carmanah®

For the AC powered SPEEDCHECK-15/18 radar speed signs

89440_REPLACEMENT_GUIDE_SPEEDCHECK_POWER_SUPPLY_REVB

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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.

1.1   Warranty Disclaimer

This guide will familiarize you with the features and installation of Carmanah's SpeedCheck AC-DC power supply. Failure to comply with the use, storage, maintenance, installation or placement instructions detailed in this guide could void the warranty.

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.

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.

NOTE **This guide is specific to the SpeedCheck AC-DC power supply installation and is not a replacement for the complete product user manual,**

Visit support.carmanah.com to download the complete product user manual.

2.0 AC-DC Power Supply Kit
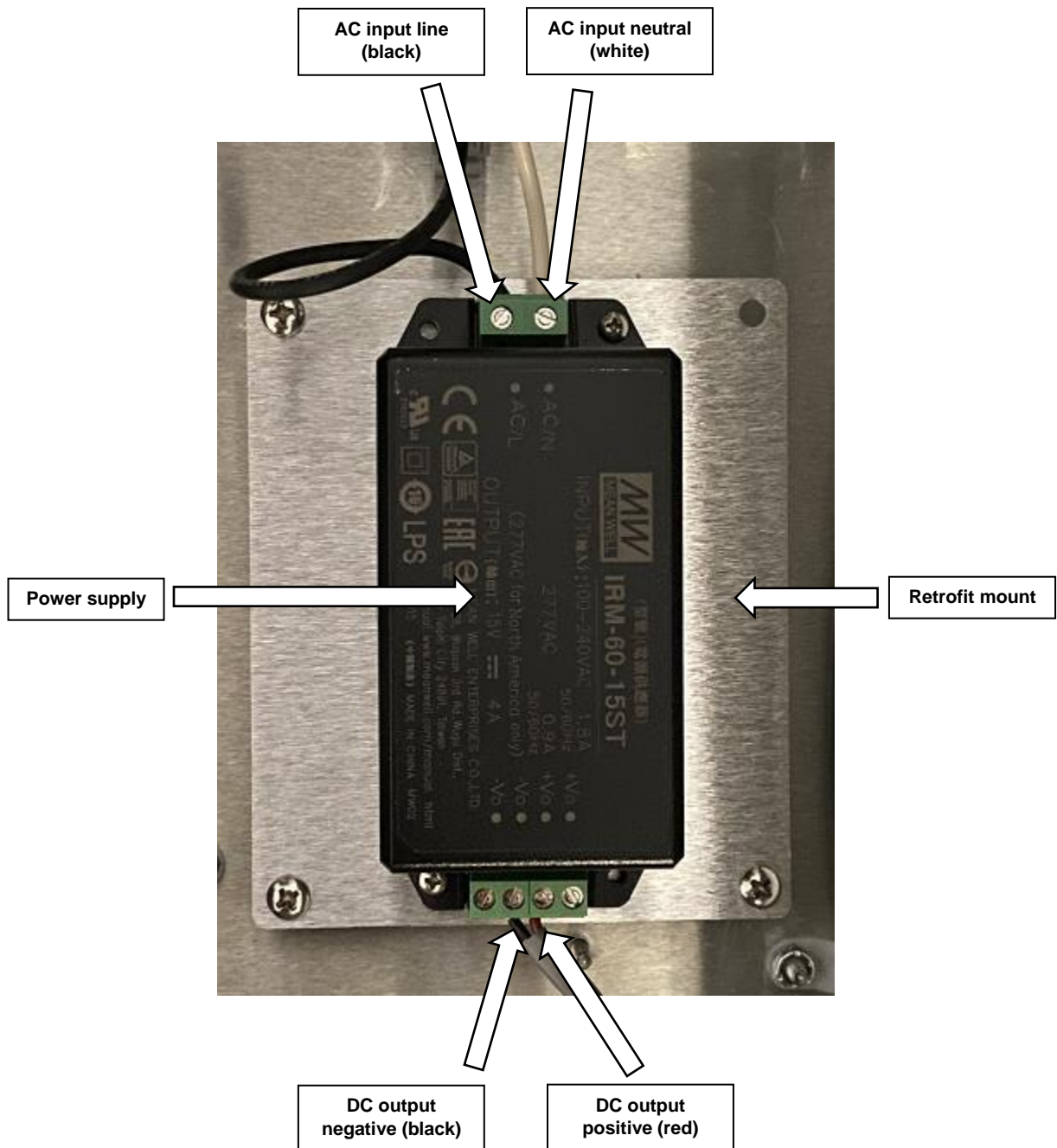
*Replacement AC-DC power supply kit will contain the retrofit mount (if needed), mounting hardware, and wiring required.

