

## For all solar-powered G Series systems



89322\_RETROFIT-GUIDE\_Solar-to-AC-G-Series\_RevC

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## 1.0 Warnings and Precautions

The following symbols indicate important safety warnings and precautions throughout this guide:



WARNING indicates that serious bodily harm or death may result from failure to adhere to the precautions.



CAUTION indicates that damage to equipment may result if the instructions are not followed.



NOTE suggests optimal conditions and provides additional information.

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### 1.1 Warranty Disclaimer

This guide will familiarize you with the features and installation of the Carmanah solar to AC retrofit kit. Failure to comply with the use, storage, maintenance, installation or placement instructions detailed in this guide could void the warranty.

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### 1.2 Standards

Perform all installation, wiring, grounding and maintenance in conformance with local building and electrical codes. Adherence to the National Electrical Code (NEC) is mandatory to comply with any certification markings. Non-adherence to code may void the warranty.

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### 1.3 Safety and Usage Precautions



Use extreme caution when handling the batteries as they can generate hazardous short-circuit currents. Remove all jewelry (bracelets, metal-strap watches, etc.) before entering the cabinet.



Before lifting any heavy or bulky equipment, ensure the load is secured so moving parts do not shift, and that it can be lifted as far as needed without back strain or loss of grip. Installation may require more than one person.



Ensure the equipment is not powered during installation and wiring of the system.



Recheck all completed wiring for proper polarity prior to energizing the system.

**NOTE**

Changes or modifications to Carmanah equipment not expressly approved by Carmanah could void both the user's authority to operate the equipment and the warranty.

**NOTE**

All Carmanah traffic products use a constant-current LED output circuit. Not all traffic beacons are compatible with this output. Please contact Carmanah for additional information and guidance when adding or replacing beacons or other hardware.

**WARNING**

Product can have sharp edges. Accidental movement of hinged components can cause injury.

**NOTE**

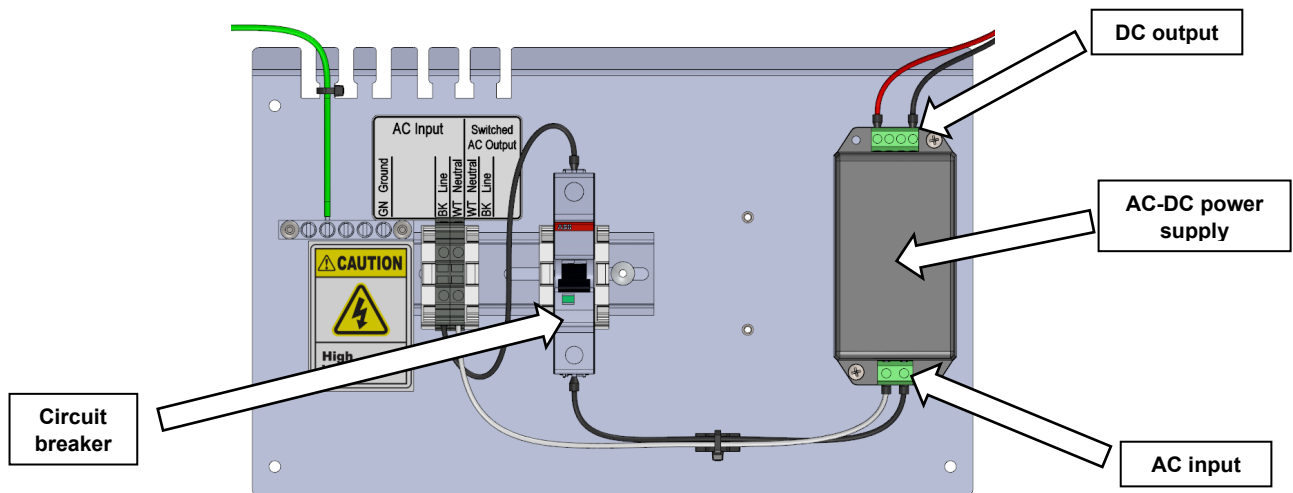
**This guide is specific to retrofitting the G Series cabinet from solar to AC power and is not a replacement for the complete G Series product user manual.**

Visit [support.carmanah.com](https://support.carmanah.com) to download the complete product user manual.

