

Omnitracs SR4 Freightliner Cascadia & New Cascadia Installation Guide

This VSA covers models manufactured between 2007-2024

Cascadia

Manufactured
2008-2012



Cascadia Evolution

Manufactured
2013-2020



New Cascadia

Manufactured
2018-present



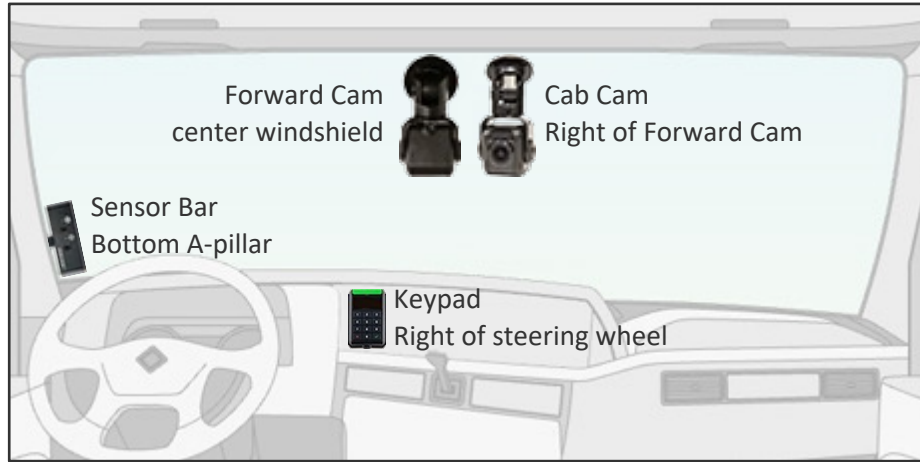
Manufactured by Daimler Trucks North America

Freightliner Cascadia

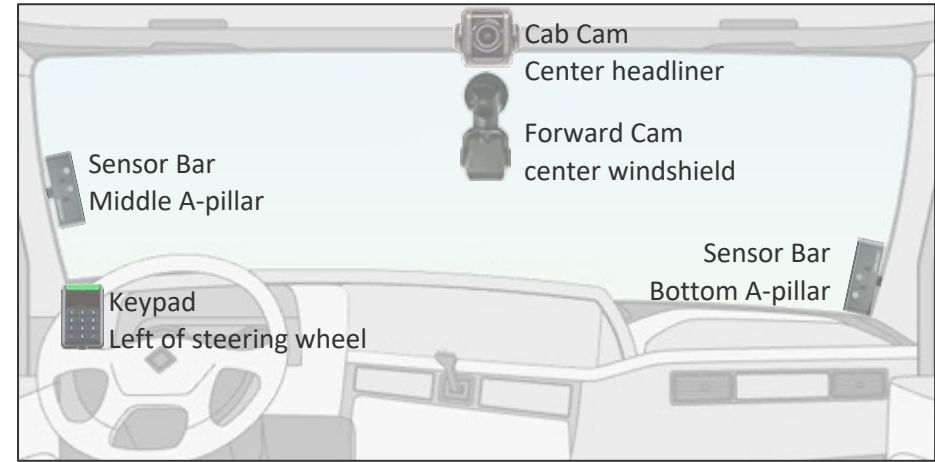
Approved camera mounting (flat/split windshield), sensor bar, and keypad locations

Note: Any combination of these mounting locations are approved

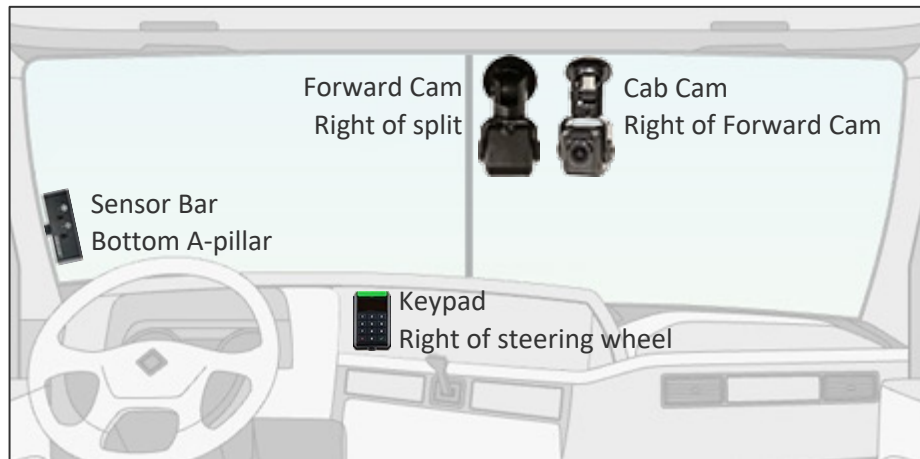
Flat windshield - Preferred locations



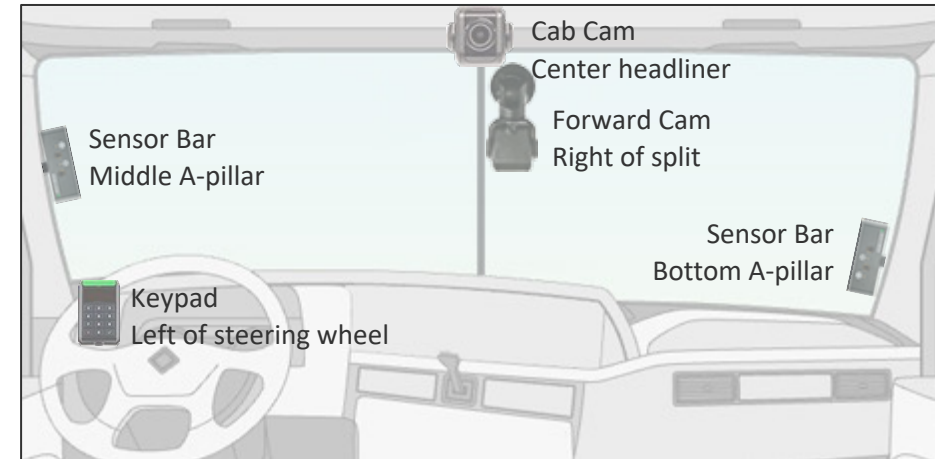
Flat windshield - Alternative locations



Split windshield - Preferred locations



Split windshield - Alternative locations

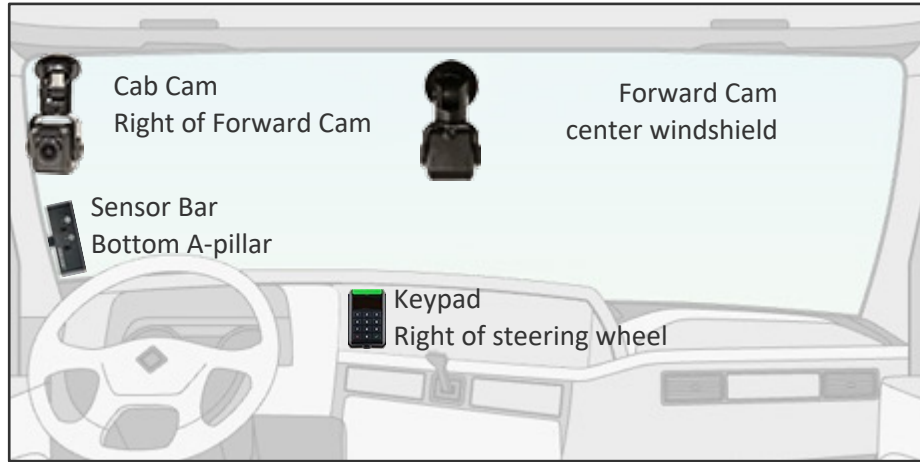


Freightliner Cascadia

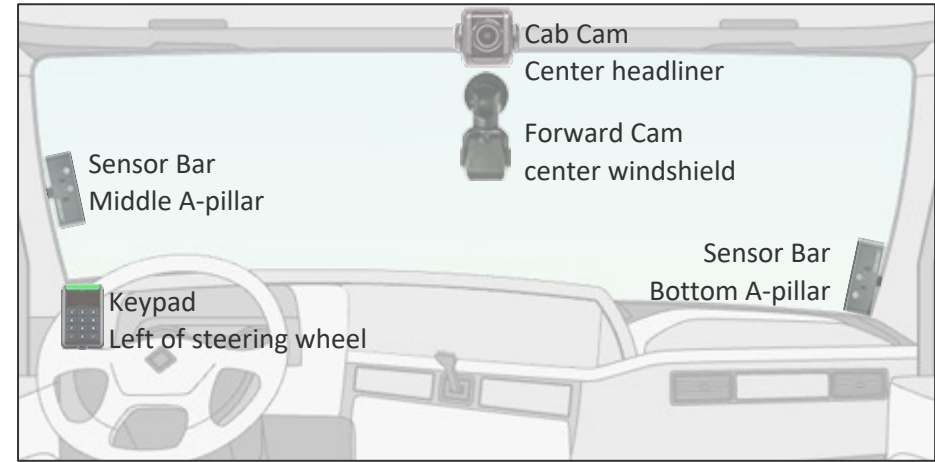
Approved camera mounting (flat/split windshield), sensor bar, and keypad locations

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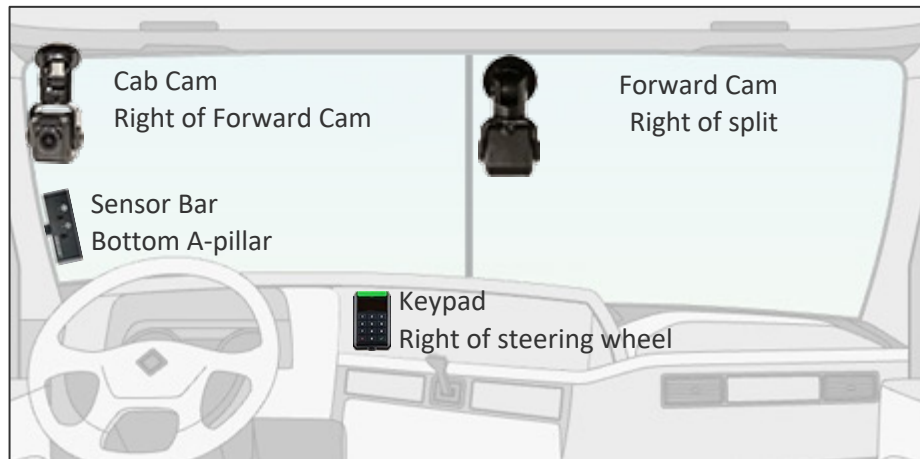
Flat windshield - Preferred locations



