

CT500

ChargePoint[®] Networked Charging Station



**Coulomb
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Installation Guide

Safety and compliance

This document provides instructions to install the ChargePoint® Charging Station and should not be used for any other product. Before installing the ChargePoint® Charging Station, you should review this manual carefully and consult with a licensed contractor, licensed electrician and trained installation expert to ensure compliance with local building practices, climate conditions, safety standards, and state and local codes.

The ChargePoint® Charging Station should be installed only by a licensed contractor and a licensed electrician and in accordance with all local and national codes and standards. The ChargePoint® Charging Station should be inspected by a qualified installer prior to the initial use. 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 Coulomb Technologies. Coulomb Technologies is not responsible for any damages that may occur resulting from custom installations that are not described in this document.

No accuracy guarantee

Reasonable effort was 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.

Warranty information and disclaimer

Your use 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. Other than any such limited warranty, the Coulomb products are provided "AS IS," and Coulomb 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.

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IMPORTANT SAFETY INSTRUCTIONS

This Installation Guide contains important instructions that must be followed during installation of the CT500.



Warnings:

- The CT500 must be connected to a grounded, metal, permanent wiring system; or an equipment grounding conductor must be run with the circuit conductors and connected to the CT500's grounding terminal or lead.
- The CT500 must be installed by a qualified electrician and in accordance with all local electrical codes and ordinances.
- Read all instructions before installing the CT500.
- Adult supervision is required when using the CT500 near children.
- Do not operate a CT500 with a visibly damaged cable. Contact Coulomb Technologies immediately.
- Do not operate a CT500 if the enclosure or the EV connector is broken, cracked, open, or shows any other signs of damage. Contact Coulomb Technologies immediately.
- Do not put fingers into the EV connector
- Do not install the CT500 near flammable, explosive, or combustible materials.
- Do not operate the CT500 in temperatures outside its operating range of -22°F to 122°F (-30°C to +50°C).
- The CT500 contains no user-serviceable parts. Do not attempt to repair or service the CT500 yourself. If the CT500 requires servicing, contact Coulomb Technologies.
- Ensure that the CT500's charging cable is positioned so it will not be stepped on, tripped over, or subjected to damage or stress.

SAVE THESE INSTRUCTIONS

Cleaning the CT500

Do not use cleaning solvents to clean any of the CT500's components. The outside of the CT500, the charging cable, and the connector end of the charging cable should be regularly wiped with a clean dry cloth to remove any accumulation of dust and dirt.

FCC Declaration of Conformity

This device complies with Part 15 of the FCC rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Radio and Television Interference

The equipment described in this manual has been designed to protect against Radio Frequency Interference (RFI). However, there are some instances where high powered radio signals or nearby RF-producing equipment (such as digital phones, RF communications equipment, etc.) could affect operations.

If interference to your CT500 is suspected, relocate or turn off nearby electrical appliances during charging, before contacting Coulomb Technologies for assistance.

Important!

Changes or modifications to this product not authorized by Coulomb Technologies could void the FCC compliance.



At the end of its service life, this product should be recycled according to local laws and regulations. Contact Coulomb Technologies for recycling information.

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This document provides step-by-step instructions on how to install any CT500 ChargePoint® Charging Station.

Before installing the CT500

- Ensure that the appropriate wiring, circuit protection, and metering is in place at the installation location. For details, refer to the specifications (page 1-2) and wiring diagrams (page 1-3).
- Ensure that the type of modem in the CT500 station that you are installing is compatible with the type of modem coverage available at the installation site (CDMA or GPRS).
- Disconnect power.
- Determine the appropriate mounting location for the CT500. The CT500 is designed to be secured to a masonry wall or a hollow wall with wood studs 16" apart. If this is not the case, prepare an appropriate mounting surface.
- Familiarize yourself with the installation procedure by thoroughly reviewing *Chapter 2 "Installation Instructions."*

Specifications



Electrical Input

Input Power	7.2 kW
Input Voltage	208/240 VAC
Input Current	30 A
Input Power Connections	Line 1, Line 2, Earth
Required Service Panel Breaker	40A double pole breaker (non-GFCI type) on dedicated circuit
Service Panel GFCI	Do not provide external GFCI as it may conflict with internal GFCI (CCID)
Standby Power	5 W typical