3.0 Installation Procedure

This guide is for installing the replacement SpeedCheck AC-DC power supply into one of the following compatible Carmanah systems:

- SPEEDCHECK-15 (AC-DC supply internal)
- SPEEDCHECK-15/18 (external power cabinet)

WARNING Live AC power will be present. Only qualified personnel should carry out replacing the power supply.

Refer to the individual product user manual for more details at support.carmanah.com.

The images in this guide may differ from your SPEEDCHECK-15/18 radar speed sign. They are for illustrative purposes only.
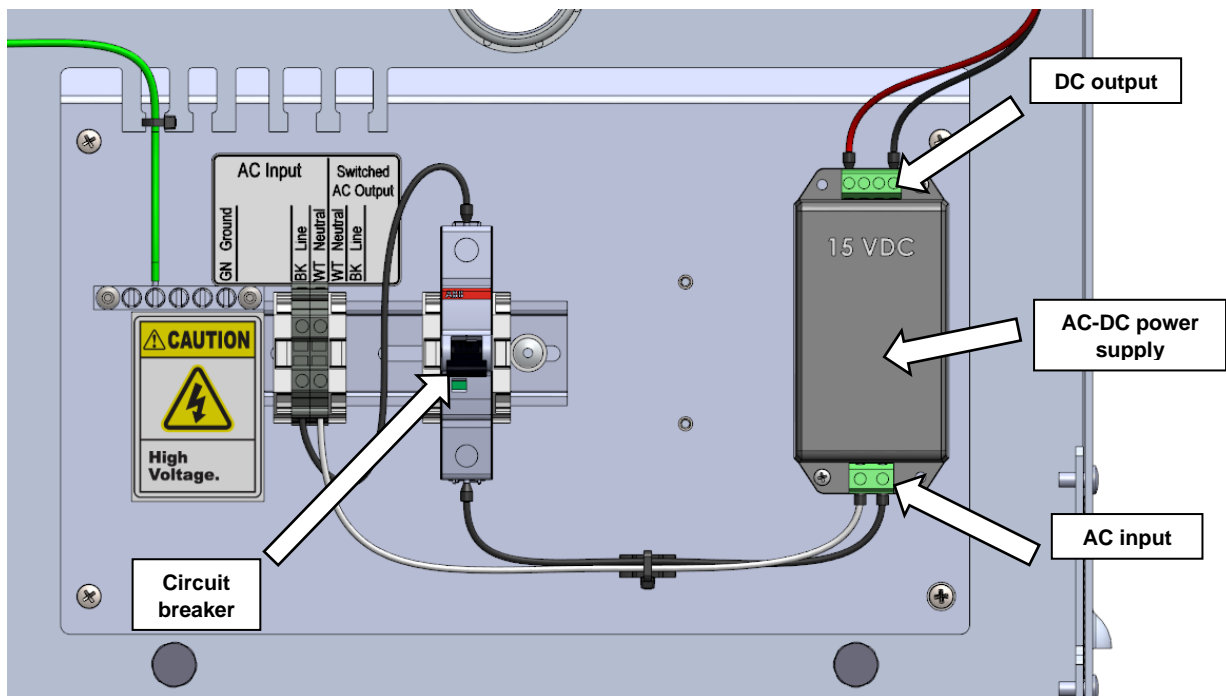