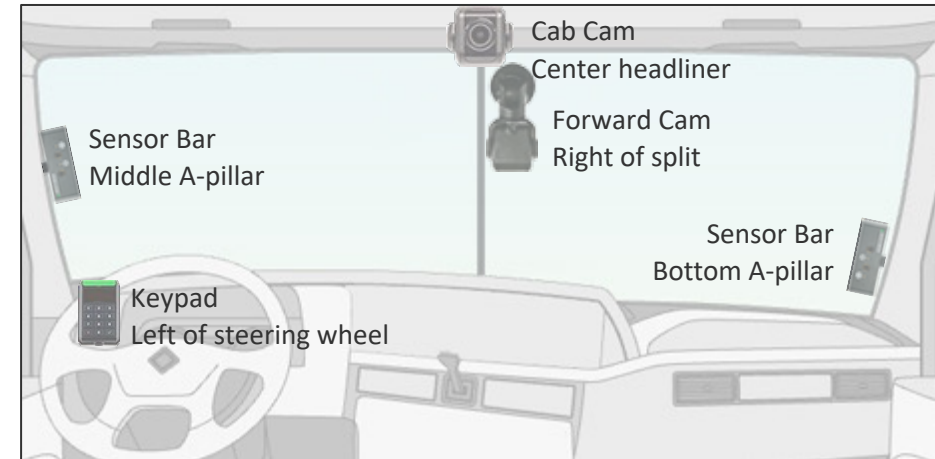
Flat windshield - Alternative locations



Split windshield - Preferred locations




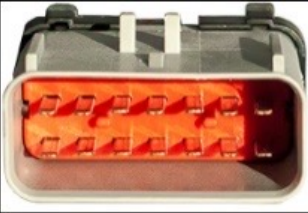


Split windshield - Alternative locations



Freightliner Cascadia 2008 - 2023

Primary Controller, ECU, and Wiring Locations

Years	Component	Primary Controller and ECU Mounting Location	Primary ECU Port	Recommended Power Location
2007-2016 Cascadia	Controller	Behind center dash or behind instrument cluster		Passenger side Fuse box behind glove box
	ECU	104-0009-0008-00 2 Pin Type B (black inside) Drivers side kick panel or center doghouse		
2017-2020 Cascadia	Controller	Behind center dash or behind instrument cluster		Passenger side Fuse box behind glove box
	ECU	104-0009-0014-00 J-1939, Splice Pack Driver or passenger kick panel		
2018- Sept 8, 2019 New Cascadia	Controller	Behind center dash		Center doghouse
	ECU	104-0009-0014-00 J-1939, Splice Pack Driver or passenger kick panel		
Sept 9, 2019 -Present New Cascadia	Controller	Behind center dash		Center doghouse
	ECU	104-0009-0038-00 14 Pin RP1226 Behind center dash		

IMPORTANT: Vehicles using the Splice Pack or 14-pin cable will require a setpoint change. **ECU protocol = 0**

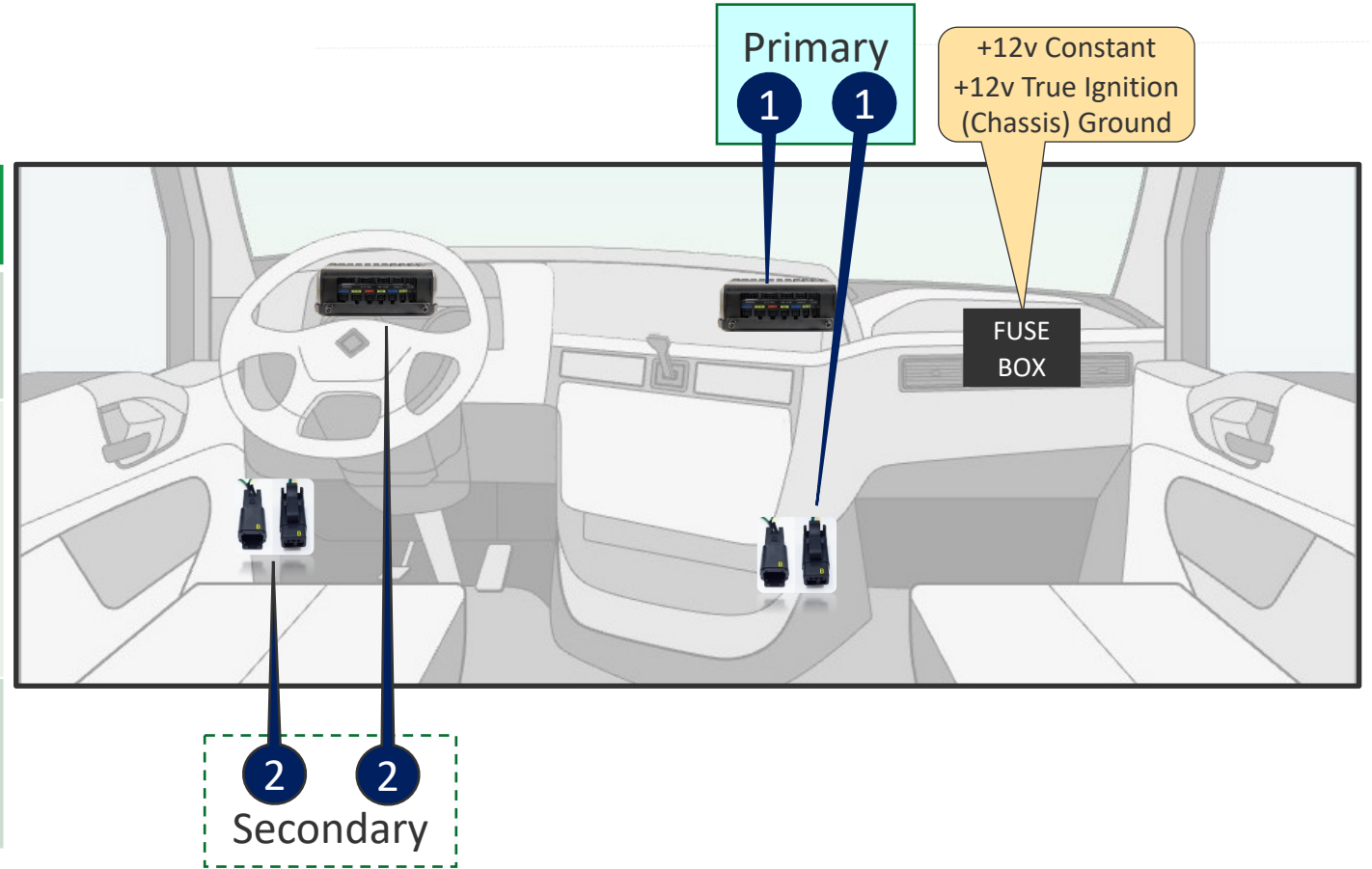
Cascadia 2008-2016 DLC and wiring instructions

Freightliner Cascadia

Cascadia 2008-2016

Component Location

Component	1 Primary Location	2 Secondary Location
Controller	Behind center dash	Driver-side behind instrument cluster
ECU Port	Doghouse 2-pin Type B Deutsch (black inside) (104-0009-0008-00)	Driver-side kick panel 2-pin Type B Deutsch (black inside) (104-0009-0008-00)
Wiring	Passenger-side Fuse box	Same



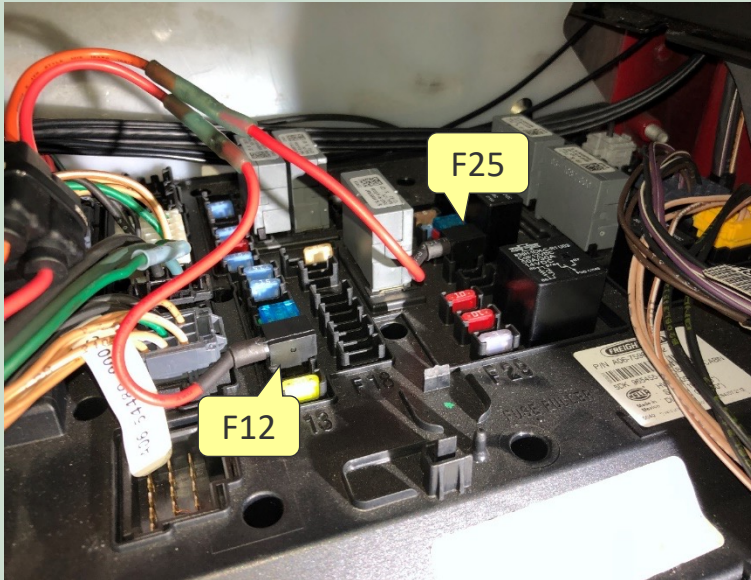
Freightliner Cascadia

Cascadia 2008-2016

Constant power, true ignition, and chassis ground wiring connections

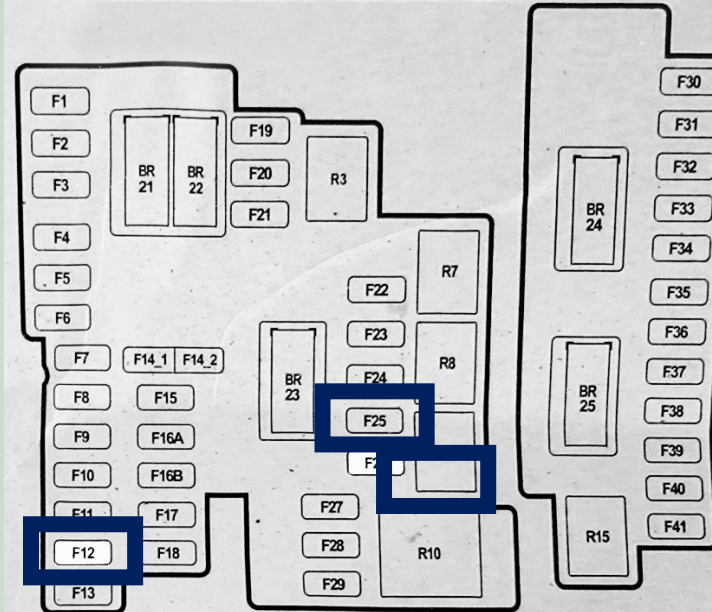
Fuse box Location

Passenger side
behind the glove box



Wiring Diagram

FUSE AND RELAY IDENTIFICATION



Wiring Locations

Constant Power

Add-A-Fuse in F12 location (DR CTRL L, BAT)

True Ignition

Add-A-Fuse in F25 location (Dash Splice Pack, IGN)

Ground

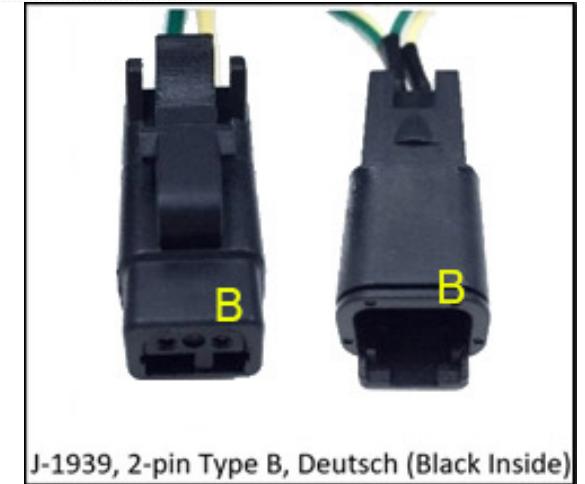
Scrape metal surface near the vehicles fuse box and use 1/2-inch self-tapping screw and ring terminal to connect to chassis ground

