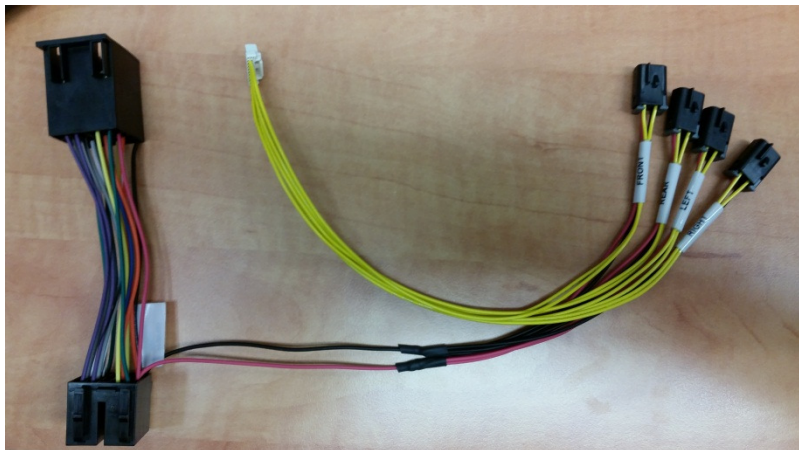


Camera Installation Guide w/ SmartNav 2.0

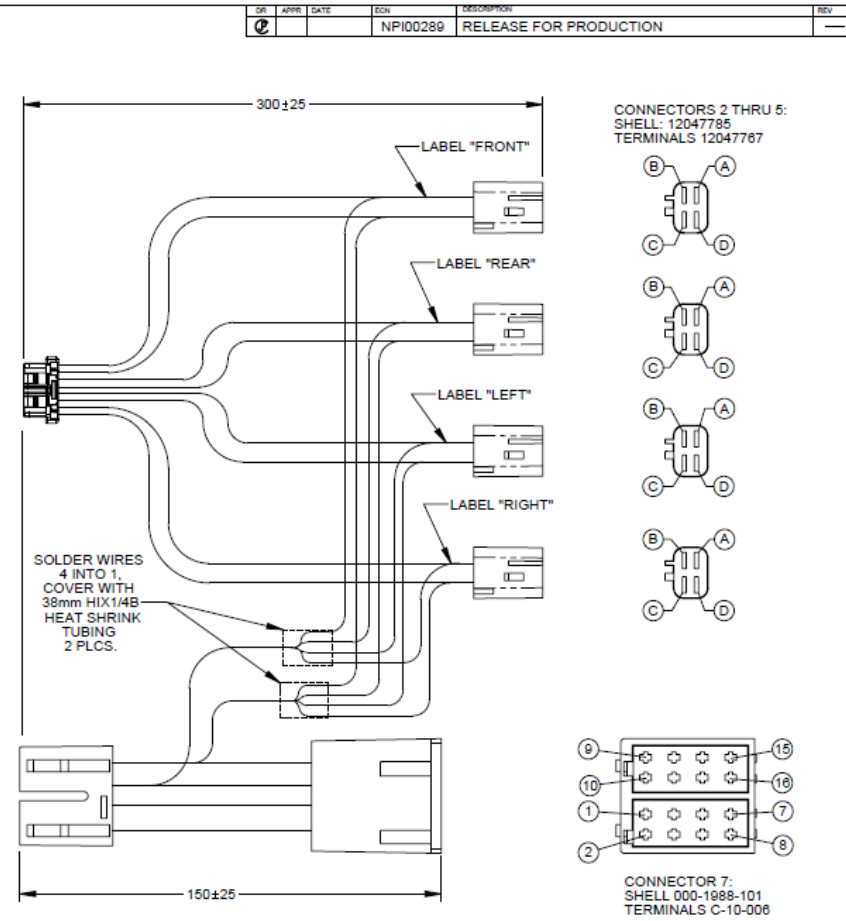
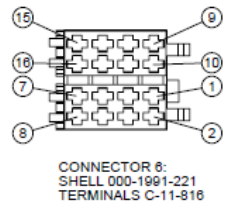
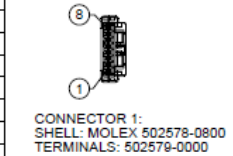
- Parts required to order from PACCAR Parts
- 1x PP207020 Adaptor Harness. This allows up to 4 cameras to be connected



Adaptor Harness PP207020

CONN. 1	COLOR	FUNCTION	CONN. 2	CONN. 3	CONN. 4	CONN. 5	CONN. 6	CONN. 7
1	YEL	FRONT CAM+	B					
2	YEL/BLK	FRONT CAM-	C					
3	YEL	REAR CAM+		B				
4	YEL/BLK	REAR CAM-		C				
5	YEL	LEFT CAM+			B			
6	YEL/BLK	LEFT CAM-			C			
7	YEL	RIGHT CAM+				B		
8	YEL/BLK	RIGHT CAM-				C		
	YEL	CAN HI					1	1
	GRN	CAN LO					2	2
	ORANGE	PARK LAMPS					3	3
	RED	IGN +12VDC	A	A	A	A	4	4
	DK BLU	PWR ANT					5	5
	ORG/WHT	DIMMER					6	6
	YEL	BATT +12VDC					7	7
	BLK	GROUND	D	D	D	D	8	8
	PUR	RR SPKR+					9	9
	PUR/BLK	RR SPKR-					10	10
	GRY	RF SPKR+					11	11
	GRY/BLK	RF SPKR-					12	12
	WHT	LF SPKR+					13	13
	WHT/BLK	LF SPKR_					14	14
	GRN	LR SPKR+					15	15
	GRN/BLK	LR SPKR_					16	16