**Current Power Cabinet
(SPEEDCHECK-15/18)**

**Legacy Power Cabinet
(SPEEDCHECK-18)**

3.1   SPEEDCHECK-15/18 – Current Power Cabinet

1. Access the inside of the power cabinet and switch the circuit breaker to the off position. It is also recommended to disconnect the AC power source coming into the cabinet if possible.
2. Remove the input and output wiring from the existing power supply and set aside to reuse.
3. Remove the two mounting screws and set aside to reuse.
4. Remove existing AC-DC power supply and install the replacement. Note the orientation of the power supply with the DC output facing up in the cabinet.
5. Reinstall the two mounting screws and secure the power supply.
6. Reinstall the input (AC) and output (DC) wiring harnesses removed from step 2. Ensure the AC wiring is terminated at the terminals labelled as AC/N (neutral, white wire) and AC/L (line, black wire).
7. Reconnect the AC power source (if disconnected) and switch the circuit breaker to the on position.
8. Wait for traffic to activate the system and ensure radar is working properly.
    a. It may take up to 60 seconds to confirm all LED segments are operational during the start-up procedure and before traffic will be detected.
9. Fully close the cabinet door. Pull back on the door to make sure it is now closed and locked.

3.2　SPEEDCHECK-15 – Internally Mounted Power Supply

1. Disconnect the AC power source coming into the SPEEDCHECK-15 radar speed sign, if possible. If you are not able to disconnect the power be careful while accessing the inside of the radar speed sign with power applied.
2. Remove the two hex head screws, one on each side, holding the sign face to the radar enclosure.
3. Tilt the sign to the rear and lift to remove.
4. Lift window retainer clip and tilt window forward. Lift and remove window.

Take note of sign retention bolts, one on each side

Remove the two fasteners

Tilt sign to rear

Lift up to remove

Lift window retainer clip

Optional: If present, disconnect strobe connectors.


Tilt the window forward and lift to remove

Take note of window alignment stud for re-installation

5. Remove the right LED board by pulling it towards you about 1/4". Pull up by grasping the LED board stiffeners only. When the retainer tabs clear the top hanger pins slide the LED board upwards and then pull down to clear the bottom hanger pins.
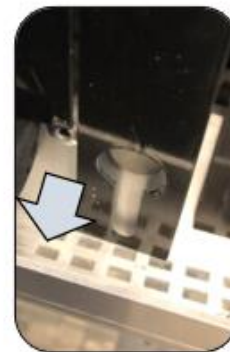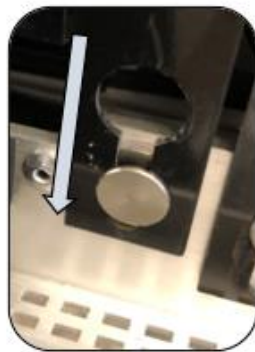

