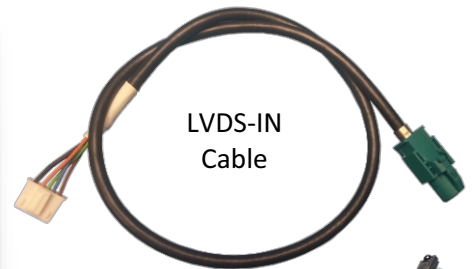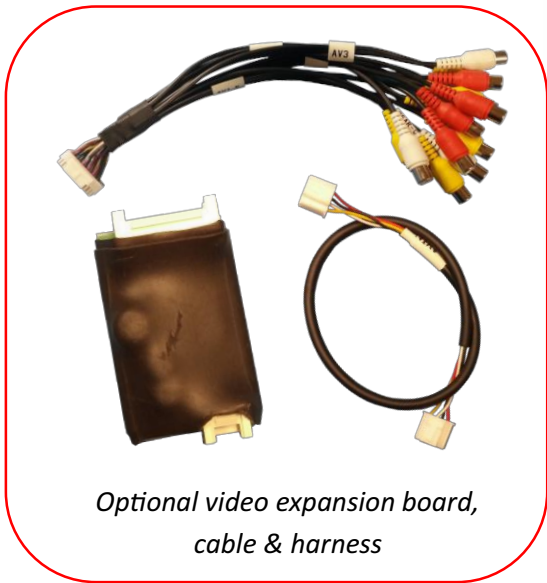# HARDSTONE

HS RC-AU20V

AUDI (Round 4Pins-MMI 3G 3G+)
A1(8X)-A4(8K)-A5(8T)-A6(4F)-A7(4G)
A8(4E-4H)-Q3(8U)-Q5(8R)-Q7(4L)

INTERFACCIA RETROCAMERA + AV + Ingresso GPS
con visualizzazione sensori di parcheggio
linee guida sterzanti - PLUG&PLAY

Audi

C E

Overview

The AUDI-DYN EXT Kit interfaces a backup camera (with dynamic guidelines) and one additional video input (front cam, etc) to the factory media screen in select Audi vehicles with the *external MMi media system* (MMi controls on the console, not vertical radio face).

Kit Content

Optional video expansion board, cable & harness

AUDI-DYN EXT Interface

LVDS-IN Cable

Power/CAN Harness

OSD Menu Remote

IR-Eye Cable

Interface Connectors

| Power/CAN | LVDS Video IN | LVDS Video OUT | RGB IN |

| LVDS (Not Used) | Not Used | Expansion Board Control | Not Used | Dip Switches |

Dip Switch Settings

Dip SW:	1	2	3	4	5	6	7	8
UP	AUX MENU OFF (leave UP normally)	CAN TYPE	CAN TYPE	**RVC OFF**	CAN SPEED 1	N/A	HI RES	KEEP DOWN
DOWN	AUX MENU ON (leave UP normally)	CAN TYPE	CAN TYPE	**RVC ON**	CAN SPEED 2	N/A	LOW RES	KEEP DOWN

YEAR	VEHICLE	Dip Pos:	1	2	3	4	5	6	7	8
Up to 2010	A4, A5, A6, Q5	UP	X	X		RVC OFF	X	N/A	HIGH RES	
		DOWN			X	RVC ON		N/A	LOW RES	X
2011+	A4, A5, Q5	UP	X	X	X	RVC OFF	X	N/A	HIGH RES	
		DOWN				RVC ON		N/A	LOW RES	X
Up to 2010	Q7	UP	X		X	RVC OFF	X	N/A	HIGH RES	
		DOWN		X		RVC ON		N/A	LOW RES	X
2011+	Q3, Q7	UP	X			RVC OFF		N/A	HIGH RES	
		DOWN		X	X	RVC ON	X	N/A	LOW RES	X
2011+	A6	UP	X	X	X	RVC OFF		N/A	HIGH RES	
		DOWN				RVC ON	X	N/A	LOW RES	X