NOTES:
ALL WIRE 22AWG STRANDED
TYPE TXL OR TWP PER SAE J1128



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	AR/PD: PFC: DATE: LABEL:		DESCRIPTION: HARNESS, CAMERAS, DEA800
	PART NUMBER: PP207020		SHEET 1 OF 1
	RELEASE FOR PRODUCTION		NPI00289

Two Camera Vendors via PACCAR Parts

1. Pana-Pacific

- Left, Right, Forward, and Back-up Camera available
- Installation Instructions – See following slides

2. Velvac Camera Kits

- Left, Right, Forward, Camera available
- Installation Instructions – See following slides

Pana-Pacific Cameras/Jumpers Through PACCAR Parts

- **Cameras**

- Available Camera kits. Kits include a camera and extension harness.
- PP807032 – Front Camera with 16 ft cable
- PP804395 – Rear Camera with 70 ft cable
- PP804396 – Right Side Camera with 16 ft cable
- PP804397 – Left Side Camera with 16 ft cable

- **Jumpers**

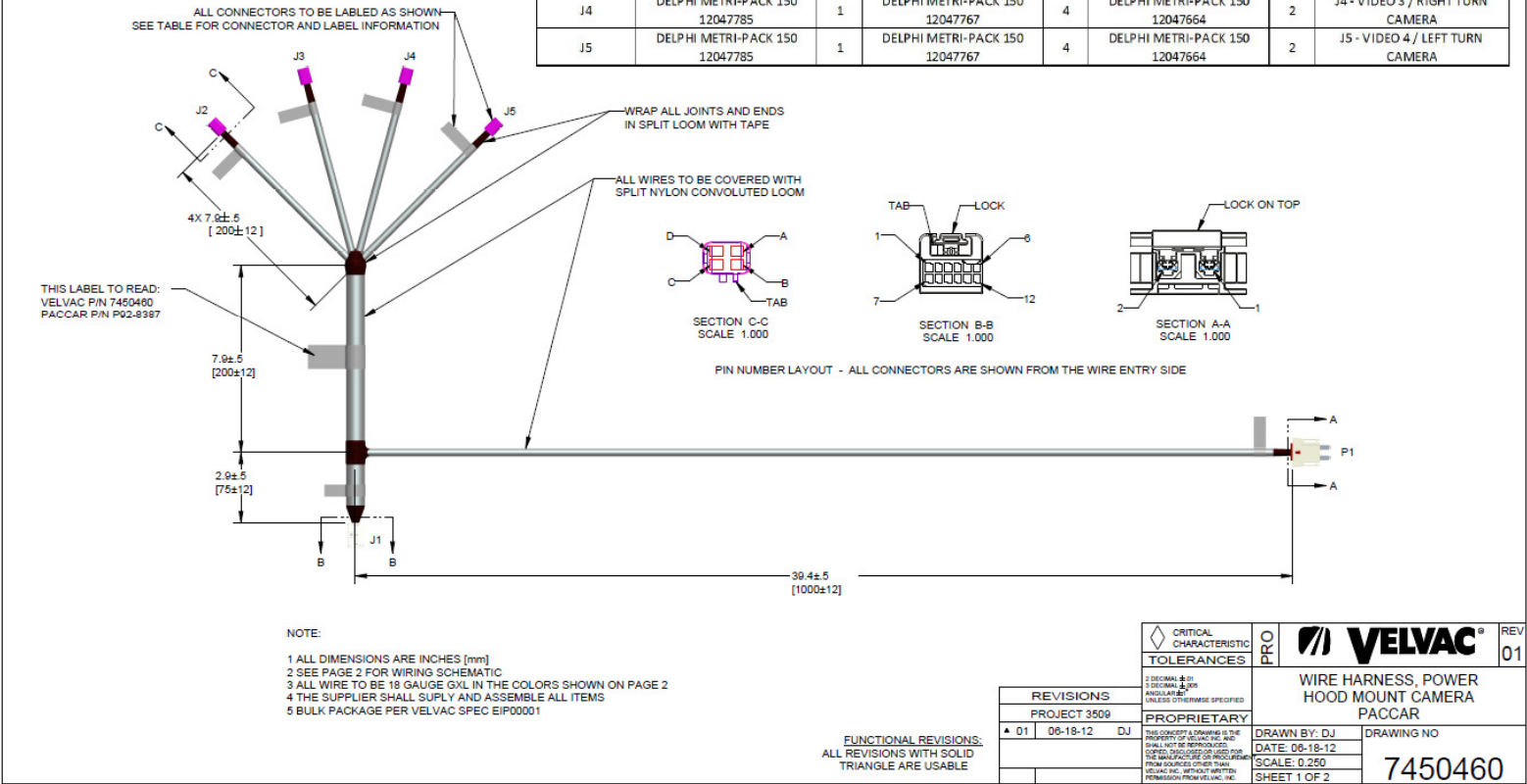
- Extension cables are available if a longer length is required:
- RRC-10: 10 ft extension
- RRC-1: 16 ft extension
- RRC-35: 35 ft extension
- RRC-70: 70 ft extension