## 2.0 Solar to AC Retrofit Kit

The retrofit kit includes:

- Cable ties (4)
- Mounting screws (4)
- The AC backplane assembly pictured below:

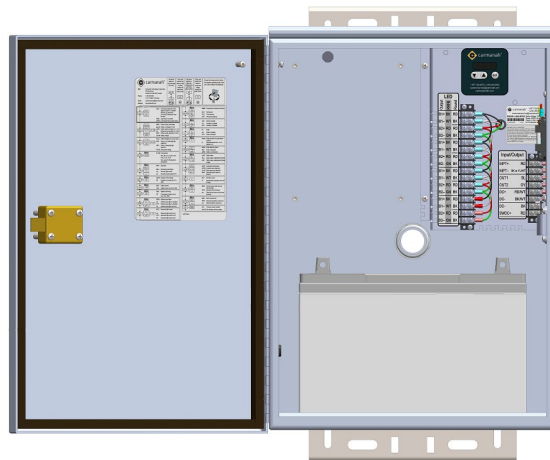


## 3.0 Installation Procedure

This guide is for installing the solar to AC retrofit kit into one of the following compatible Carmanah systems:

- G Series: SC315-G, R820-G, R829-G, R247-G

Refer to the full product user manual for more details at [support.carmanah.com](http://support.carmanah.com). There are many different options available for the G Series cabinet so your product may differ from what is depicted throughout this guide.



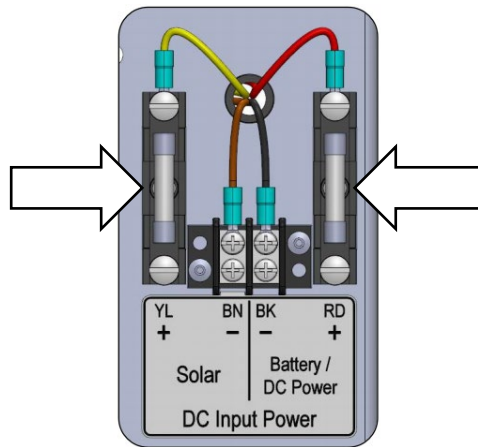
**G Series Solar Cabinet Example**

### 3.1 Removing Solar Components

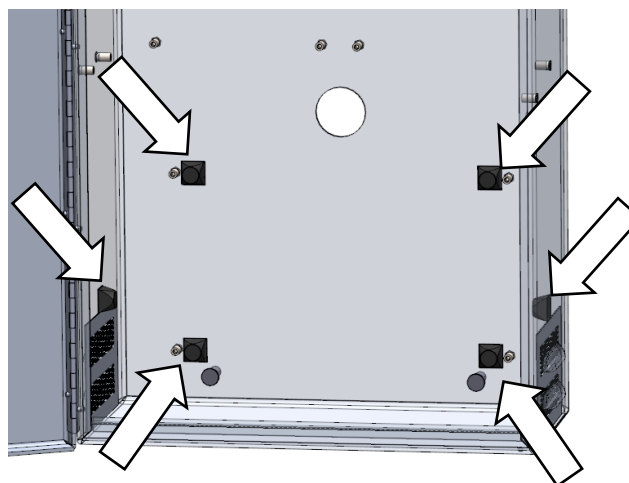


Battery removal should not be carried out in windy conditions. In all cases, the area at the base of the post must be roped off for safety.

1. Access the inside of the battery cabinet and remove the solar and battery fuses on the right side to deenergize the system.



2. Remove the battery harness on the battery. Do not short the wires together during this process. Cut the cable tie securing the battery harness then unscrew the harness from the DC Input Power terminals.
3. Remove the battery from the cabinet.
4. Cut the cable tie securing the solar panel harness then unscrew the harness from the DC Input Power terminals. Cap off the wires with wire nuts so they don't get shorted together during disassembly.
5. Remove the solar panel, solar panel harness, and solar panel mount from the pole.
6. Remove the battery bumpers as shown pictured below:

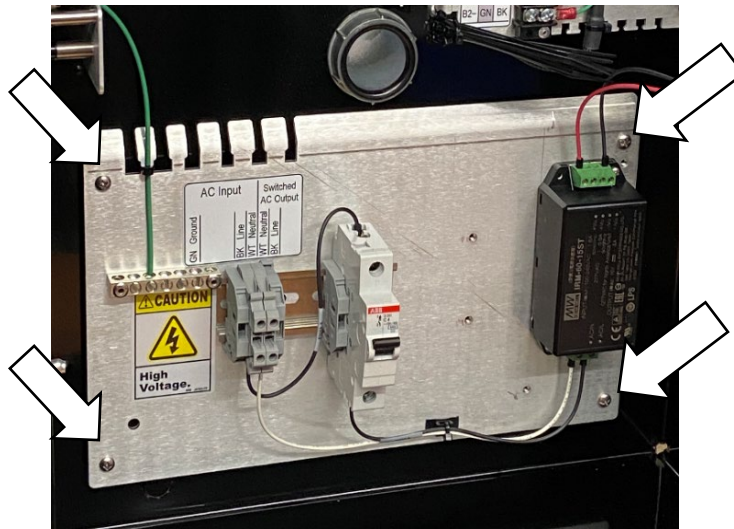


### 3.2 Installing AC Backplane

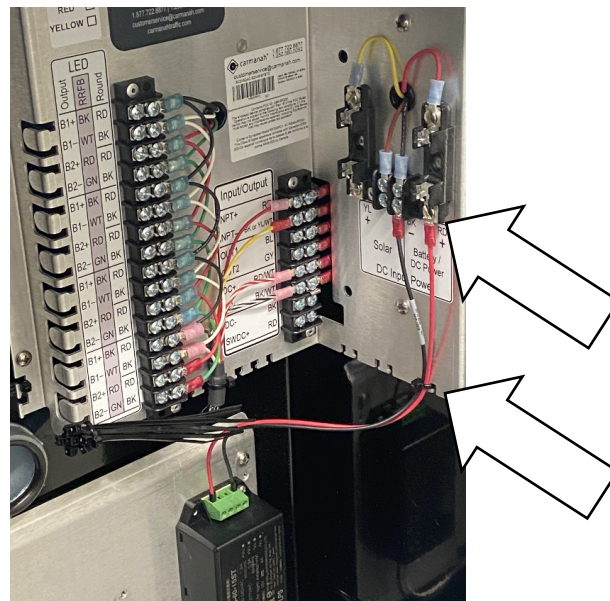


Live AC power may be present. Only qualified personnel should carry out the following retrofit.

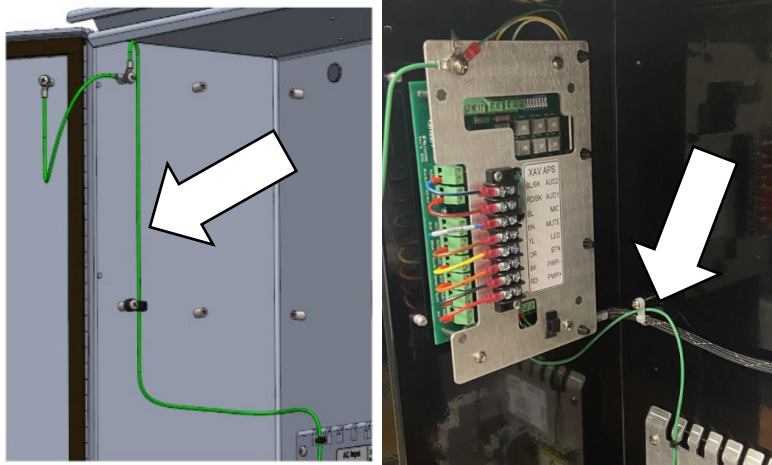
1. Mount the AC backplane to the four available threaded inserts in the cabinet using the included four included screws and tighten to snug.



2. Connect the DC output wires from the power supply to the DC Input Power terminal (red wire to RD +, black wire to BK -).
3. Secure the wires to one of the cutouts on the terminal block plate with a cable tie.



4. Route the green AC ground wire from the AC backplane to the grounding stud on the left side of the cabinet. If you have the Polara XAV push button option, you will need to route it behind the control board.



5. Ensure the circuit breaker on the AC backplane is turned off.
6. Wire AC power into the cabinet following the AC Input label color coding (black wire to BK Line, white wire to WT Neutral, green to GN Ground).
7. Strain relieve the AC wires to the AC backplane using the provided cable ties.
8. Ensure the AC wiring is secure and installed with the proper polarity.
9. Insert Solar and Battery/DC Power fuses into fuse holders on right side of cabinet (the solar fuse holder is a location to store a spare fuse).
10. Energize the AC feed circuit and then the circuit breaker in the cabinet. Ensure the EMS (Energy Management System) powers up and the OBUI (on-board user-interface) visibly lights up.
11. Test system and ensure it is operating as prior to the retrofit.
  - a. Ensure the battery (power supply) voltage is ~15V. This is displayed as “bAtt” on the user interface for both solar and AC-powered configurations.
  - b. Run the BIST (built-in self-test) and verify you only have a charging error (4000), which is normal for AC-powered systems.
  - c. Visit [support.carmanah.com](http://support.carmanah.com) for a list of BIST error codes.





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