carmanah®

For the **SPEEDCHECK-15/18**

89327_REPLACEMENT-GUIDE_SPEEDCHECK-15-18-Controller-RevE

Table of Contents

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 installation of Carmanah's SPEEDCHECK-15/18 controller. 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 handling the batteries.

Solar panels produce DC electricity when exposed to light and can therefore produce an electrical shock or burn. To render solar panels inoperative, remove them from sunlight or fully cover their front surface with an opaque material.

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.

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

WARNING 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 **This guide is specific to the SPEEDCHECK-15/18 controller installation and is not a replacement for the complete SPEEDCHECK-15/18 product user manual.**

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

NOTE Ensure you are running the latest version of the SpeedCheck Manager mobile app or PC software

The images in this guide may differ from your existing system. They are for illustrative purposes only.

2.0 SPEEDCHECK-15 Installation Instructions

⚠️ **WARNING** ENSURE DEVICE IS COMPLETELY POWERED OFF SO THERE IS NO DANGER OF ELECTRICAL SHOCK OR RISK OF DAMAGING EQUIPMENT.

1. Disconnect power from the SPEEDCHECK-15 sign by turning off the breaker or removing the fuse(s) in the associated power cabinet.
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.
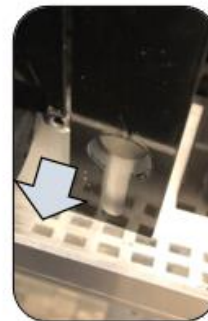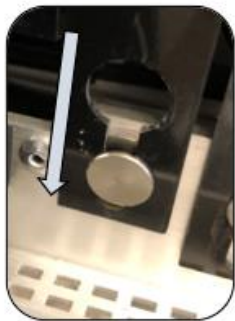

Being very careful not to touch the LED lamps, grasp the circuit board stiffeners at the top.
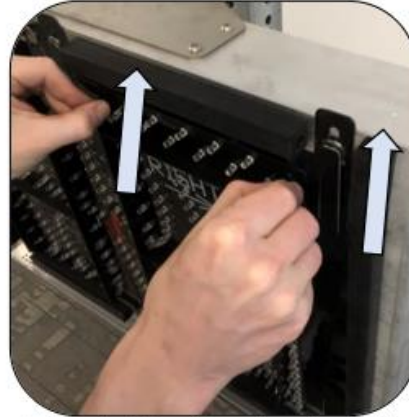
Pull the circuit board toward you about 1/4". When the retainer tabs clear the hanger pins, slide the circuit board upwards.
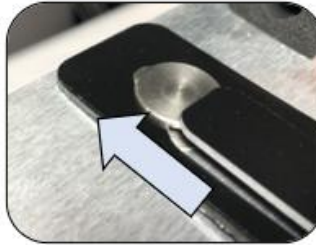

Pull on LED boards to raise tabs

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.

6. Open the DIN rail fuse block(s), DC and AC if equipped, as a precaution to ensure no power will feed the controller during this procedure.

7. 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.
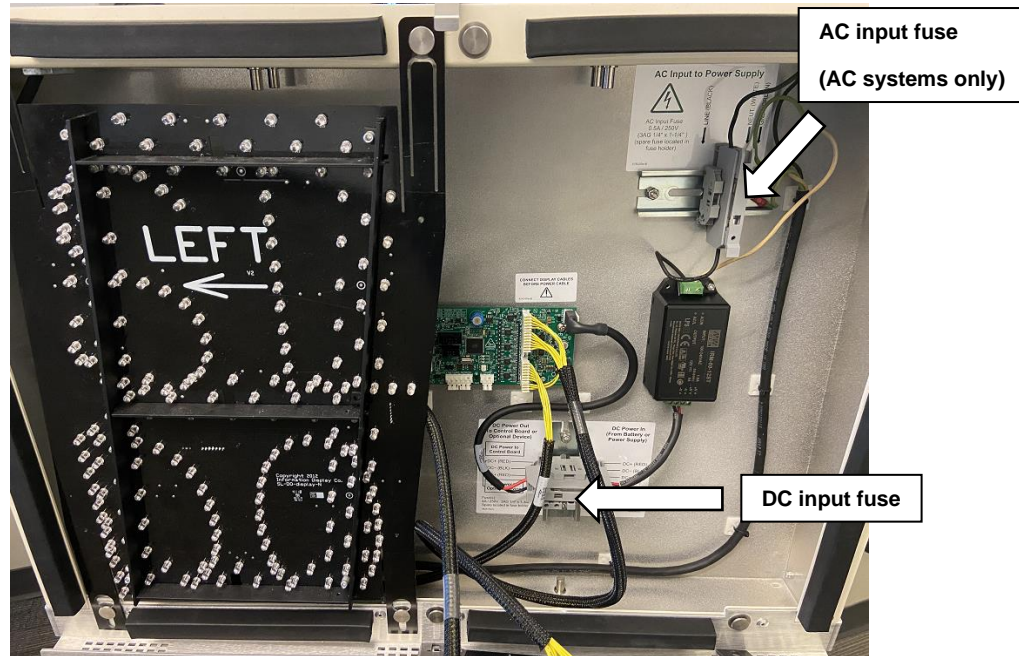
8. Remove all cabling connected to the SpeedCheck controller.