Freightliner Cascadia

Cascadia 2008-2016

2-Pin Type B Deutsch Data Link Connection (DLC) locations

Component		Notes
2-Pin Type B Deutsch (black inside)		N/A
Description		
SR4 Part #	104-0009-0008-00	J-1939, 2 Pin Type B Deutsch (black inside)
Connector Color	Black	(Black) internal color indicates Type B Connector
Network	J1939	Vehicle Bus Communication Network - (Passive)
Baud Rate	250kb, 500kb	<ul style="list-style-type: none">Supports (250kb) Low speed and (500kb) High speed<u>(250kb) Best Connection for 3rd Party Devices</u>
Connection Type:	2-Pin, Type B	<ul style="list-style-type: none">Deutsch connection, (<u>B</u>) pin slot is green wire, (+)J1939Notified by tab on (<u>B</u>) pin slot of male connector



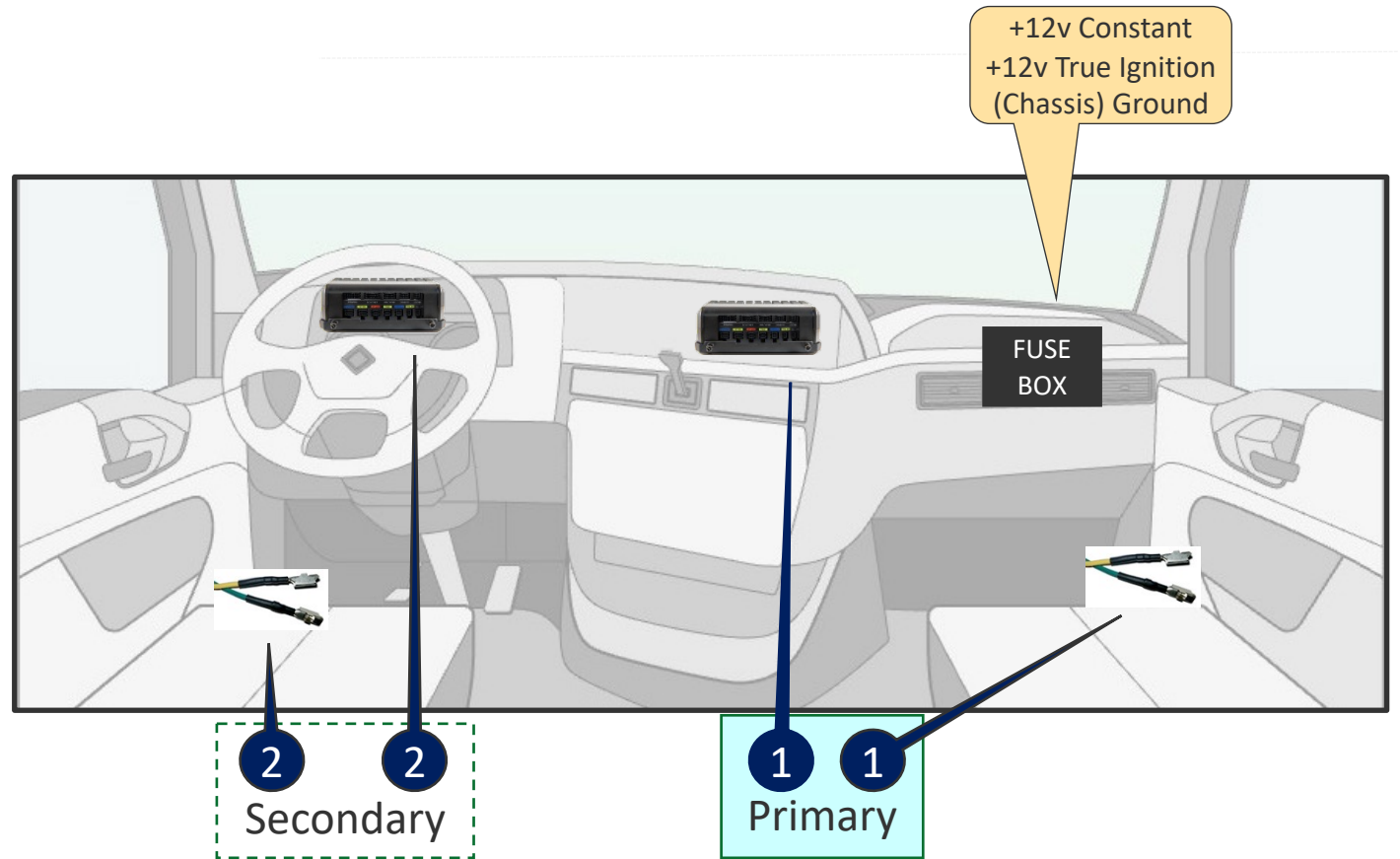
Cascadia 2017– 2020 DLC and wiring instructions

Freightliner Cascadia

Cascadia 2017-2020

Component Location

Component	Primary Location 1	Secondary Location 2
Controller	Behind center dash	Driver-side behind instrument cluster
ECU Port	Passenger kick panel Splice Pack (104-0009-0014-00)	Driver kick panel Splice Pack (104-0009-0014-00)
Wiring	Passenger-side Fuse box behind glove box	Same



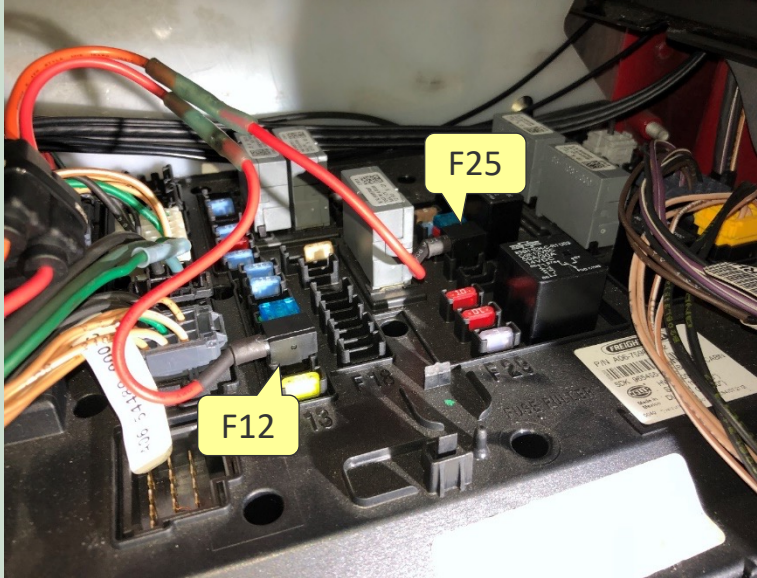
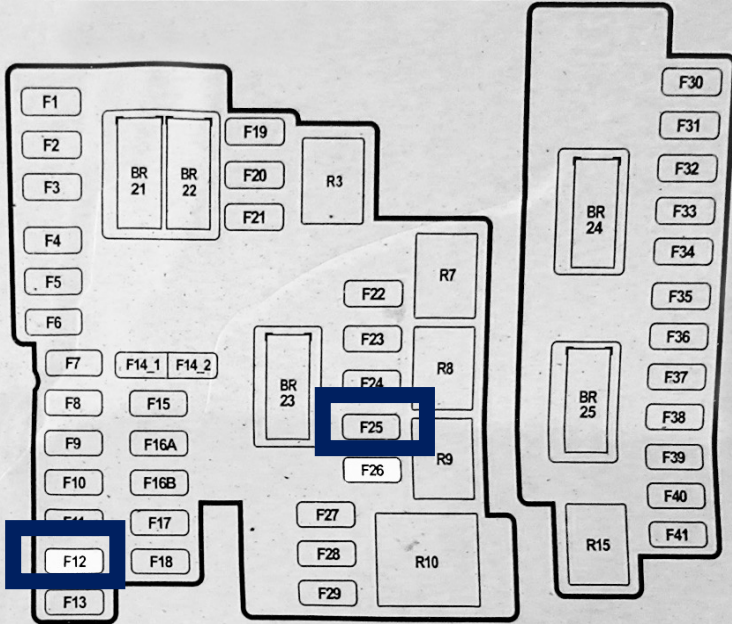
IMPORTANT: Vehicles using the Splice Pack cable will require a setpoint change.

ECU protocol = 0

Freightliner Cascadia

Cascadia 2017-2020

Constant power, true ignition, and chassis ground wiring connections

Fuse box Location	Wiring Diagram	Wiring Locations
<p>Passenger side behind the glove box</p> 	<p>FUSE AND RELAY IDENTIFICATION</p> 	<p>Constant Power Add-A-Fuse in F12 location (DR CTRL L, BAT)</p> <p>True Ignition Add-A-Fuse in F25 location (Dash Splice Pack, IGN)</p> <p>Ground Scrape metal surface near the vehicles fuse box and use 1/2 inch self-tapping screw and ring terminal to connect to chassis ground</p>

See the [WIRING CONNECTION INSTRUCTIONS](#) slide for details

Freightliner Cascadia

Cascadia 2017-2020

Splice Pack Data Link Connection (DLC)

Component		Notes
Splice Pack (green/yellow metal tip leads)		N/A

Description		
SR4 Part #	104-0009-0014-00	J-1939, Splice Pack (green/yellow metal tip leads)
Network	J1939	Vehicle Bus Communication Network – (Active)
Baud Rate	250kb	<ul style="list-style-type: none">Supports (250k) Low speed Active Protocol<u>(250k) Best Connection for 3rd Party Devices</u>
Connection Type	Terminal leads	(Green/Yellow) crimped female terminal leads



Vehicles using the Splice Pack cable will require a setpoint change.

ECU protocol = 0

New Cascadia – 2018-2020
Build date prior to September 8, 2019
DLC and wiring instructions

