OpenEVSE

"Advanced Series" with OpenEVSE v5

This guide provides step by step instructions to build an "Advanced Series" OpenEVSE kit.

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INTRODUCTION

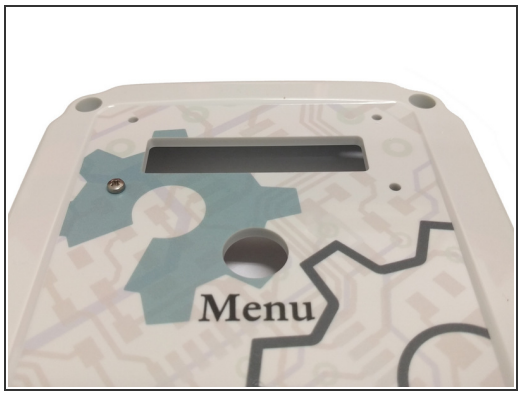
OpenEVSE Store - Purchase this OpenEVSE Kit

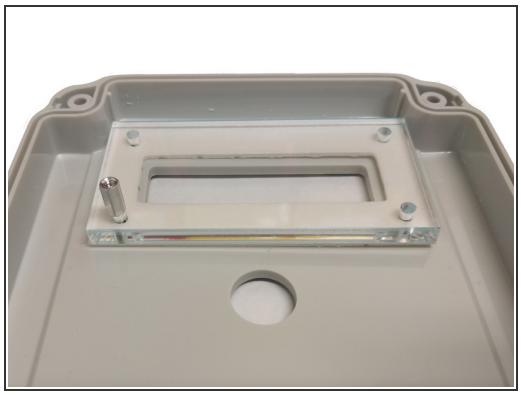
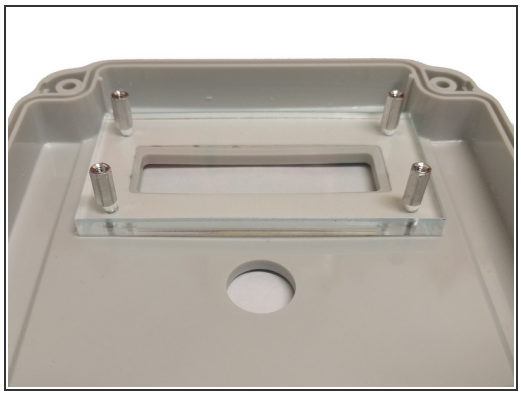
Warning Assembly of a Electric Vehicle charging station requires wiring Alternating Current (AC) components that will be exposed to voltages from 100 to 250v. If you do not have the experience and knowledge required to safely work with AC voltages please consult with an experienced electrician for assistance and inspection of your work.

Note Regularly inspect your charging station. Pay special attention to excess heat, components, handles, and wiring will be warm but they should not be HOT...

Always Disconnect your charging station from power before performing an inspection and/or maintenance