9. Remove the single screw securing the control circuit board. Slide the board to the right to clear the standoffs and remove the board.
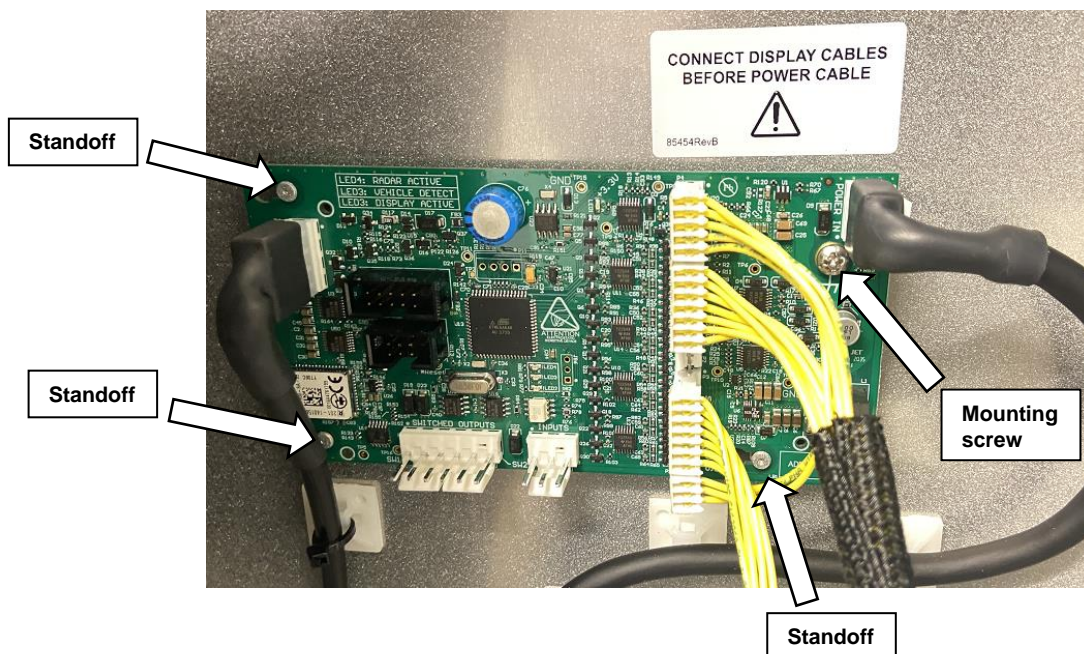
10. Install the new controller and secure with the single screw.

11. Reinstall the cabling removed from steps 7/8. Refer to Appendix A for the wiring configurations with the new controller.

12. Close the DIN rail fuse blocks(s) in the radar sign.

13. Carefully install the right LED display board back onto the radar sign enclosure. For LED boards that have exposed solder joints on the rear do not short them to the enclosure frame while power is applied.

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

15. Reinstall the fuse(s) or close the breaker in the power cabinet to apply power to the radar sign. Confirm the control board status LEDs turn on and the display LED boards turn on. It may take up to 60 seconds to confirm all LED segments are operational during the start-up procedure.

    a. See Appendix B to configure the new controller with SpeedCheck Manager. See Appendix C if you are installing this board into a legacy system (2010 or older, serial number 14550 or lower) that contains the original LED display boards. If so, you will need to enable 20mA intensity mode via SpeedCheck Manager - otherwise the LEDs will appear significantly dimmer. Contact Carmanah if you are unsure what intensity you should be setting the controller to.

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

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

# 3.0 SPEEDCHECK-18 Installation Instructions

WARNING ENSURE DEVICE IS COMPLETELY POWERED OFF SO THERE IS NO DANGER OF ELECTRICAL SHOCK OR RISK OF DAMAGING EQUIPMENT.

1. Disconnect power from the SPEEDCHECK-18 sign by turning off the breaker or removing the fuse(s) in the associated power cabinet.
2. Remove the four screws holding the back panel assembly to the back of the SPEEDCHECK-18 sign.
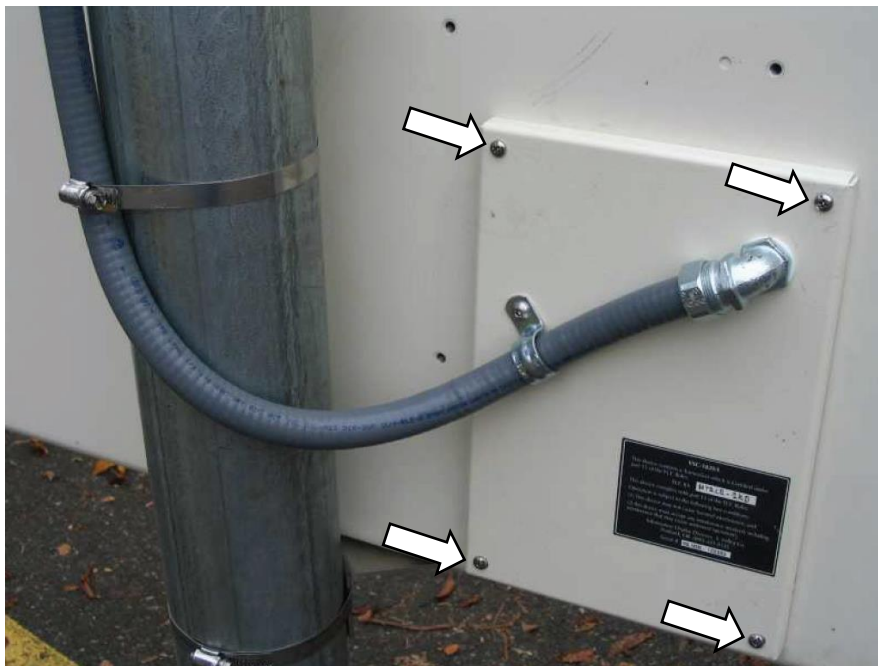
3. If present, disconnect the fuse from the fuse holder on the back panel to ensure no powering is feeding into the radar sign.
4. Remove all cabling connected to the controller.
5. Remove the single screw securing the controller. Slide the controller down to clear the standoffs and remove.