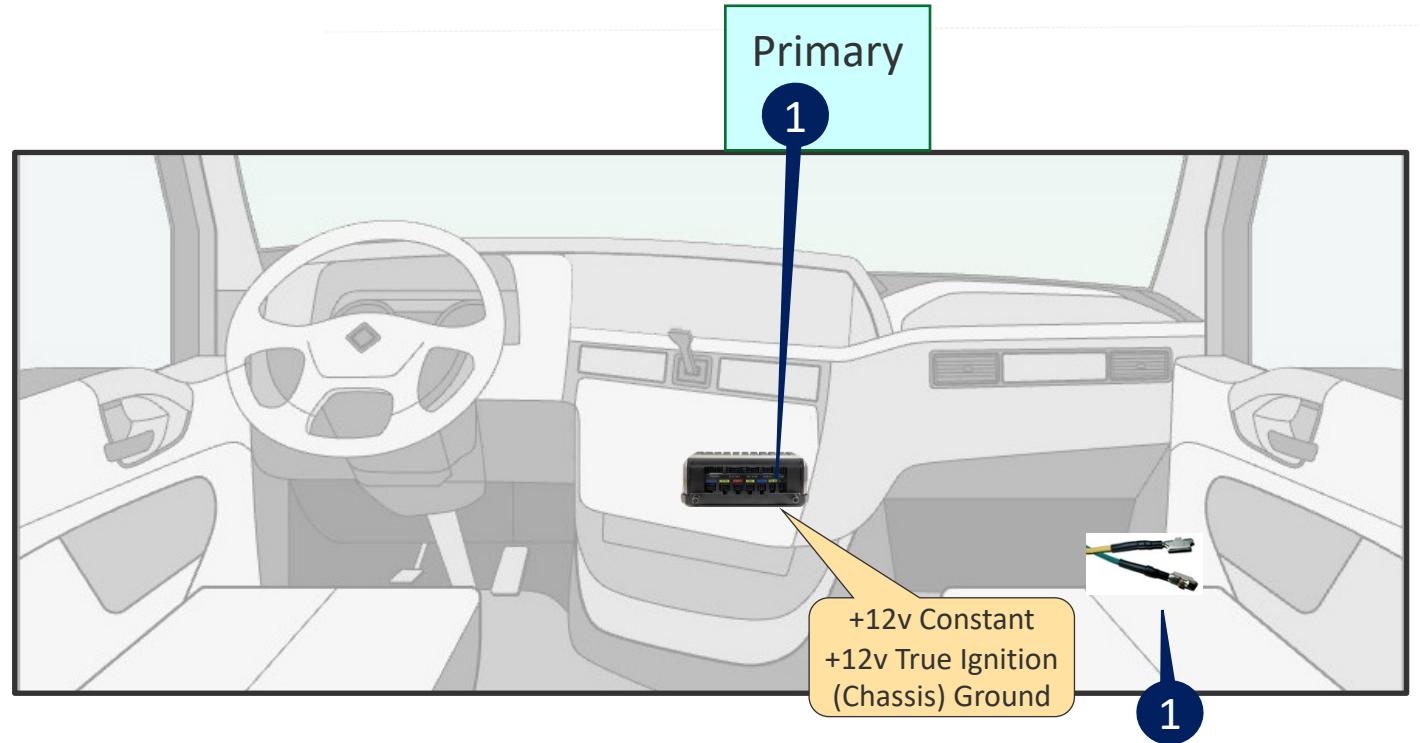
Freightliner Cascadia

New Cascadia – 2018-September 8, 2019

Component Location

1

Component	Primary Location	Secondary Location
Controller	Center Dash Behind center dash	
ECU Port	Passenger kick panel Splice Pack (104-0009-0014-00) <u>Not an option after Sept 8, 2019</u>	
Wiring	Constant and Ground behind center doghouse Ignition behind center dash	





IMPORTANT: Vehicles using the Splice Pack cable will require a setpoint change.

ECU protocol = 0

Freightliner Cascadia

New Cascadia – 2018-September 8, 2019

Constant power, true ignition, and chassis ground wiring connections

Constant and Ground	Ignition	Wiring Locations
<p data-bbox="351 325 614 361">Center doghouse</p> 		<p data-bbox="1691 325 1939 361">Constant Power</p> <p data-bbox="1691 372 2277 451">#10 Ring terminal on right side battery connection(B+) inside SAM Module</p> <p data-bbox="1691 504 1811 539">Ground</p> <p data-bbox="1691 551 2397 629">#10 Ring terminal on ground connection inside SAM Module</p> <p data-bbox="1691 725 1888 761">True Ignition</p> <p data-bbox="1691 772 2372 851">Connect to ignition splice pack in center dash with freightliner pins</p> <p data-bbox="1691 903 1964 939">Part # 12110844-L</p>

See the [WIRING CONNECTION INSTRUCTIONS](#) slide for details

Freightliner Cascadia

New Cascadia – 2018-September 8, 2019

Splice Pack Data Link Connection (DLC)

Component		Notes
Splice Pack (green/yellow metal tip leads)		N/A

Description		
SR4 Part #	104-0009-0014-00	J-1939, Splice Pack (green/yellow metal tip leads)
Network	J1939	Vehicle Bus Communication Network – (Active)
Baud Rate	250kb	<ul style="list-style-type: none">Supports (250k) Low speed Active Protocol<u>(250k) Best Connection for 3rd Party Devices</u>
Connection Type	Terminal leads	(Green/Yellow) crimped female terminal leads



Vehicles using the Splice Pack cable will require a setpoint change.

ECU protocol = 0

New Cascadia – 2020-Present
Build date after Sept 9, 2019
DLC and wiring instructions

Freightliner Cascadia

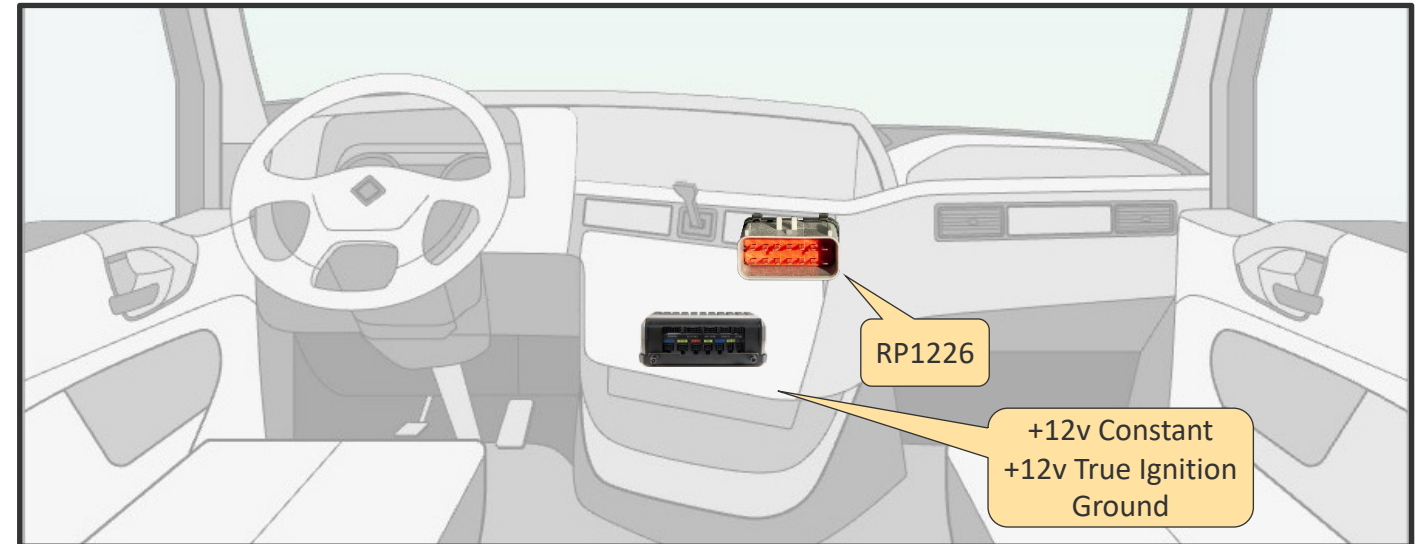
New Cascadia – Sept 9, 2019 - Present

Controller, ECU, and Wiring

IMPORTANT: The 14-Pin (RP1226) is an orderable option for this vehicle prior to Sept 9, 2019. Verification of whether the vehicle equipped with the 14-Pin can be done by asking the customer if they have ordered an Accessory Port for this vehicle using the **6TS-XXX** code.

Oct 2018-Sept 8, 2019 Option by purchase only
Starting Sept 9, 2019 14-pin is the **ONLY OPTION**

Component	Primary location
Controller	Center dash Behind center dash
ECU Port	14 Pin RP1226 (grey connector, no label) (104-0009-0038-00) ECU protocol = 0
ECU Port	Center Dash via passenger panel
Wiring	Center doghouse and behind center dash



IMPORTANT: Vehicles using the 14-pin cable will require a setpoint change.

ECU protocol = 0

14-pin locations based on part code

6TS-005 TMC RP1226 accessory connector located center of dash

6TS-006 TMC RP1226 accessory connector located center of overhead console



6TS-007 TMC RP1226 accessory connector located center of back wall/passenger side baggage compartment

6TS-009 (2) TMC RP1226 accessory connectors: (1) located center of dash and (1) center back wall/passenger baggage compartment

Freightliner Cascadia

New Cascadia – Sept 9, 2019 - Present

Constant power, true ignition, and chassis ground wiring connections

Constant and Ground	Ignition	Wiring Locations
<p data-bbox="351 325 614 361">Center doghouse</p> 		<p data-bbox="1691 325 1939 361">Constant Power</p> <p data-bbox="1691 372 2277 451">#10 Ring terminal on right side battery connection(B+) inside SAM Module</p> <p data-bbox="1691 504 1811 539">Ground</p> <p data-bbox="1691 551 2397 629">#10 Ring terminal on ground connection inside SAM Module</p> <p data-bbox="1691 725 1888 761">True Ignition</p> <p data-bbox="1691 772 2372 851">Connect to ignition splice pack in center dash with freightliner pins</p> <p data-bbox="1691 903 1964 939">Part # 12110844-L</p>

See the [WIRING CONNECTION INSTRUCTIONS](#) slide for details

Freightliner Cascadia

New Cascadia – Sept 9, 2019 – Present

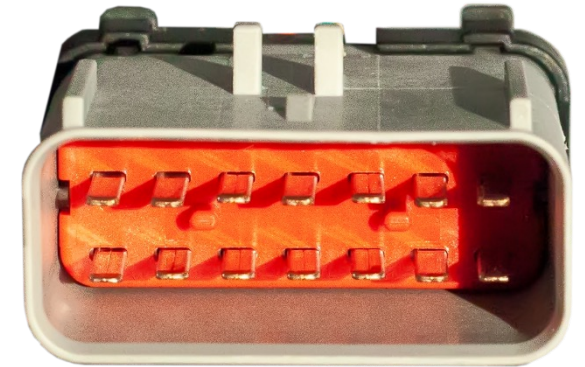
14-pin RP1226 Data Link Connection (DLC)

IMPORTANT: The 14-Pin (RP1226) is an orderable option for this vehicle. Verification of whether the vehicle is equipped with the 14-Pin can be done by asking the customer if they have ordered the Accessory Port for this vehicle using the **6TS-XXX code**.

Component		Notes
J-1939, 14 Pin RP1226 (grey connector, no label)		Check Build Date
Description		
SR4 Part #	104-0009-0017-00	J-1939
Network	J1939	Vehicle Bus Communication Network – (Active)
Baud Rate	500k	
Connection Type	14 pin connector	

IMPORTANT: Vehicles using the 14-pin cable will require a setpoint change.

ECU protocol = 0



A blurred, high-speed photograph of a city street with multiple lanes, viewed from a low angle looking down the road. The image is dark blue and has a motion blur effect, suggesting speed and modern technology.

360 Cameras

Freightliner Cascadia

Approved 360 Camera VSA

The following 360 Convoy VSAs describe the installation process.

- SR4-360 VSA_Side Mirror
- SR4-360 VSA_Rear view
- SR4-360 VSA_Entry Exit Door
- SR4-360 VSA_Inside Interior
- SR4-360 VSA_Monitor M7104
- SR4-360 VSA_5 Camera

Please contact your Project Manager for a copy of these documents.

SmartDrive™ SR4 360 VSA
360 Convoy Mirror-Mount Side Camera
Installation Quality Standards

C1600SD-LR (bottom of mirror)

Driver side, left Passenger side, right

C1600SD-R (top of mirror)

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SMARTDRIVE
Rev 1, March 29, 2019



ADAS Camera and Driver Feedback Device

Freightliner Cascadia

Approved ADAS Forward-facing Camera location

Mounting Location

Mount the ADAS shroud 1" from the top and center of the windshield

The camera cannot interfere with a driver's line of sight of the road, traffic signals, or road signs.