Note: You must remove power to the unit prior to making adjustments to the dip switches.
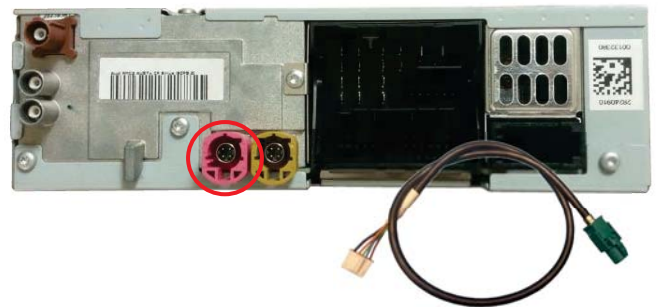
AUDI-DYN-EXT Installation

> **ATTENTION INSTALLER: All connections (including CAN) must be made BEFORE connecting the power harness to this unit for proper startup operation.**

1. Remove the factory radio (CD). Depending on the vehicle, this will require EURO tools or just prying the climate control panel from the sides (use plastic tools!). Disconnect all harnesses and set the radio aside.

2. Remove/drop the glovebox. This requires removing multiple 8mm bolts which secure it to the dash. *In some vehicles the pocket or single DIN media-gateway must be removed to access a bolt for removal*.

   a. Remove this beauty panel **before dropping glove box** (newer AUDI's, beneath glove box):

3. Connect the provided **LVDS-IN Cable** to the OEM radio at the **pink** connector (no nav) or **gray** connector (with nav). This connector is keyed and will only fit in one direction. Run the other end of this cable out to the glove box area and connect to the interface plug labeled 'VIDEO IN'.
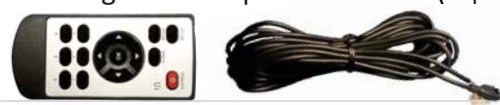

4. *Connect the* <u>OEM</u> *pink (or gray) circular HSD connector previously connected to the radio (removed in step 1) to the green port on the interface labeled 'VIDEO OUT'. You may need to unwrap/cut factory tape for it reach the module with proper slack.*
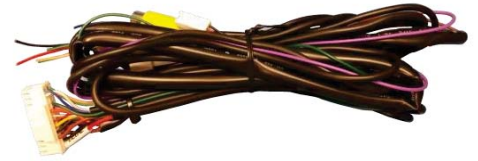

5. Reconnect remaining plugs to the radio and carefully place it back into the dash. Don't secure the radio until fully tested.

6. **Optional:** If this car is **not** equipped with OEM rear parking sensors, you may turn the PDC off in the OSD menu system (see page 7 for menu information).

   Note: If adjusting any RVC or AUX Video menu settings, temporarily connecting the provided IR-Eye is *required.* The IR connector is located among the main power harness (2-pin & 3-pin). See menu settings on page 7 for more info.

7. Grab the provided *Power/CAN Harness* from the AUDI-DYN-EXT kit. Use the chart below to locate and solder (splice, don't cut) the following wires to the car (*you may have to extend a pair of CAN wires for Q7*):

Vehicle	Interface wires	Connect to AUDI Wires:	Wires Location
ALL	GROUND (Black)	Brown (-)	CAN Gateway or Radio
	POWER (Red)	Blue/Red (+)	CAN Gateway or Radio
A4/A5/Q5	CAN HI (Blue)	CAN HI (Orange/Green)	CAN Gateway (Right side of radio. Must remove glove box for access.)
	CAN LO (White)	CAN LO (Orange/Brown)	CAN Gateway (Right side of radio. Must remove glove box for access.)
A6	CAN HI (Blue)	CAN HI (Orange/Blue)	Climate Control (Beneath radio)
	CAN LO (White)	CAN LO (Orange/Brown)	Climate Control (Beneath radio)
Q3/Q7	CAN HI (Blue)	CAN HI (Orange/Black)	CAN Gateway (High in drivers dash to the left of steering wheel)
	CAN LO (White)	CAN LO (Orange/Brown with blue dots)	CAN Gateway (High in drivers dash to the left of steering wheel)

