

NAV-TV

INTERFACING THE FUTURE

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Ford 4" MULTI-CAM V1/V2

5-camera / AUX Video Interface for Ford 4" media screens

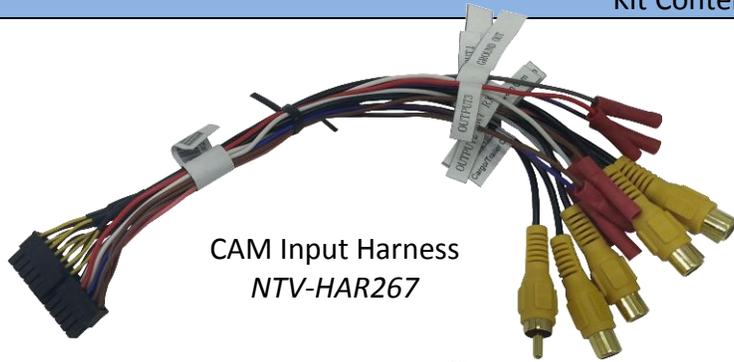
NTV-KIT601/609



Overview

The Ford 4" MULTI-CAM interfaces up to **5 cameras** & **1 Auxiliary Video source** to the OEM 4" media screen in select Ford vehicles. All connected cameras are activated through factory controls. Turn signal camera activation is speed adjustable via programming from a provided USB-Updater (via PC). **Note: before installing this module, VERIFY 75 ohms exists across pins 6 & 12 with a multimeter at the 4" screen connector.**

Kit Contents



CAM Input Harness
NTV-HAR267



4" MULTI-CAM Module
NTV-ASY222



USB Cable
NTV-CAB009



4" Monitor T-Harness
NTV-HAR272

Compatibility (with 4" screen)

Multi-CAM V1 (KIT601)	Multi-CAM V2 (KIT609)
Transit Connect	Edge
Transit	Explorer
Focus	Taurus
Fiesta	Fusion
C-MAX	F-Series
Escape	Mustang
	Expedition
	Flex
	MKZ
	Navigator

Optional Cameras



F-Series/Flex CAM
NTV-KIT376



CAM 6
NTV-KIT299



CAM 8
NTV-KIT509



Blind-Spot Cams
NTV-KIT594

V1 and V2 use different software, one is not compatible with the other. V2 vehicles can force specific cameras through factory buttons, V1 vehicles force cameras with **analog (wire) triggers only.**

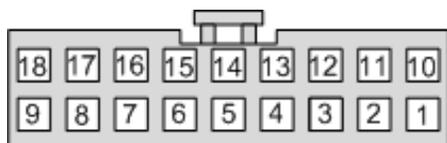
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Ford 4" MULTI-CAM Connectors	
18-PIN (Plug & Play T- Harness) connector	24-PIN (Cameras & I/O) Connector

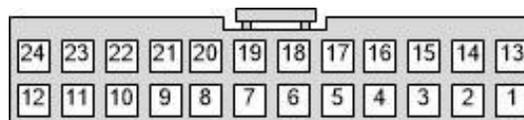
PIN #	Description	Color
1	12v (+) Constant	Yellow
2	-Empty-	--
3	-Empty-	--
4	-Empty-	--
5	OBD2 CAN HI	White/Green
6	CAN (1) HI (radio side)	White/Blue
7	CAN (0) HI (vehicle side)	White/Brown
8	DIFF (+) (radio side)	White/Purple
9	DIFF (+) (vehicle side)	White/Orange
10	Ground (-)	Black
11	INPUT 2 (-) De-Program	Blue
12	INPUT 1 (+) Force Rear Cam	Red
13	-Empty-	--
14	OBD2 CAN LO	Green
15	CAN (1) LO (radio side)	Blue
16	CAN (0) LO (vehicle side)	Brown
17	DIFF (-) (radio side)	Purple
18	DIFF (-) (vehicle side)	Orange