Step 1 — Enclosure Lid



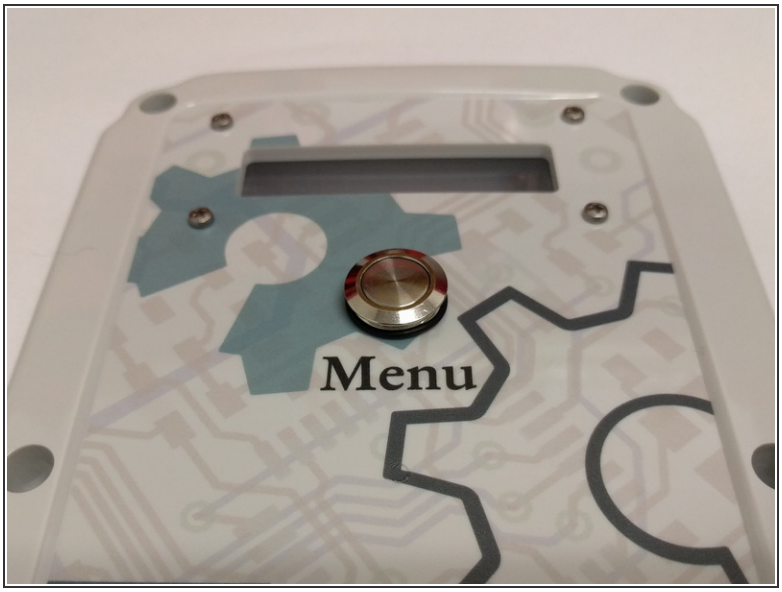



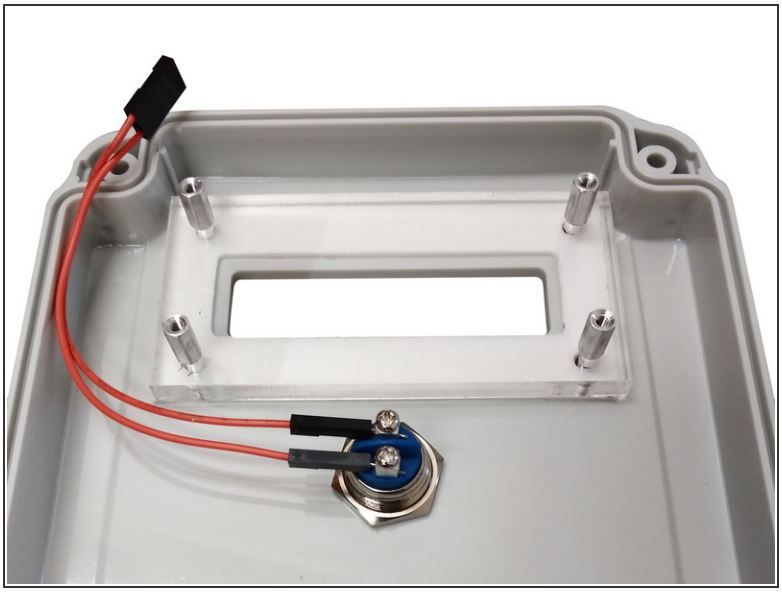
Remove any protective film from the clear window.

- From the front place a 10mm screw through one of the small holes.
- Flip the lid. Stack the foam window seal then clear window.
- Thread a Hex Standoff onto the screw.

  Hand tighten only.
- Repeat for the other 3 screws.

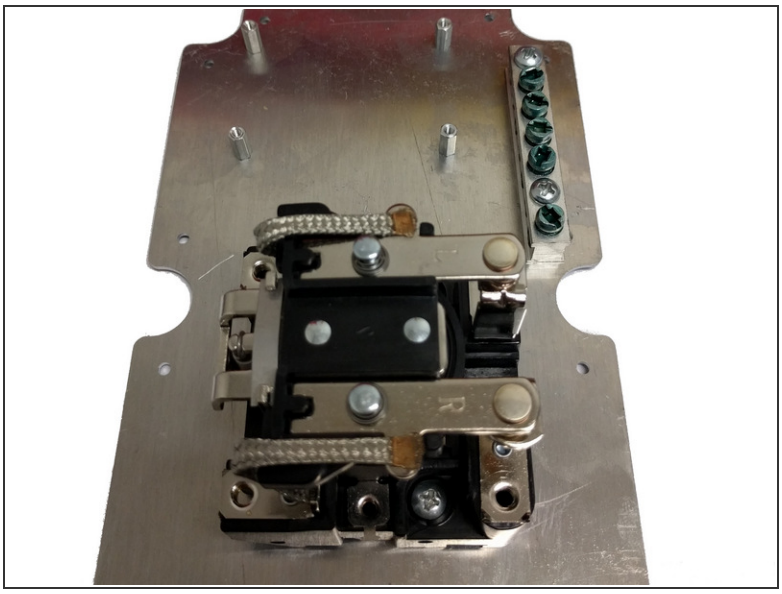
Step 2 — Install button





- Mount button with O-ring seal on the outside. Screw on the large hex nut from the inside.
- Connect harness to the screw terminals of the push button.