AUDI A4, A5, Q5 CAN Wires Location

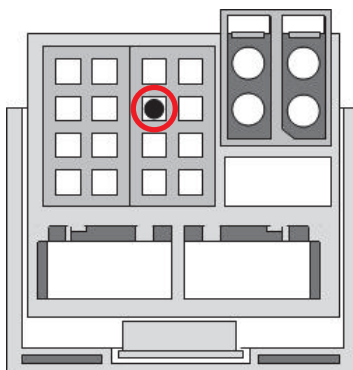CAN Gateway location (A4, A5, Q5)

CAN Gateway

Without MOST Fiber

With MOST Fiber

8. Install your reverse camera and run signal, power and ground wires up front to the AUDI interface.

9. Power your camera with an ACC source, not a reverse lamp trigger (the **purple** wire from the main power harness labeled *'REAR12VOUT'* provides 12v (+) when in reverese only, if you want to use a reverse signal).

10. Connect the signal for your camera to the yellow RCA among the **Power/CAN Harness** labeled *'CAMERA'*.

11. **Optional:** If adding an auxillary video in or front camera, connect the signal to the RCA among the **Power/CAN Harness** labeled 'CVBSIN'. If automatic front camera switching is desired, the setting must be activated in the OSD Menu system. See page 8.

12. Connect the 24-pin white plug from the **Power/CAN Harness** to the port on the AUDI 09 interface labeled *'Power/CAN'*.

13. *UPDATE:* For older AUDI's (only) that do **not** have the 'iNAV' button on the steering wheel and adding AUX Video/Front Camera, connect (solder) the **White wire** labeled 'MMI' to the **MMI** data wire located behind the OEM radio at the Euro-style plug, at **pin 10**. This wire color will vary by vehicle, but the **pin location** will remain the same.

