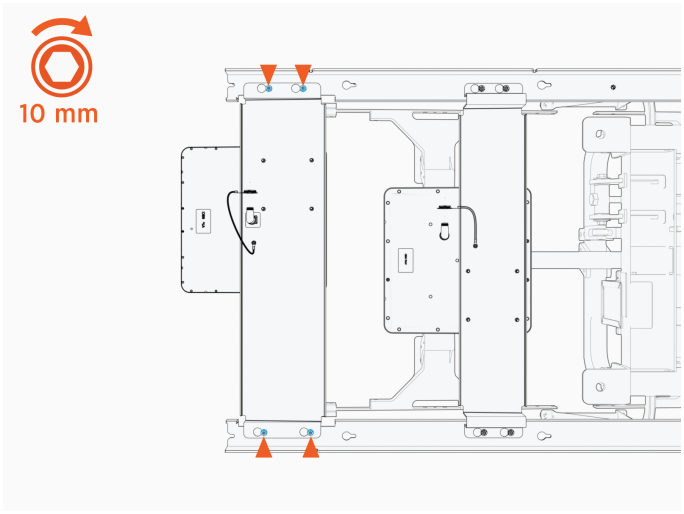
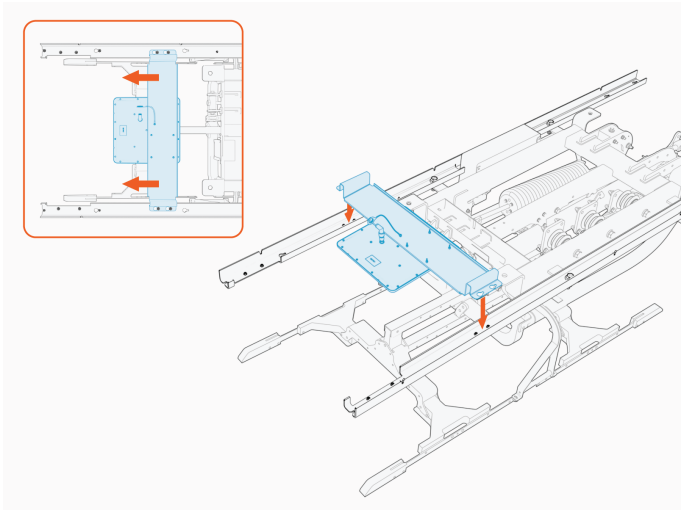
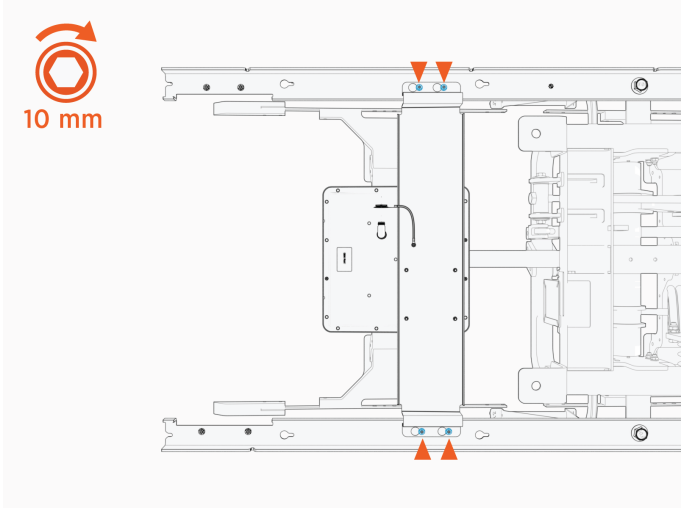
	Item	Status/Comments
	1. Verify all labels are placed on the Pantograph.[Attach Photo]	☐
	2. Verify that the Pantograph powder coating is free of scratches and defects. [Attach Photo]	☐
	3. Verify no obstructions in the "keep out zone".	☐
	4. Verify Pantograph is mounted on rail with M16 bolt (5/8), washer and flange nut.	☐
	5. Verify nuts are torqued to **99 Nm (73 ft-lb)** and marked with paint pen. [Attach Photo]	☐
	6. Confirm the Wi-Fi antenna is installed on the outermost left and right rails. [Attach Photo] 	☐
	7. Verify Wi-Fi M6 mounting nuts are torqued to **5.6 Nm (50 in-lb)**.	