Being very careful not to touch the LED lamps, grasp the circuit board stiffeners at the top.
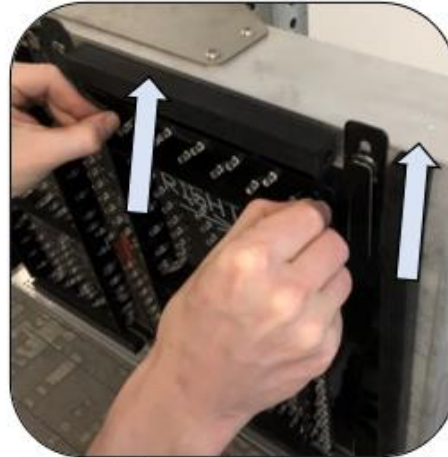
Pull the circuit board toward you about 1/4". When the retainer tabs clear the hanger pins, slide the circuit board upwards.
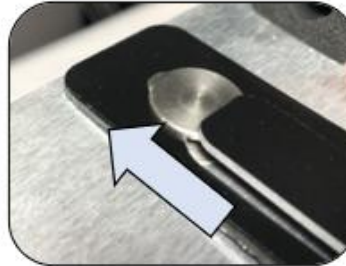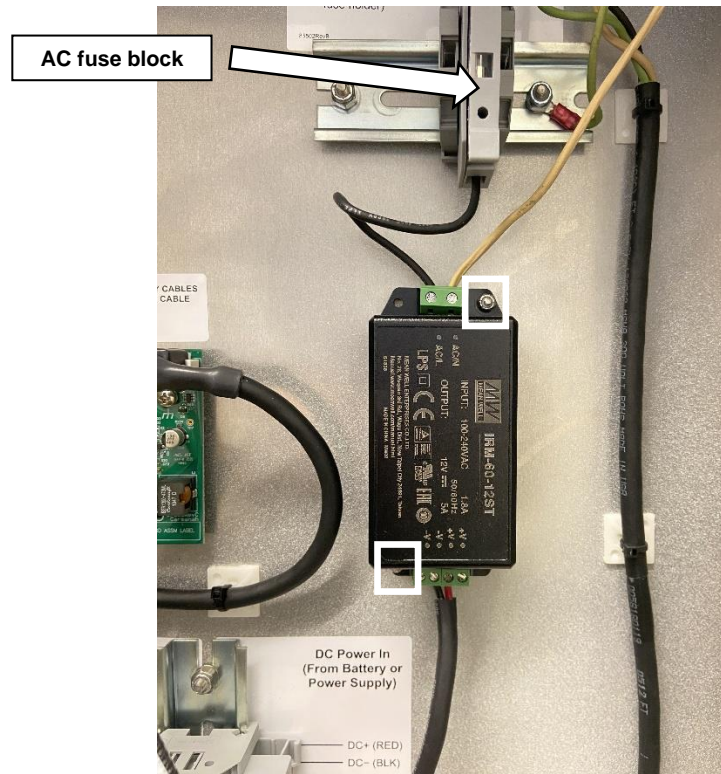