Step 3 — Mounting Plate

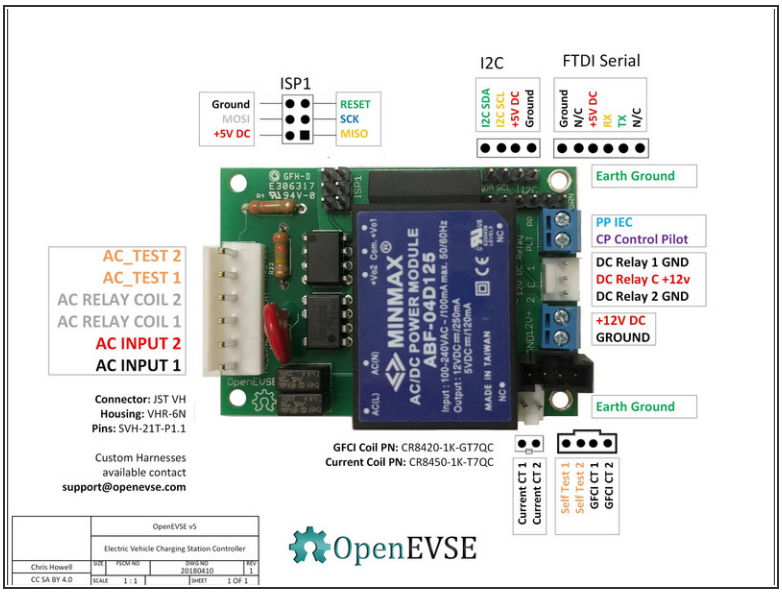


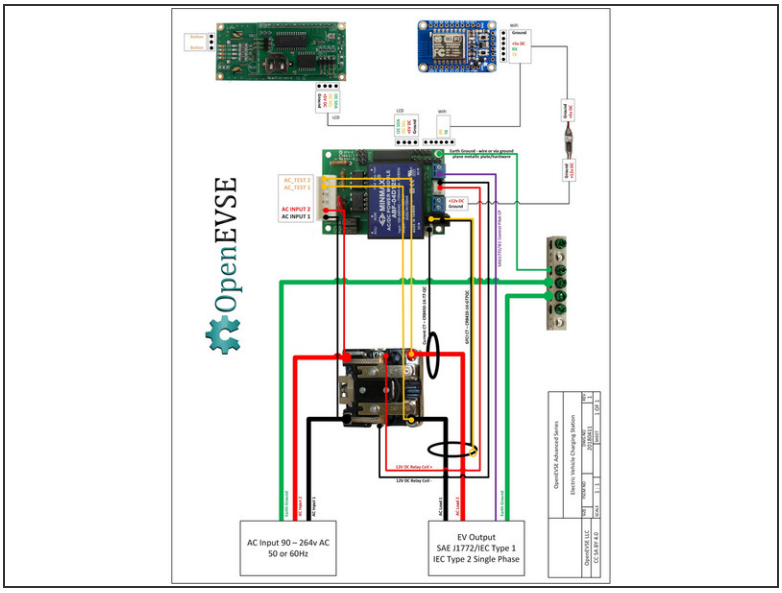
⚠ If your kit contains a Packard C240C contactor, continue here. Guide

- Position the plate with the 4 holes for the OpenEVSE controller up top and the Earth Ground bus bar on the right.
- Mount hex standoffs to the top side of the plate with 6 mm screws.
- Mount ground bar to the plate with 2 - 5/8" self threading screws.

  ⓘ Note: The screws from the ground bar packaging are not used.
- Mount the Struthers & Dunn relay using 2 - 1/2" self threading screws.

Step 4 — Connection Diagrams



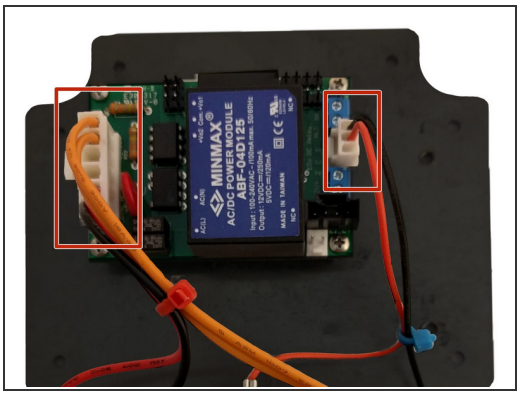


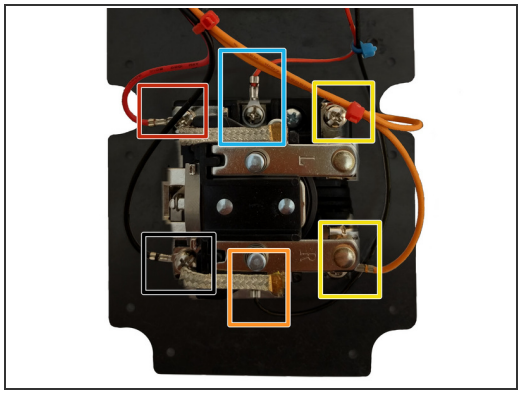
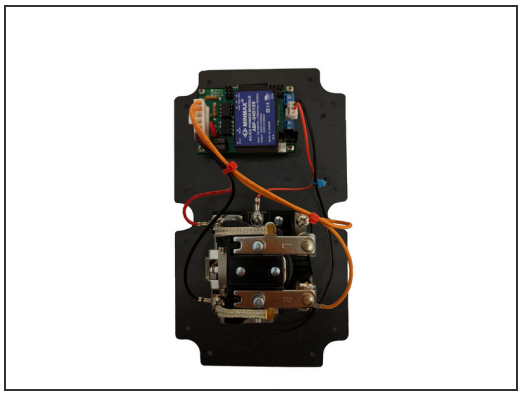
⚠ These documents will assist with the steps that follow.