Velvac Cameras/Jumpers Through PACCAR Parts

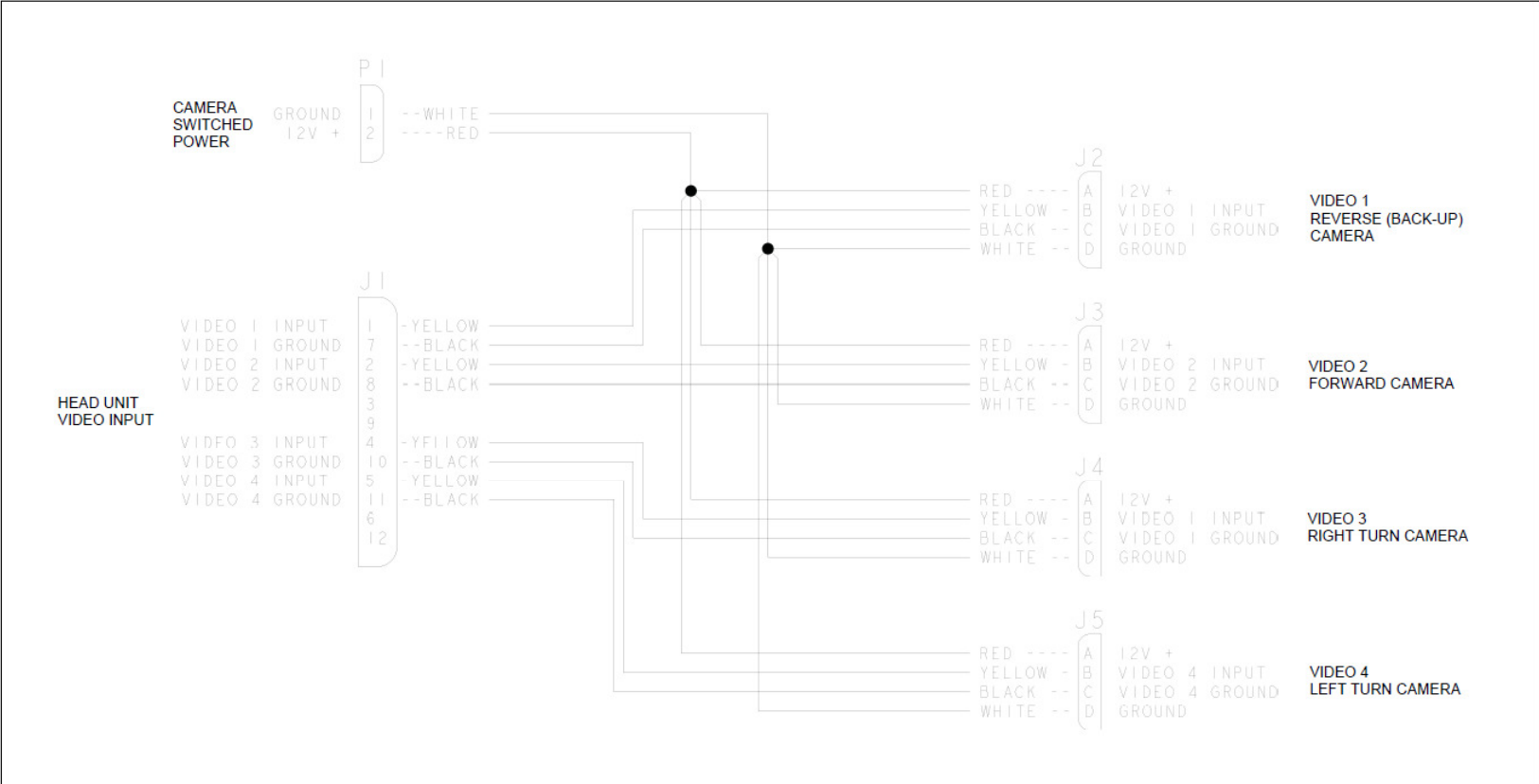
Description	Original Velvac No	PACCAR PARTS No	NEW SmartNav 2.0 & NAVPLUS HD
Peterbilt Model 579/567 Kenworth Model T700			
Pair	717373	717373VEL	719547
Right Side Kit	717374	717374VEL	719548
RS Aerocam	717054		717810
Left Side Kit	717375	717375VEL	719549
LS Aerocam	717055		717809
NON Peterbilt Model 579/567 Kenowrth Model T700			
Pair	717324	717324VEL	719550
Right Side Kit	717326	717326VEL	719552
RS Aerocam	717054		717810
Left Side Kit	717325	717325VEL	719551
LS Aerocam	717055		717809