Pull on LED boards to raise tabs

When the top part of the circuit board releases from the upper hanger pins, lower the board to where the cut-outs slip off the lower hanger pins.
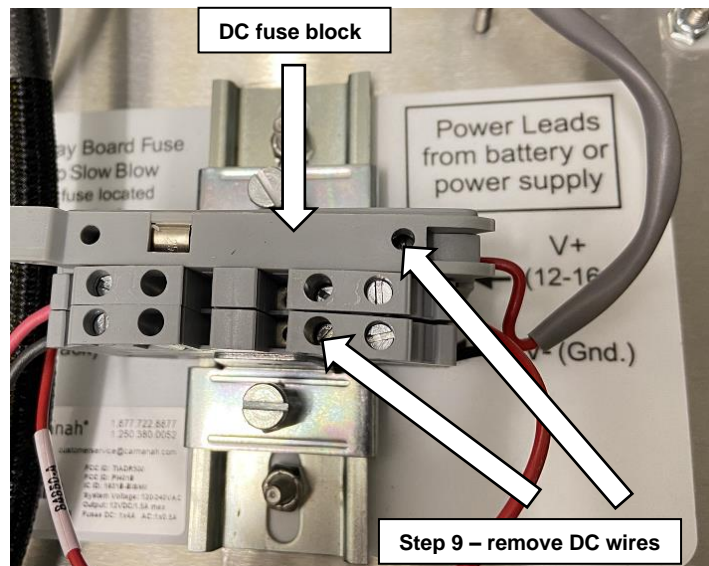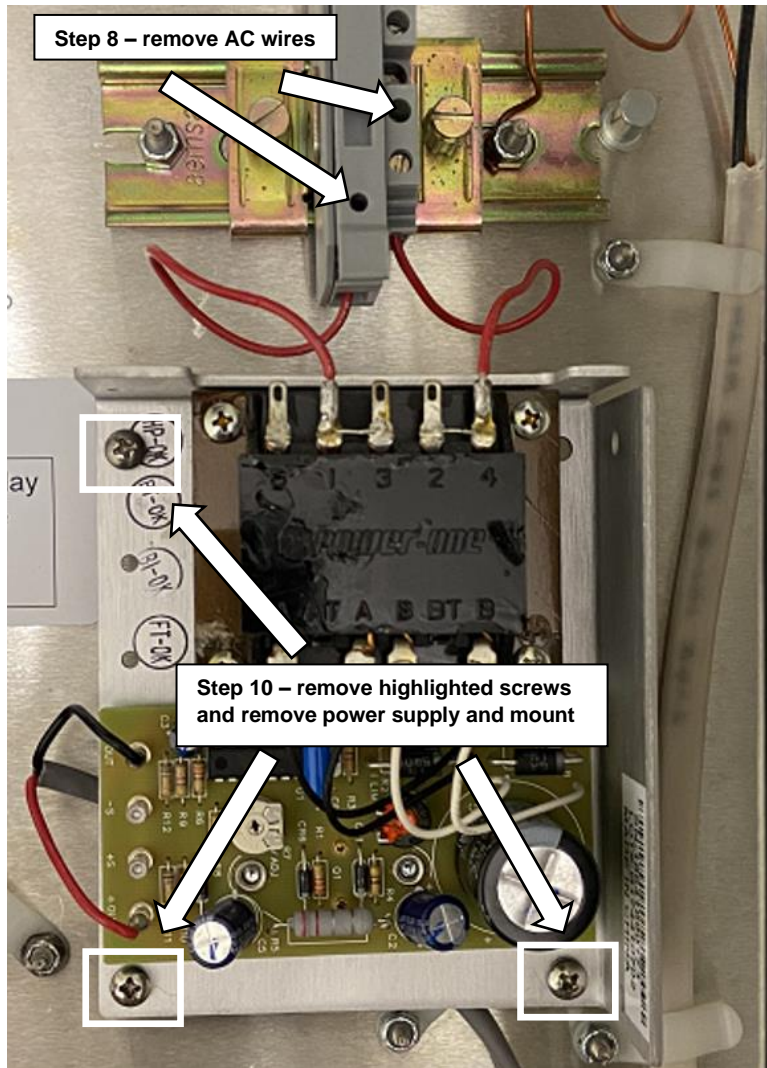
Option 1 – Direct Replacement (Mean Well)