Wire side view

Press the **NAV** button near the MMi command knob for switching to the AUX video/front camera source at any time.
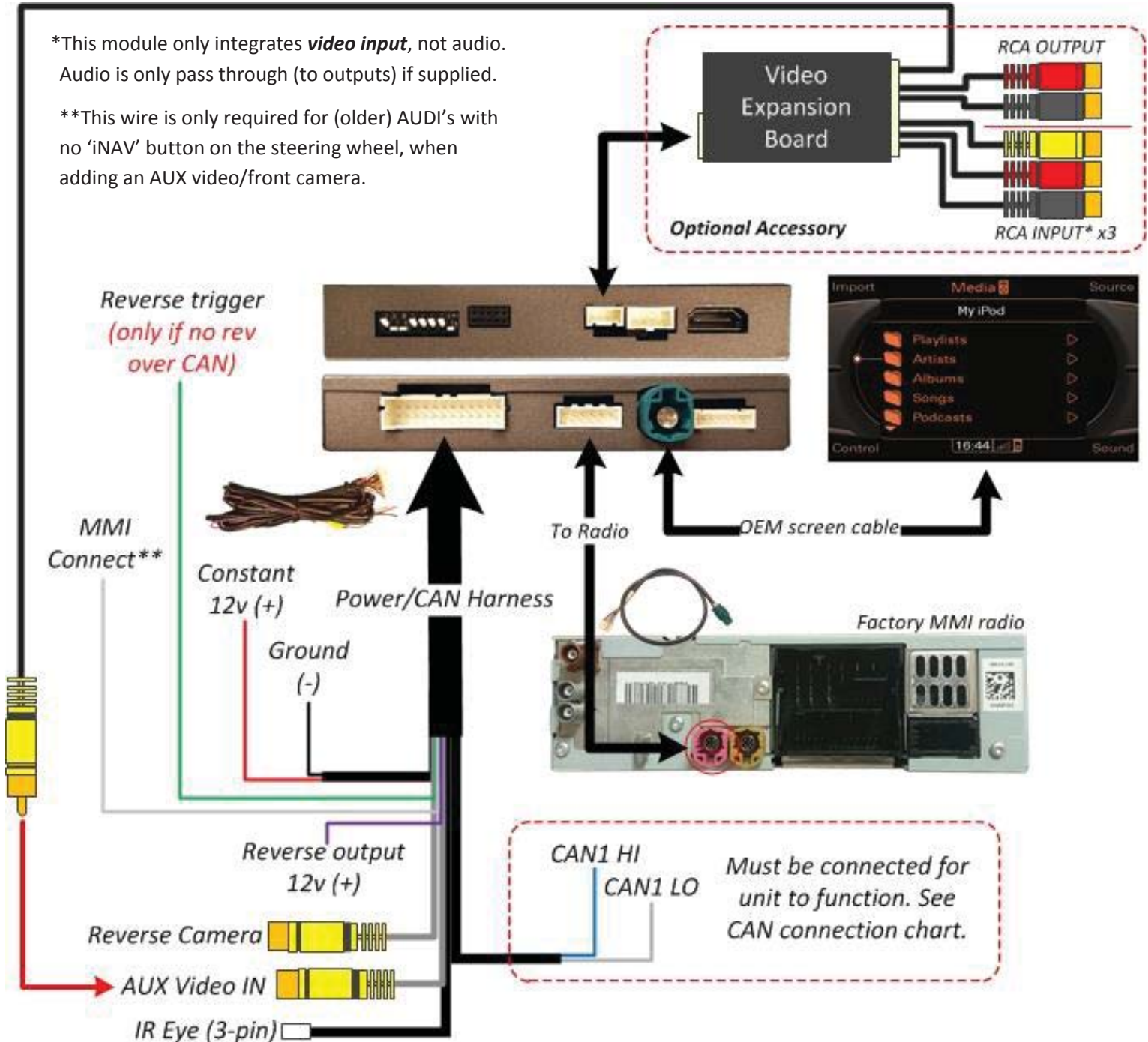
14. Start the car and test for proper functionality before replacing dash pieces. If menu adjustments are needed (to remove sensor overlay, etc.), proceed to 'Menu Adjustments'

Installation Diagram

Remove the RADIO, not the screen for EXT MMI

*This module only integrates **video input**, not audio. Audio is only pass through (to outputs) if supplied.

**This wire is only required for (older) AUDI's with no 'iNAV' button on the steering wheel, when adding an AUX video/front camera.

RCA OUTPUT

Video Expansion Board

Optional Accessory

RCA INPUT* x3

Reverse trigger *(only if no rev over CAN)*

To Radio

OEM screen cable

Import   Media   Source
My iPod
Playlists
Artists
Albums
Songs
Podcasts
Control   16:44   Sound

MMI Connect**

Constant 12v (+)

Power/CAN Harness

Ground (-)

Factory MMI radio

Reverse output 12v (+)

Reverse Camera

AUX Video IN

IR Eye (3-pin)

CAN1 HI
CAN1 LO

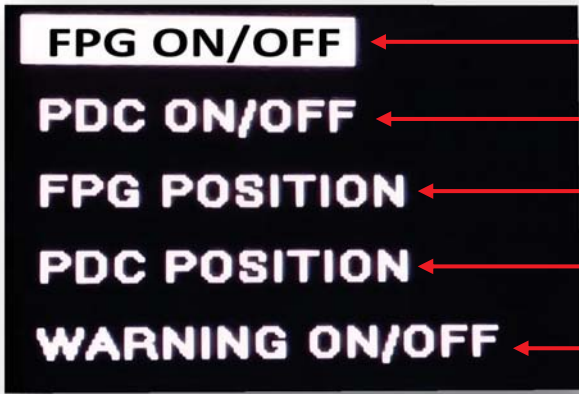Must be connected for unit to function. See CAN connection chart.