Details

1. Before removing the adhesive backing, check to make sure the camera fits properly
2. Using an alcohol pad clean the windshield and wipe dry with a lint-free clean cloth
3. **Critical: Use a pocket level to ensure that the bottom of the camera is mounted level looking from left to right.**
4. Press firmly on camera bracket for 10 seconds to ensure adhesion
5. Run camera cable under the headliner towards the driver side
6. Remove the A-pillar cover and run the camera cable down to the controller. Ensure the cable doesn't get pinched.

This camera requires calibration.
Details are available in the
ADAS installation and Calibration guide



Freightliner Cascadia

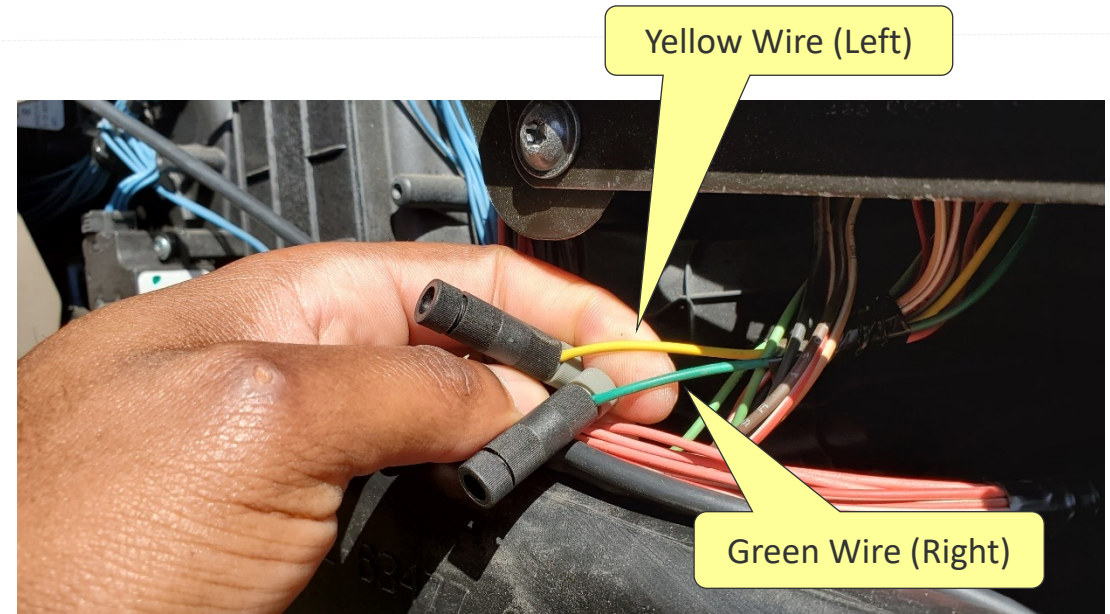
Cascadia ADAS Turn Signals

Turn signal wiring location

Under the passenger side fuse box

Details

1. Use an **Expansion Cable** to connect to the vehicles turn signals
2. Locate the **Left turn signal wire** under the passenger side fuse box. Use the **Expansion Cable's Blue wire to connect the left turn signal wire(Yellow)**.
3. Locate the **Right turn signal wire** under the passenger side fuse box. Use the **Expansion Cable's Green wire to connect the left turn signal wire(Dark Green)**.
4. Use the interchange cable's molex connector to make the connection to the controller's "Expansion" port



Freightliner Cascadia

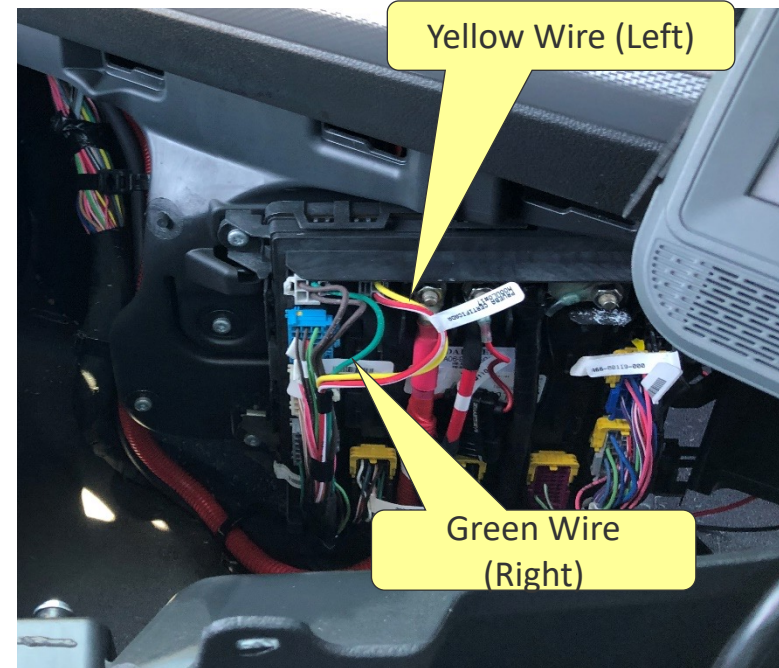
New Cascadia ADAS Turn Signals

Turn signal wiring location

Inside SAM Module

Details

1. Use an **Expansion Cable** to connect to the vehicles turn signals
2. Locate the **Left turn signal wire** inside SAM Module. Use the **Expansion Cable's Blue wire** to connect the **left turn signal wire(Yellow)**.
3. Locate the **Right turn signal wire** inside SAM Module. Use the **Expansion Cable's Green wire** to connect the **left turn signal wire(Dark Green)**.
4. Use the interchange cable's molex connector to make the connection to the controller's "Expansion" port



Freightliner Cascadia

Driver Feedback Device location

Mounting Location

**Mounted on the right-hand side of the steering wheel
to the top of the dash.**

Run the cable to the controller.

Plug the driver feedback cable into the port DRIVER FB

**Secure the device by cleaning the area with alcohol pad
and secure with adhesive**

Details

1. The sensor bar must be visible to the driver.
2. Clean the windshield with an alcohol pad and wipe dry with clean cloth. Do not use shop rags which have grease even when clean.
3. Press firmly on the baseplate for 10 seconds to ensure it adheres properly to the dash
4. Secure with 2 self-tapping screws
5. Run wires to the controller



Best Practices: Cameras, Sensor Bar, & Keypad

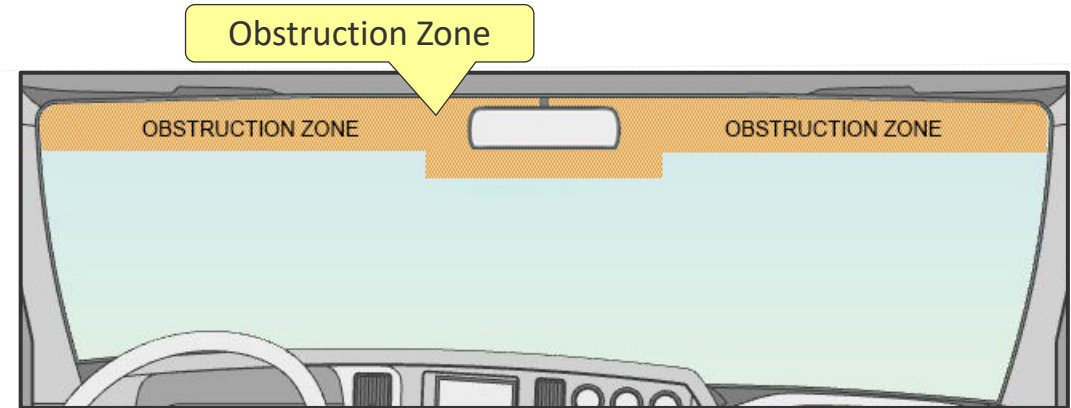
Freightliner Cascadia

Best Practice: Camera Mounting Considerations

During an install, you may find obstructions such as sun visors and third party devices that make it impossible to mount in a SmartDrive approved location. The following describes our recommended adjustments in these situations.

Sun Visors are set in the down position and fully extended during the install process to verify the Cab-facing camera has a clear view of the drivers face, hands on the steering wheel, shoulder, and seat or lap belt. When blocked by visor, mount the Cab-facing camera using the secondary location where the desired view is attainable.

When third party devices are located at the top center of the windshield, mount the forward-facing camera on the right side of the device.



Freightliner Cascadia

Best Practice: Forward and Cab-facing Camera Installation Instructions

Forward-facing Camera Installation Instructions



**Mount the camera within 6" from the top of the windshield.
Camera cannot interfere with a driver's line of sight
to the road, traffic signals, or road signs**

Details

1. Before removing the adhesive backing, check to make sure the camera fits properly. **Use a pocket level to ensure the bottom of the camera is mounted level looking from left to right.**
2. Using an alcohol pad clean the windshield and wipe dry with a lint-free clean cloth. Do not use shop rags which contain grease even when clean.
3. Press firmly on camera bracket for 10 seconds to ensure adhesion
4. Use ¼ loom to protect the cable and to keep it from coming loose from the headliner
5. Run the camera cable down to the controller.
6. Cables must not block air bag functionality

Cab-facing Camera Installation Instructions



Camera lens must have a complete view of the driver when the visors are in the down and fully extended position. Use a headliner location when the fully extended visor covers the camera lens.

Details

1. Mount the Cab-facing camera on a flat hard surface Using an alcohol pad clean the windshield and wipe dry with a clean cloth. Do not use shop rags which contain grease even when clean.
2. **Mount the camera where the sun visor does not block the lens** (windshield or headliner)
 - Headliner: Secure with 2-3 self-tapping screws
3. Press firmly on camera bracket for 10 seconds to ensure adhesion
4. Use ¼ loom to protect the cable and to keep it from coming loose from the headliner
5. Run the camera cable to the controller
6. Cables must not block air bag functionality
7. Ensure the cable doesn't get pinched

Freightliner Cascadia

Best Practice: Cab-facing Camera Installation Instructions regarding Infrared Light

Cab-facing Camera Headliner Mount

The cab-facing camera has two infrared (IR) sensors that improve image quality when the cab is dark. IR flare occurs when the camera bracket partially blocks the cab-facing camera creating a bright flare in the image. (See image 1)

Proper Headliner Mounting Options

The camera face must extend beyond the bracket to prevent obstruction

Vertical Mount

Mount the camera vertically to the headliner and position the bracket to hang toward the road. Rotate the camera level with the road and tilted down slightly toward the driver. There should be a visual air gap between the camera and bracket (see all the way through). (See image 2)

Horizontal Mount

Mount the camera horizontally to the headliner and tilt the bracket forward parallel with the headliner. Rotate the camera level with the road and tilt it down toward the driver. There should be a visual air gap between the camera and bracket (see all the way through). (See image 3)

Make sure the cab-facing camera bracket, or vehicle's headliner, **DOES NOT BLOCK** the cameras Infrared (IR) sensors



Freightliner Cascadia

Best Practice: Forward-facing Camera – Field of View Adjustment

Use the proprietary M4 security wrench

1. Loosen the camera bracket screws located on the Forward-facing camera mounting bracket shaft
2. Adjust the camera angle by rotating and/or tilting the camera slightly down to capture the view of the horizon to see an unobstructed view of the road and traffic signals/signs in front of the vehicle
 - **Note:** It is not required to remove the camera from the mounting bracket to complete this adjustment
3. Tighten camera bracket screws when the proper camera angle placement is achieved

Note: These are stock images which are not specific to this vehicle.