1. Open the DIN rail fuse block(s) to remove power to the power supply and controller.
2. Disconnect the LED wiring on the back and carefully set aside the right LED board, or flip it over and lay gently on top of the left LED board. Do not bend the LEDs in this process.
3. Remove the AC input and DC output wires.
4. Remove the two securing nuts and remove the power supply.
5. Install the new power supply in the same manner with the AC input connections facing up. Rewire the power supply with the wires removed from step 3:
   a. AC in = hot (black), neutral (white)
   b. DC out = red (positive), black (negative)
6. Carefully install the right LED board back onto the radar enclosure with the bottom retaining tabs going in first. For LED boards that have exposed solder joints on the rear do not short them to the enclosure frame while power is applied.
7. Install the polycarbonate window back onto the radar sign and ensure it is secured with the window tab. The glossy side faces towards traffic.
8. Wait for traffic to activate the system and ensure the radar sign is working properly.
9. Reinstall the sign and secure to the enclosure using the two hex screws.

Option 2 – Legacy Retrofit (Power-One)
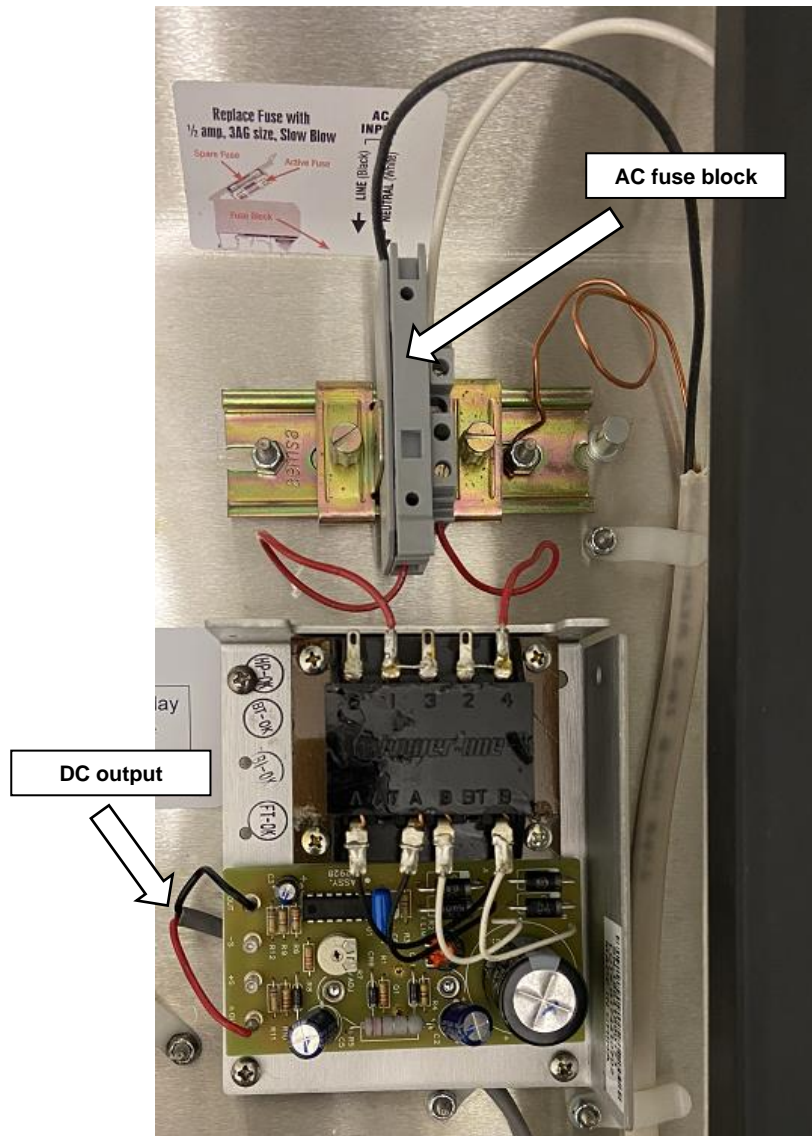
1. Open the DIN rail fuse block(s) to remove power to the power supply and controller.
2. Disconnect the LED wiring on the back and carefully set aside the right LED board, or flip it over and lay gently on top of the left LED board. Do not bend the LEDs in this process.
3. Remove the two red wires (line and neutral) on the bottom side of the AC input terminal block.
4. Remove the red and black wires (DC positive and negative respectively) on the DC output terminal block.
5. Remove the three mounting screws on the perimeter of the power supply mount and remove the power supply assembly.

