SmartDrive™ SR4 360 VSA

360 Convoy Monitor

BASIC INSTALLATION - Quality Standards

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
Overview

1	**Securely mount** the 360 monitor to the vehicle using the appropriate bracket
2	**Connect the 360 Camera(s)** – Use a splitter to the monitor and the controller
3	**Secure & protect interior cable run** - When routing camera cable into the vehicle (pass through) use a grommet and/or cable split loom to protect cable from pinching and damage
4	**Cable connection** - Route and connect the camera cable to the appropriate Controller ANALOG camera port
5	**Final QA** checkout

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Securely Mount Monitor

360 VSA: Convoy Monitor (BASIC INSTALLATION)
360 Monitor Mount

Cable Details

1. Mount the 360-monitor dashboard

2. Use four screws to mount securely

3. Secure all cables with zip ties as needed

True Ignition and ground Instructions

True Ignition and ground connections are made to the fuse box.

The monitor is only powered on when the ignition is running.

Cable instructions

1. Turn the monitor to face the driver, parallel with the front of the dashboard

2. Run the monitor cable into the dashboard to the controller

3. Ensure the cable doesn't get pinched

Convoy Monitor

Mounting Bracket

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
360 Displaying 2 side mirror cameras on the monitor

Monitor setup

When looking at the image on the monitor, the image is deceiving if not mirrored. The cameras are on the correct side of the truck, but the image appears as if the driver is standing in front of the truck as opposed to looking in a side mirror.

To correct this issue, use monitor settings on all 360 camera feeds to mirror the image.

The new view will now be familiar to the driver because it matches their point of view from the driver's seat.
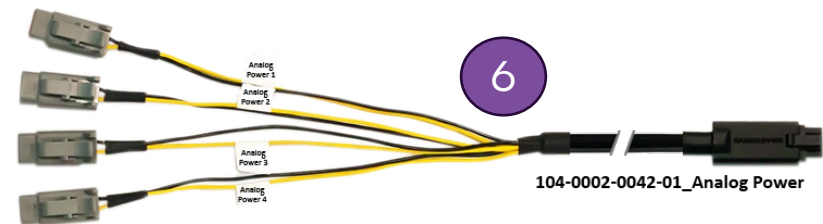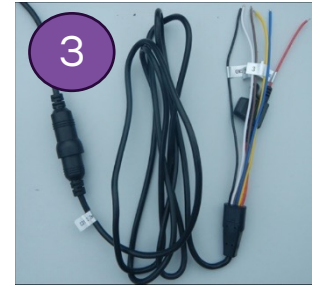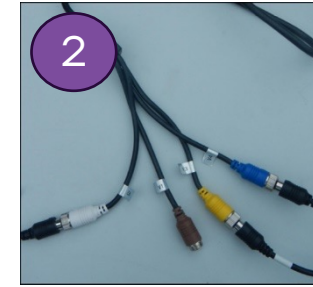

Convoy Monitor

Mounting Bracket

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Connect the Camera(s) to the Monitor and Controller

360 VSA: Convoy Monitor (BASIC INSTALLATION)
360 Monitor Parts

1. **Convoy CT-M7104 Monitor** with mounting bracket

2. **Convoy CT-M7104 Camera Harness**
   - Connects 4 video feeds into the monitor

3. **Convoy CT-M7104 Power/Trigger Harness**
   - **True Ignition (red wire)**
   - **Ground (black wire)**
   - Note: Triggers not covered in this VSA

4. **Convoy CS2ADP Video splitter**
   - Splits a single camera feed
   - One feed goes to the monitor
   - One feed goes to the controller using an E1 cable

5. **SmartDrive E1 Cable**
   - Extends the camera cable to reach the controller and converts the round 4-pin DIN connector into a Molex power connection for the camera and a gold SMP connector for the controller