Velvac Cameras/Jumpers Through PACCAR Parts

CONNECTOR	HOUSING	QTY	TERMINAL	QTY	LOCK / COVER	QTY	LABEL TEXT
P1	AFL2421-001	1	PACKARD 12020120	2	AFL2422-001	1	P1 - CAMERA SWITCH POWER
J1	AMP (TE) Micro-Power Quadlok System 1394048-1	1	AMP (TE) 963715-1	12	AMP (TE) Micro-Power Quadlok System 2-1355524-3	1	J1 - HEAD UNIT VIDEO INPUT
J2	DELPHI METRI-PACK 150 12047785	1	DELPHI METRI-PACK 150 12047767	4	DELPHI METRI-PACK 150 12047664	2	J2 - VIDEO 1 / REVERSE (BACK-UP) CAMERA
J3	DELPHI METRI-PACK 150 12047785	1	DELPHI METRI-PACK 150 12047767	4	DELPHI METRI-PACK 150 12047664	2	J3 - VIDEO 2 / FORWARD CAMERA
J4	DELPHI METRI-PACK 150 12047785	1	DELPHI METRI-PACK 150 12047767	4	DELPHI METRI-PACK 150 12047664	2	J4 - VIDEO 3 / RIGHT TURN CAMERA
J5	DELPHI METRI-PACK 150 12047785	1	DELPHI METRI-PACK 150 12047767	4	DELPHI METRI-PACK 150 12047664	2	J5 - VIDEO 4 / LEFT TURN CAMERA



Velvac Cameras/Jumpers Through PACCAR Parts

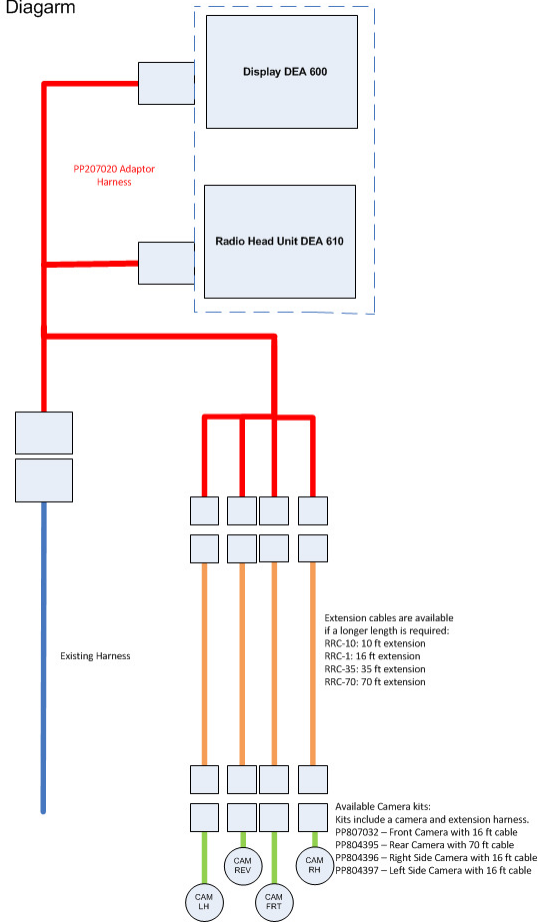


CRITICAL CHARACTERISTIC TOLERANCES DECIMAL ±0.1 ANGULAR ±0.5 UNLESS OTHERWISE SPECIFIED PROPRIETARY	PRO		REV 01
	WIRE HARNESS, POWER HOOD MOUNT CAMERA PACCAR		
THIS DOCUMENT IS OWNED BY THE PROPERTY OF VELVAC INC AND SHALL NOT BE REPRODUCED, COPIED, DISSEMINATED OR OTHERWISE TRANSMITTED IN ANY FORM OR BY ANY MEANS, WITHOUT WRITTEN PERMISSION FROM VELVAC INC.	DRAWN BY: DJ DATE: 08-18-12 SCALE: 0.250 SHEET 2 OF 2	DRAWING NO 7450460	

REVISIONS
SEE PAGE 1

Camera Installation Block Diagram

Camera Installation
Block Diagram



Adaptor Harness PP207020

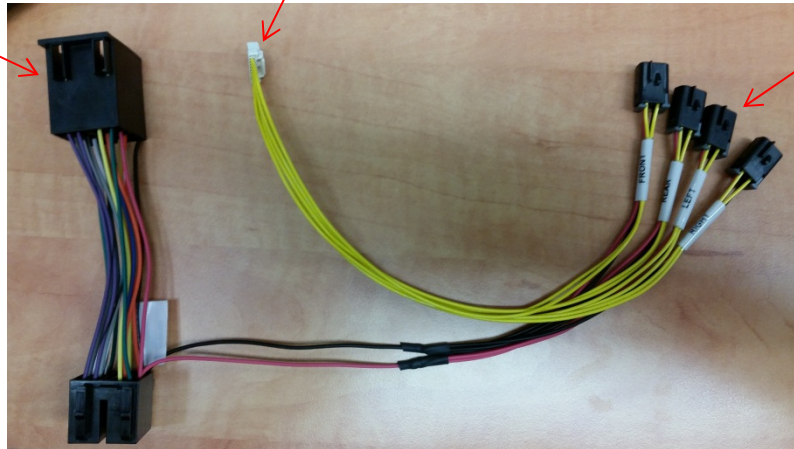
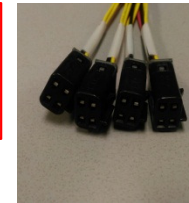
PP207020 Adaptor Harness Plugs into Back of the Head Unit.
The existing harness plug connects to the PP2010220 Adaptor Harness.