Step 8 – remove AC wires

Step 10 – remove highlighted screws
and remove power supply and mount

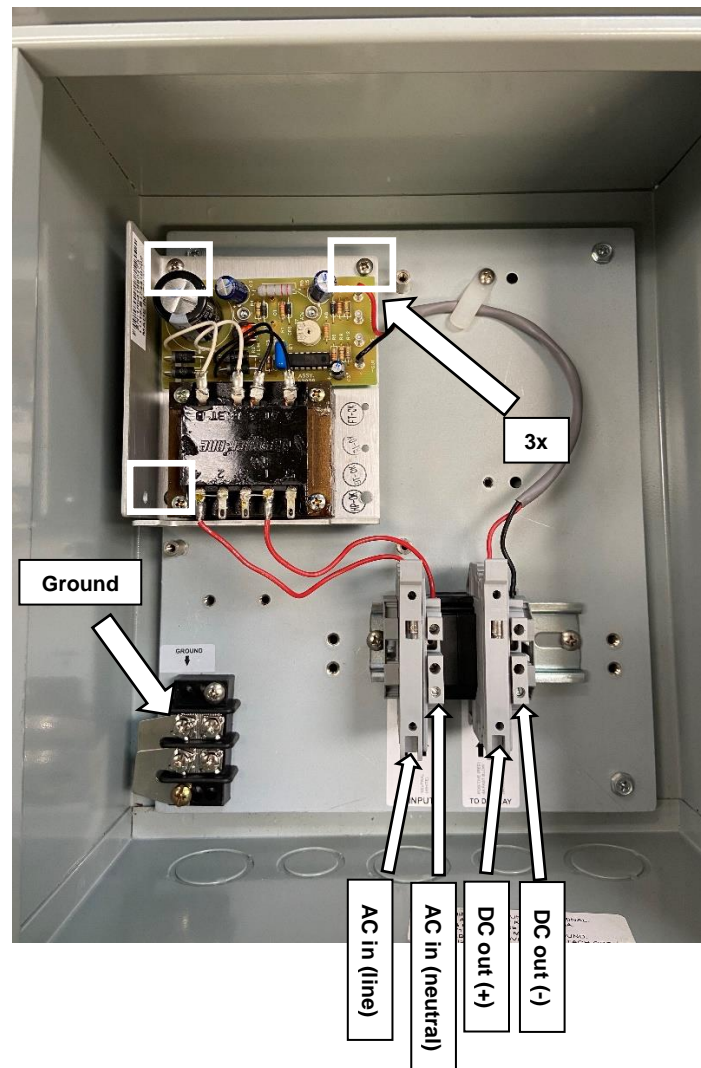DC fuse block

Step 9 – remove DC wires

6. Orient the replacement power supply so the AC input connections are at the top and secure the new mounting plate with the included hardware.

7. Secure the new DC output wires connected to the new power supply to the same terminals as step 4, with the red (positive) wire going to the fuse block.

8. Secure the new AC input wires connect to the new power supply to the same terminals as step 3, with the black (line) wire going to the fuse block.
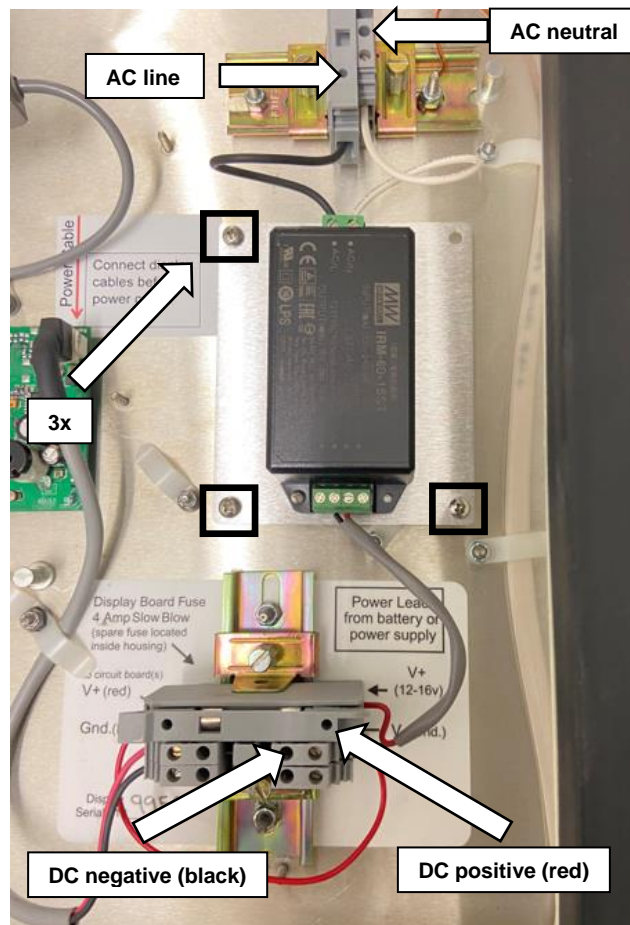

9. Reinstall the cabling removed from step 2.

10. Close the DIN rail fuse blocks(s) in the radar sign. Confirm the controller status LEDs come on and the display LED boards come on. Wait up to 60 seconds and confirm all LED segments are operational during the start-up procedure.

11. Carefully install the right LED board back onto the radar enclosure with the bottom retaining tabs going in first. For LED boards that have exposed solder joints on the rear do not short them to the enclosure frame while power is applied.

