

# **inView 360 Core**

## **Around Vehicle Monitoring System**

### Installation Guide

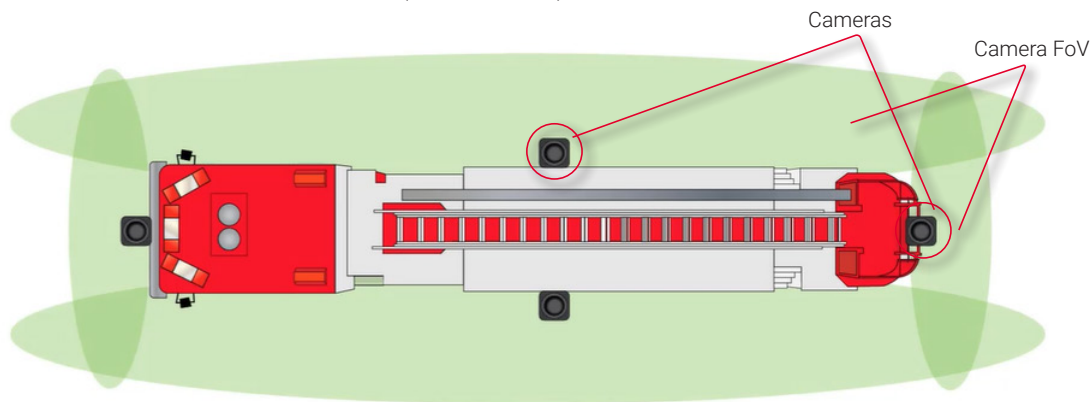
# Introduction

The InView 360 Core is a high-definition multi-camera system that provides drivers with a top-down “bird’s eye” 360° view of the area around their vehicles. Large vehicles, due to their size and shape, often have areas which drivers cannot see unaided. By providing drivers with a full 360° view of the area around their vehicles, the InView 360 Core helps to eliminate these vehicle “blind spots”, contributing to the reduction of collisions with surrounding pedestrians and vehicles.

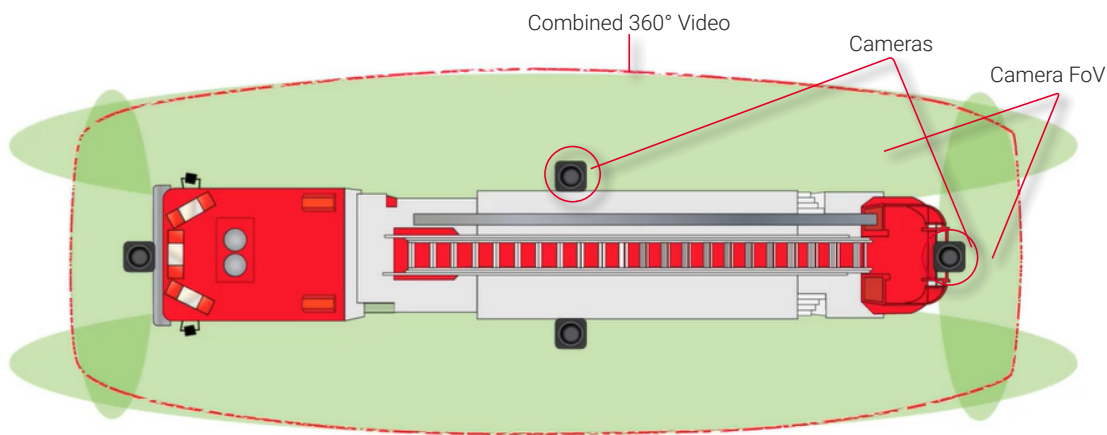
## How Does the InView 360 Core Work?

High-definition cameras are placed high up on the front, rear, left, and right sides of the vehicle. Videos from these four cameras are sent to the on-board computer, which, with the help of proprietary software, stitches/combines these video feeds to create the 360° view of the area around their vehicles.

### Cameras and Camera Fields of View (uncombined)



### Cameras and Camera Fields of View (combined)



#### **NOTE: Installation Locations**

Vehicle makes, models and sizes vary. Therefore, this document does not specify exact locations for the kit’s components. Instead, this document describes the best locations for installing components for optimal operation and ideal placement of cameras for optimum fields of view.

# Installation Process

There are multiple steps to be performed by different team members:

1. Install the inView 360 HD system
2. Calibrate the inView 360 HD system (See the inView 360 HD System Calibration Guide)
3. Verify that the inView 360 HD system was correctly installed and calibrated (See the inView 360 HD Verification and Setup Guide)

Each step requires a specific skill set from the person who performs it.

## **i** NOTE: Installation Process

This document assumes that the installer is familiar with installing hardware in a vehicle. Therefore, this document does not go into detail to describe how to mount the ECU and cameras, and how to route the kit cables.

## Kit List

ECU	Green Push Button
Flasher harness	Cameras and cables (x4 each)
Camera connections harness	IR extension
Power harness	IR remote
Interface Harness, which contains the following: AHD cable, CVBS cable, Radar Cable, Buzzer cable, USB cable, harnesses for flashes/triggers and for the button	

## Mounting the ECU

The ECU should be mounted in a location underneath the dashboard or somewhere within the vehicle where it is protected from water, dirt, and physical contact, and it should have ample ventilation.

## Accessibility

When installing the ECU, ensure that the IR Extension and USB cables are easily accessible. The USB cable will be used for future firmware upgrades. The IR Extension must be placed so that no obstructions interfere with receiving a signal from the IR remote.

## Routing Cables and Connectors

After you have selected an optimal location for the ECU, and mounted it, you can begin routing the power, signal, radar/proximity sensors and buzzer cables, as well as the push button.

# Placing Cameras

It is important to keep vehicle type/shape in mind when considering camera placement. Also, it is important to keep in mind the physicality of the vehicle when placing cameras. Watch out for mirrors and other vehicle elements that can create a blind spot in the camera view.

## General Camera Placement Considerations

When considering where to mount the cameras, it is important to follow these general guidelines:

- Place the cameras as high and as centered as possible to ensure that there are no immediate obstructions in the camera's field of view.

## Examples of Camera Placement on Commercial Vehicles

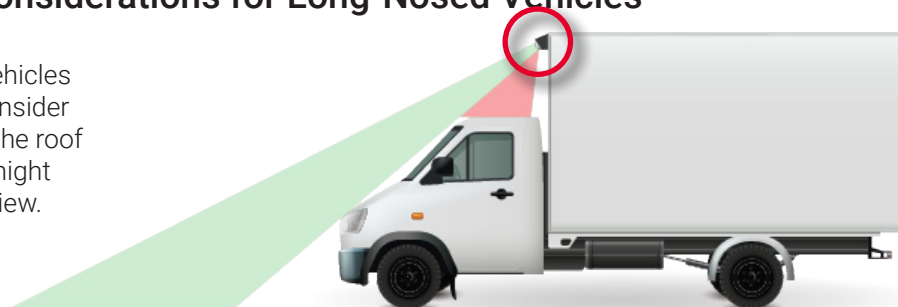


## Examples of Camera Placement on School Buses



## Camera Placement Considerations for Long-Nosed Vehicles

When mounting cameras on vehicles with long noses, you should consider that vehicle elements such as the roof of the cab or the side mirrors might obstruct the camera's field of view.