ⓘ OpenEVSE Board Pins and Connections Download PDF

ⓘ Advanced Series Schematic Diagram Download PDF

Step 5 — Controller Wiring



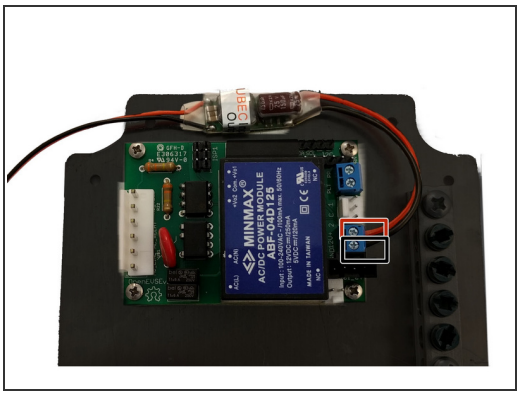
⚠ View OpenEVSE v5 Diagram in previous step for wires named below.

- Connect both keyed wiring harnesses to OpenEVSE controller.

  ⓘ Wire colors may vary.

- Connect DC Relay 1 GND (Black) to the bottom middle coil terminal. Tighten screw.
- Connect DC Relay C +12v (Red) to the top middle coil terminal. Tighten screw.
- Connect AC INPUT 1 to the bottom left power terminal. Start screw, but leave loose additional power wire added later.
- Connect AC INPUT 2 to the top left power terminal. Start screw, but leave loose additional power wire added later.
- Connect AC_TEST 1 and 2 to the top and bottom right power terminals. Start screw, but leave loose additional power wire added later.

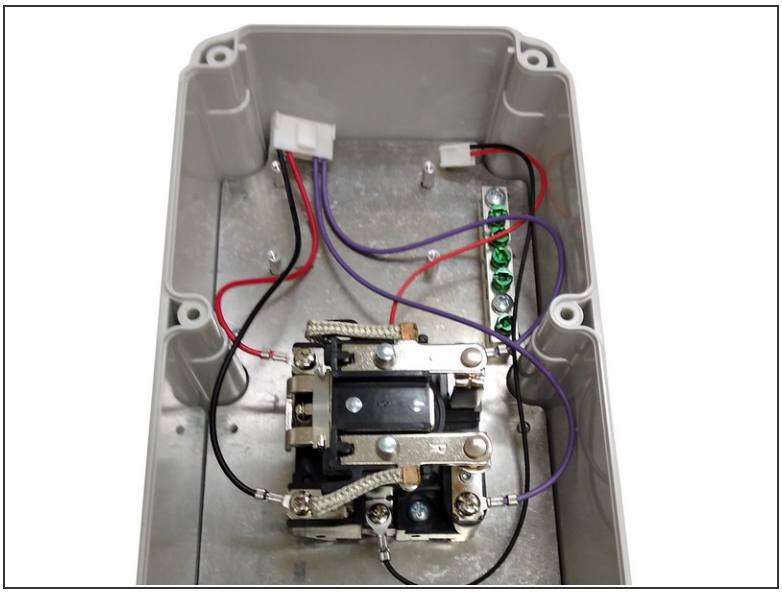
Step 6 — More Connections

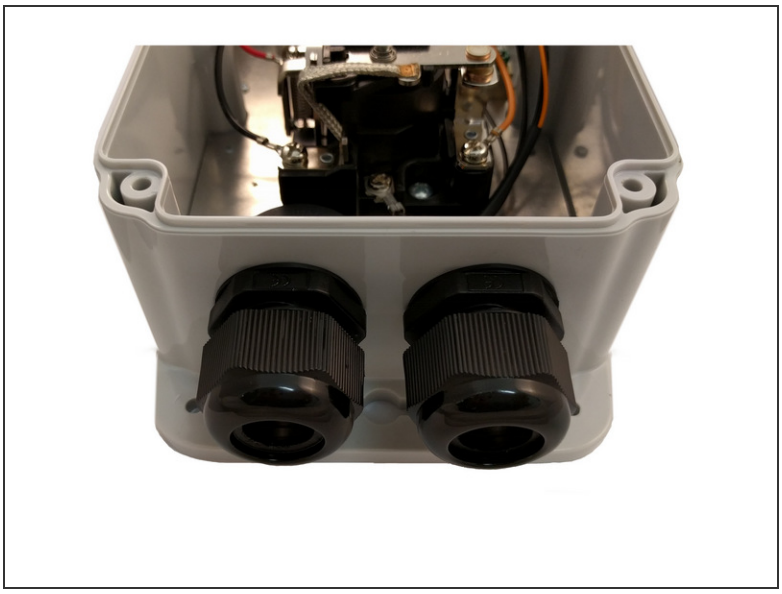


Mount OpenEVSE controller to the hex standoffs with 6mm screws.