Freightliner Cascadia

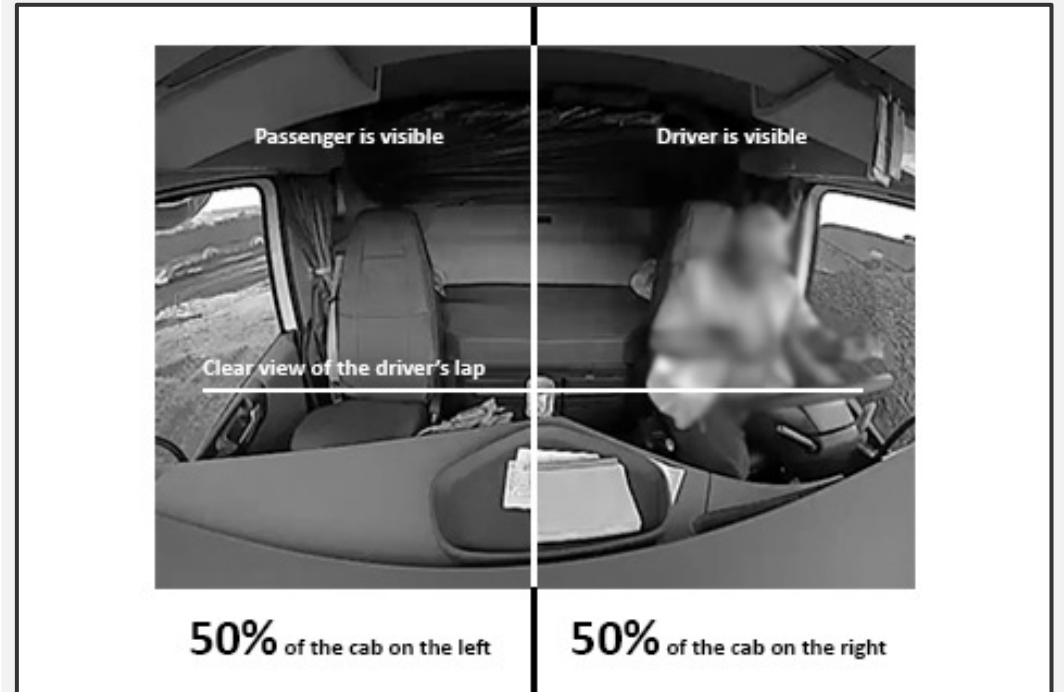
Best Practice: Acceptable Camera Views

Forward-facing camera view



The field of view shows a small portion of the hood while maintaining view of horizon to see road and traffic signals/signs.

Cab-facing camera view



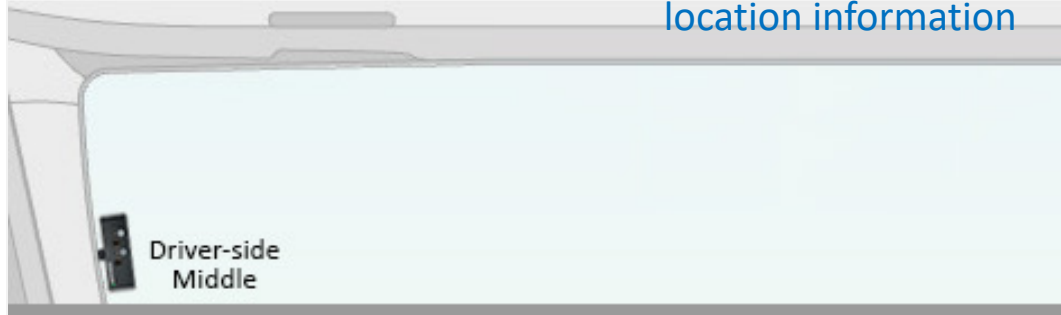
The camera placement is ideal if the field of view provides an unobstructed view of the driver's head / eyes, lap, hands, seatbelt, and an adequate view of the steering wheel (i.e., a visual approximation of at least 75% of the wheel visible within the frame).

Freightliner Cascadia

Best Practice: Sensor Bar and Keypad Installation Details

Sensor Bar Installation Details

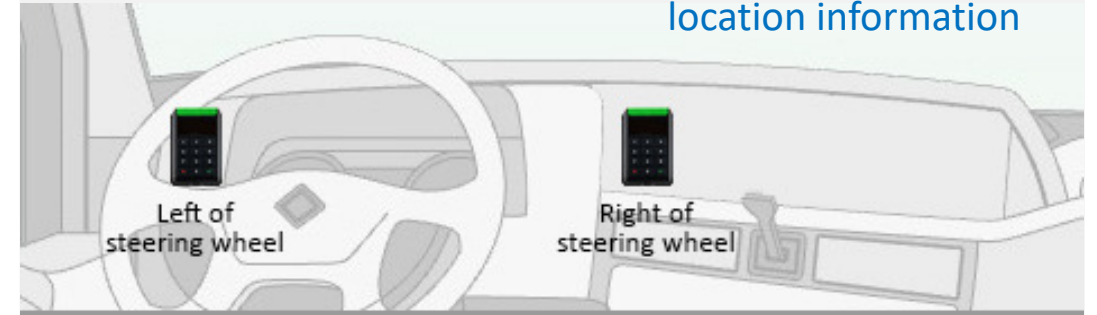
See Sensor Bar slide for location information



1. The sensor bar must be visible to the driver. Do not mount where a visor in the down position or fully extended can block the drivers view of the sensor bar.
2. Clean the windshield with an alcohol pad and wipe dry with clean cloth. Do not use shop rags which have grease even when clean.
3. Remove the baseplate from the sensor bar.
 - DO NOT lose the screws
4. Press firmly on the baseplate for 10 seconds to ensure it adheres properly to the windshield
5. Install the sensor bar and secure screws until tight
6. Run sensor bar wires to the controller
7. Ensure the cable does not prevent the functionality of an airbag

Keypad Installation Details

See Keypad slide for location information



1. Mount keypad bracket and secure the bracket with 2 self-tapping screws
2. Run the length of the keypad cable behind the dashboard to the controller location.
3. If needed, drill a 3/4 inch hole in the dash and insert a 3/4 inch snap bushing into the hole to protect the cable from sharp surfaces
4. Inspect the backside of the box & verify that the screws don't protrude and cause damage
5. Insert keypad into mount

Freightliner Cascadia

Best Practice: Cable Routing

Service Loops

Before connection cables to the controller, coil excess wiring in an 8" loop and secure with zip ties

Zip Ties

Use zip ties as needed to secure wiring

Controller SMB Connectors

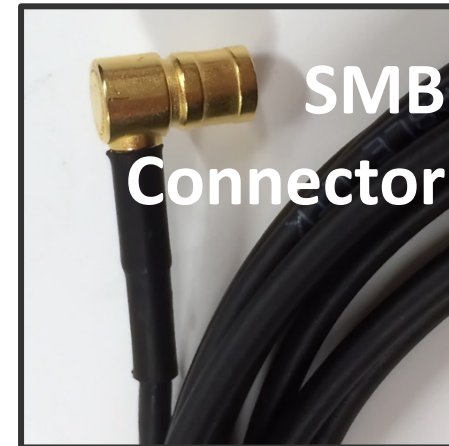
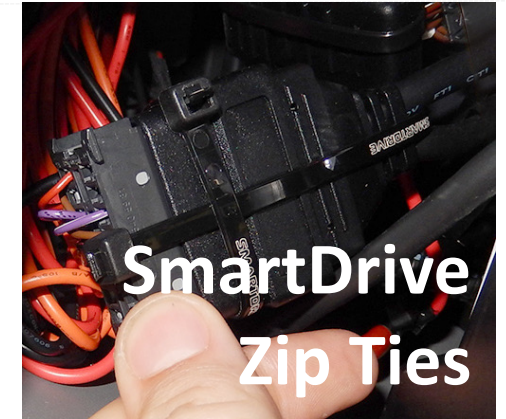
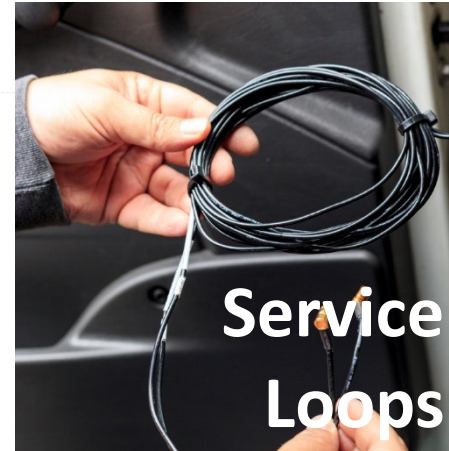
Press down on each SMB Coaxial connector to ensure a good connection

Molex Connectors

Push and lightly pull each Molex connector to ensure that the snap-in clip is secure

OBDII Connectors

Use SmartDrive banded zip ties around the connectors to prevent them from coming loose and to identify tampering



Controller: Wiring and Component Connections

Freightliner Cascadia

Approved and Non-Approved Electrical Connection Methods

Approved Electrical Connections

Approved connections methods are with **(Permanent Connections)** – Heat Shrinkable and Water Resistant connectors.

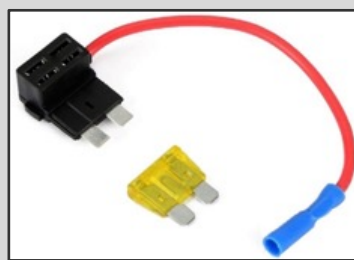
Ring Terminals ✓



Spade Terminals ✓



Add-a-Fuse ✓



Butt Connectors ✓

16-14 Awg.		
12-10 Awg.		
8 Awg.		

Non-Approved Electrical Connections

Scotchloks or T-Taps are NOT allowed. These connections are prone to corrosion, loosening, are easily tampered. They can result in less than desirable performance issues.