Existing
Harness
connection

Display DEA 600
connection

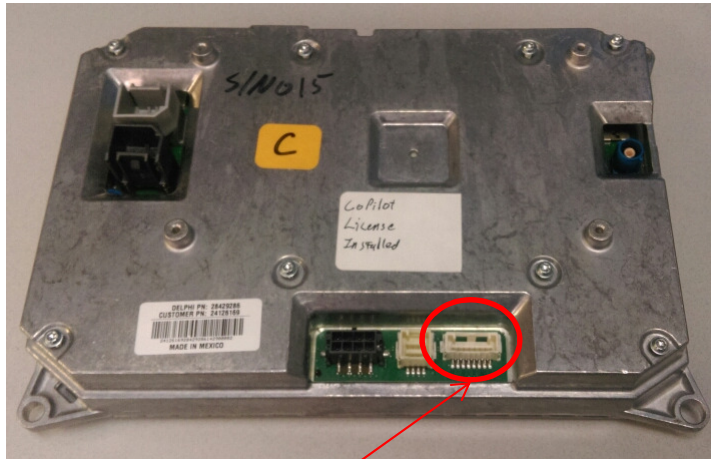


4x Camera
Inputs

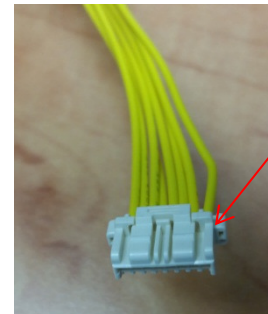


Radio Head
Unit DEA 610
connection

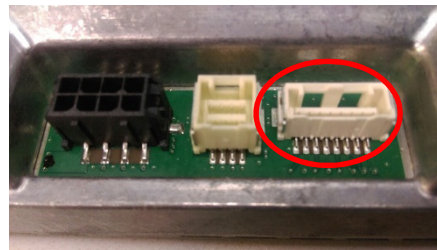
Adaptor Harness PP207020 Connection Display DEA 600