6. Install the new controller and secure with the single screw.
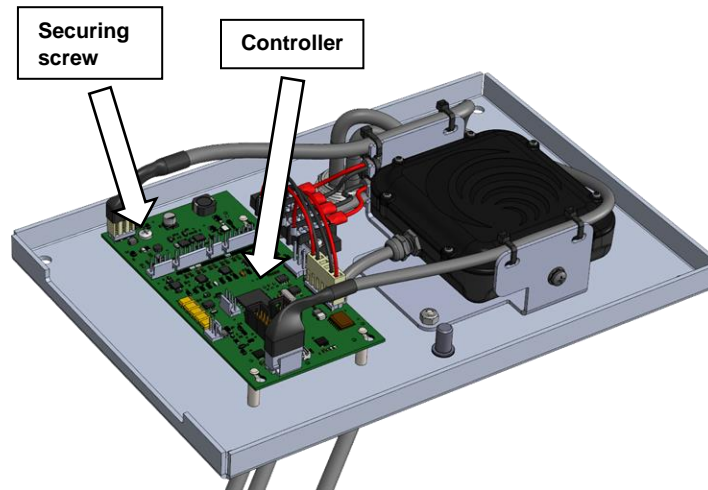
7. Reinstall the cabling removed from step 4. Refer to Appendix A for the wiring configurations with the new controller.
8. Reconnect the fuse holder on the back panel.
9. Reinstall the fuse(s) or close the breaker in the power cabinet to apply power to the radar sign. Confirm the control board status LEDs turn on and the display LED boards turn on. It may take up to 60 seconds to confirm all LED segments are operational during the start-up procedure.
    a. See Appendix B to configure the new controller with SpeedCheck Manager. See Appendix C if you are installing this controller into a legacy system (2010 or older, serial number 14550 or lower) that contains the original LED display boards. If so, you will need to enable 20mA intensity mode via SpeedCheck Manager - otherwise the LEDs will appear significantly dimmer. Contact Carmanah if you are unsure what intensity you should be setting the controller to.
10. Wait for traffic to activate the system and ensure the radar sign is working properly.
11. Reinstall the back panel assembly to the SPEEDCHECK-18 sign. Ensure nothing gets pinched in the gasket. Tighten the four screws firmly.
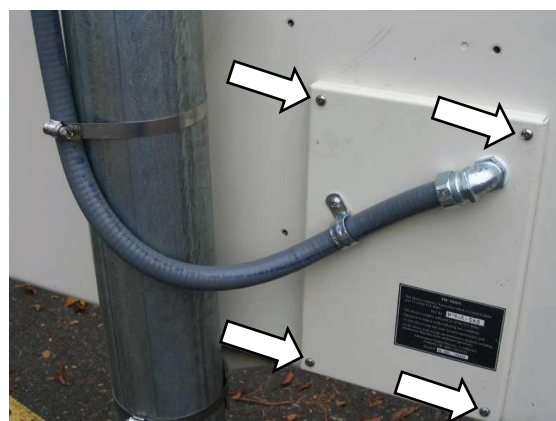
4.0 Appendix A – Wiring Configuration
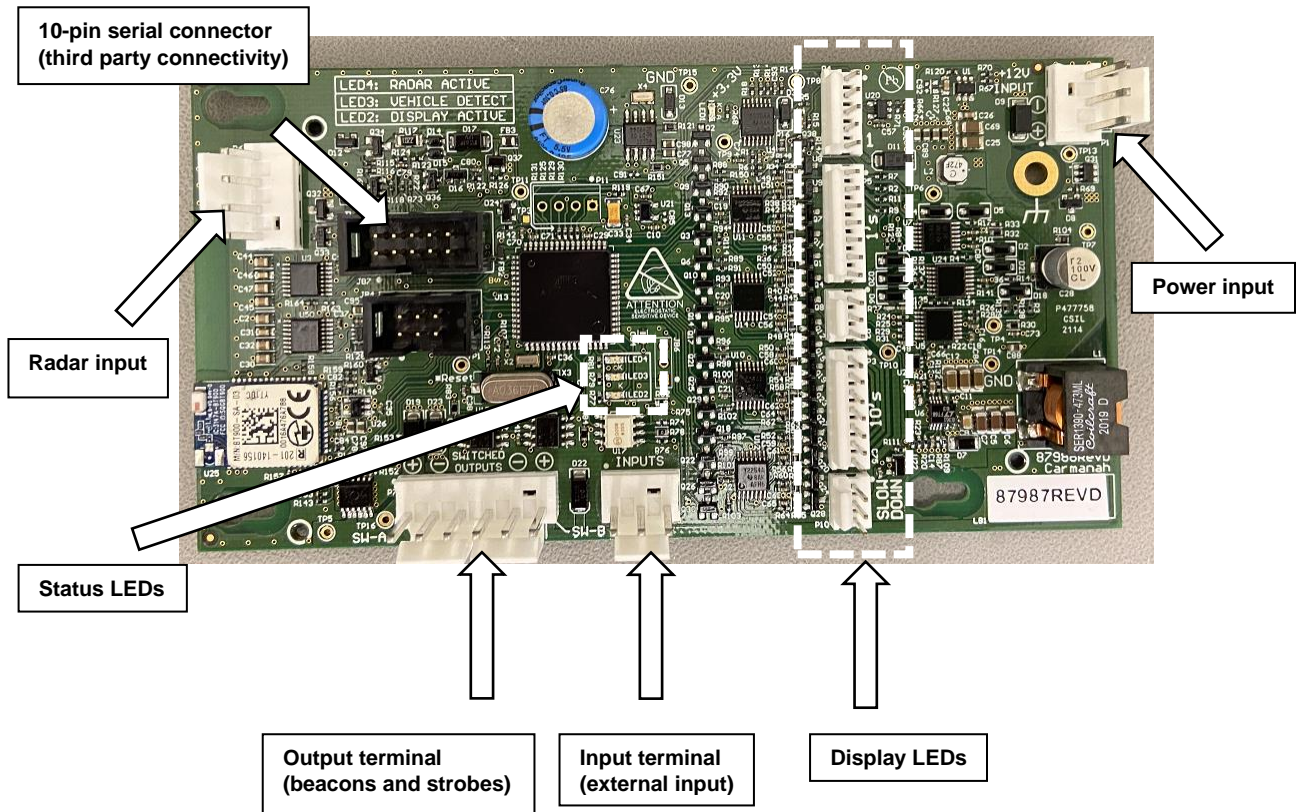
- Radar input – input from radar
- 10-pin serial connector – for StreetHub™ integration with Applied Information (AI) or cellular/Ethernet systems
- Output terminal – for flashing beacons or strobes
- Input terminal – for third party time switches such as RTC
- Display LEDs – output to LED display boards
- Power input – DC power from charge controller or power supply