PIN #	Description	Color
1	Shield for Reverse CAM RCA (V1)	Black
2	Shield for Front CAM RCA (V2)	Black
3	Shield for Right Turn RCA (V3)	Black
4	Shield for Left Turn RCA (V4)	Black
5	Shield for AUX VID RCA (V5)	Black
6	Shield for Trailer CAM RCA (V6)	Black
7	-Not Used-	Black
8	Ground OUT (camera)	White/Black
9	Ground OUT (camera)	White/Black
10	INPUT 4 (+) Enables V6 instead of V1	Purple
11	INPUT 3 (+) Force Front Camera	Pink
12	UART RX	Brown/Black
13	Signal for Reverse-CAM RCA	Yellow
14	Signal for Front CAM RCA	Yellow
15	Signal for Right Turn RCA	Yellow
16	Signal for Left Turn RCA	Yellow
17	Signal for AUX VID RCA	Yellow
18	Signal for Cargo CAM RCA	Yellow
19	-Not Used-	Yellow
20	-Empty-	--
21	OUTPUT 3 12v when AUX is enabled	Red
22	OUTPUT 2 Reverse 12v	Blue/Red
23	OUTPUT 1 12v ACC	Gray/Red
24	UART TX	Brown

Any additional wires not mentioned here are not used for this install.



Wire Side



Wire Side



18-PIN

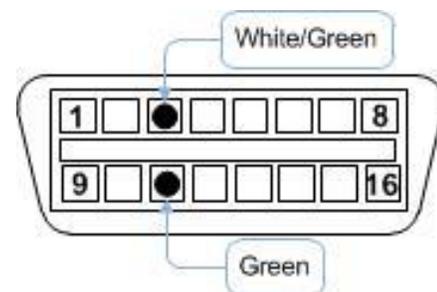


24-PIN

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Ford 4" MULTI-CAM Installation

1. After removing the factory radio, grab the provided **Plug & Play T-harness** and connect the female side to the factory 12-pin plug. Make certain the lock connects together securely.
2. Run the twisted pair of wires (green and white/green) from the 18-pin harness through the dash, down to the OEM OBD2 connector location.
 - a. **Solder** (splice, don't cut) each wire to the OBD2 wires according to their specific label: **Green to Pin 11 & White/Green to Pin 3**.



3. Install all cameras/video sources and run signal/power leads into the front dash opening.
Camera Installation Notes:
 - a. 12v ACC is provided from **Output 1** (PIN 23, gray/red). **If connecting multiple cameras, trigger a relay with this Output instead to power your cameras!**
 - b. **Ground** is provided from the 24-pin harness as well (PIN 8 & 9, white/black) for convenience.
 - c. Connect each camera signal to each yellow RCA per their specific labels (Rear Cam, Front Cam, Right TC, Left TC etc).
4. **Optional:** Connect the following wires for forcing specific cameras on the screen at any time:
 - a. **Input 1** to 12v (+) through a toggle for REAR CAM (you may use OEM dash button for V2 vehicles only, instead)
 - b. **Input 3** to 12v (+) through a toggle for FRONT CAM (you may use OEM dash button for V2 vehicles only, instead)
5. **Optional:** Connect **Input 4** to 12v ACC (+) through a toggle, if the user desires the Trailer CAM to display instead of the Reverse CAM. Any time **Input 4** receives 12v (+), the Trailer CAM will display instead of the Reverse CAM, when the vehicle is placed in reverse. As soon as 12v is removed from **Input 4**, Reverse CAM will then display in reverse as usual. This would be helpful for those installing a camera on the back of a trailer.
6. **AUX VIDEO NOTE:** The AUX video input (V5) can only be activated for V2 vehicles (see chart on page 2, KIT609). If AUX video is still desired on a V1 vehicle, use the Front CAM input instead.
7. Connect the MULTI-CAM module to the 18-pin connector found in the **Plug & Play T-Harness**, and the 24-pin connector to the **CAM input harness**.
8. Connect the male side of the Plug & Play to harness the monitor. Proceed to **Programming** on **Page 5**.

Ford 4" MULTI-CAM Programming

Programming (the vehicle) with the 4" MULTI-CAM is automatic. After all connections are properly made and the module is connected, turn the car on to **IGNITION**, wait for the radio to fully boot and settle before testing functionality.

NOTES:

- The radio **may or may not** visually reboot. It may appear that the radio just boots slowly (the first time, in which case it took programming before the display appeared).
- Place the car into reverse, the screen should automatically display the connected reverse image.

This module VIN-LOCKS to the vehicle it is connected to and cannot be used on any other vehicle until it is De-Programmed. See De-Programming procedure on page 9.