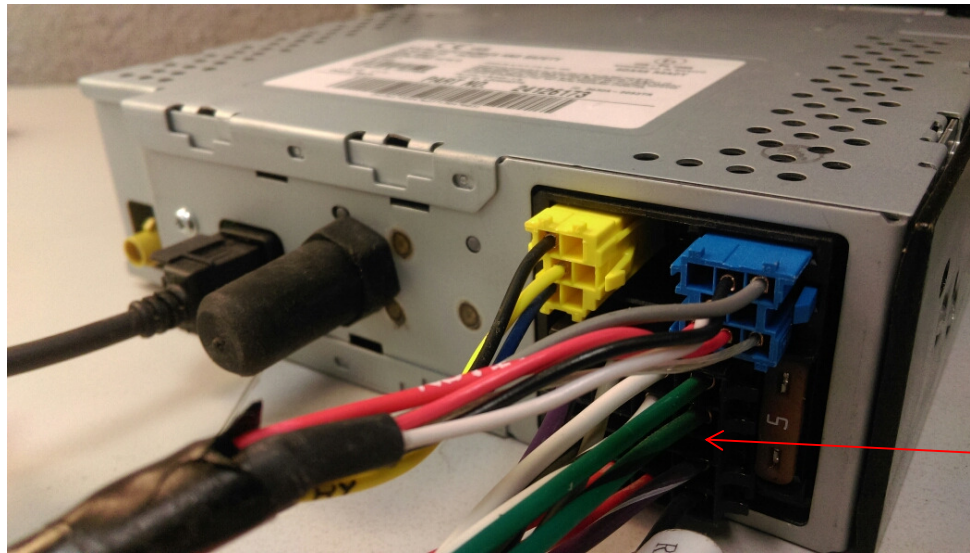
Display DEA 600
connection



Display DEA 600
connection



Adaptor Harness PP207020 Connection Radio Head Unit DEA 610



Radio Head
Unit DEA 610
connection

Camera Connections

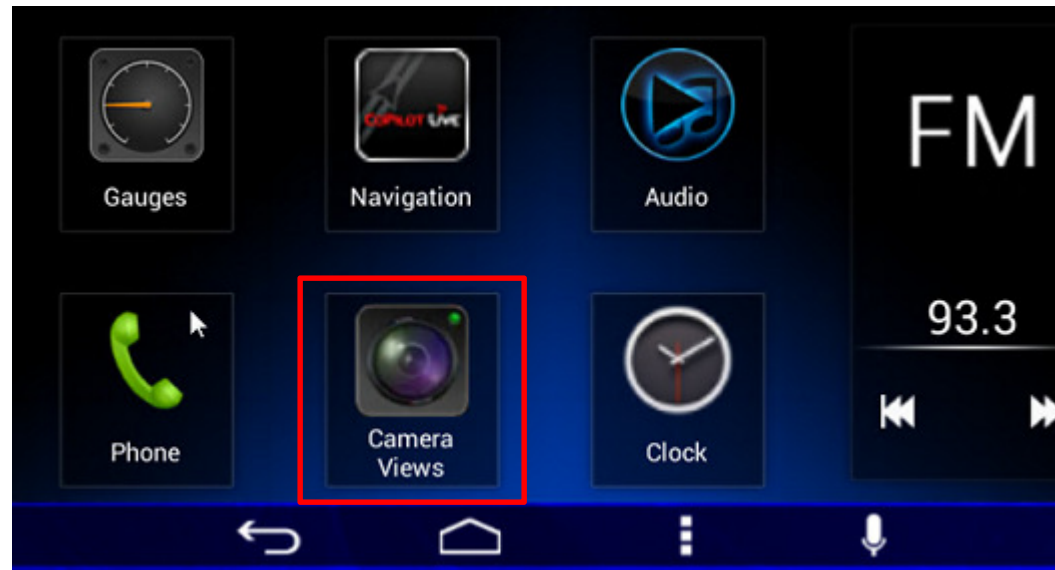
4x Camera Inputs



Camera Configuration Options

- Camera
 - Video Input 1 – Reverse (Back-up) Camera
 - Video Input 2 – Forward Facing Camera
 - Video Input 3 – Right Turn Camera
 - Video Input 4 – Left Turn Camera
- Cameras can be configured to be selected manually or Automatically (Via J1939 CAN Messages)
- In Manual mode the user select the camera view
- In Auto mode the camera view is selected automatically depending on the truck state
 - Left turn signal active
 - Right turn signal active
 - Reverse active
 - Front default
 - Note the user may manually select the camera view when left, right turn signal or reverse is not active

Camera Views

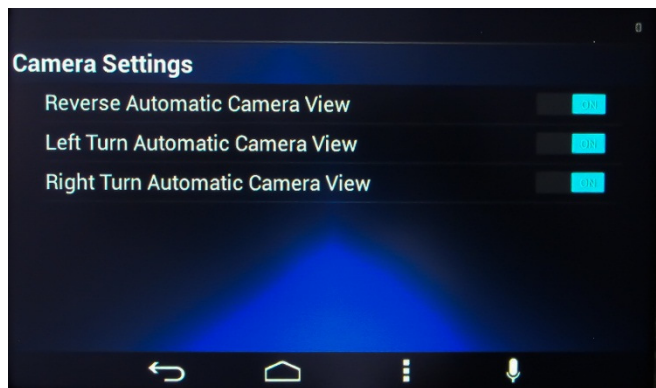


Select camera views in “Home” screen to access the available camera views

Camera Display Activation DEA 600

To configure the cameras within the DEA 600 Display

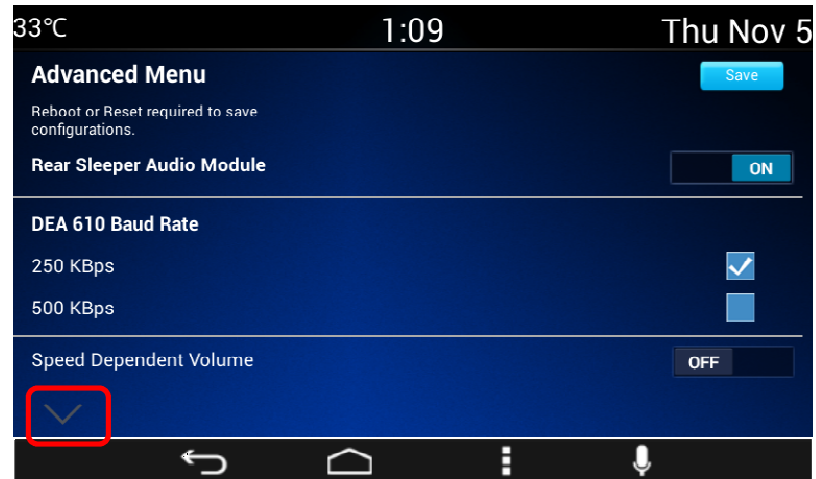
- Enter camera views application select the desired camera view and activate “ON”



Camera Display Activation DEA 600

To configure the cameras within the DEA 600 Display

- Enter the Advanced Menu and follow the steps:
 - Simultaneously select the following hard keys Home & Brightness . Hold for greater than 8 seconds. The display will enter the “Advanced Menu”
 - Scroll down to page 2