Status LEDs:

- LED1 = input power; this will illuminate when power is applied
- LED2 = display active; this will illuminate when the display is powered and operational
- LED3 = vehicle detect; this will intermittently illuminate when a vehicle has been detected
- LED4 = radar active; this will illuminate when the radar is powered and operational

4.1   LED Configurations

No Slow Down ("88" LEDs only)

- Left LED board = LED harnesses 3 & 4 (3-pin and 7-pin respectively)
- Right LED board = LED harnesses 1 & 2 (5-pin and 7-pin respectively)
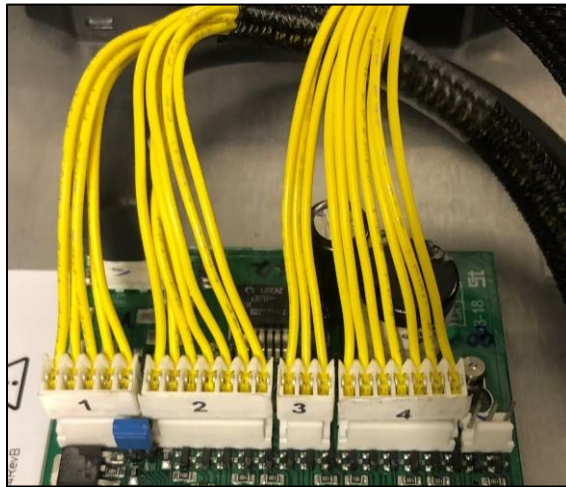
Slow Down equipped

- Left LED board = LED harness 3 (7-pin)
- Right LED board = LED harnesses 1, 2, & 4 (5-pin, 7-pin, and 3-pin respectively)
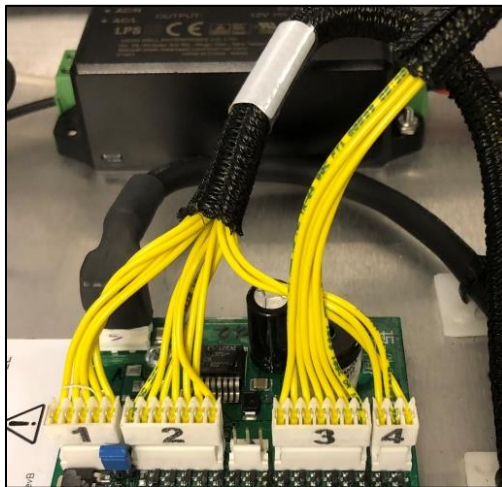
> **NOTE**   Do not plug in any cables with power applied to the controller. If you have any auxiliary connectors that are not outlined above please contact Carmanah for assistance.