Programming Options for the 4" MULTI-CAM is performed using a Windows PC, and a NAV-TV specific MULTI-CAM updater. You can download the programmer and file from our website:

https://navtv.com/media/products_file/2015/07/14/Ford_4_MULTI-CAM_SW_1.zip . Make sure the proper USB-UART driver is installed, and connect the interface to the PC with the provided USB cable.

Rear view camera:

- ON = V1 (RVC) input
- OFF = OEM Rear Camera equipped

Front view camera:

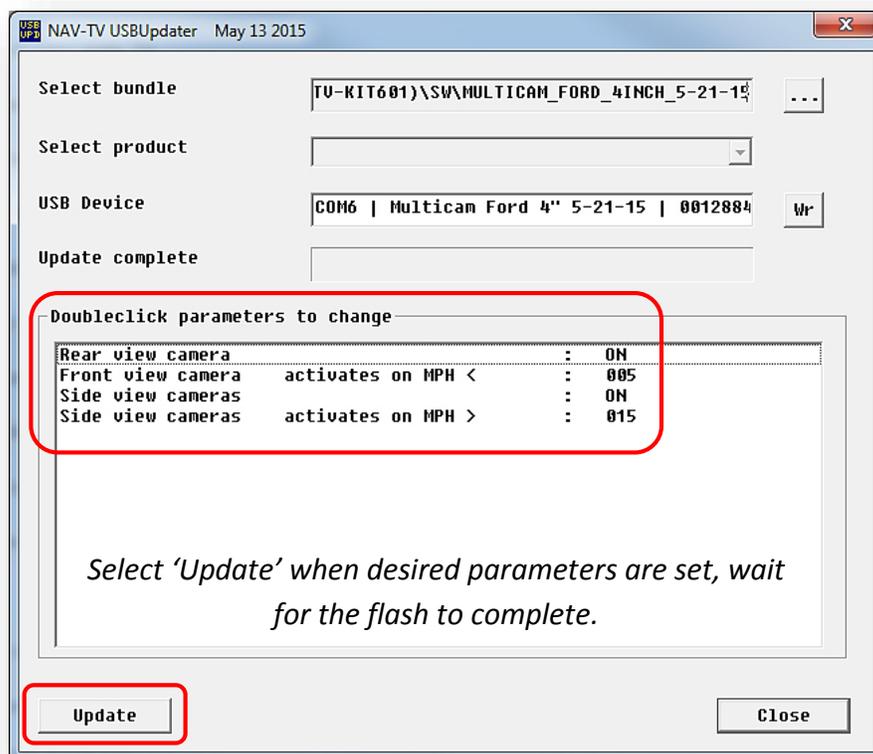
- Front camera will automatically activate below the user-selected mph value and above 0 mph. *If this feature isn't desired, set this value at 0.*

Side view cameras:

- ON = Turn signal cameras will be active (when in drive).
- OFF = Turn signal cameras will be inactive.

Side view cameras (MPH):

- User selectable value when the turn signal cameras will display (only in drive). The cameras will be inactive if the vehicle is traveling slower than the user-selected value.