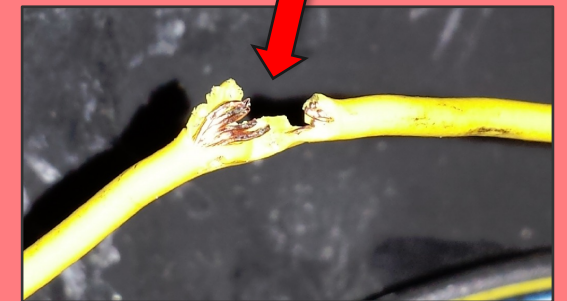
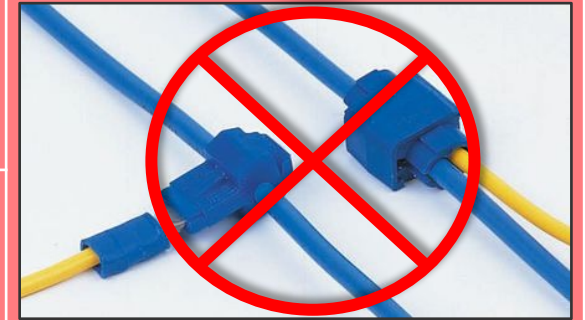
Scotchlok (Wire Nuts) ✗



Scotchlok (T-Tap) ✗



Inline Wire Tap ✗



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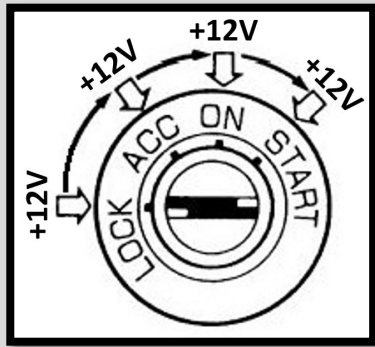
Verifying Wiring Connecting

+12v (Uninterrupted) Constant Power

(Red Wire)

How to locate Constant Uninterrupted Power with a Digital Multi-meter:

1. Test for constant 12 volts (in all key positions)
2. With the ignition ON, vehicle running, Ignition OFF, and while cranking.
3. Verify constant battery voltage remains constant and does not drop below 10vDC

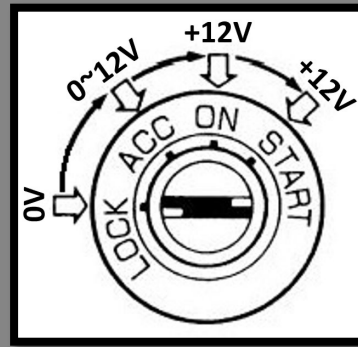


+12v True-Ignition

(Orange Wire)

How to locate True Ignition with a Digital Multi-meter:

1. With the vehicle off your meter will show "0" volts.
2. With the key in the Run position your meter will show approx. 11 ~ 14 volts.
3. While the vehicle starter is cranking, your meter will show approx. 10 ~ 11 volts.
4. With the engine running your meter will show approx. 12 ~ 14 volts.

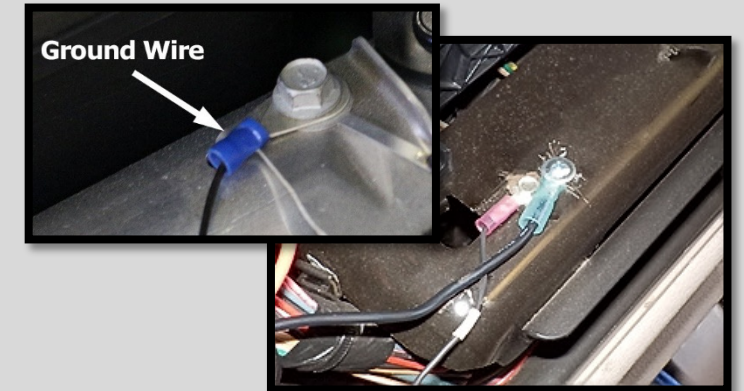


(Chassis) Ground

(Black Wire)

Verifying Chassis Ground

Connect a #10 ring terminal to the black ground wire. When making a connection in the engine compartment, use a #10 water resistant, heat shrinkable ring terminal. Scrape surface near the vehicles fuse box and use ¼ inch self-tapping screw to connect the ground wire



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Master Power Cutoff (MPC) and Low Voltage Disconnect (LVD)



Negative Ground Master Power Cut-off Switch (-MPC)

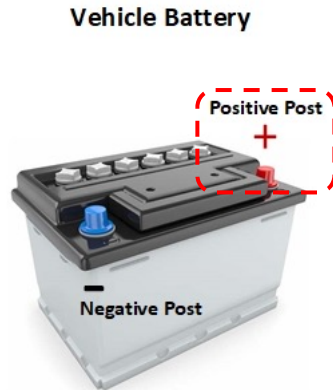
NEVER connect to:

(-) Negative Ground (MPC)!

Positive Master Power Cut-off Switch (+MPC) and LVD

ONLY connect to:

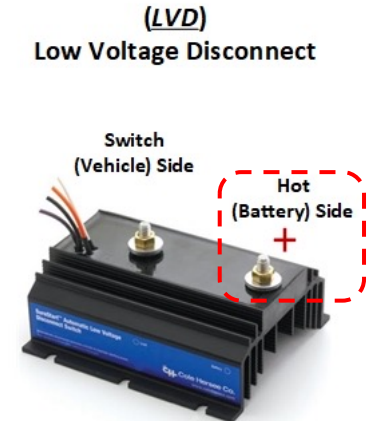
- Positive Post of Vehicle Battery.
- Hot/Battery side of (+MPC) Switch.
- Hot/Battery side of (LVD).



Connect the SmartRecorders **Red** Constant Power wire to the **Positive Post** of the Vehicles Battery.



Connect the SmartRecorders **Red** Constant Power wire to the **Hot/Battery** side of the Master Power Cut-off switch.



Connect the SmartRecorders **Red** Constant Power wire to the **Hot/Battery** side the Low Voltage Disconnect.

The SmartDrive SR4 system is designed to function only with a Positive MPC/LVD, not a Negative Ground MPC/LVD.

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Controller Connection Ports: DLC/Power, Analog Power, Keypad, Sensor Bar, GPS, Wabco Camera, GPS, Remote Push Button

Expansion Port

Plug the expansion cable to the EXPANSION port

ECU/Controller connection and Power

Plug the main power and ECU connector to the ECU/PWR port

Analog Power

Plug the Analog Camera Power connector to the Analog PWR port

Driver Feedback

Plug the driver feedback cable into the port DRIVER FB

The Keypad

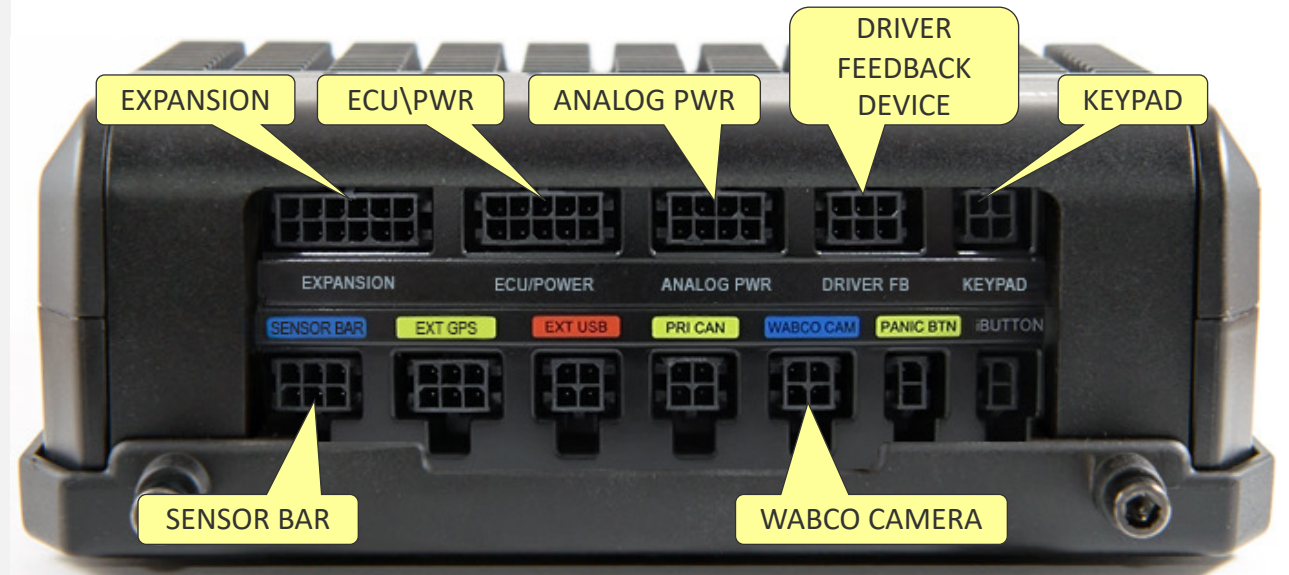
Connect the Keypad connector to the KEYPAD port

The Sensor Bar

Connect the Sensor Bar connector to the blue SENSOR BAR port

Wabco Camera

Plug the Wabco camera connector to the WABCO CAM port



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Controller Connections: Forward and Cab-facing cameras and Sensor Bar (Cellular and WIFI)

Connection instructions

1. Forward-facing Camera (FWDCAM-1 port)
2. Cab-facing Camera (DCAM-2 port)
3. Reserved (DCAM-3 port)
4. Other Digital Camera (DCAM-4 port) (not available)
5. Cellular Antenna (CELL ANT port)
6. WIFI Antenna (WIFI ANT port)

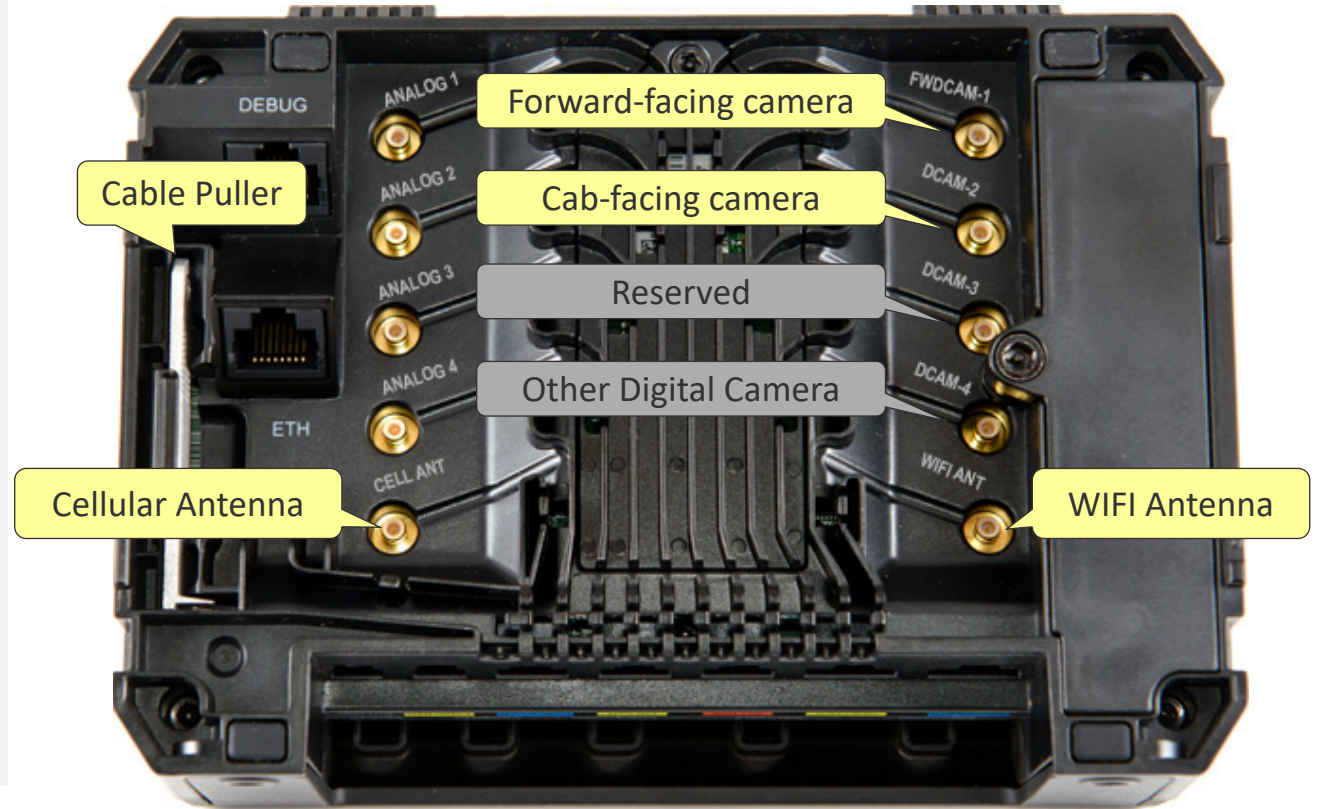
Details

Connect all cables to their ports and route through the strain relief channel. Use mounting tray for securing the Controller