5.0 Appendix B – SpeedCheck Manager Configuration

5.1   SpeedCheck Manager Mobile App

With this new controller you must have SpeedCheck Manager mobile app version 3.0.0 or newer for it to function and communicate properly when programming. Visit support.carmanah.com to download the latest version or go directly to the Apple App Store/Google Play Store.

SpeedCheck Manager mobile app is used to wirelessly communicate with your SPEEDCHECK-12/15/18 radar speed sign for programming, configuration and diagnostics. It utilizes the Bluetooth connection between your mobile device and the applicable radar speed sign. Once you download the app, no cellular or Wi-Fi connection is required while onsite to communicate with the radar speed sign.

The mobile app allows for quick adjustments to key settings, verification of system parameters, firmware updates, password management, and the ability to perform local diagnostics without needing to access the interior of the radar speed sign.

SpeedCheck Manager mobile app is available free of charge on the Apple App Store and Google Play Store for compatible mobile devices.
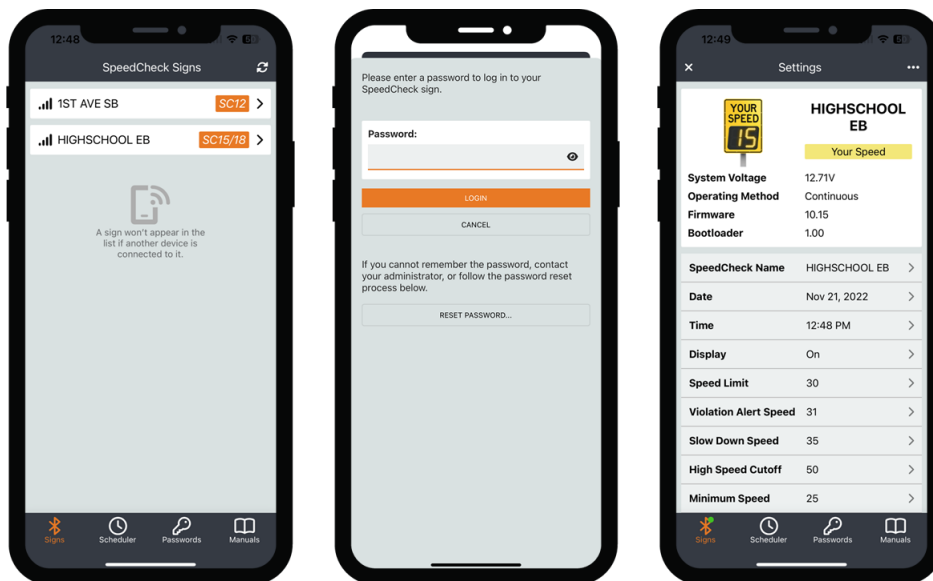
| NOTE | **The default password for this new SPEEDCHECK-15/18 controller is "speedcheck".** |

| NOTE | For more information on using the SpeedCheck Manager mobile app please see its user guide at support.carmanah.com or from within the app itself. |

| NOTE | The SpeedCheck Manager mobile app is supported for all SPEEDCHECK-15/18 systems that have the updated programmable controller that started shipping in 2023 Q1. Starting in 2023 Q3, the RevE version of the controller **is only supported by the SpeedCheck Manager mobile app**. The PC version is not compatible. |

5.2   SpeedCheck Manager PC

| NOTE	**As mentioned in Section 5.1, the RevE version of the SPEEDCHECK-15/18 controller is no longer compatible with the PC version of SpeedCheck Manager. Please use the mobile app for these systems.**

With this new controller you must have SpeedCheck Manager version 3.0.1.16 or newer for it to function and communicate properly when programming. Visit support.carmanah.com to download the latest version.

Starting with this hardware revision and firmware version 10.02, your laptop will need to be paired with the controller via Bluetooth in Windows first before connecting to the system. This process only needs to be done once per PC.

Bluetooth Pairing

When connecting to your SpeedCheck radar speed sign for the first time you will need to pair it via Bluetooth:

1. Open SpeedCheck Manager and click on Establish Connection.
2. Wait for the software to scan and detect nearby Bluetooth devices. Click on your radar speed sign (designated as SpeedCheckXXXXX) and click Connect.
3. Click on the dialog box in the bottom right corner to begin the pairing process.
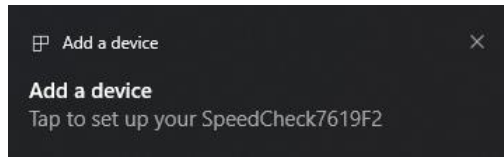
4. Click on Allow to pair the device.
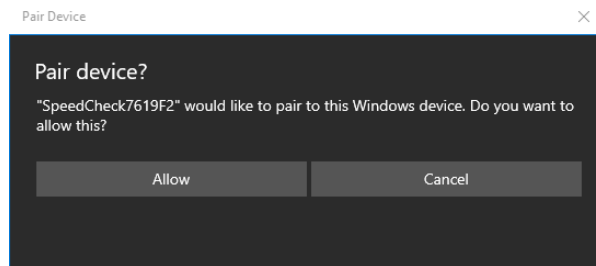
5. The sign is now paired and will be connected within SpeedCheck Manager.
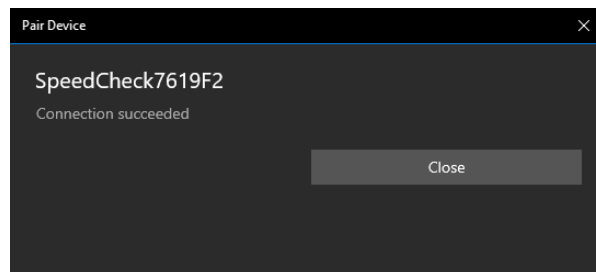
This process will need to be completed if you are connecting to a system for the first time or connect via another PC.