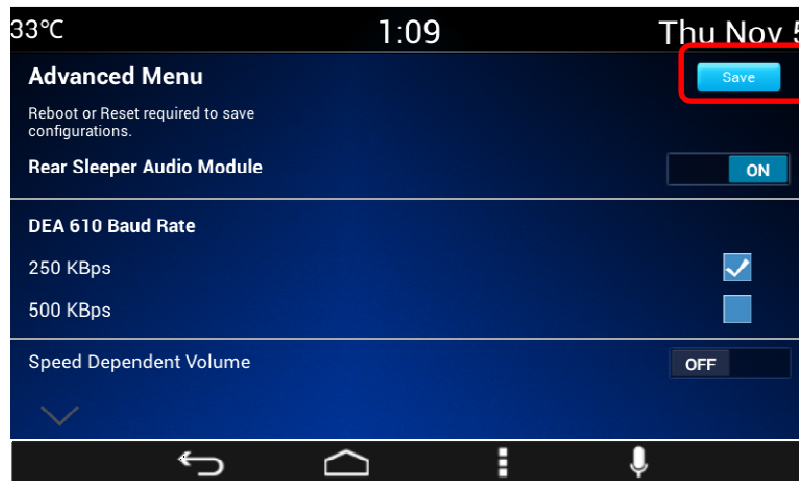


Camera Display Activation DEA 600



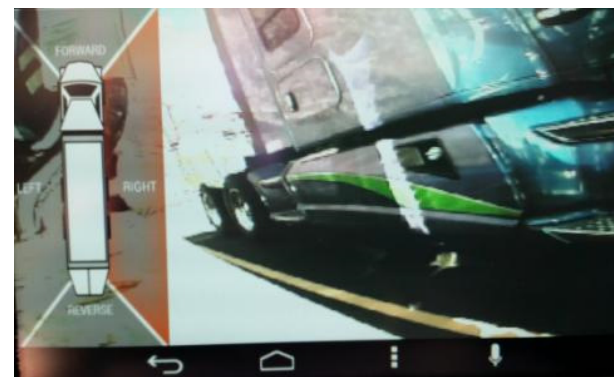
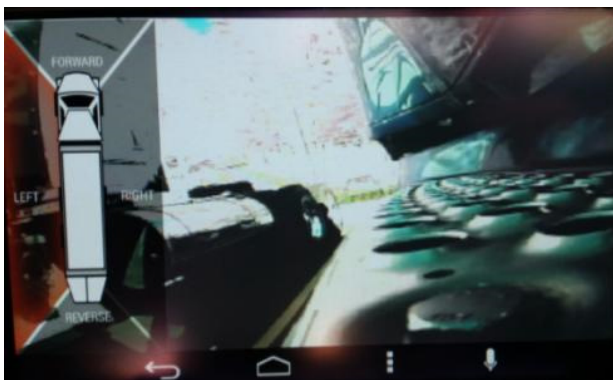
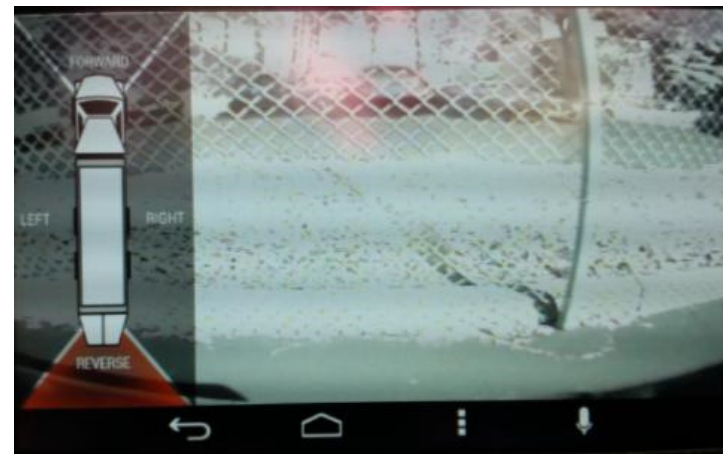
- Page 2 Select Camera Required

Camera Display Activation DEA 600



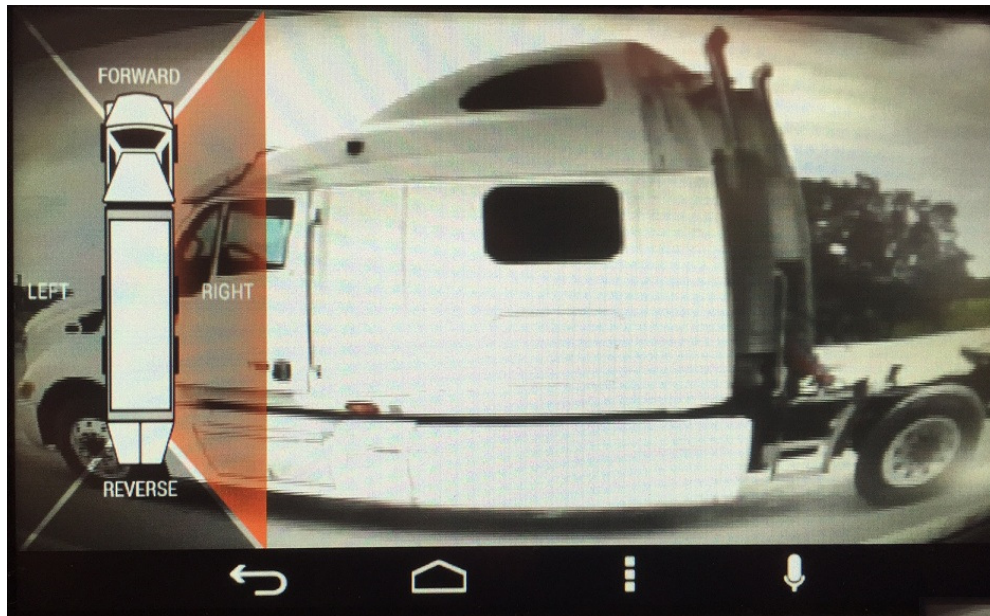
- Scroll up to page 1
- Select “SAVE”
- Pop Up Save Configuration appears “OK” or “Cancel” Select “OK”
- System Reboots
- Cameras are now active and manually selectable within the camera view menu
- Completed
- ❖ To set Cameras to Auto follow the steps above and continue the procedure using ESA. The ESA process is described in the next slides