Electrical Output

Output Charging Power	7.2 kW
Output Voltage	208/240 VAC
Output Current	30 A
Output Charging Connector	SAE J1772™ EV connector on 18' (5.48 m) cable

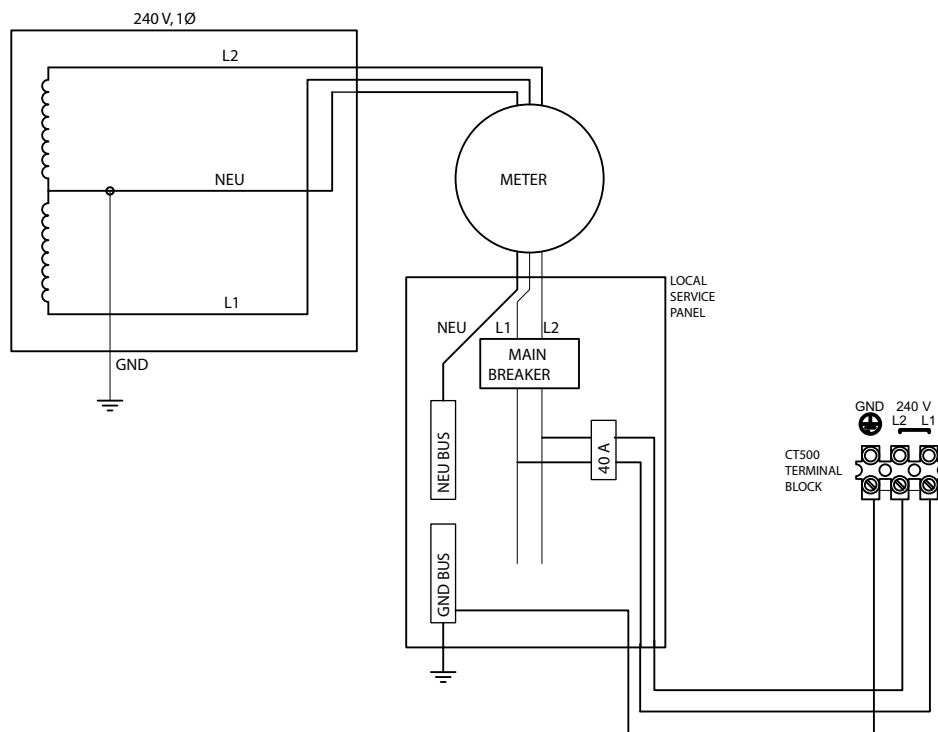
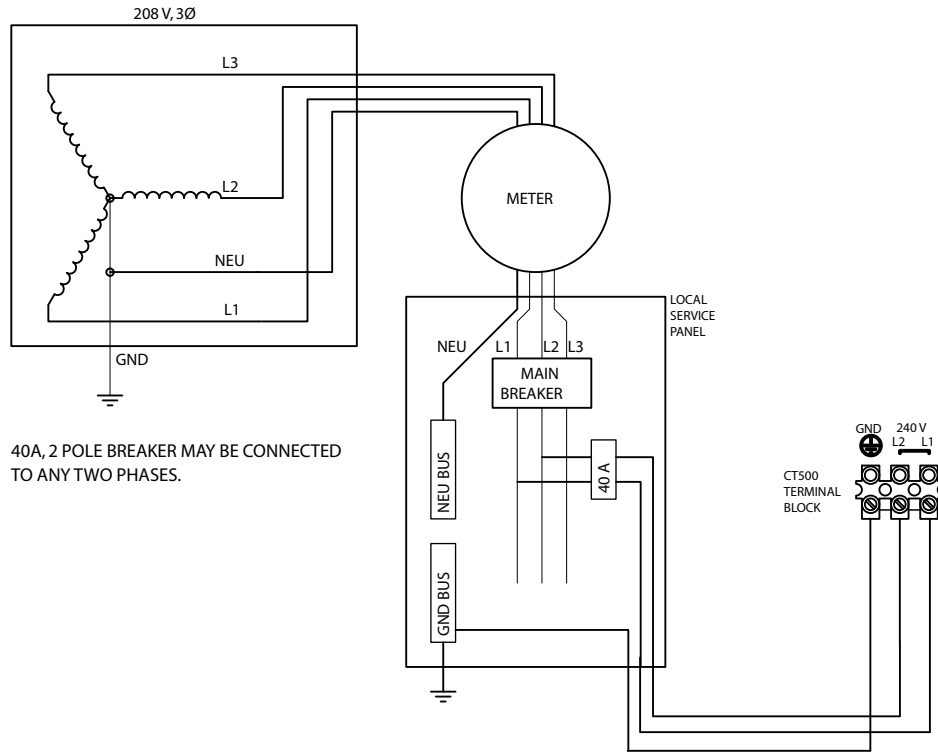
Functional Interfaces