System Tab

- Set MPH/KPH
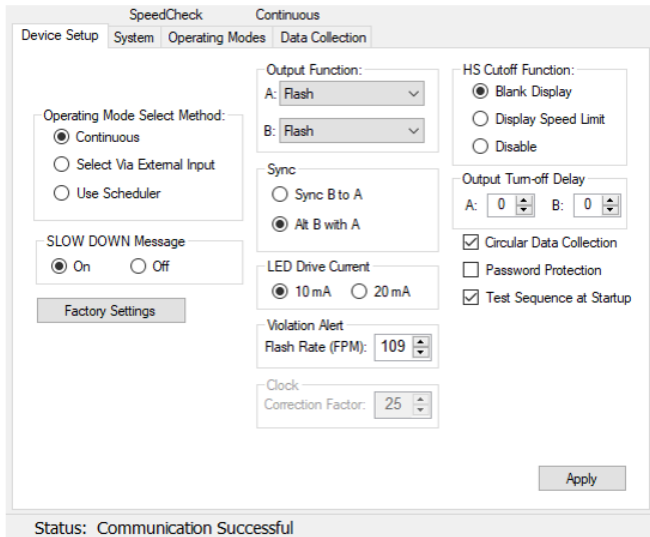   - Select the unit of speed for your installation location
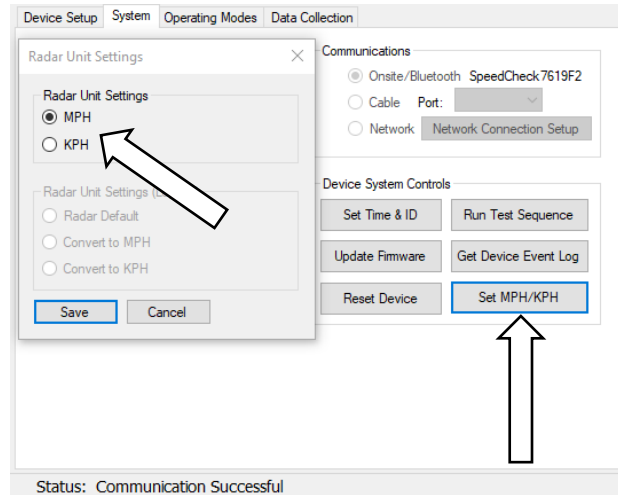
Device Setup Tab

- Type "**unlock**" to enter this section
- The follow main settings can be adjusted:
    - Operating mode (continuous, external input, scheduling)
    - Beacon adjustments (Output Function)
    - High Speed Cutoff mode
    - SLOW DOWN message setting (only enable if you have the slow down LED boards)
    - Violation Alert variable flash rate
    - LED drive current (10mA/20mA)
- Navigate to Help → Download SpeedCheck Manager Guide for more detailed information on system operation and programming (requires an Internet connection).
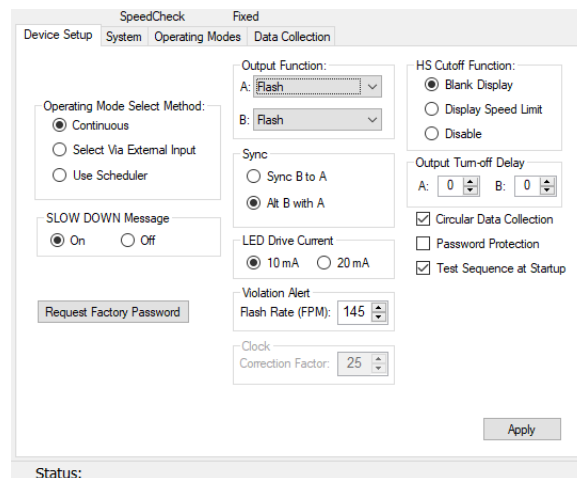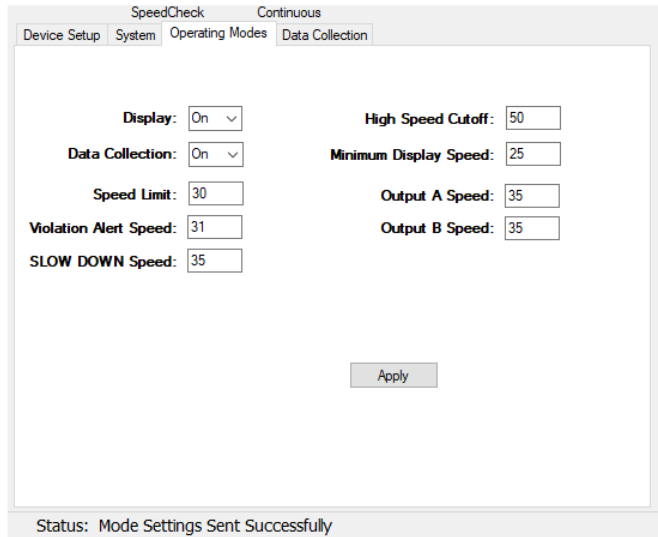
Operating Modes Tab