Camera Views



To activate a camera view, select the Forward, Right, Left or Reverse soft key indicated on the display truck graphic

Example Camera View (Right)



Automatic Mode

- Automatic Camera Mode by Model

Peterbilt Auto Camera Availability		
Model	Auto Camera	
325	NO	
330	NO	
337	NO	
348	NO	
382	NO	
320	NO	
365	YES	
367	YES	
389	YES	
587	NO	
567	YES	
579	YES	

Kenworth Auto Camera Availability			
Model	LH Camera	RH Camera	Reverse Camera
T270	YES	YES	NO
T370	YES	YES	NO
T440	YES	YES	???
T460	YES	YES	???
T470	YES	YES	???
C500	YES	YES	YES
T660	YES	YES	YES
T680	YES	YES	YES
T800	YES	YES	YES
T880	YES	YES	YES
W900	YES	YES	YES

- Camera activation DEA 600
 - Cameras must be set to on within the DEA 600

ESA Procedure for Setting Automatic Camera Mode

- Program area of ESA (use the program button at top),
 - Look under the network interface tab.
 - Enable Router should be set to “Enable”
 - Transmit CECU LC Message should be set to “Gateway or Route to VCAN”

NAMUX 3

Description	Locked	Value
Configure Which CAN Bus to Transmit Fuel Level Message		Disabled
* Databus Gateway		Enable
* Databus Router		Enable
Destination for Ambient Conditions Message		Disabled
Destination for Engine Aftertreatment SCR Reagent Tank 1 Message #1		Disabled
Destination for Engine Controller Message #1		Disabled
Destination for Engine Controller Message #2		Disabled
Destination for Engine Diesel Particulate Filter Control Message #1		Disabled
Destination for Engine Fluid Level Message #1		Disabled
Destination for Engine Hours Message		Disabled
Destination for Engine Temp Message #1		Disabled
Destination for Exhaust Temp Message #1		Disabled
Destination for Fan Drive Message		Disabled
Destination for Fuel Consumption Message		Disabled
Destination for Fuel Economy Message		Disabled
* Destination for Lighting Control Message		Vehicle Databus

ESA Procedure for Setting Automatic Camera Mode

- Program area of ESA (use the program button at top),
 - Look under the network interface tab.
 - Enable Router should be set to “Enable”
 - Transmit CECU LC Message should be set to “Gateway or Route to VCAN”

NAMUX 4

Description	Locked	Value
Configure Which CAN Bus to Transmit Fuel Level Message		Disabled
* Databus Gateway		Enable
* Databus Router		Enable
Destination for Ambient Conditions Message		Disabled
Destination for Engine Aftertreatment SCR Reagent Tank 1 Message #1		Disabled
Destination for Engine Controller Message #1		Disabled
Destination for Engine Controller Message #2		Disabled
Destination for Engine Diesel Particulate Filter Control Message #1		Disabled
Destination for Engine Fluid Level Message #1		Disabled
Destination for Engine Hours Message		Disabled
Destination for Engine Temp Message #1		Disabled
Destination for Exhaust Temp Message #1		Disabled
Destination for Fan Drive Message		Disabled
Destination for Fuel Consumption Message		Disabled
Destination for Fuel Economy Message		Disabled
* Destination for Lighting Control Message		Vehicle Databus

ESA Procedure for Setting Automatic Camera Mode

- Program area of ESA (use the program button at top),
 - Look under the network interface tab.
 - Enable Router should be set to “Enable”
 - Transmit CECU LC Message should be set to “Gateway or Route to VCAN”
- Once these are set, should see the lighting information on the bus.
 - Provides info SmartNav needs for the Automatic mode in the camera screen.
- Note: Cameras will only work in automatic mode if the SmartNav is put in camera mode.
 - If in GPS mode or something else - camera view won't automatically pop up

J1939 CAN Messages

- CAN Messages are used to activate camera views:
 - SPN 2367, PGN 65089 Left Turn Signal
 - SPN 2369, PGN 65089 Right Turn Signal
 - SPN 2391, PGN 65089 Backup Light
- Note: no message to activate the forward facing camera. The only way for a user to access it is to go the camera screen under the truck menu where it is the default camera view.