



Express Plus

DC Fast Charging Platform

High Voltage Wire Insulation Resistance Test Field Guide



IMPORTANT SAFETY INSTRUCTIONS

SAVE THESE INSTRUCTIONS

This manual contains important instructions for Express Plus that shall be followed during installation, operation and maintenance of Express Plus modular products.

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.** 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 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 or the electric vehicle connector is broken, cracked, open, or shows any other signs of damage.**
 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. **Site operator is responsible for making sure that no mechanical damage occurs and the pantograph is installed in a location that doesn't present a safety risk.** If used carelessly, the pantograph could critically injure someone just from the extension force.
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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.**

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.com/guides.

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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



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.

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Why is Insulation Resistance Testing Required?

All installers and site designers need to perform an Insulation Resistance Test since it is crucial for ensuring the safety, reliability, and longevity of electrical installations. This test helps to:

- Identify defects
 - Detect insulation defects, moisture ingress, or physical damage that could lead to failures
- Prevent failures
 - Avoid potential short circuits, electrical shocks, and equipment damage

Test Specific Safety Precautions

Follow these safety precautions:

- Wear appropriate Personal Protective Equipment (PPE): Insulated gloves, safety glasses, and flame resistant clothing
- Ensure that the circuit is de-energized: Verify that the power is completely turned off and locked out
- Use insulated tools: Ensure that all the tools and the equipment used are rated for the voltage level
- Follow manufacturer's guidelines: Adhere to the safety recommendations provided by the equipment manufacturer

Example Testing Procedure

Follow these steps:

1. To prepare for the test, ensure that the wires are disconnected on both sides and that the wires are properly isolated.
2. To perform the test, use Megger Test equipment, Megaohmmeter, or, any other similar equipment.
3. Test the voltage.



IMPORTANT: A common practice is to use a test voltage of 1000 V.
Refer to relevant standards such as IEEE 43 or manufacturer specifications for guidance.

4. Apply the test voltage for one minute.
5. Record the insulation resistance value at the end of the test duration.

Expected Insulation Resistance Value

IMPORTANT:



Compare the measured resistance value against the acceptable limits specified by relevant standards or the wire manufacturer.

Generally, higher resistance values indicate better insulation quality. For 600 V to 1000 V rated wires, a minimum insulation resistance of 1 MΩ per kV of operating voltage is often considered acceptable.

By following the above guidelines, you can help to ensure that your electrical installations remain safe and reliable over their operational life.

Measurements from the AC Set or Stations

Use the following sample table to capture measurements from your test:

AC Set/Station #	Cable Size	L1 - L2	L2 - L3	L3 - L1	L1 - GND	L2 - GND	L3 - GND
Station 1 AC							
Station 2 AC							
Station 3 AC							
Station 4 AC							

AC side measurements

Measurements from the DC Set or Stations

Use the following sample table to capture measurements from your test:

DC Set/Station #	Cable Size	1-GND	2-GND	3-GND	4-GND	DC+/DC-
Station 1 DC						
Station 2 DC						
Station 3 DC						
Station 4 DC						

DC side measurements

FCC Compliance Statement

This equipment has been tested and found to comply with the limits for a Class B 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 residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications.

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.

ISED (formerly Industry Canada)

This device complies with the licence-exempt RSS standard(s) of Innovation, Science and Economic Development Canada (ISED). 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.

Cet appareil est conforme aux flux RSS exemptés de licence d'Innovation, Sciences et Développement économique Canada (ISDE). 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.

Radiation Exposure Statement: This equipment complies with the IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Énoncé d'exposition aux rayonnements: Cet équipement est conforme aux limites d'exposition aux rayonnements ioniques RSS-102 Pour un environnement incontrôlé. Cet équipement doit être installé et utilisé avec un Distance minimale de 20 cm entre le radiateur et votre corps.

FCC/IC Compliance Labels

Visit chargepoint.com/labels.



chargepoint.com/support

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