Card Reader	ISO 15693, 14443
Ground Fault Detection	20 mA CCID with auto retry (15 minute delay, 3 tries)
Plug-Out Detection	Power terminated per SAE J1772™ specification
Power Measurement	2% @ 15 minute intervals
Local Area Network	2.4 GHz 802.15.4 dynamic mesh network
Wide Area Network	Commercial CDMA or GPRS cellular data network

Safety and Operational Ratings

Safety Compliance	UL listed for USA and cUL certified for Canada; Complies with UL 2594, UL 2231-1, UL 2231-2, UL 1998, UL 991, and NEC Article 625
Surge Protection	6 kV @ 3000 A. In geographic areas subject to frequent thunder storms, supplemental surge protection at the service panel is recommended.
EMC Compliance	FCC Part 15 Class B
Operating Temperature	-22 °F to 122 °F (-30 °C to +50 °C)
Operating Humidity	Up to 95% non-condensing
Enclosure	NEMA 3R
Terminal Block Temperature Rating	212 °F (100 °C)
Maximum Charging Stations per 802.15.4 Radio Group	100 (each station must be within 150 feet "line of sight" of at least one other station)
Approximate Shipping Weight	26 lbs (12 kg)

Wiring information



After the appropriate wiring is in place at the installation site (see “Wiring information” on page 1-3), you are ready to install the CT500. You will need:

- CT500 ChargePoint® Charging Station components (see page 2-2)
- ¾” (19 mm) conduit
- #2 Phillips screwdriver
- 3/8” socket wrench
- ¼” (6 mm) x 2” (50 mm) hex flange lag bolts (4)

Overview of steps

Installing the CT500 ChargePoint® Charging Station involves a few simple steps:

1. Check box for correct contents (see page 2-2)
2. Attach holster (see page 2-3)
3. Remove front panel (see page 2-4)
4. Mount to wall (see page 2-5)
5. Install conduit (see page 2-7)
6. Connect wires to wiring terminals (see page 2-8)
7. Replace front panel (see page 2-9)
8. Attach antennas (see page 2-10)
9. Verify that the station operates correctly (see page 2-11)

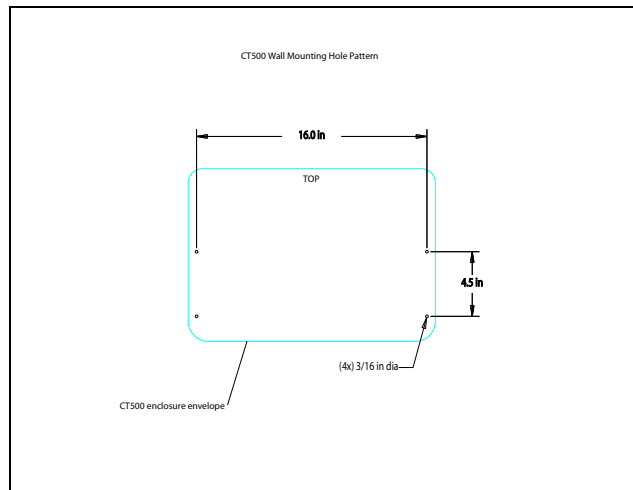
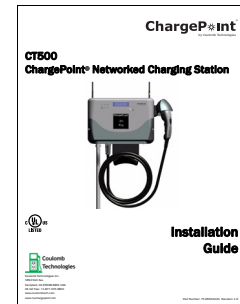
These steps are detailed in the remainder of this chapter.