6. **SmartDrive Analog Power Cable**
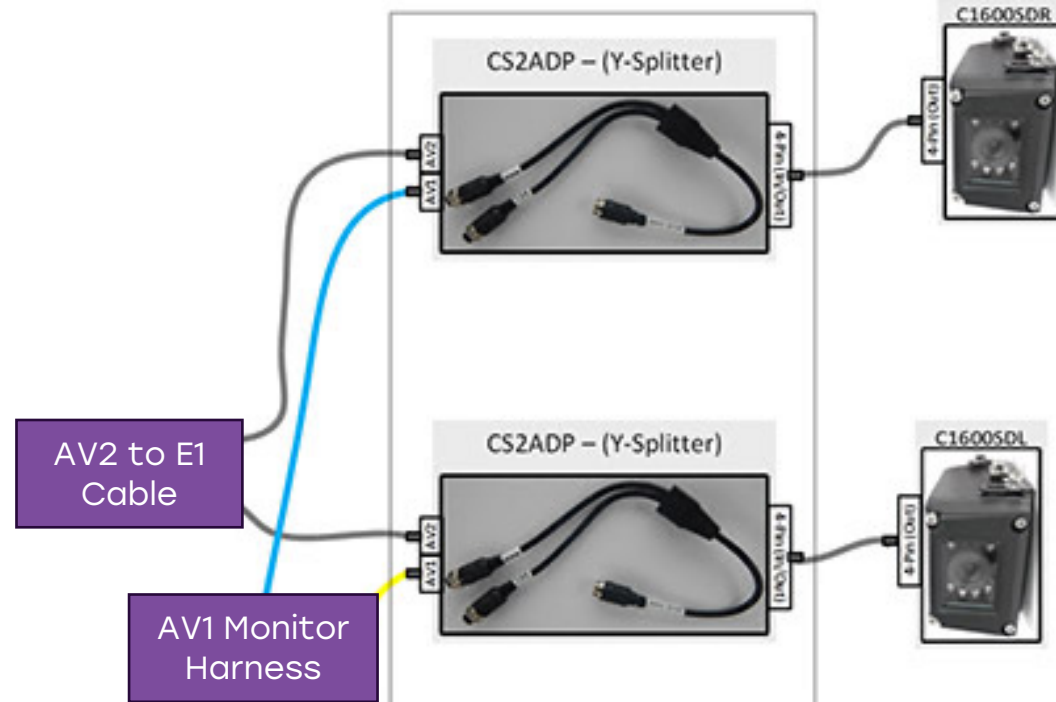   - Provided power to the camera

104-0002-0042-01_Analog Power

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
360 Side mirrors – Side mirror cameras to the Monitor via a video wiring harness

Details

1. Connect each camera to the monitor's wiring harness.

2. From each Convoy splitter (CS2ADP)

   - Connect the **AV1 side of the splitter goes to the monitor's harness**

   - Connect the **AV2 side of the splitter to E1 Cable**

For all Y-Splitters, AV1 must be connected to the monitor side. If AV2 or the 4-pin In/Out is connected to the monitor side, the vehicle may have electrical issues.

CS2ADP – (Y-Splitter)

C1600SDR

AV2 to E1 Cable

CS2ADP – (Y-Splitter)

C1600SDL

AV1 Monitor Harness

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Secure & Protect Interior Cable Run

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Best Practices for Securing Cables

The cable must not impede the operation of the vehicle or the driver's safety.

Cable Protection
It is important to maintain the integrity of the cable itself from pinching, binding, or tension of any kind

Secure the cable
- **Zip ties:** Secure the cable with zip ties as needed
- **Cable ties/P-rings:** Use in areas where a zip tie cannot be used

Avoid moving parts
- Keep cables away from moving parts such as windows and windshield wipers

Cable movement
- When a cable runs from a location that is movable such as a door, leave a sufficient amount of slack in the cable to prevent binding or pulling on the cable. Be sure the cable to secure and will hold its place during movement.

Weather Proofing
- When a cable connector is exposed to the elements, it needs to be weatherproofed. Use die electric grease and a rubber sleeve (if provided) or heat shrink wrapping.

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
Secure & protect interior cable run

Protecting the cable in a pass-through
It is highly recommended to **use an existing pass-through in the firewall** to run the cable into the cab

When an existing pass-through is not available
Use a rubber grommet when a hole is drilled. **Seal the pass-through** to prevent water from entering the vehicle

GOOD - LOOM USED

BAD - LOOM NOT USED

GOOD - GROMMET USED

BAD - GROMMET NOT USED

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
Protect the cable when using a pass-through

Corrugated split loom
Loom is used to protect cables from abrasion and corrosion. Use loom when the cable is in harsh environments, such as the engine compartment.