- Connect the red wire on the UBEC WiFi power supply to +12v DC screw terminal on the OpenEVSE controller.
- Connect the black wire on the UBEC WiFi power supply to the Ground screw terminal on the OpenEVSE controller.
- Connect the keyed 4 pin GFCI coil to the OpenEVSE controller.
- Connect the keyed 2 pin Current Measurement coil to the OpenEVSE controller.

Step 7 — Enclosure

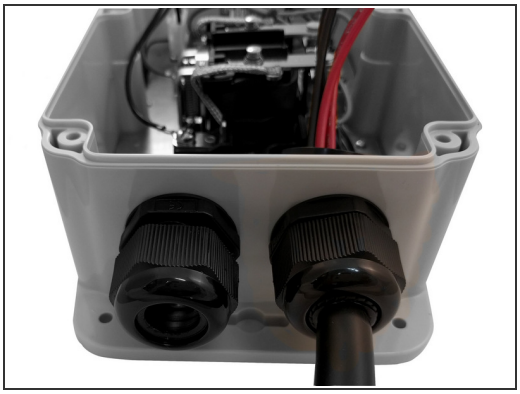


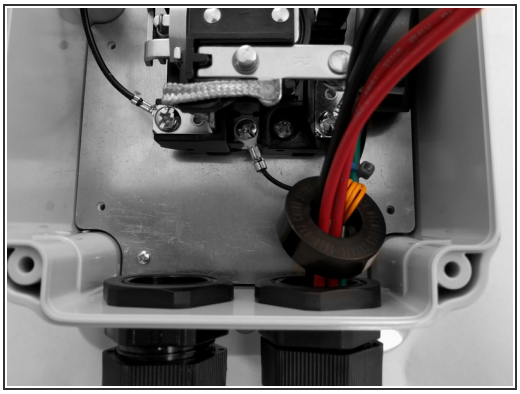


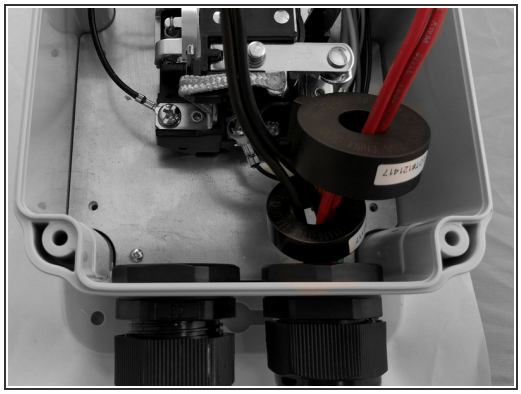
Mount plate to Enclosure box using 6 - self tapping screws (2 top, 2 middle 2 bottom).

- Install cable glands on the enclosure with seals on the outside.

Step 8 — EV Cable







- Insert EV Cable through the Cable Gland on the right and tighten.

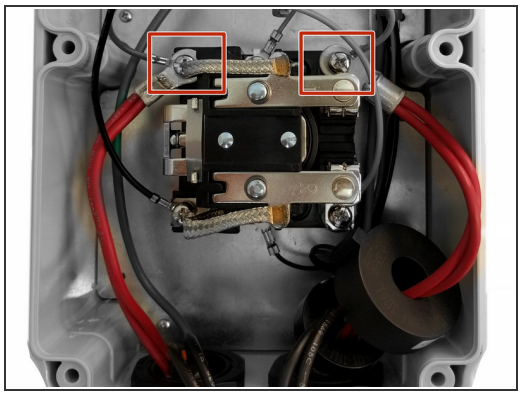
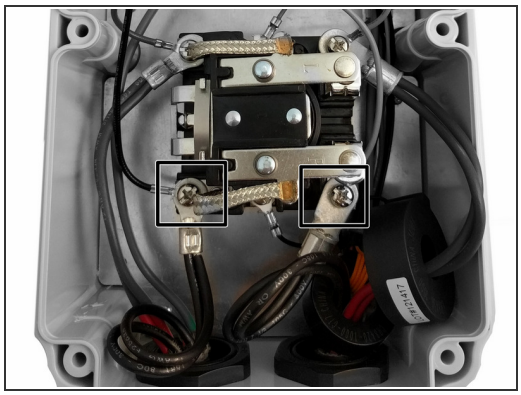
Route the ground and pilot wires low in the enclosure up the right side.