Step 1 - Check box for correct contents

The CT500 ChargePoint® Charging Station ships in a box containing:

- Main assembly
- Holster
- Holster bolts (3)
- Antenna(s)*
- Mounting template
- Installation Guide

**The CT500 ships with either one or two antennas, depending on the specific model that was ordered.*



Step 2 - Attach holster

Using a #2 Phillips screwdriver, attach the holster to the main assembly using the three supplied Holster bolts.



Step 3 - Remove front panel

Using a #2 Phillips screwdriver, loosen the 2 captive screws located on each side of the front panel. Pull the front panel downward to remove.

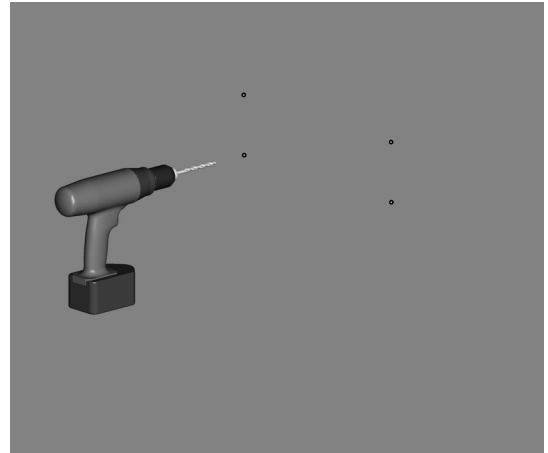


Step 4 - Mount to wall

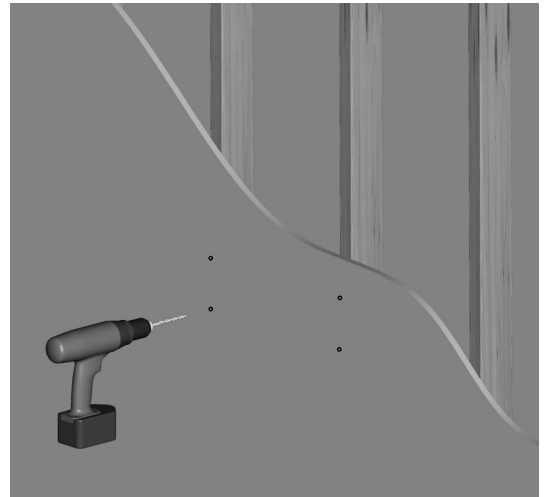
Drill four 3/16" holes in the wall, as illustrated. Use the supplied template to ensure correct alignment.

⚠ IMPORTANT: The top of the CT500 must be mounted no higher than a maximum height of 48" above the surface to comply with the Americans with Disabilities Act (ADA).

Masonry



Sheetrock



Bare studs



Step 4 - Cont'd

Align the CT500 to the mounting surface, and fasten to the wall using a 3/8" socket wrench to fasten the four 1/4" x 2" lag bolts, fasten it to the wall.

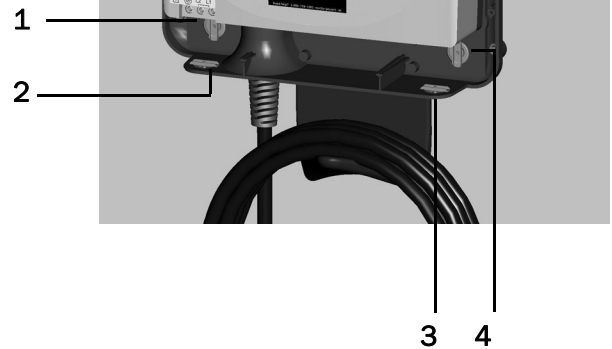


Step 5 - Install conduit

Choose the appropriate conduit opening and, if necessary, remove its cover.

NOTE: The CT500 has four conduit openings, three of which are covered. If you remove a cover, use it to cover the remaining unused conduit opening.

The CT500 has four conduit openings—two openings from the back and two from the bottom



After running the wiring through $\frac{3}{4}$ " (19 mm) conduit, insert the conduit into the selected opening.



Step 6 - Connect wires to wiring terminals

Pull the 240V L1 and L2 wires, and the Ground wire, into body assembly and connect to wiring terminals.

Strip wires ¼" (6 mm), insert in terminal block, and tighten screws to 18 ½ inch-lbs (2.1 Nm).

 **IMPORTANT:**

- Requires dedicated 40A breaker.
- Use copper conductors only.
- Do NOT provide GFCI protection at panel. The CT500 has built-in GFCI protection.
- In areas with frequent thunder storms, add surge protection at the service panel for all circuits.