Rubber grommet (drill hole)
When a hole is drilled through metal or other surfaces, use a rubber grommet to protect the cable from abrasion. Each Convoy camera includes a grommet on the cable.

Pass through
Try to use existing pass-through as an alternative to drilling holes. They are found in the firewall, the door jamb, and sometimes in the floor.

Water seal
When using a pass-through, seal the hole to prevent water from entering the vehicle. When possible, it is good practice to let the cable loop below the pass-through so that water drips off the loop vs. attempting to enter the cab.

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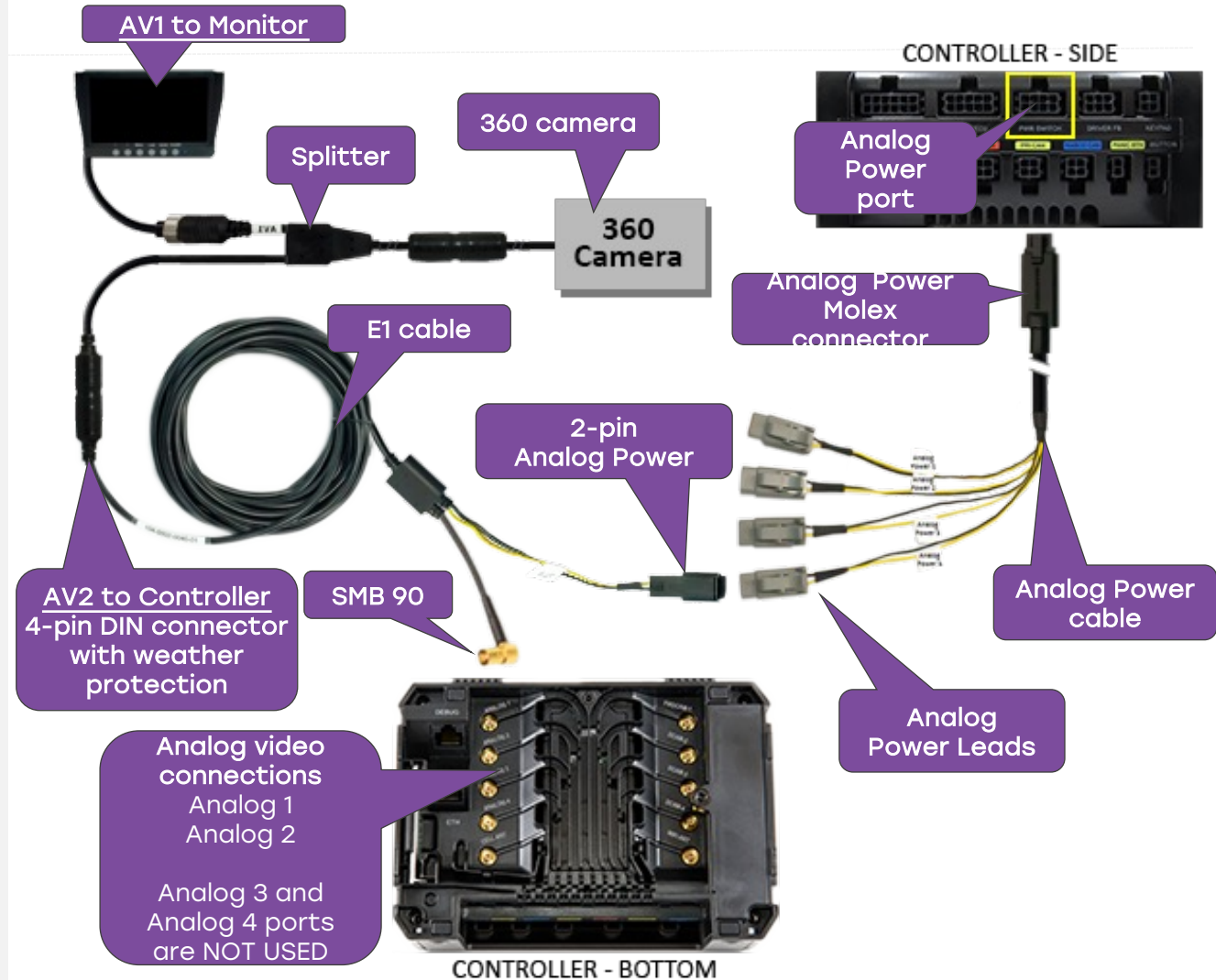
Controller cable connection