Mount the camera at the tip of the hood on vehicles with "long noses" to get the maximum field of view.

You can see more by lowering the front camera to the tip or nose of the hood. Positioning the camera here allows drivers to see more of what's on the road in and around the front of the vehicle, especially pedestrians.

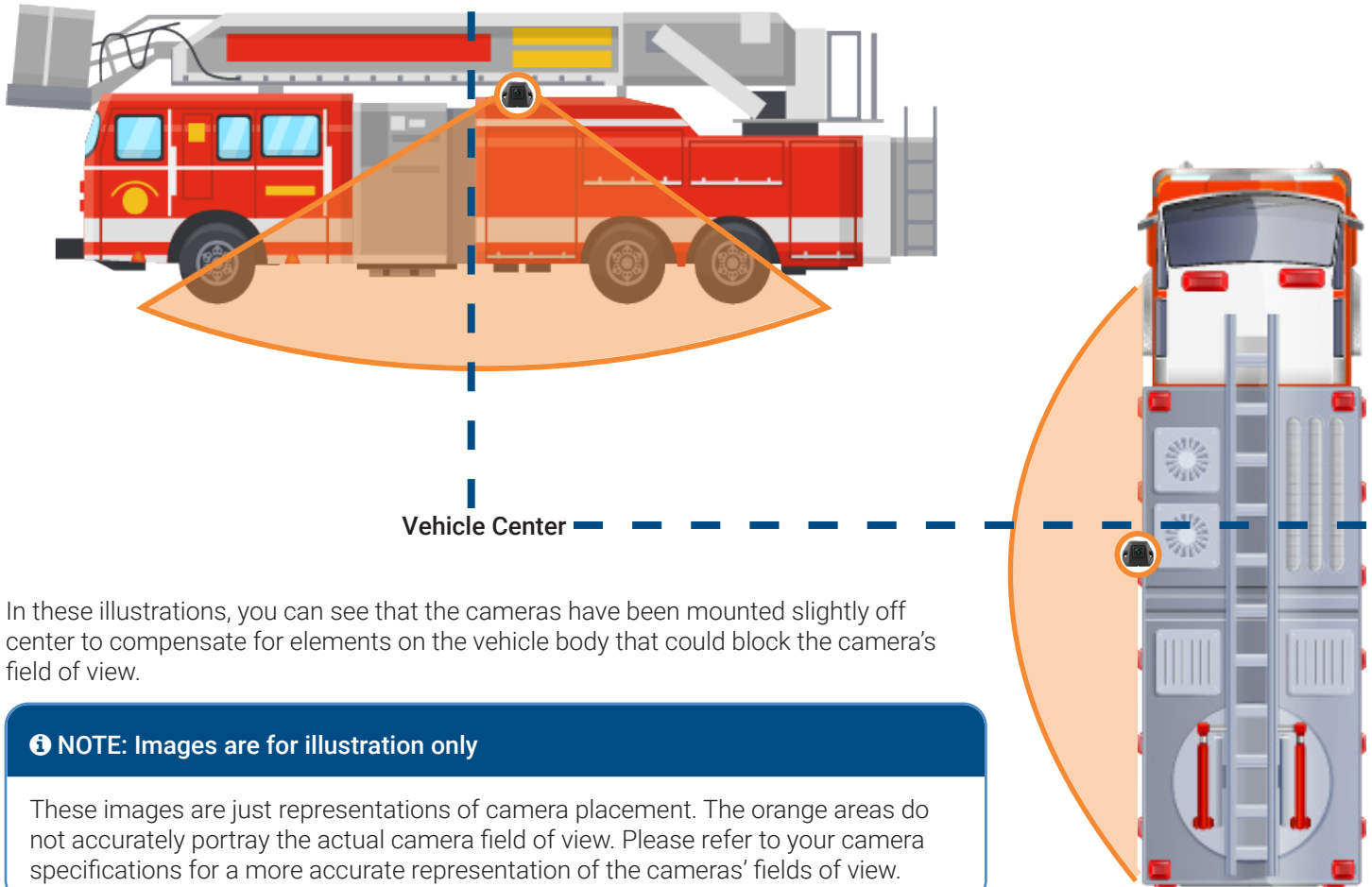


## Camera Placement Considerations for Specially Shaped Vehicles

Vehicles that have special compartments or equipment in the middle, such as fire trucks, might require special consideration for mounting cameras. Because of the accessories and equipment that is usually added to emergency vehicles, mounting the cameras high up and in the center might not be an option. The added equipment might block a camera's field of view.



This is a situation where you should consider mounting the camera slightly off center.



In these illustrations, you can see that the cameras have been mounted slightly off center to compensate for elements on the vehicle body that could block the camera's field of view.

### **NOTE:** Images are for illustration only

These images are just representations of camera placement. The orange areas do not accurately portray the actual camera field of view. Please refer to your camera specifications for a more accurate representation of the cameras' fields of view.

