

This interface can insert video into AUDI MMI 3G/4G screens (including Audi A1,A4,A5,Q5,A6,Q7). It can insert 1 RGB High definition video and 2AV and 1 reverse camera video or iPod video onto the screen. It is an upgraded version from previous FV-MMI-3G, which now support mmi-4G with OEM keys to switch and control installed devices. Also it has guideline displays. This interface support all audi-4P connector cars.

the following are the features.

- ✓ The interface can be installed in all AUDI MMI screens with round-4Pin connector, the panel resolution can be configured with DIP.
- ✓ By using the CAN box, the reverse guide lines can be generated by can bus.
- ✓ The internal video processor and 64M video memory makes this interface displays HD map onto A1/A3 MMI-4G screens. Many places in the world the new map only be released in the HD way, which also offers over-speed camera detection in advance, and map upgrade possibilities.
- ✓ This interface allows OEM keys to switch: for Audi-MMI-4G cars like A1, people use “NAV” key on steering wheel to switch; for MMI-3G cars like A6/A7, people use MODE key to switch, also the MMI knob can be used to control installed device.

FOSP has another interface for Audi cars with 4P round connector, which is Audi\_MMI\_3G\_Radar , it has all the features above, further The OEM radar picture can be displayed onto the installed camera signal by overlaying on the left-top 1/4 area of screen.

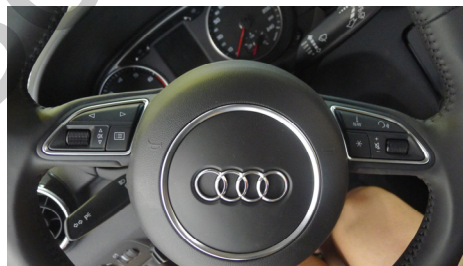


1. DIP settings

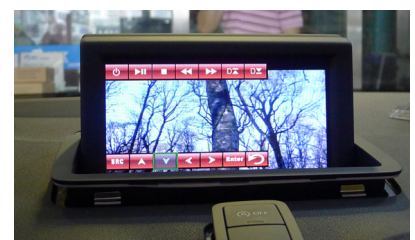


DIP	Down side (=ON)	Up side (=OFF)
1	RGB input enabled	RGB input disabled
2,3	AV1/2 input enabled	AV1/2 input disabled
4	RGB input= VGA resolution 800X480	RGB input= NTSC resolution 400[or 480]X240.
5	AV4 video is selected when green wire goes to 12V.[this is for the case aftermarket camera is installed]	Car oem picture is selected when green wire = 12V.
6	Set to ON once for IR programming, and to ON 5 times for touch panel calibration.	Set to OFF for normal use.
<b>DIP</b>	<b>8UP:</b> the screen is 800X480 resolution in A6/Q7 cars	<b>8DOWN:</b> the screen is 400X240 resolution in A1/A2/A4/Q5 cars.
<b>7, 8</b>	The DIP7 should ALWAYS Down for audi. Otherwise people see black screen instead of inserted video.	

Operation guide:



- **SWITCH:** when in MMI-4G cars like A1, people press NAV to switch; when in MMI-3G cars, people press MODE to switch, or NAV on the mmi-console to switch.
- **Reverse:** when the driver goes to R, the can box's output [Green wire=12V], then the reverse image will be shown. And guideline can be shown if enabled by OSD.
- **MMI control:** When in AV1/AV2, the user can rotate the mmi-knob to pop out the MMI icons, and press to make the execution. For MMI4G, people needs to rotate the left-hand knob, up or down to traverse the MMI menu, push=execution.