Before proceeding with the next step, test the unit by restoring power. When the circuit is live, you should see a sequence of power-up message on the CT500's display. If this is not the case, turn off power and check the wiring connections.



Use copper conductors only.
Input terminal recommended tightening torque:
18.5 in.-lbs. (2.1 Nm)
Input terminal wire size range:
6 to 10 AWG (13mm² to 4mm²) solid / stranded.

SEE INSTALLATION GUIDE



Step 7 - Replace front panel

Align the front panel with the main assembly and push upwards into place until the edges meet.

Using a #2 Phillips screwdriver, tighten the two captive screws located on each side of the front panel.



Insert the connector into the holster.



Step 8 - Attach antennas

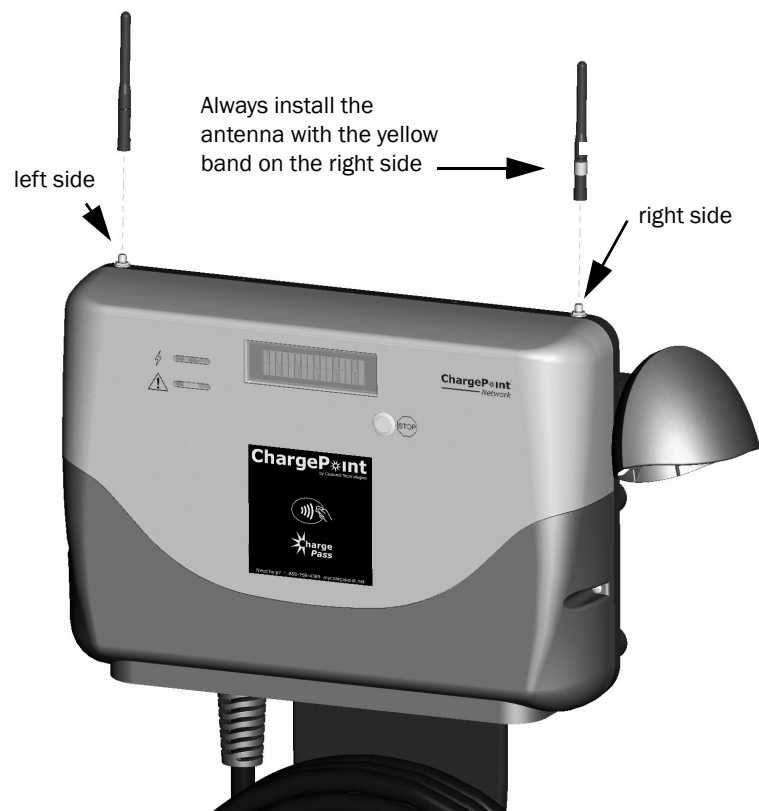
Attach the antennas to the top of the main assembly as shown. Turn the antenna clockwise to hand-tighten.

NOTE: The CT500 ships with either one or two antennas, depending on the specific model that was ordered.

Follow these rules when installing the antenna(s):

- Always install the antenna **WITH** the yellow band on the right side.
- Always install the antenna **WITHOUT** the yellow band on the left side.

You have now finished installing the CT500 ChargePoint® Charging Station.



Step 9 - Verify that the station operates correctly

Follow these instructions to ensure that the charging station is fully operational:

- Turn on the main power to ensure that the head assembly powers up. When the circuit is live and the head assembly's wiring is connected, a sequence of power-up messages will be displayed. When ready to use, the display will read "AVAILABLE: REMOVE CONNECTOR FROM HOLSTER AND PLUG INTO VEHICLE TO START" (if not equipped with a card reader) or "AVAILABLE: HOLD CARD NEAR LOCK" (if equipped with a card reader).

If this is not the case, check that the wiring is properly connected. If a different message is displayed, refer to "*Chapter 3: Troubleshooting*" for a description of error messages.