- Thread **ALL** hot and neutral lines through the 4 wire GFCI coil with the orange self test loop.

  Do not thread the ground wire or pilot wire through.

- Thread only **ONE** hot line through the Current Measurement Coil.

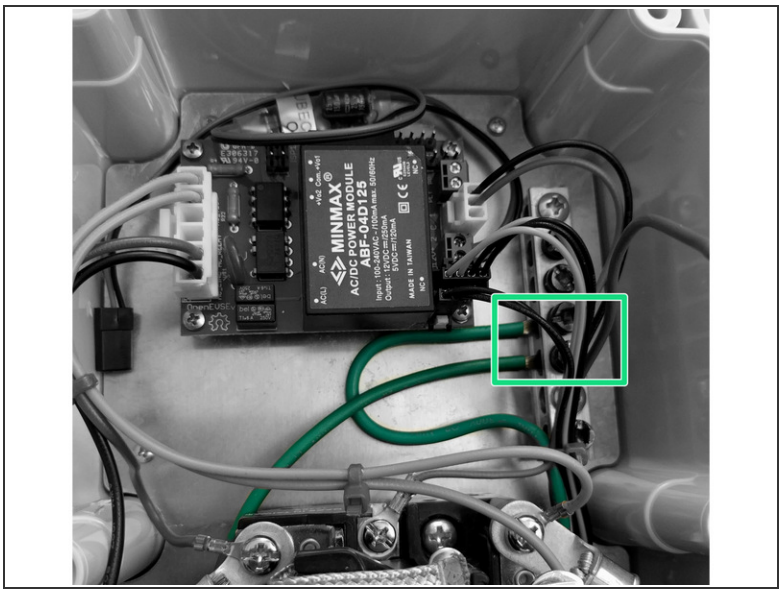
Step 9 — High Power Connections

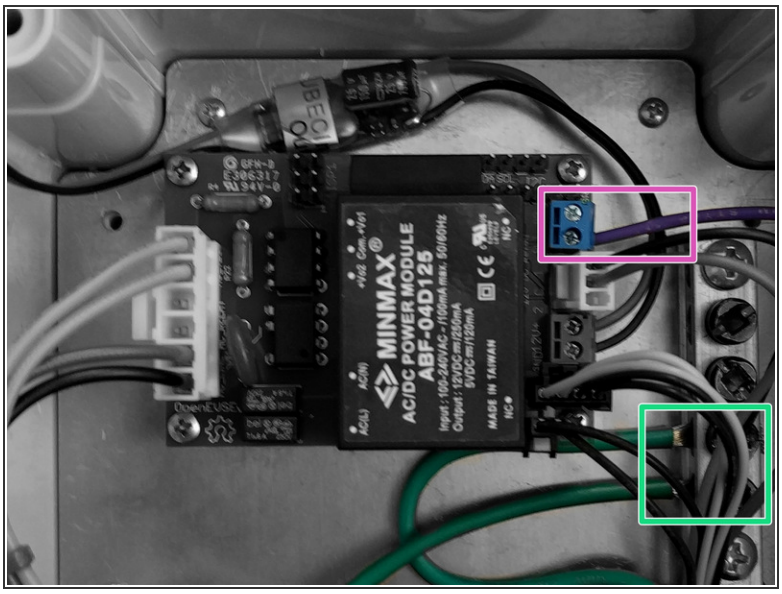




Insert Input cable through the cable gland on the Left and tighten. This step will use the same relay screws left loose from an earlier step.

- Connect AC Input 2 to the relay top left power terminal.
- Connect AC Load 2 to the relay top right power terminal
- Connect AC Input 1 to the relay bottom left power terminal.
- Connect AC Load 1 to the relay bottom right power terminal