Ford 4" MULTI-CAM Operation

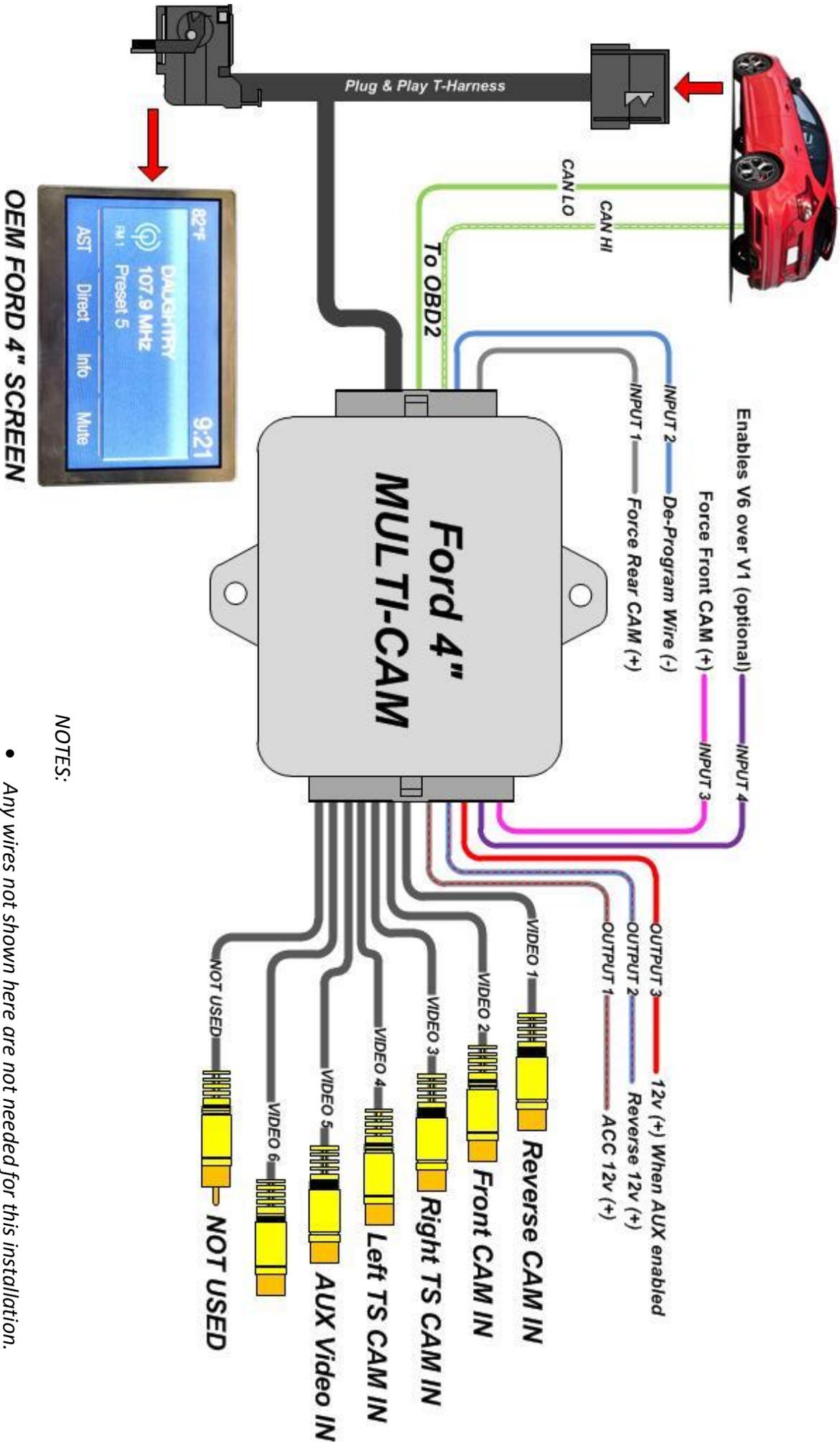
- After all connections are made and programming is complete, placing the vehicle in reverse will automatically display the connected rear camera's image (V1 or OEM rear camera). *If INPUT 4 receives 12v (+) while in reverse as well, V6 (Cargo Cam) will display instead of V1 (reverse camera).*
- If **forced rear camera** is desired, connect **Input 1 (red)** to 12v (+) **through a toggle** (not included) and the rear image will show whenever activated.
- If a front camera was added, **force this camera** by connecting **Input 3 (pink)** to 12v (+) **through a toggle** (not included).
- While in Drive, turn signal cameras will display automatically upon triggering each OEM blinker, respectively. Turn signal cameras will be cancelled if:
 - The vehicle has slowed down beneath the user-set speed (see programming, page 5)
 - The OEM turn signal lever is turned off
 - Another Video input with higher priority is selected

OEM button control (V2 vehicles only. V1 vehicles' buttons are LIN-controlled and not supported for video activation at this time).



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Wiring Diagram



NOTES:

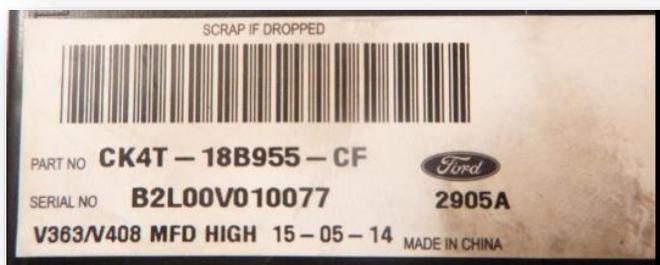
- Any wires not shown here are not needed for this installation.
- Not all wires shown here will be used for every installation.