# Putting the Components Together

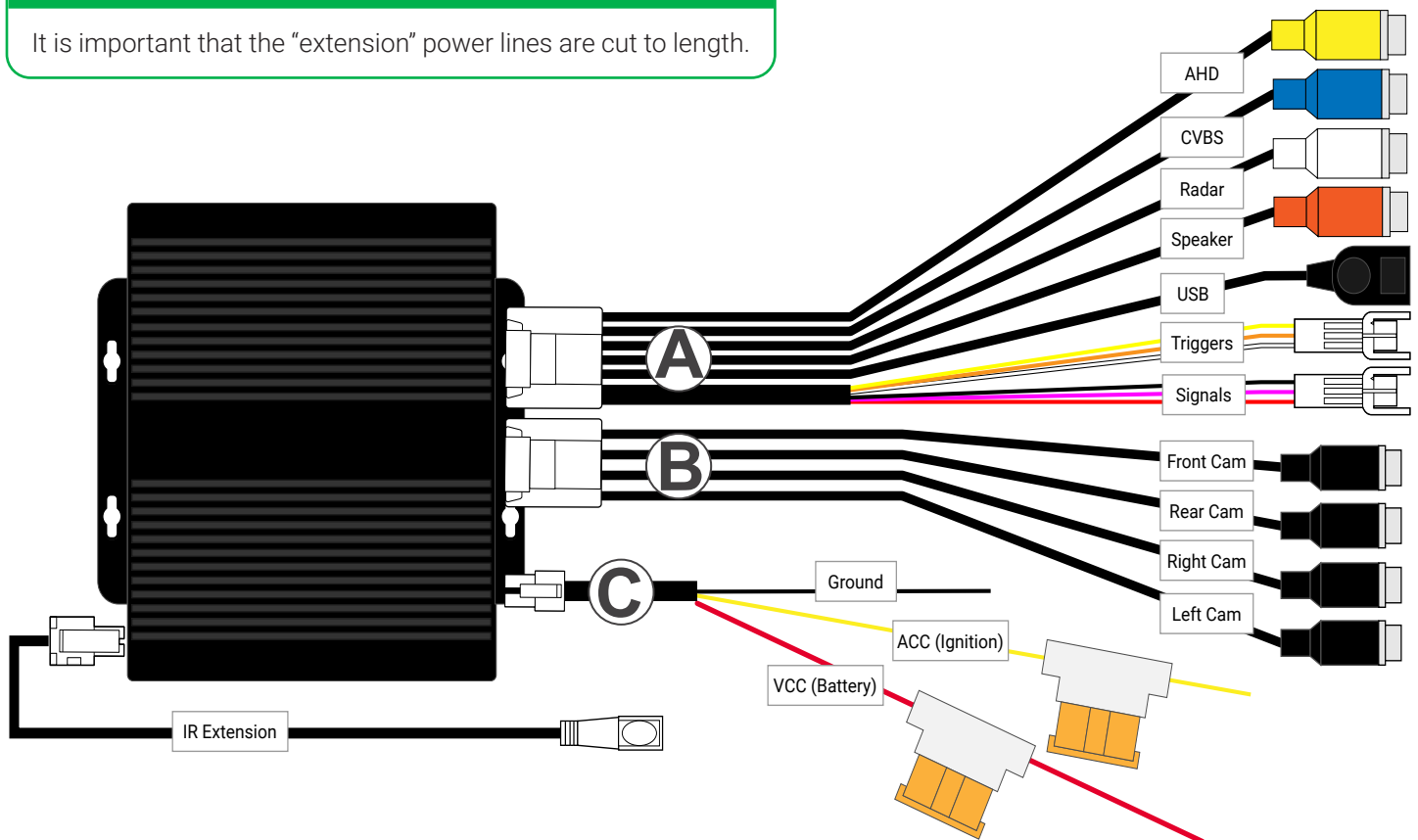
## Connecting to the Power Source

When connecting to the power sources, please ensure the following:

- Red goes to vehicle power
- Yellow goes to vehicle ignition
- Black goes to vehicle ground

### TIP! Cutting the Power Lines

It is important that the “extension” power lines are cut to length.



## Harnesses

Letter	Name
A	Interface Harness
B	Camera Connections Harness
C	Power Harness

## Connecting Cameras to the ECU

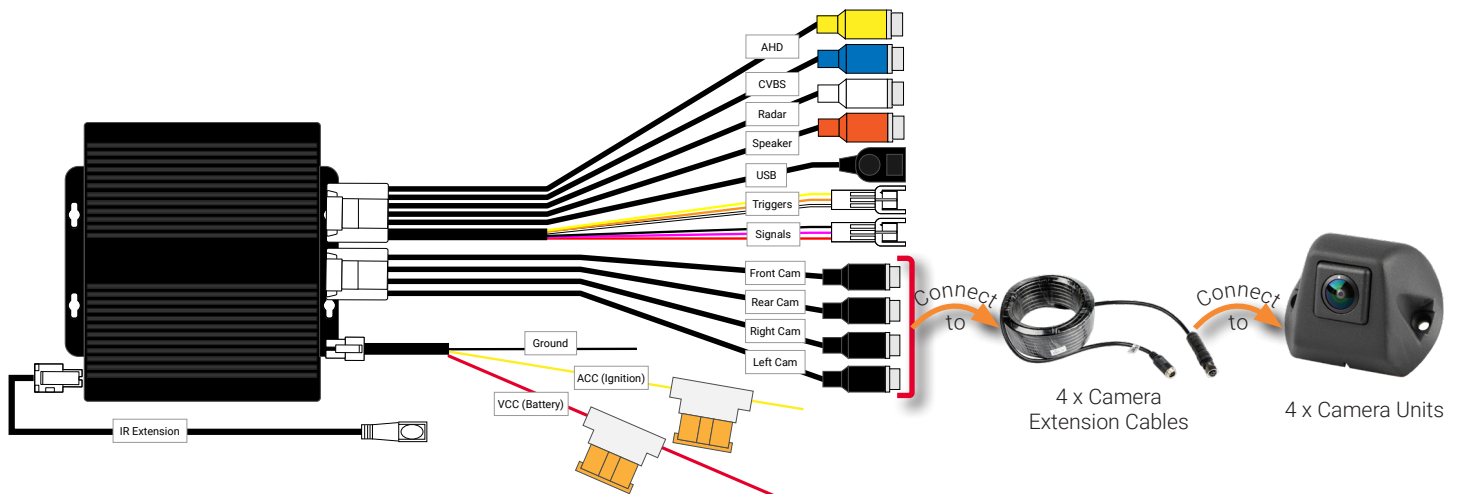
The cameras are labeled to indicate where they should be mounted on the vehicle - FRONT, RIGHT, LEFT, REAR. When connecting cameras to the ECU, it is important that you do the following:

- Connect the labeled camera to the correct corresponding camera interface on the ECU harness.
- Connect each camera to an extension cable before connecting it to the ECU.

### **NOTE: Using the Correct Cables**

It is important that you use the correct button and camera extension cables. They are labeled for your convenience.

Follow the diagram below to connect the cameras.



### **NOTE: Choosing the Correct Camera Extension Cable**

Camera extension cables are labeled and come in 3 different lengths:

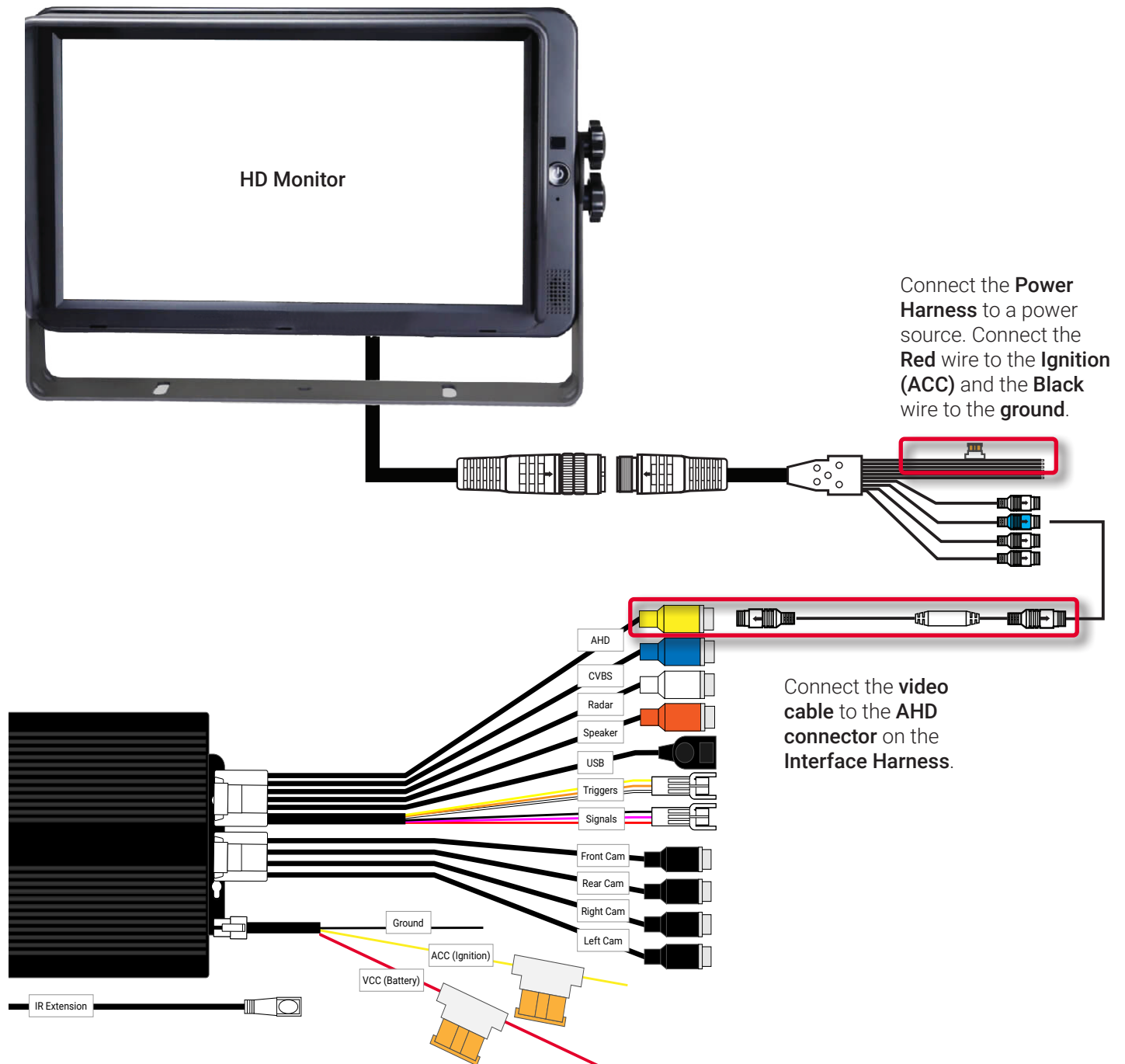
- 8m Front
- 12m Left, Right
- 15m Back

Please ensure that you use the correct cable for the camera.

# Connecting Monitors

## Connecting an HD Monitor to a Power Source via the Power Harness

Use the AHD connector from the Interface Harness to connect to an HD monitor. You will need a video cable and power harness, which are sold separately.





## Connecting the ECU to a Standalone (Single) Monitor

It is recommended that you connect the InView 360 Core system to an in-cab monitor. This allows drivers to view the area around their vehicle.

### **i** NOTE: Where to find a monitor

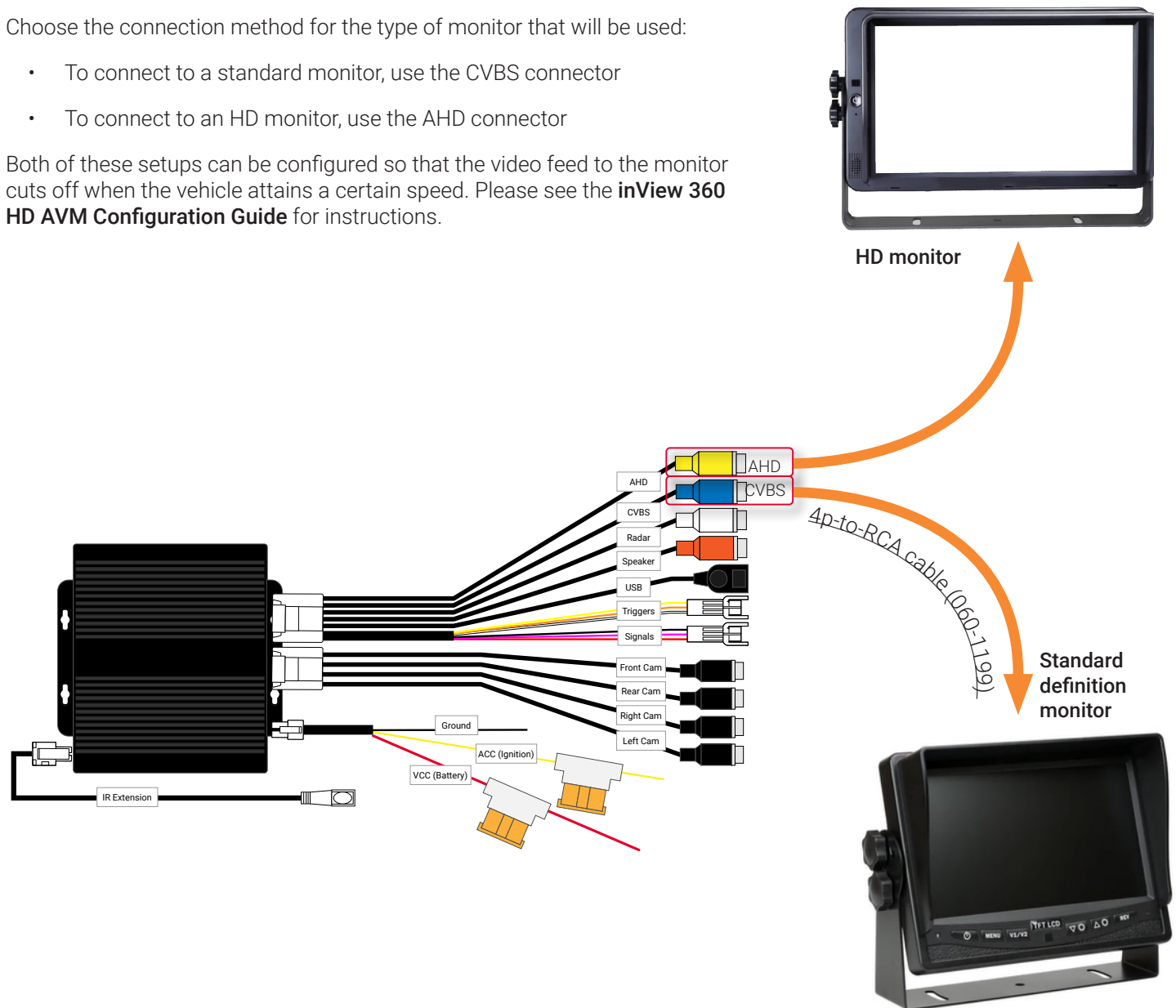
Monitors are sold separately and are not included in the InView 360 Core system kit. You should have received a monitor in your installation package. If you do not have a monitor to install, please inform the client, or contact Safe Fleet for assistance.

If you are installing the InView 360 Core as a standalone system (without a Safe Fleet DVR or NVR), then you can simply connect the monitor directly to the ECU harness' **CVBS** cable or to the **AHD** cable.