	Item	Status/Comments
		☐
	8. Push-Pull test Wi-Fi antenna cable	☐
	9. Confirm the RFID reader is installed on the intermost left and right rails. [Attach Photo] 	☐
	10. Verify RFID M6 mounting nuts are torqued to **5.6 Nm (50 in-lb)**. 	☐

	Item	Status/Comments
	11. Push-Pull test RFID antenna cable	☐
☐	**12.** Confirm LED status light is installed. [Attach Photo]	☐
	13. Push-Pull test status LED 24v cable	☐
	14. [Critical] Verify maximum conductors (x3) per HV DC pole & does not exceed 300 kcmil	☐
	15. Verify ground conductor (x1) - max wire size 50 mm^2 (1/0 AWG)	☐
	16. [Critical] Verify Pantograph HV DC and ground is single hole lug to fit M10 stud	☐
	17. Verify HV DC wiring polarity is correct	☐
	18. Verify HV DC torqued to **19 Nm (14 ft-lb)**	☐
☐	**19.** Take photos of HV DC and ground connections. [Attach Photo]	☐
☐	**20.** Push-Pull test on Pantograph 24v rest sensor cable. [Attach Photo]	☐
☐	**21.** Push-Pull test on Pantograph 24v control pilot cable. [Attach Photo]	☐
☐	**22.** Push-Pull test on Pantograph 24v control cable. [Attach Photo]	☐
	23. Verify that Pantograph rest sensor is terminated using M12, 4-pin, female connector and is fully tightened. [Attach Photo]	☐
☐	**24.** Verify that Pantograph controller is terminated using Harting, female connector and is fully tightened. [Attach Photo]	☐
☐	**25.** Verify that Pantograph status LED is terminated using M12, 8-pin, female connector and is fully tightened. [Attach Photo]	☐
	26. Verify that RFID antenna cable excess is secured and will not interfere with moving parts	☐
	27. Verify that WiFi antenna cable excess is secured and will not interfere with moving parts	☐
	28. Verify that status LED cable is secured to the front cover	☐

	Item	Status/Comments
	29. Does Pantograph have a cover installed? [Attach Photo]	Yes ○ No ○
	30. Verify all M6 nuts (x6) on the rear cover are torqued to **5.6 Nm (50 in-lb)**	☐
	31. Verify all M6 nuts (x4) in the front cover are torqued to **5.6 Nm (50 in-lb)**	☐
	32. Verify Status LED M5 nuts are torqued to **4.5 Nm (40 in-lb)**	☐
	33. Verify the M6 nuts (x4) on the left side cover are torqued to **5.6 Nm (50 in-lb)**	☐
	34. Verify the M5 nuts (x2) on the left side cover are torqued to **4.5 Nm (40 in-lb)**	☐
	35. Verify the M6 nuts (x4) on the right side cover are torqued to **5.6 Nm (50 in-lb)**	☐
	36. Verify the M5 nuts (x2) on the right side cover are torqued to **4.5 Nm (40 in-lb)**	☐
	37. Verify that the length of lowering spring at resting position is 610 mm (24 in)	☐
	38. Record the length of raising spring at resting position. [Attach Photo]	
	39. Verify that the length of raising spring at resting position is 630 mm (24.8 in)	☐
	40. Record the pan head angle at resting position. [Attach Photo]	
	41. Verify that the pan head angle at resting position is 3° ± 0.5°	☐
	42. Measure the spring force at resting position using a force gauge	
	43. Verify that the spring force at resting position is 100 N (22.5 lbs)	☐
	44. Record the resting height. [Attach Photo]	
	45. Verify that resting height is 588 ± 30 mm (23.1 ± 1.2 in)	☐
	46. Measure the Pantograph complete length at resting position. [Attach Photo]	
	47. Verify that the complete length of the Pantograph is 2179 ± 20 mm (85.8 ± 0.8 in)	☐
	48. Measure the width of the Pantograph	

	Item	Status/Comments
	49. Verify that the width of the Pantograph is 750 ± 2 mm (29.5 ± 0.1 in)	☐
	50. Verify that the minimum Working Height of the Pantograph is 779 mm (30.6 in).	☐
	51. [Critical] Verify that the minimum Working Height Contact Force is 500 +100/-150 N (112 +22/-34 lbs) using a force gauge. [Attach Photo]	☐
	52. Verify that the maximum Working Height of the Pantograph is 2277 mm (89.6 in)	☐
	53. Verify that the maximum Working Height Contact Force is 500 +100/-150 N (112 +22/-34 lbs.) using a force gauge. [Attach Photo]	☐
	54. Verify that the maximum Extension is 2377 mm (93.6 in). [Attach Photo]	☐
	55. Verify that the spring force (max extension – retaining force) is ≥ 40 N (≥ 9 lbs) using a force gauge. [Attach Photo]	☐
	56. Verify that the Pan Head Movement angle is within 5° ± 0.5°.	☐

Acknowledgment

I, _____, hereby confirm the following:

- All instructions in the Installation Guide have been followed
- Torqued all fasteners to the correct torque values using an appropriate tool
- The electrical system complies with all local codes, norms, standards, and regulations. This includes but is not limited to health and safety regulations, electrical regulations, building regulations, manufacturer specifications, and requirements of the local authorities.
- I certify that the scope of work has been completed correctly and that the station has no functional, electrical, or safety issues

Name and signature of the technician who commissioned the stations.

Name: _____

Company: _____

Signature	Date

Legal Disclaimer

ChargePoint is not responsible for verifying this information, and the creator of the protocol remains responsible for this information.

ChargePoint accepts no ongoing responsibilities for the electrical design and the installation specifics.

chargepoint.com/support