- Ensure that neither light on the left side of the station's display is illuminated or blinking RED. This indicates that the station has detected an error. If this is the case, an error message will be displayed. Refer to "*Chapter 3: Troubleshooting*" for a description of error messages.
- If equipped with a card reader, briefly hold a valid and authorized ChargePass™ card up to the label on the front the station. After authorizing the card, the CT500 should display a message indicating that it is ready to charge. If this is not the case, contact Coulomb Customer Support.
- If possible, plug the connector into an electric vehicle and ensure the top light on the left side of the station's display is blinking green to indicate that the vehicle is charging. If this is not the case, contact Coulomb Customer Support.

The station's display

To troubleshoot the CT500, you'll need to pay attention to the messages are displayed on the 2-line display. The display varies slightly depending on whether or not the CT500 is equipped with a card reader.

Under normal conditions, the CT500 displays the following message to indicate that it is ready for charging:



The bottom line scrolls information across the display to indicate what action to take.

NOTE: In the CT500 is equipped with a card reader, the second line of the display will read "HOLD CARD NEAR LOCK."

Understanding error messages

The following pages describe the error messages that can occur on a CT500. If one of the lights to the left of the CT500's display illuminates or blinks RED, read the display for information about the type of error that has occurred.

Power up errors

The follow messages can occur when the station powers up.

FAULT GFCI TRIP / SELF-TEST FAILED

Cause/Other Symptoms: Upon power-up, the station detected a ground fault.

Solution/Action: Press and hold the STOP button for 10 seconds to reboot the CT500. If the message continues to be displayed, call Coulomb Customer Support at 1-888-758-4389.

Ground fault errors

The following ground fault errors can occur during charging, or when attempting to begin a charging session:

SUSPENDED GROUND FAULT / AUTO RE-TRY IN 00:mm:ss

Cause/Other Symptoms: The station detected a ground fault during a charging session.

Solution/Action: The charging station will wait 15 minutes before reattempting to restore power. If after three attempts, the ground fault continues to be detected, the station displays the message below (HALTED). Instead of waiting, you can try pressing and holding the STOP button for 10 seconds to reboot the CT500. If the message continues to be displayed, call Coulomb Customer Support at 1-888-758-4389.

HALTED GFCI HARD FAULT / RETURN PLUG TO HOLSTER

Cause/Other Symptoms: During charging, the station detected a ground fault (see message above) and made three unsuccessful attempts to continue charging. Or, the station detected a ground fault when attempting to begin a charging session.

Solution/Action: Press and hold the STOP button for 10 seconds to reboot the CT500. If the message continues to be displayed, call Coulomb Customer Support at 1-888-758-4389.

User errors

The following errors occur as a result of an inappropriate action that was performed by a person using the charging station.

DISABLED BREAKAWAY

Cause/Other Symptoms: The vehicle was driven away during a charging session. The charging station is out of service until repairs are completed by a service technician repairs.

Solution/Action: Call Coulomb Customer Support at 1-888-758-4389

SUSPENDED OVERCURRENT / AUTO RETRY IN 00:mm:ss / RETURN PLUG TO HOLSTER

Cause/Other Symptoms: During charging, this message is displayed if the vehicle attempts to draw more than the maximum power of 30A.

Solution/Action: Restart the charging session by momentarily returning the charging connector to its holster. If the message continues to be displayed, press and hold the STOP button for 10 seconds to reboot the CT500. If the message is still displayed, call Coulomb Customer Support at 1-888-758-4389.

Other errors

The following errors occur as a result of a potential equipment failure or utility failure.

FAULT RELAY STUCK OPEN / FOR ASSISTANCE CALL ...

Cause/Other Symptoms: When attempting to charge a vehicle, this message will be displayed if the relay is stuck open. When the relay is stuck open, the charging station can not provide power and therefore you can not charge a vehicle.

Solution/Action: Restart the charging session by momentarily returning the charging connector to its holster. If the message continues to be displayed, press and hold the STOP button for 10 seconds to reboot the CT500. If the message is still displayed, call Coulomb Customer Support at 1-888-758-4389.

FAULT RELAY STUCK CLOSED / FOR ASSISTANCE CALL ...

Cause/Other Symptoms: When attempting to end a charging session, this message will be displayed if the relay is stuck closed. A new charging session can not be started until this error is resolved.

Solution/Action: Restart the charging session by momentarily returning the charging connector to its holster. If the message continues to be displayed, press and hold the STOP button for 10 seconds to reboot the CT500. If the message is still displayed, call Coulomb Customer Support at 1-888-758-4389.



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