Choose the connection method for the type of monitor that will be used:

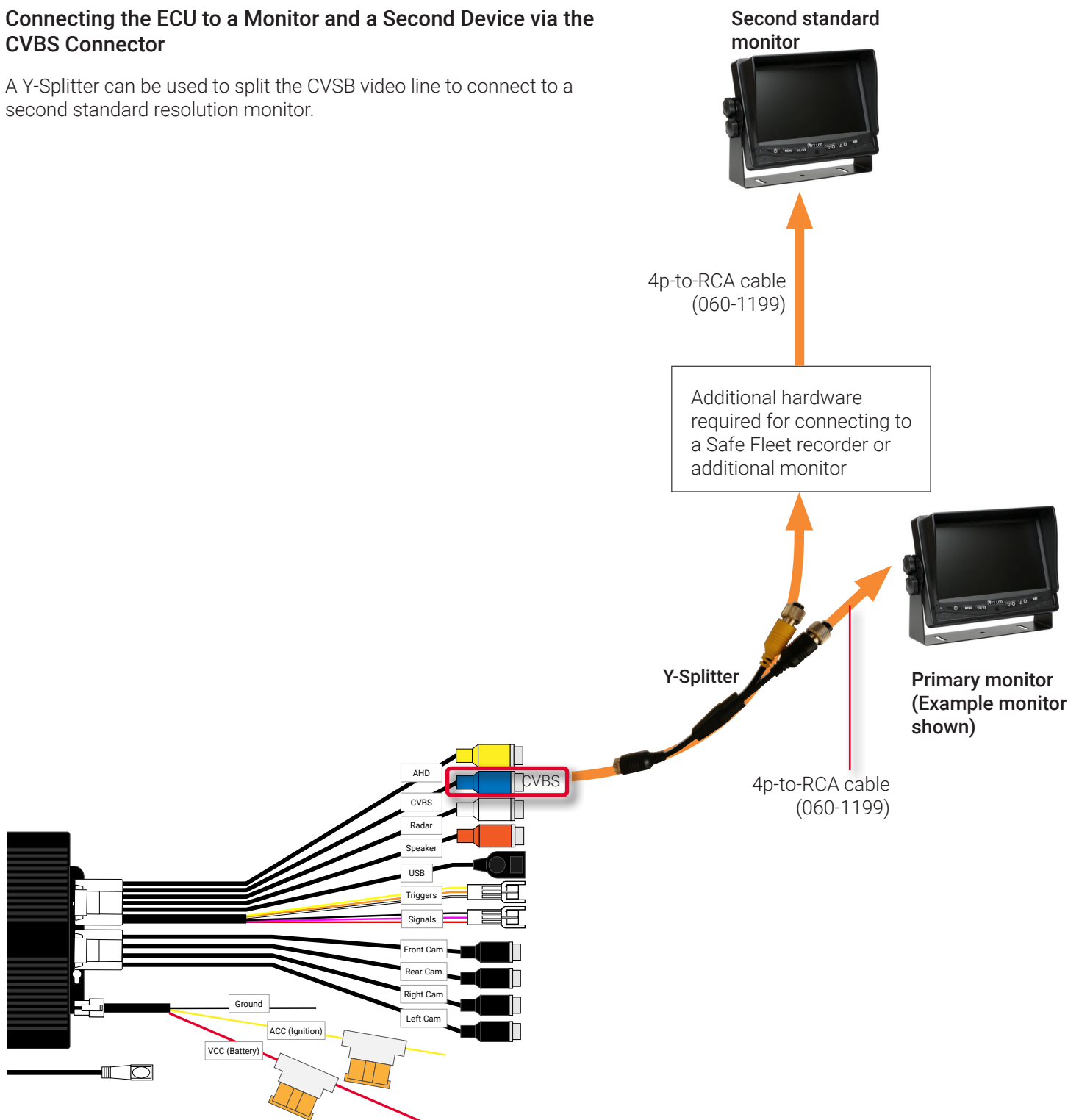
- To connect to a standard monitor, use the CVBS connector
- To connect to an HD monitor, use the AHD connector

Both of these setups can be configured so that the video feed to the monitor cuts off when the vehicle attains a certain speed. Please see the **inView 360 HD AVM Configuration Guide** for instructions.



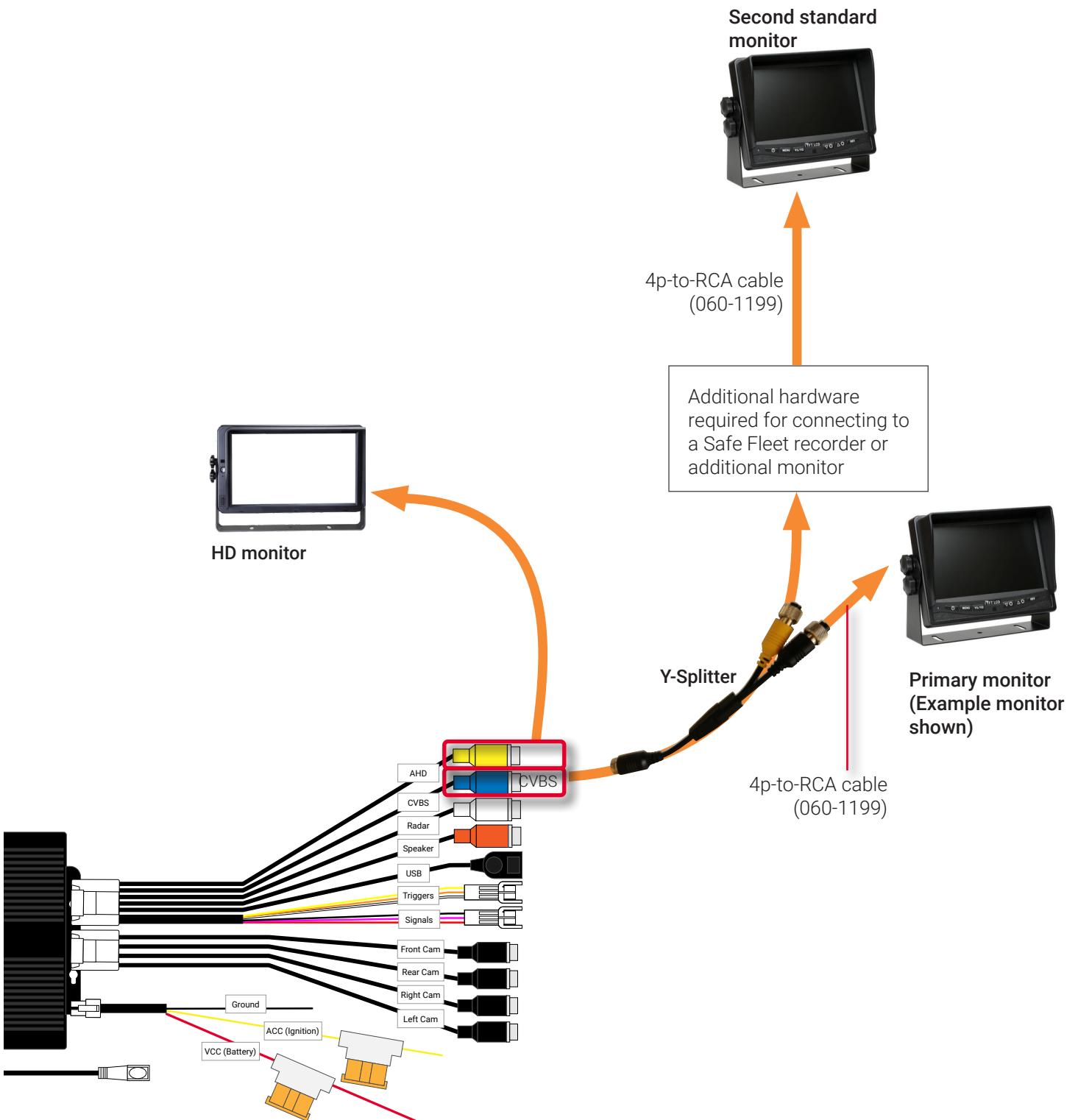
## Connecting the ECU to a Monitor and a Second Device via the CVBS Connector

A Y-Splitter can be used to split the CVBS video line to connect to a second standard resolution monitor.