360 VSA: Convoy Monitor (BASIC INSTALLATION)

SmartDrive Components
Basic install limited to **Two SmartDrive cameras + two 360 cameras**
or **One SmartDrive Camera + three 360 cameras.**

1. Monitor
2. 360 Cameras supported
   side mirror(s), rear-view, entry/exit, or an interior dome
3. **E1 Analog PWR/Video cable** connects the *360 camera*
   1. The cameras threaded *4-pin DIN Connector* is connected to the E1 cable
      - Weatherproof the adjoining connectors between the camera and the SmartDrive cable using the black sleeve protector on SmartDrive's E1 or use heat shrink tubing.
   2. The E1 cable's 2-pin power lead connects to one of the power leads on the *Analog Power Cable.*
4. Analog 4 port Power Cable
   Connect the black *Molex connector* to the controller's *Analog PWR* port. Each 2-pin power connector lead provides power to an analog camera. (there are four leads)

AV1 to Monitor

360 camera

Splitter

360 Camera

E1 cable

CONTROLLER - SIDE

Analog Power port

Analog Power Molex connector

2-pin Analog Power

Analog Power cable

AV2 to Controller 4-pin DIN connector with weather protection

SMB 90

Analog Power Leads

Analog video connections
Analog 1
Analog 2

Analog 3 and Analog 4 ports are NOT USED

CONTROLLER - BOTTOM

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
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: Not Available

Analog 4: **Not Available**

Details

Connect all cables to their ports and route through the strain relief channel. Use a 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

Note: Press the green keypad button one time to create an event that displays all the cameras. This assumes that the controller has updated setpoints with 360 cameras enabled.
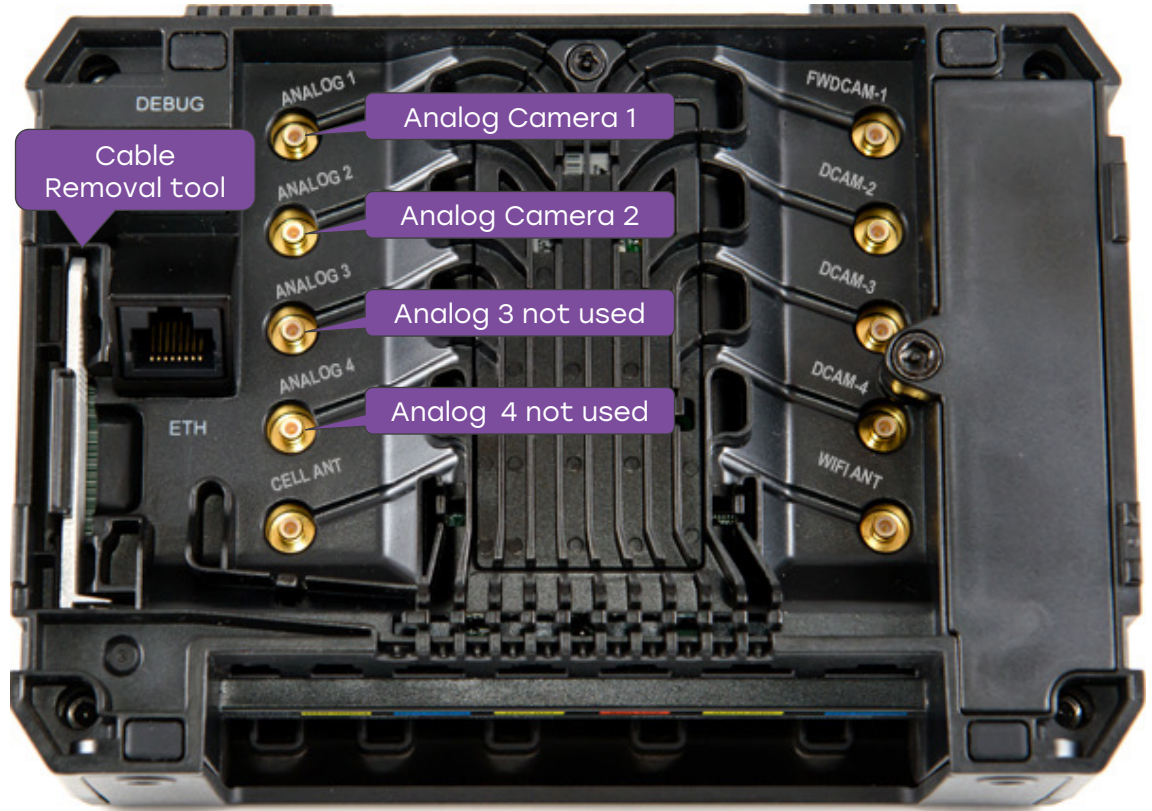
Final QA Checkout