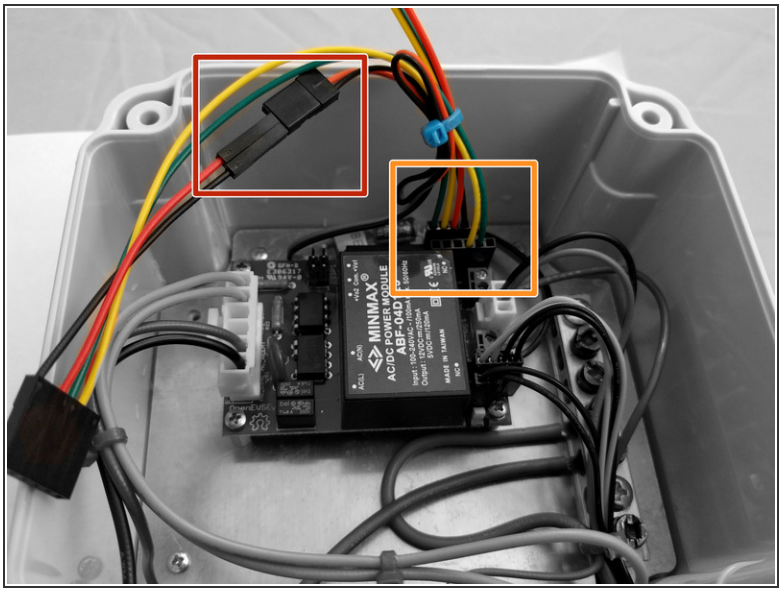
Step 10 — Ground and Pilot

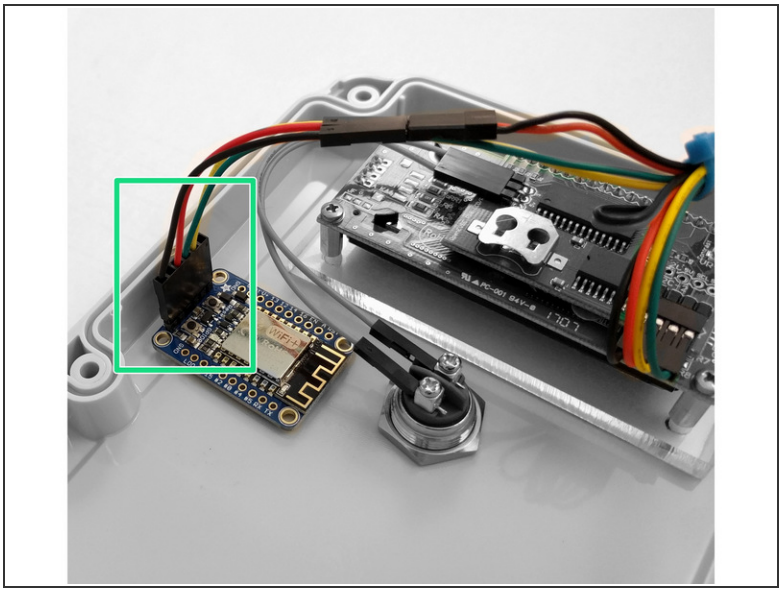




- Connect the AC Input Earth Ground to the Ground block.
- Connect the EV Output Earth Ground to the Ground block.
- Connect the EV Output Control Pilot (CP) to PLT on the OpenEVSE Controller.