## Connecting the ECU to Up to Three Devices

Using a combination of the AHD and CVBS video lines, you can connect up to three devices: 1 x HD monitor and 2 x standard resolution monitors



## Connecting the Driver Alert System

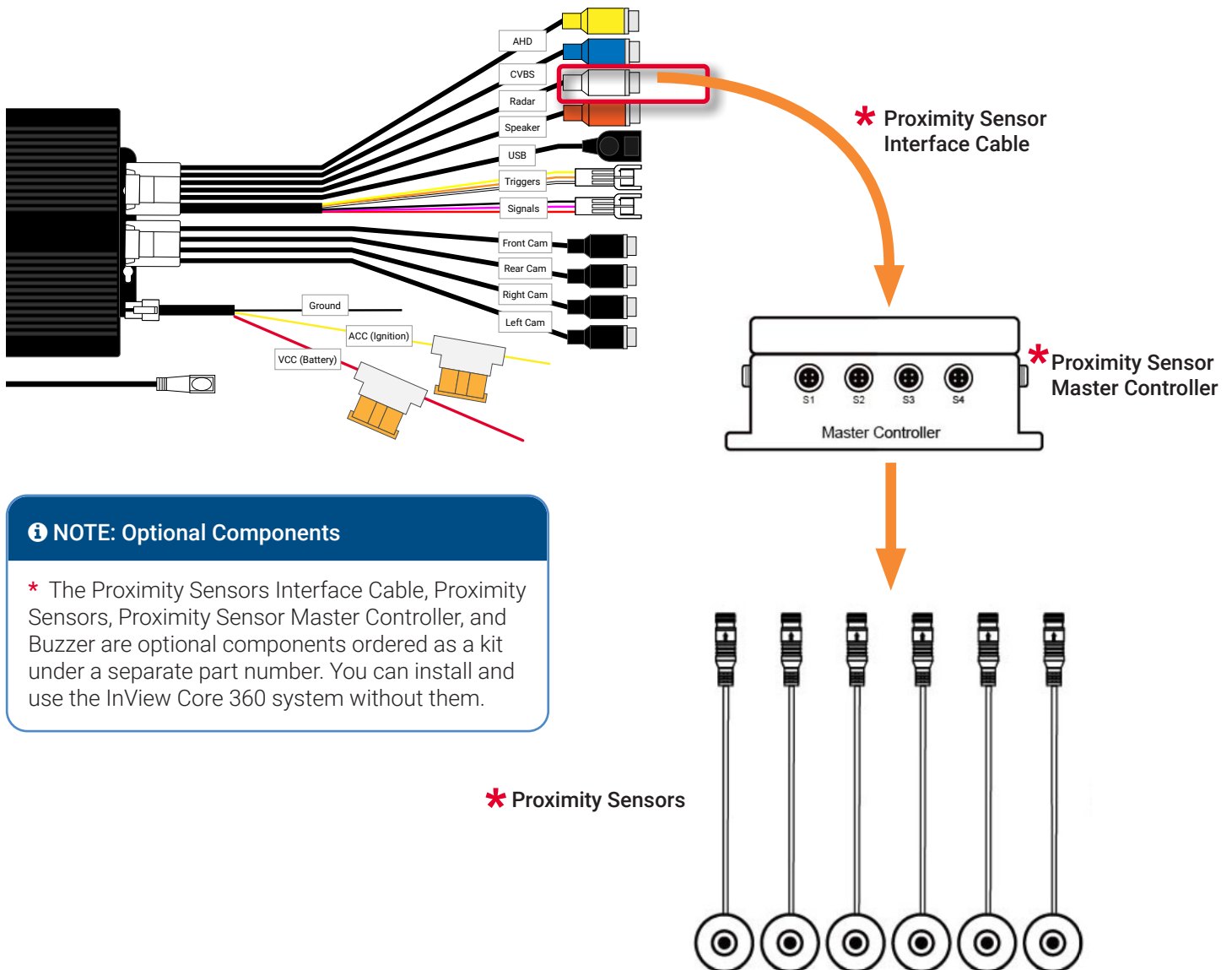
### *Optional and Sold Separately*

Proximity Sensors and a Buzzer can be connected to the ECU. They work together to alert the driver if an object is near the vehicle. The Proximity Sensors sense if something is near the vehicle and the Buzzer sounds an alert for the driver.

The Proximity Sensors and Buzzer are sold separately as a kit along with the Proximity Sensor Interface Cable and Proximity Sensor Master Controller.

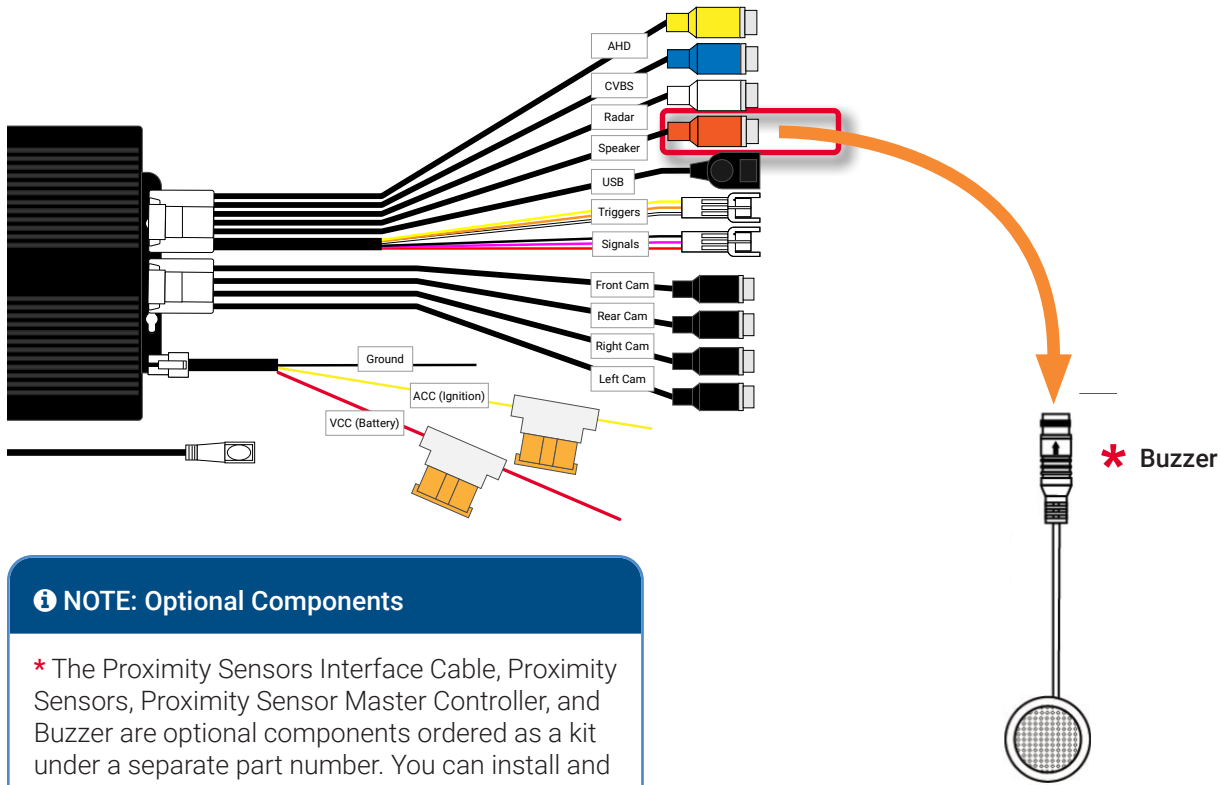
### Connecting the Proximity Sensors (Optional)