360 VSA: Convoy Monitor (BASIC INSTALLATION)
Creating a diagnostic mode manual event

- **Start the vehicle** and let it run
- **Press the green button on the keypad five times in 10 seconds** to initiate diagnostic mode

If the test finds any problems, it will display the fault code on the keypad.

Use the SR4 Fault Codes section of the Vehicle Specification Assessment (VSA) to troubleshoot the issue.

Rerun the Diagnostic mode until the keypad displays all Zeros (000000).

<u>Call Tech support for assistance</u> to resolve any error code other than (000000)

US: 866.933.9930, Option 4
UK: 0800 047 0968, Option 4

When the keypad displays all Zeros (000000)

<u>Call Tech Support for QA verification</u>.

US 866.933.9930 (Option 1)
UK: 0800 047 0968 (Option 1)

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Additional Information for Installers

360 VSA: Convoy Monitor (BASIC INSTALLATION)
Splitter cable

Video Y-splitter
Part # Convoy CS2ADP


Splitter Wiring Diagram

Primary use case - Monitor Support

A splitter is required to provide video to a monitor in the cab and to provide video/audio to the controller. In some cases, an extension cable is needed.

- 360 camera connects to the female connector.
- AV1 is used to connect to the monitor
- AV2 is used to connect to the controller

Female Connector

Male Connectors

AV1

AV2
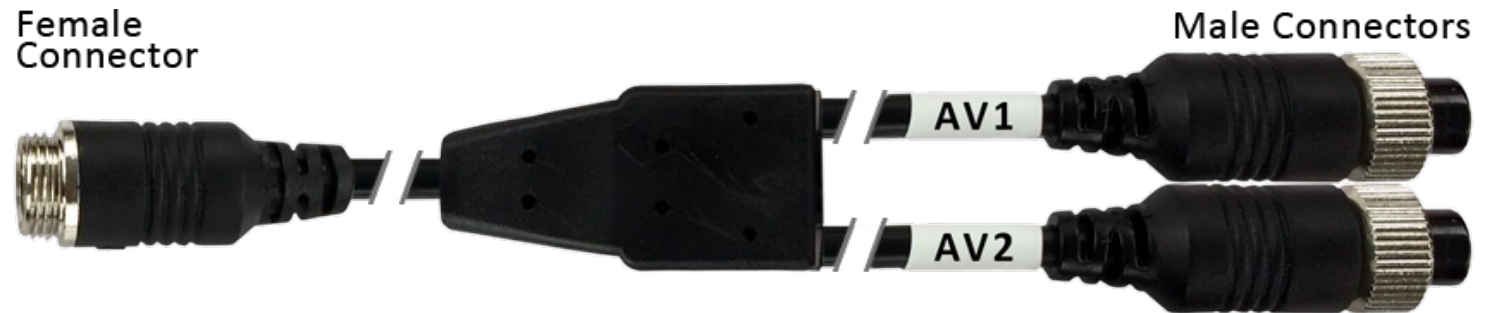
All splitters: AV1 must be connected to the monitor side. If AV2 or the 4-pin In/Out is connected to the monitor, electrical issues may occur to the vehicle.

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
SR4 E1 Cable

SR4 E1 20 ft. cable
Part # 104-0002-0040-01

Tip: Best practice is routing the cables from the cabin > rubber boot > door panel > exit hole > camera. Pulling the 4-pin DIN connector from the cab to the camera is easier than pulling the split end to the cab.