Ford 4" Screen Compatibility list

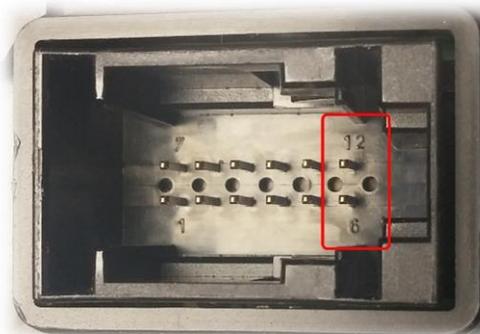
Due to the large variety of different 4" screen part numbers, it is strongly advised to verify the screen compatibility by removing the screen and measuring a 75 ohm termination across pins 6 and 12. NAV-TV cannot assure compatibility unless this step has been taken.

Incompatible Display PART #'s		
EM5T-18B955-CB	CM5T-18B99-AD	CJ5T-18B955-GF
EM5T-18B955-CA	CM5T-18B955-GF	CJ5T-18B955-GE
EJ5T-18B955-GB	CM5T-18B955-CE	CJ5T-18B955-GC
DM5T-18B955-CD	CM5T-18B955-AD	CE8T-18B955-AD
DA6T-18B955-BE	CM5T-18B955-AB	CE8T-18B955-AA
D2BT-18B955-BE		BB5T-19C116-CJ

Compatible Display PART #'s				
FG1T-18B955-CA	EJ5T-18B955-GA	DT4T-19C116-GB	DL3T-18B955-CC	CM5T-18B955-GD
FB5T-19C116-GA	EJ5T-18B955-CC	DT4T-19C116-CD	DG1T-18B955-CD	CM5T-18B955-GB
FB5T-19C116-CA	EG1T-18B955-CD	DT4T-19C116-CC	DB5T-19C116-GB	CM5T-18B955-CF
ET4T-19C116-GG	EG1T-18B955-CA	DT4T-19C116-CB	DB5T-19C116-GA	CK4T-18B955-CF
ET4T-18B955-CC	EB5T-19C116-CD	DT4T-19C116-CA	DB5T-19C116-CBT	CB5T-19C116-GD
ES7T-18B955-CB	EB5T-19C116-CA	DS7T-18B955-CF	DB5T-19C116-CA	CB5T-19C116-GC
ES7T-18B955-CA	EB5T-18B955-GC	DS7T-18B955-CE	DA8T-18B955-CF	CB5T-19C116-CD
EM5T-18B955-JB	EB5T-18B955-GA	DL3T-18B955-CG	DA8T-18B955-CD	CB5T-19C116-CC
EM5T-18B955-CE	EA8T-18B955-CB	DL3T-18B955-CF	CM5T-18B99-GG	BT4T-19C116-CP
EL3T-18B955-CE	DT4T-19C116-GD	DL3T-18B955-CD	CM5T-18B955-GE	BB5T-19C116-CK
				BT4T-19C116-CN



Find the PART number on the back of the main 4" media screen.



Verify 75ohms on pins 6 & 12 on the back of the main 4" media screen.

Ford 4" MULTI-CAM De-Programming Procedure

Use this procedure if you wish to **De-Program** the 4" MULTI-CAM from the car. This must be completed if you're removing the interface from the car, **otherwise the screen will show an error while in reverse. If the vehicle has an OEM reverse camera, there is no need to perform this procedure.**

1. Leave the car's **IGNITION** in the **OFF** position.
2. With the module still connected to the vehicle, connect the **BLUE WIRE** (input 2, pin 11) to **Ground (-)** temporarily.
3. Turn the **IGNITION** to **ON**.
4. The radio **may or may not** visually reboot. It may appear that the radio just boots slowly.
5. Once the radio boots and settles, place the car in reverse, confirm that the main radio image remains on screen and does not show any error.
6. Disconnect the MULTI-CAM system entirely and confirm once more that nothing happens while in reverse.

Video input Priority Chart

Priority	Video Input RCA	Condition
1 st	Rear Cam	<i>When INPUT 4 is <u>not</u> connected</i>
2 nd	Trailer Cam	<i>1st when 12v on INPUT 4</i>
3 rd	Front Cam	
4 th	Turn Signal Cameras	
5 th	AUX Video	



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