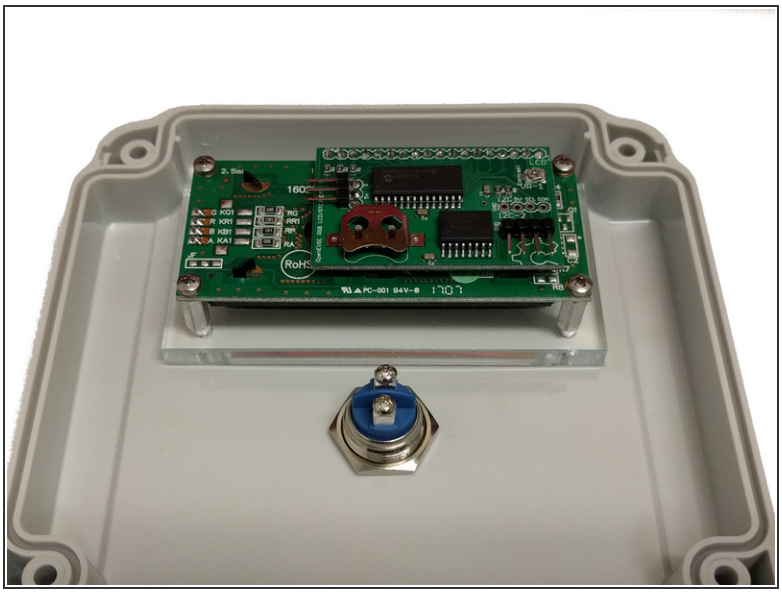
Step 11 — WiFi and LCD

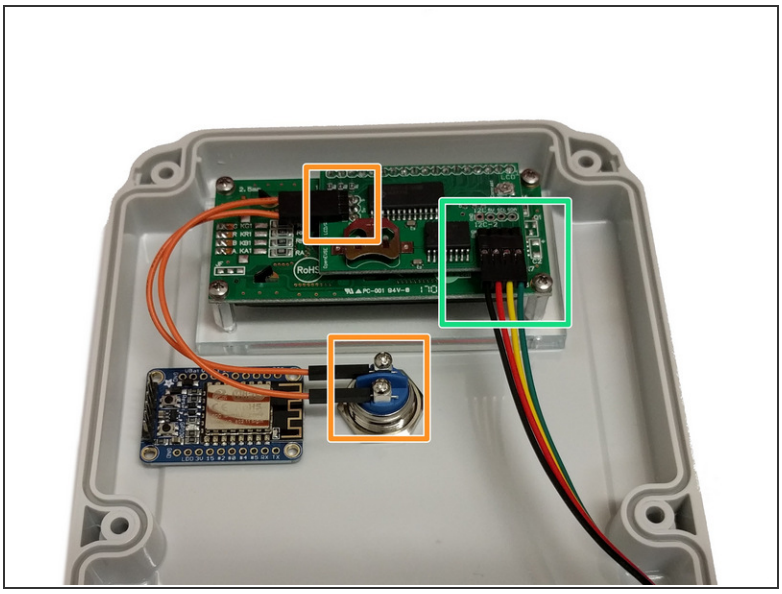




- Connect Display cable (4 wires) and the WiFi Cable (2 wires) to the OpenEVSE Controller.
- Connect the UBEC power supply to the WiFi harness. Match Red to Red and Black to Black.
- Connect the WiFi Harness to the WiFi Module.

Step 12 — Mount electronics



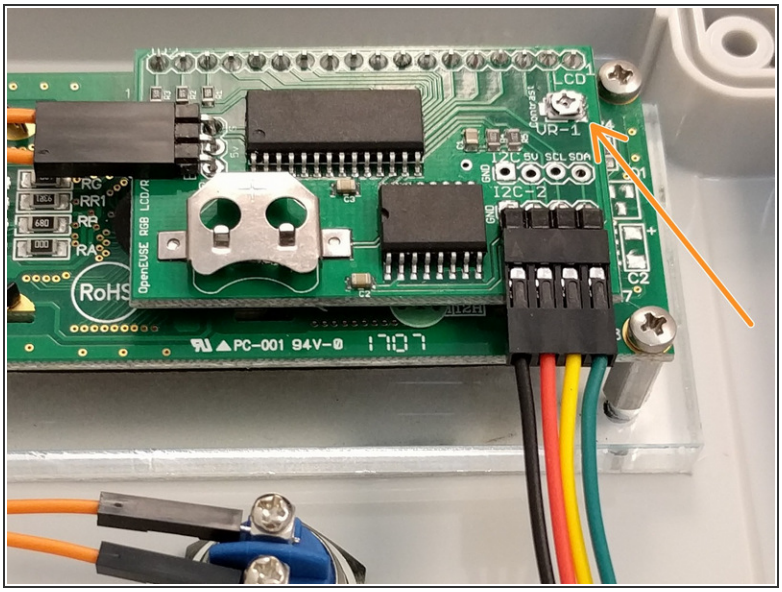


- Using 4 - 6mm screws. Mount display module to the lid.
- Connect 4 pin connector to display module.

  ⓘ Note the color that represents Ground (Black as Pictured)
- Connect the 3 position connector (2 wires attached) to the display module and the ends to the button.
- Mount WiFi to the left of the button with the header pins to the far left.

⚠ Flip lid over and tighten screws to fully the compress the watertight foam seal.

Step 13 — Display Contrast



⚠ Power ON. Use caution.

ⓘ A OpenEVSE programmer can be used to power the controller to adjust contrast. Note there will be errors (this is normal) as not all systems are powered.

If needed - Adjust LED contrast (VR-1) Be very careful not to touch any components while powered.

- When adjusting, be gentle. Do not force past the stop in either direction. If forced past the stop, the part will no longer function.

- Secure the enclosure lid. Tighten the screws slowly alternating across and top, middle and bottom.

Step 14 — Set Menu Options

- To Enter the Menu Press and hold the button (long press). Press and release (short press) to scroll through Options.

Set Current to desired Value (80% of your circuit breaker value). Menu => Setup => Max Current.

Enable GFCI Self Test. Menu => Setup => GFI Self Test

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