Menu Adjustments

Before you start:
1. The IR-Eye must be connected
2. Make sure the car's ignition is on and radio is on
3. You must be in *Reverse Camera* mode *OR AUX Video* mode (see below):
   - *Reverse Camera Mode* adjusts Reverse Camera Settings
   - *AUX Video Mode* adjusts AUX Video Settings
4. Press the *OK BUTTON* <u>4 times</u> (numbers will display per press), then press *POWER*.
5. The *OSD Menu* will appear on screen (auto-time out in about 5 seconds if no action occurs).

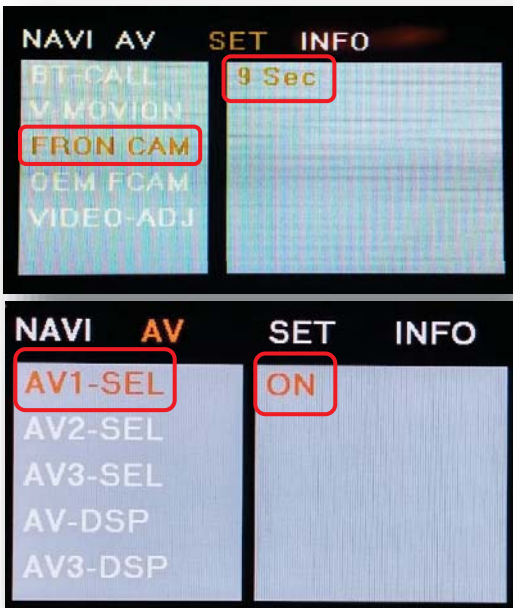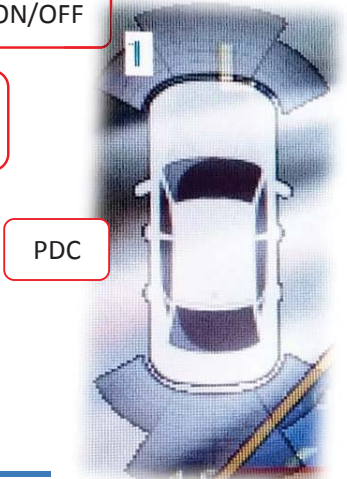**Return**
(AUX VID menu control)

RVC Menu

Functional Parking Guidelines ON/OFF

Parking Distance Control ON/OFF (while in reverse)

Adjust FPG Position

Adjust PDC Position

'Safe to move?' ON/OFF

PDC

If adding a front camera OR Aux Video source:

1. Disconnect POWER/CAN Harness from interface
2. Place DIP SWITCH 1 in the DOWN position, reconnect power
3. Press the *iNAV* button on the steering wheel to activate 'NAV input'
4. Press *OK* button on remote 4 times, then press *POWER*

AUX VIDEO Menu

SET – FRON CAM must be turned on if adding a *front camera and the user wishes for automatic front camera switching.* Options for 5, 7, 9 or 11 seconds are user-selectable for the length of time the front camera input stays active once the vehicle is placed out of reverse.

If the user wants only an AUX video input *without front camera*, set *AV1-SEL* to *ON*

Once finished with settings, place DIP SWITCH 1 back into the *UP position* and reset power to interface.

AUDI DYN-EXT Operation

- Once all connections have been properly made, placing the vehicle in reverse will show the connected rear camera image with Dynamic Guidelines which correspond with the steering wheel geometry.
- If a front camera was added and **Automatic front-camera switching** was turned on, whenever the vehicle leaves reverse (after showing reverse image once) the connected front camera will display for the user-set amount of time (5, 7, 9 or 11 seconds, see page 7 for menu settings).
- If AUX Video is wanted **(no front camera)**, use the **iNAV** button on the steering wheel for AUX Video switching. The option for AUX Video must be turned on in the AUX VID Menu (see page7).

For vehicles without 'iNAV' button on the steering wheel, use the **NAV** button near the MMi command knob for switching to AUX/font camera *(MMi wire must be connected, see page 5, step 13).*