- Display – On = display on, Off = display off
- Data Collection – On = data collection on, Off = data collection off
  - See Data Collection tab
- Speed Limit – The speed limit for data logging purposes. This needs to be set even if not using data collection.
- Violation Alert Speed – Speed at which the display digits begin flashing (exceeding speed limit).
- SLOW DOWN Speed – Speed at which the SLOW DOWN message is activated (exceeding speed limit, if applicable and enabled under the Device Setup tab).
  - This requires the SLOW DOWN message enabled under the Device Setup tab
- High Speed Cutoff – maximum speed shown on display, speeds above this follow function set under Device Setup or not applicable if disabled.
- Minimum Display Speed – lowest speed to be shown on display, speeds below this number will not be displayed.
- Output A/B Speed – Sets the speed at which each auxiliary output is to provide 12VDC for external devices, such as LED beacons.
  - This requires Output A/B functions enabled under Device Setup tab

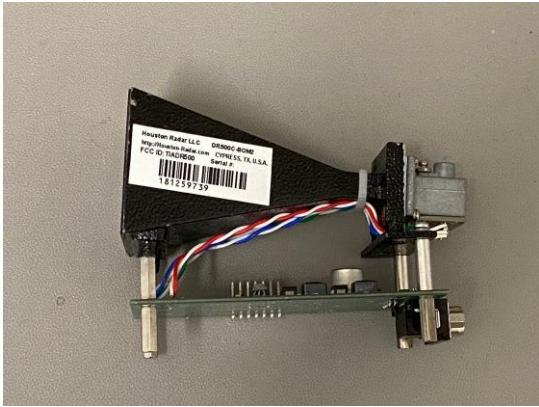# 6.0 Appendix C – Legacy Information

Coin cell batteries have been phased out in this controller. This was used for retaining date and time settings when power was disconnected. There is a capacitor bank that provides greater than 24 hours of data retention in the event of power loss or manually turning the system off. This will be useful if you are powering down the system during troubleshooting. It is recommended to double check and update the date and time as needed as a final check.