Please take extra care when routing and tying up the camera cables as kinks or tight cable ties may create video failure

Depress the SMB coaxial connector until it clicks (locks) in place then route the cable in the strain relief channel

Should you need to remove a cable, use the cable puller



Freightliner Cascadia

Controller Connections: Analog cameras

Connection instructions

- Analog 1: 360 camera mounted on the passenger-side
- Analog 2: 360 camera mounted on the driver-side
- Analog 3: Any other analog camera (backup, rear view, etc.)
- Analog 4: Not available

Details

Connect all cables to their ports and route through the strain relief channel. Use mounting tray for securing the Controller

Please take extra care when routing and tying up the camera cables as kinks or tight cable ties may create video failure

Depress the SMB coaxial connector until it clicks (locks) in place then route the cable in the strain relief channel




Should you need to remove a cable, use the cable removal tool



Freightliner Cascadia

System Verification

Once the Controller is powered up, use the 3 LEDs on the top of the Controller to verify proper operation

- ✓ **Power LED** 
 - ✓ Solid **red** when control is receiving external power
 - ✓ OFF when not powered
- ✓ **Ignition LED** 
 - ✓ Solid **orange** when ignition is on
 - ✓ OFF when ignition is off
- ✓ **System LED** 
 - ✓ OFF when the controller is shut down
 - ✓ ON green, awake and running with constant power
 - ✓ BLINKING green, awake and running **ONLY** on the controllers internal battery. Action: Rewire to obtain constant power.

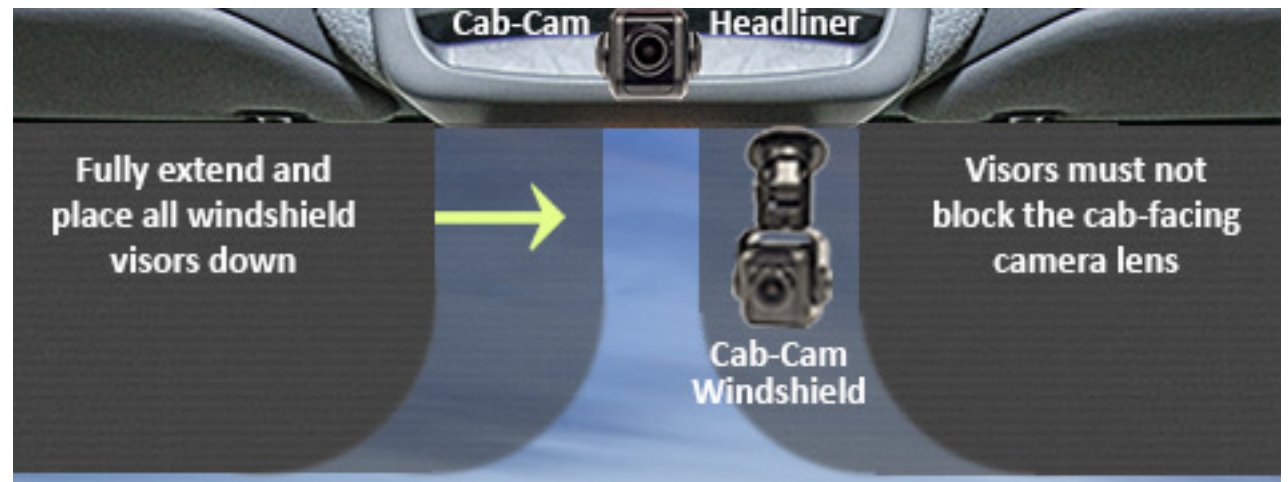


Diagnostic Mode and Self QA

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Preparing Diagnostic Mode and checking cellular connectivity

1. **Move the vehicle outside** to obtain cellular connectivity
2. **Start/Crank the vehicle and let it run for 30-60 seconds** before triggering an event to ensure ECU data is being gathered.
3. **Turn the windshield wipers on** to ensure the Road-Facing camera is in the windshield wiper path.
4. **Fully extend and place all windshield visors down** to ensure the Cab-Facing camera has a clear view of the driver (no obstructions).
5. **Verify the system has a cellular connection** by observing a solid blue gear LED on the Sensor Bar.



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Run Diagnostic Mode using the Keypad or Driver Feedback Device

Press the green button on the keypad or driver feedback device 5 times in 10 seconds to initiate Diagnostic Mode

When diagnostic mode is complete, it will display all Zeros (000000).

Press the green button one time to create a manual event.

Note: The SR4 Controller will reboot after the test is complete.



When the test identifies a SR4 system fault, a code will display on the keypad or the driver feedback device. Fault codes are cumulative

Example:

Sensor Bar not found (020,000)

Ignition Off (010,000)

The error codes are added together. 030,000 will display.

When the keypad displays a fault code, use the [SR4 Installation Checklist and Diagnostic Mode/Fault Code Guide](#) to assist you in resolving the problem. This document is available from your SmartDrive Project Manager or online in the Response Center help page.

If you can't resolve a fault code, contact **Technical Support**.
Toll free number **(866) 933-9930 Option 1**



SMARTDRIVE

What is Diagnostic Mode?

Diagnostic Mode is an environment that runs a set of tests on the SmartRecorder™ 4 (SR4) in order to identify any faults that may be occurring. Diagnostic Mode utilizes the SR4 Keypad and Driver Feedback Device to display fault codes.

Run Diagnostic Mode after every installation or repair

Diagnostic Mode codes will display any appropriate fault codes on the keypad and the driver feedback device.

Fault codes appearing on the keypad are cumulative

Example: Sensor Bar not found (020000) + No GPS Signal (000100) = 020100

How to Exit Diagnostic Mode?

To exit Diagnostic Mode, turn the Ignition OFF and wait 15 seconds.

Diagnostics Mode Fault Codes

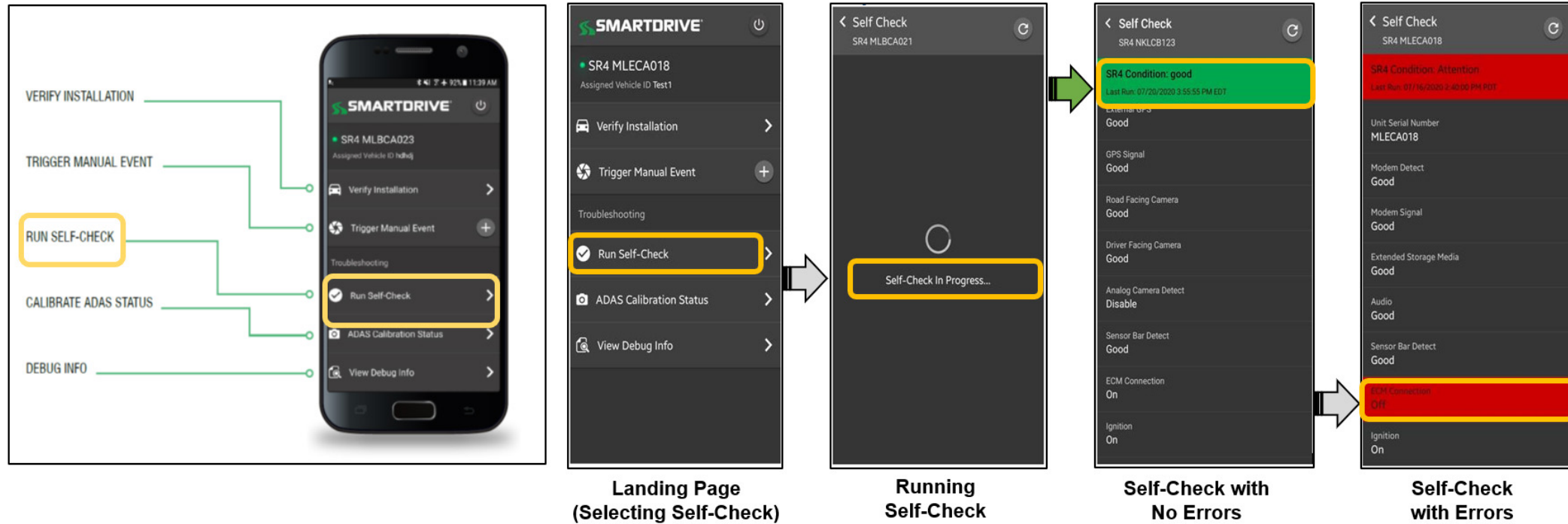
Keypad Code	Code Description	Action
000000	Diagnostic Mode has completed with no faults	None – Passed
000001	Analog camera enabled and not detected	Often referred to as "360 cameras", ensure you would expect analog Cameras to provide feed during the diagnostics test. Refer to your Vehicle Spec for connectivity or contact technical support for further assistance
000002	Analog Camera Capture Circuit	Contact technical support for assistance with this code
000004	Audio Fault	Contact technical support for assistance with this code
000010	Wi-Fi Wireless signal found but unable to connect to SmartDrive	Verify the Vehicle is in WIFI coverage area; check your facility Wi-Fi setup. If correct, contact technical support
000020	Wi-Fi Modem Fault	Perform a soft reboot (10 key presses in 10 seconds) Wait 5 minutes for system to reboot, re-run diagnostic test again. If the fault does not clear, contact technical support

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Run Self-check (Diagnostic Mode) using the SmartDrive Technician App

Perform self-service installation QA via a mobile device

- The Android App is available in the Google Play Store.
- Run Self-Check.
- When the SR4 Condition is green, you are done.
- When the SR4 Condition is red, the problem area is shown in red. Resolve that problem area and run Self-Check again.



Approved Exceptions

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Vehicle Specification Assessment (VSA) & Exception Management

VSA - MASTER INSTALL SPECIFICATION

The VSA is the approved hardware installation and wiring spec for this vehicle make-model and year ranges

Specific details are defined within – **check the model year you are installing on** as it specifies:

- ✓ Appropriate SmartDrive wiring harness to use
- ✓ Location and instructions for the approved Data Link Connector (DLC)
- ✓ Approved locations and install details for cameras, controller, keypad, and sensor bar
- ✓ The source and approved method to obtain uninterrupted constant power, true ignition, and chassis ground
- ✓ How to connect cables to the controller
- ✓ How to test, troubleshoot, and diagnose
- ✓ How to call into Technical Support for final QA validation

CAUTION:

EXCEPTION MANAGEMENT

- Contact** your SmartDrive Project and Account Manager if anything within this document cannot be followed
- Toll free number **(866) 933-9930 Option 1** or their direct phone number
- All exceptions** must be documented and approved by SmartDrive and Customer before proceeding with installations

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Document all Approved Exceptions

N/A

Approved by