12. Install the polycarbonate window back onto the radar sign and ensure it is secured with the window tab. The glossy side faces towards traffic.

13. Wait for traffic to activate the system and ensure the radar sign is working properly.

14. Reinstall the sign and secure to the enclosure using the two hex screws.

3.3 SPEEDCHECK-18 – Legacy Power Cabinet

1. Access the inside of the power cabinet and open the fuse blocks. It is also recommended to disconnect the AC power source coming into the cabinet if possible.
2. Remove the two red wires (line and neutral) on the bottom side of the AC input terminal block.
3. Remove the red and black wires (DC positive and negative respectively) on the DC output terminal block.
4. Remove the three mounting screws on the perimeter of the power supply mount and remove the power supply assembly.
5. Orient the replacement power supply so the AC input connections are at the bottom and secure the new mounting plate with the included hardware.
6. Secure the new DC output wires connected to the new power supply to the same terminals as step 3, with the red (positive) wire going to the fuse block.
7. Secure the new AC input wires connect to the new power supply to the same terminals as step 2, with the black (line) wire going to the fuse block.

8. Ensure the ground wire is connected to the terminal block in the bottom left.
9. Close the fuse blocks in the power cabinet and apply power to the radar sign. Wait up to 60 seconds and confirm all LED segments are operational during the start-up procedure. Wait for traffic to activate the system and ensure the radar sign is working properly.
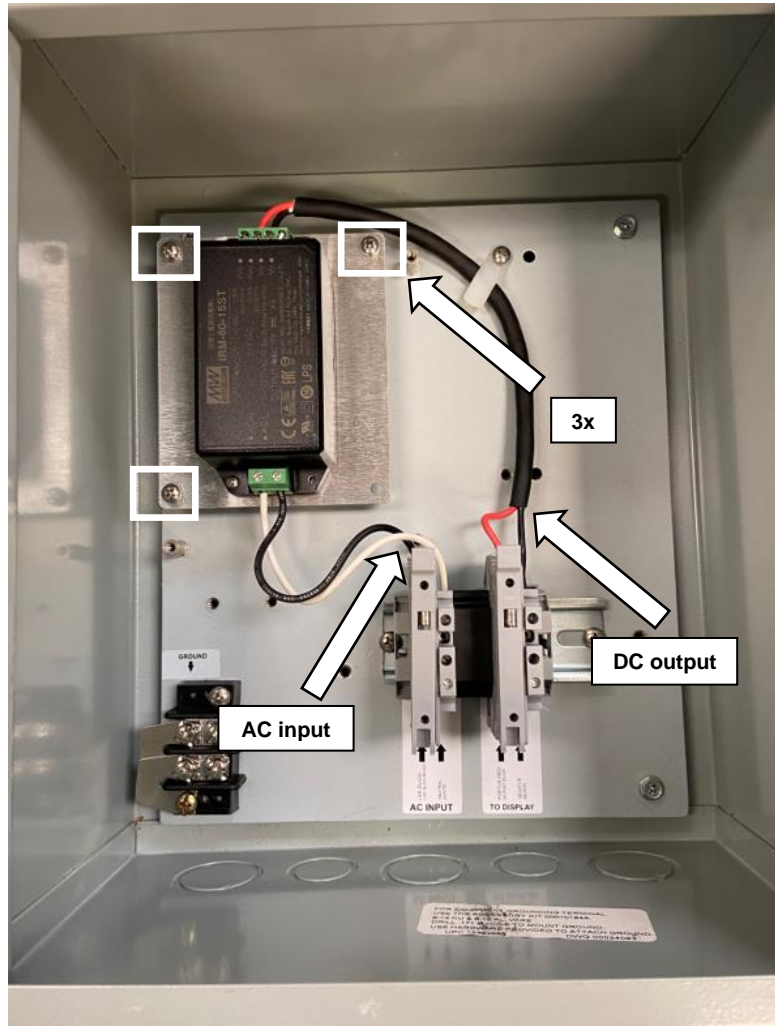
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