Up to 6 Proximity Sensors can be installed around the vehicle to monitor the area around the vehicle. When a sensor senses something within the vehicle's area, a buzzer in the vehicle's cab alerts the driver.



## Connecting the Buzzer (Optional)

Install the Buzzer in the cabin near the driver so it can be easily heard. The Buzzer is sold separately as a kit with the Proximity Sensors, Proximity Sensors Interface Cable, and Proximity Sensor Master Controller.



### **i** NOTE: Optional Components

\* The Proximity Sensors Interface Cable, Proximity Sensors, Proximity Sensor Master Controller, and Buzzer are optional components ordered as a kit under a separate part number. You can install and use the InView Core 360 system without them.

## Connecting the Push Button

The InView 360 Core system kit comes with a push button that, with the use of the dashboard push button mount/template, can be mounted in the vehicle within the driver's reach. The button has multiple functions, depending on how a driver presses it. This is how drivers use the button to access features:

**Short press 0-3 seconds:** Use a quick press of the button to **cycle** through the different camera views for the vehicle (front, rear, left, right).

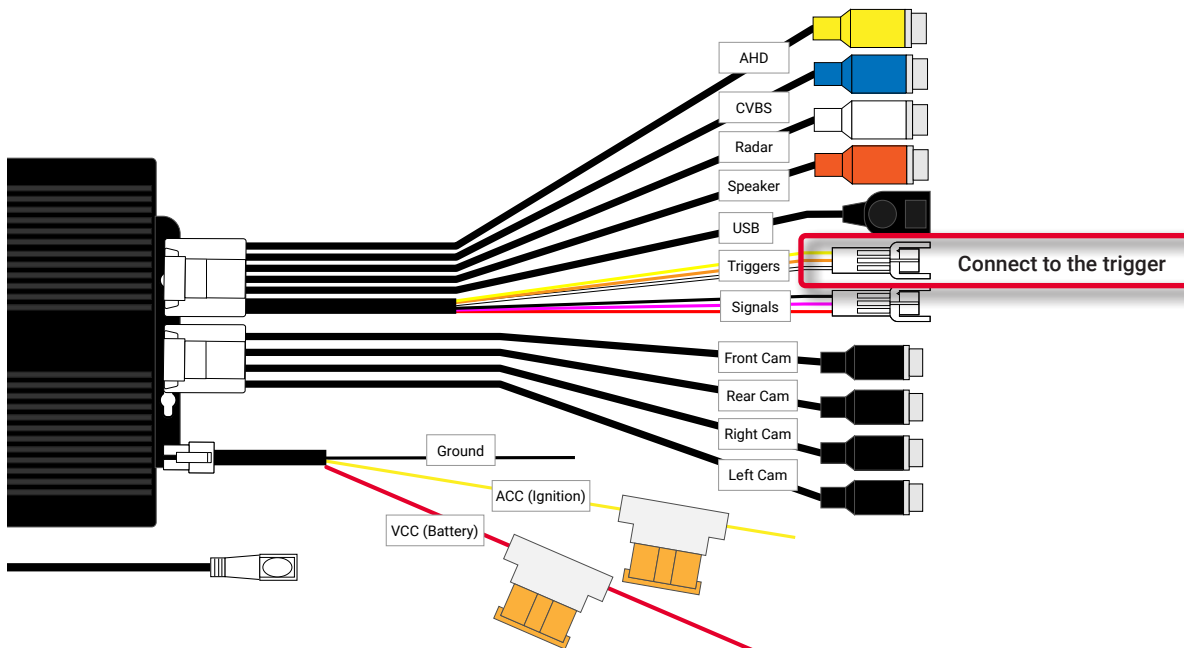
**Long press 3-5 seconds:** Use a longer press of the button to turn the **Outrigger** feature on and off.

**Longer than 5 seconds:** Press and hold the button to turn on the Outrigger feature. The Outrigger feature remains on as long as the button is pressed. Release the button to turn off the Outrigger function.

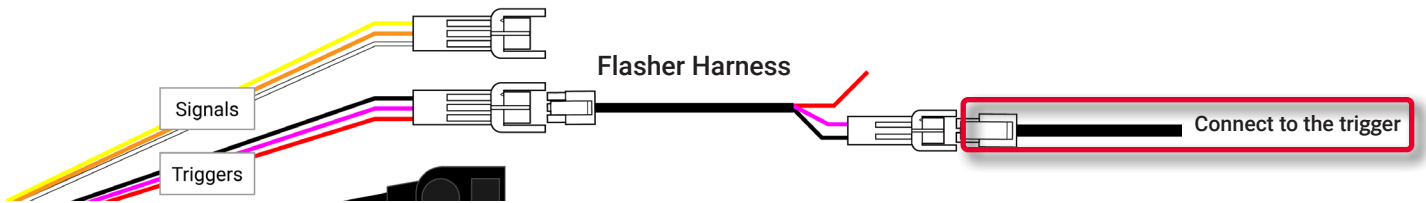


To connect the push buttons:

1. Find the connectors on the ECU harness.

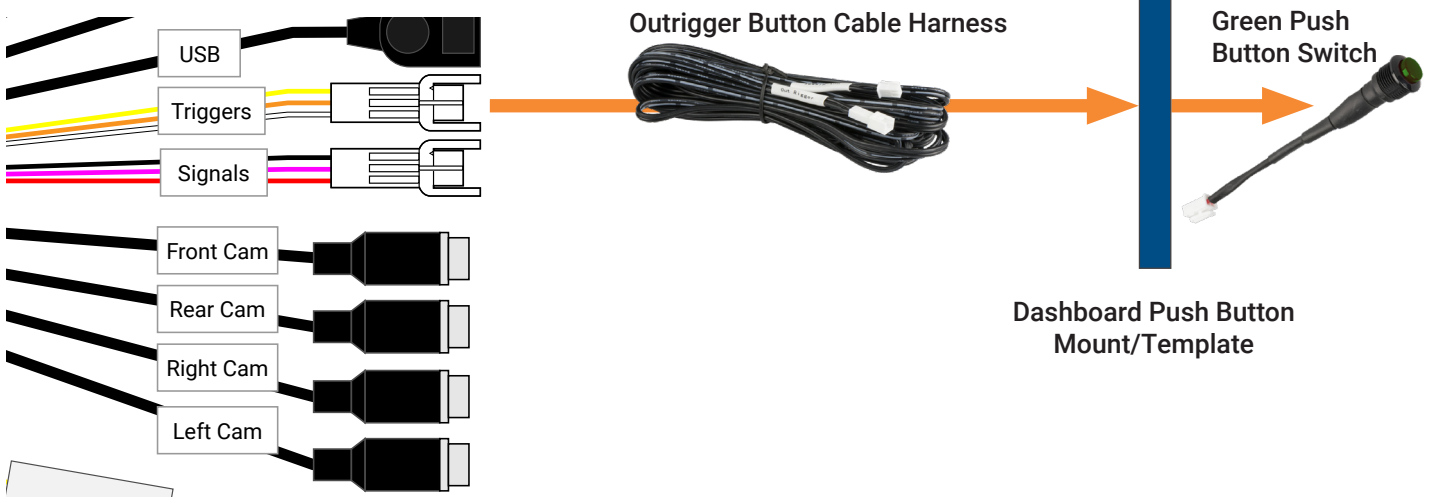


2. Use the correct harness to connect each switch to the ECU.



**Dashboard Push Button Mount/Template**

3. Install the dashboard push button mount/template into the dashboard.
4. Install the push buttons in the mounting plate on the dashboard.

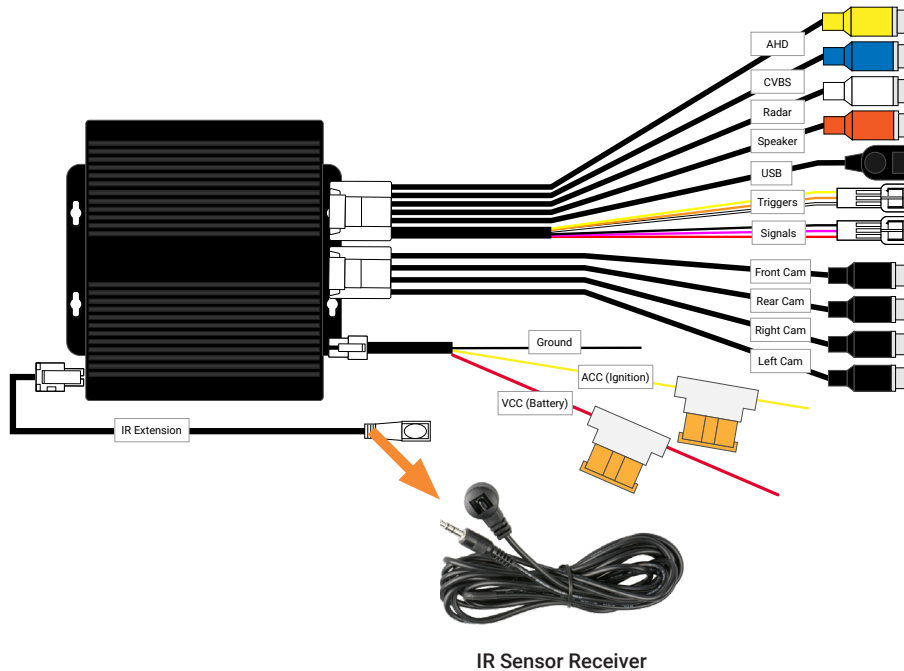


**Dashboard Push Button Mount/Template**

5. Connect the correct cable harness to the correct button. Install the mounting plate into the dashboard.
6. Install the push buttons in the mounting plate on the dashboard.
7. Connect the correct cable harness to the correct button.

## Connecting an IR Receiver

The IR receiver jack is on the front of the ECU. Please connect the IR Sensor Receiver as shown below.



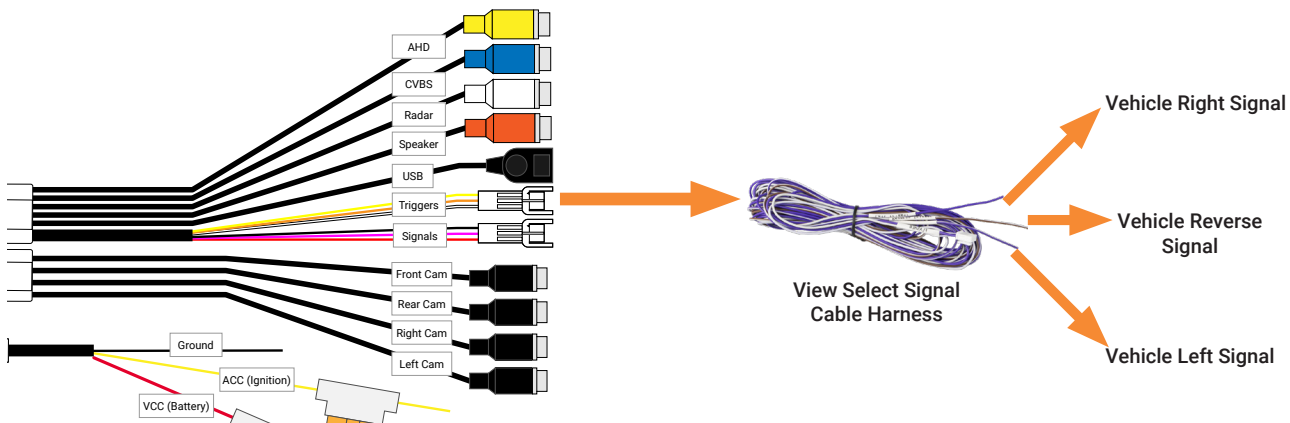
### NOTE: Placing IR Receivers

When installing the IR Receiver, make sure that it is mounted where a remote can easily be pointed at it while viewing the screen.

## Connecting to Vehicle Signals via the View Select Signal Cable Harness

If the ECU and the vehicle's turn signals are connected to the ECU harness' **Left Right Reverse Trigger** connector through the **View Select Signal Cable Harness**, then the driver will receive a left/right/rear view when the driver activates the turn signals or places the vehicle in reverse.

Directly connect the signal cable harness to the ECU harness' **Left Right Reverse Trigger** connector.



### NOTE: Connecting Trigger Wires

Do not connect trigger wires to trailer triggers. They should be connected to vehicle triggers only.



## Next Steps...

After you have successfully installed each of the system's components, you'll need to use the software to calibrate the cameras. Please see the **inView 360 HD AVM Calibration Guide** for more about the calibration procedures.

## inView 360 HD Customer Support

### Safe Fleet Community

User documentation, training videos, and other technical resources for the inView 360 HD system can be found on our Safe Fleet Community website's dedicated 360 HD page (<https://community.safefleet.net/360hd/>). You'll need to log into the community in order to view its contents. If you do not have login credentials, please contact Safe Fleet customer support to get access.

### Contact Us

Email: [ptsupport@safefleet.net](mailto:ptsupport@safefleet.net)

Phone: 1.844.899.7366

Support Hours: Monday - Friday: 7:00am - 7:00pm EST