If you are installing this controller into a legacy system (Q1 2010 or older) that contains the original LED boards then you will need to adjust the intensity to the 20mA mode in SpeedCheck Manager. Current LEDs operate much more efficiently and therefore need less power to provide the same intensity as the legacy LED boards. See the instructions below for setting the correct mode for your installation.
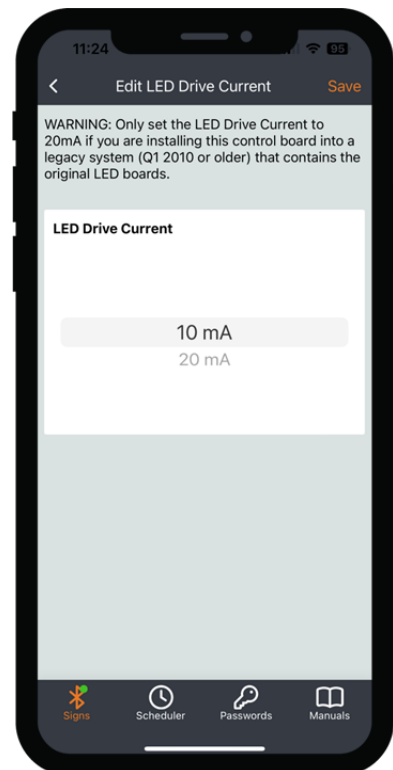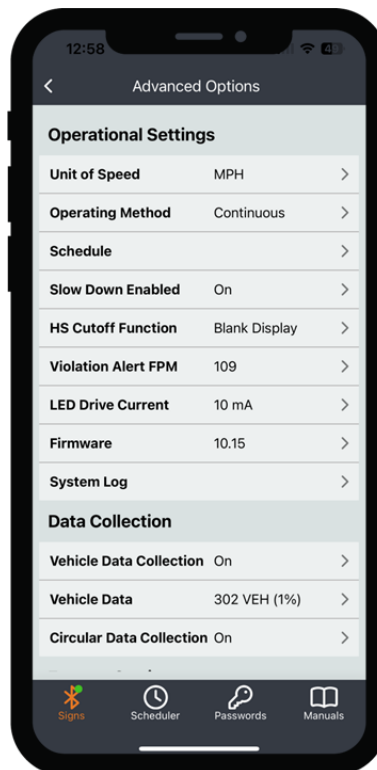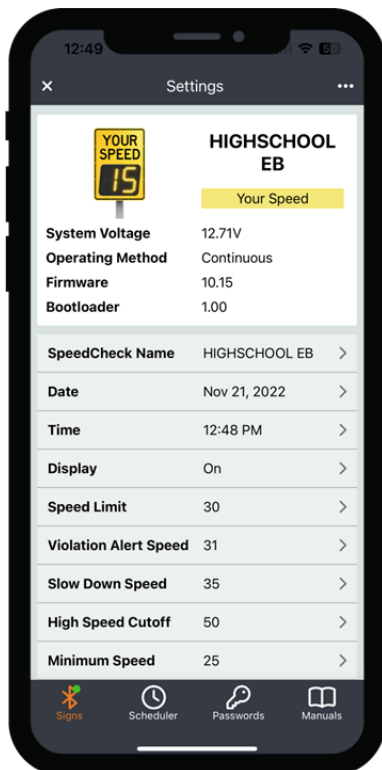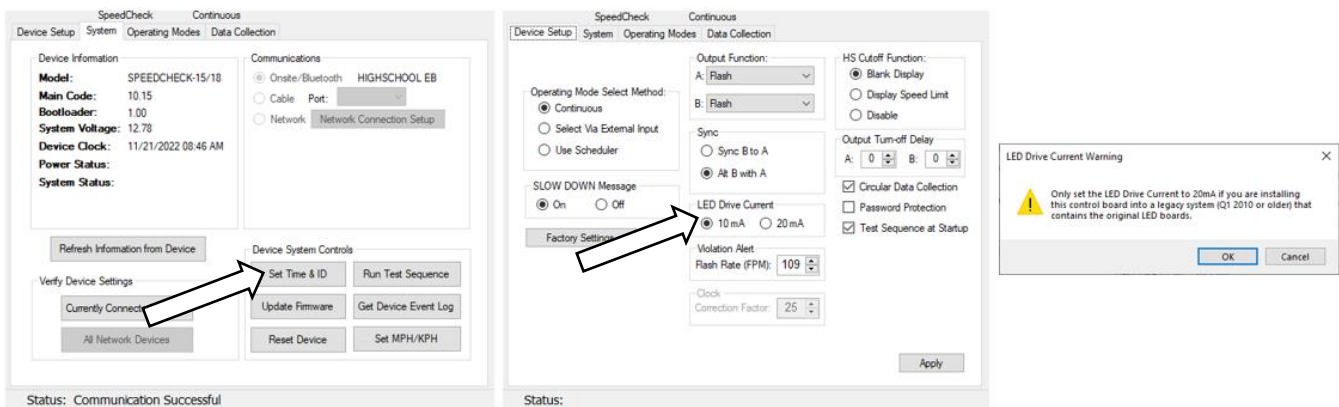
7.0 Appendix D – Supported Radars

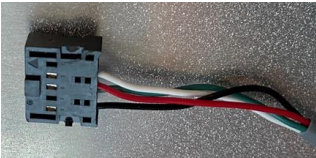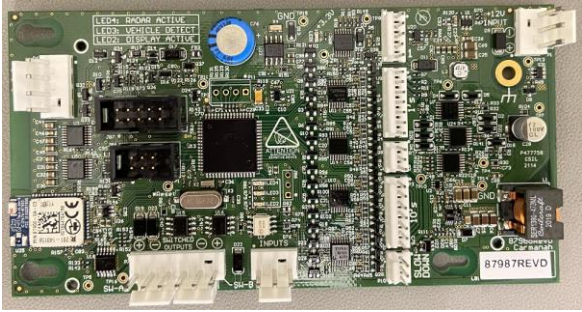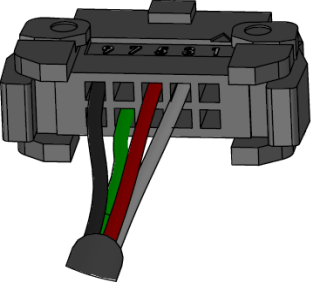| Radar	Example	Supported
Houston Radar DR600 (current)		Yes
Houston Radar DR500 (legacy)		Yes
Decatur SI-2/SI-3 (legacy)		No
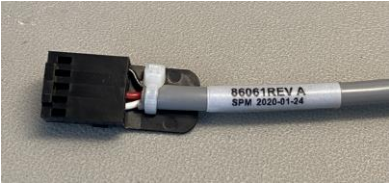
NOTE   If you have a Decatur SI-2/SI-3 radar you will need to replace it will the latest DR600 version to be compatible with the updated control board.

8.0 Appendix E – Supported Serial Harness

The updated programmable controller requires a new serial harness to function with StreetHub™ or AI equipped systems. The previous version serial harness is not compatible with the updated controller. The new controller utilizes a new locking connector that cannot be installed backwards.

The new serial harness is backwards compatible with the legacy programmable controller by removing the lever arms.

Controller Version	Serial Cable Version Supported
Legacy Programmable	
Updated Programmable	

NOTE   Contact Carmanah if you require an updated serial harness.

© 2023 Carmanah Technologies Corporation

Technical Support:

Email: customersupport@carmanah.com
Toll Free: 1.877.722.8877 (US & Canada)
Worldwide: 1.250.380.0052
Fax: 1.250.380.0062
Web: carmanah.com