Prior to routing the cables, check the 4-pin DIN connector to ensure it matches the camera.

To help pass the DIN connector through the rubber boot, it's best to keep it as straight as possible, using a small amount of grease to help slide it through.

SR4 E1 Wiring Diagram

The E1 cable is 20 feet long. The 4-pin DIN connector connects to the 360 Analog camera. The cable splits the video and power feeds. The 2-pin connector is used to obtain power and the gold SMP 90 connector is used to provide video to the controller
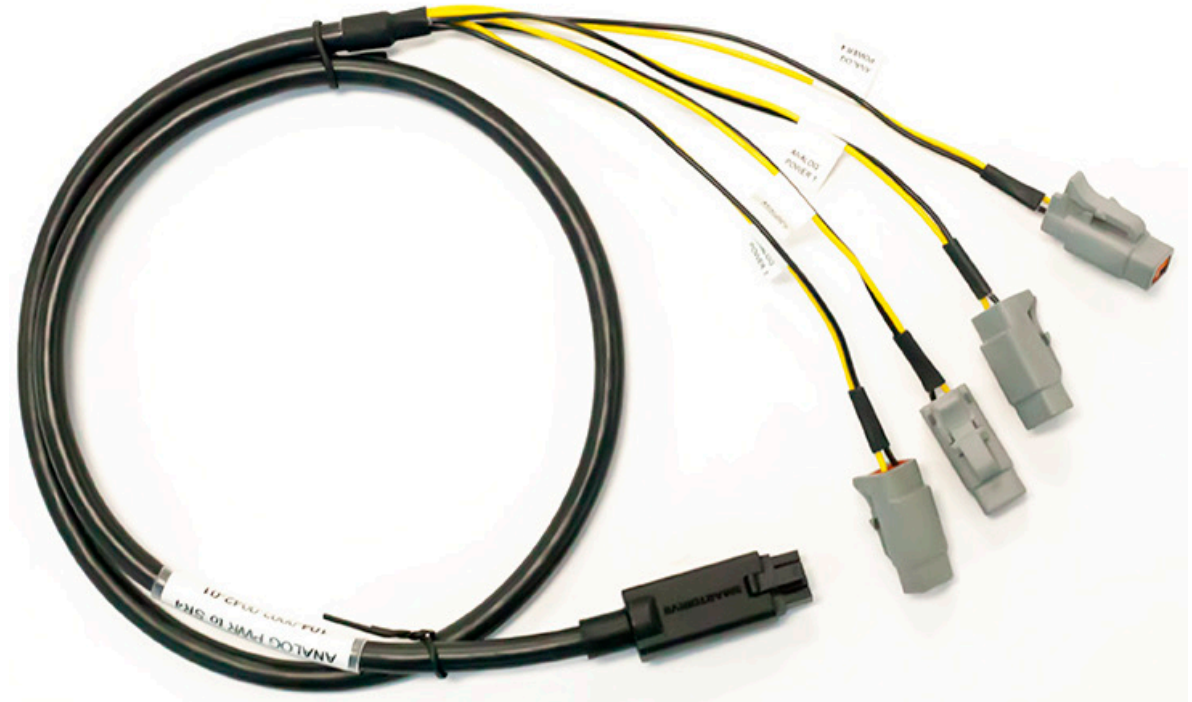
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360 VSA: Convoy Monitor (BASIC INSTALLATION)
SR4 Analog Power Cable

SR4 Analog Power Cable
Part # 104-0002-0042-01

The power connector labeled Analog Power 1 is connected to the E-1 cable for the (passenger-side) camera.

The power connector labeled Analog Power 2 is connected to the E-1 cable for the (driver-side) camera.

SR4 Analog Power Cable

Provides four 2-pin connectors to provide 12v/24v power to Analog cameras.

Note: Power output to the cable is determined by the power input to the controller.

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360 VSA: Convoy Monitor (BASIC INSTALLATION)
Extension Cable

Extension Cable
Part # MCBLS10 (10 meter)
Part # MCBLS30 (30 meter)
Part # MCBLS50 (50 meter)

Extension Cable Wiring Diagram

Primary use
TBD

Female Connector   2 -Weather Proof Seals (one for each side)   Male Connector

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