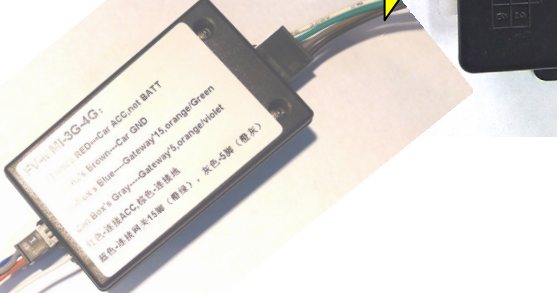
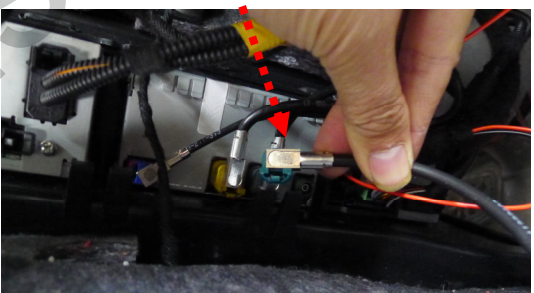
2. system connection:



AV1,AV2 audio are selected to output

The 4Pin LVDS should be inserted to the monitor's socket.

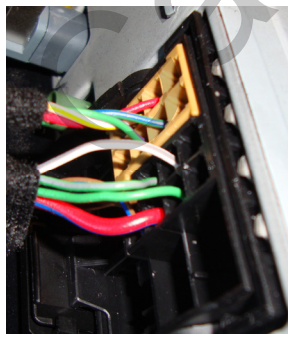
The connector from the car computer should be inserted onto the socket here.



CAN box has 5 input wires, to connect to..

- **Blue CAN+** ----Gateway's Orange/Green-Pin15
- **Gray CAN-** ---- Gateway's Orange/Gray -pin5
- **Red with Fuse**---- ACC, not BATT. [because the ACC from Can box is not generated, it just follows BATT, some installers just Connect the MMI-Data wire, while leave the CAN bus wire away.]
- **Black**-----to Ground Chassis.
- **White wire**[with MMI label]---to the MMI-data wire behind the CD, like the white/Gray strip in the picture. For MMI-4G cars, this wire is not there, so leave it un-connected.

The 5, 15 are twisted can bus wires. The Blue,Gray and white wire, when connected wrong, will not damage anything, since they have isolation inside. Correct connection will make the LED blinking on can box.



The CAN gateway in audi cars are like the picture above.

- It will generate reverse signal[green wire], guideline signal, and switch signal[white wire].
- Some audi cars will stop the steering angle signal when parked for a while, when this happens, the guideline will not move as the steering wheel rotates, however, this signal will come back again when the car starts to move and get to >10km/H.

**The 6PIN power connector signal definition between the Can box and interface box:**

**YELLOW:** power supply of 12V BATT.

**RED: generated ACC (=12V when key in ignition state):** when=12V, the interface works.

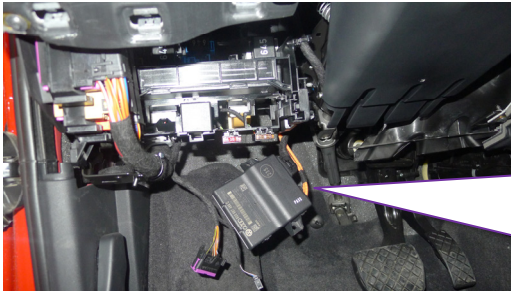
**BLACK:** Ground to Chassis.

**GREEN:** Can box generated reverse trigger signal [when =12V the reverse video is enabled]

**WHITE:** Can box generated switch signal wire, when=12V, this interface switches. [max.25V]

**GRAY:** CAN box's communication with interface on sharing control signal to DVD/TV on this wire.[if we do not need to idrv to control DVD/TV/iPOD, this wire may be cut off.]

**CAN Gateway's location:**



All Gateway inside an Audi looks like this, it has CAN+ Optical cable connected.

A1,A3 cars: it is under the Steering wheel connection, like this picture.

A6/A7A8 etc: it is near the co-driver's right foot stand.

Q5/Q3 etc: it is near the co-driver's left knee.

**5. the 3 side key buttons**

The input box has 3 side keys, the installer may use it to tune the picture display, and touch function for the connected DVD or other devices. The 3 keys are : menu, +, -.

The first 5 options has separate state memory. The modification of one input is different not affecting others.

- The 3 side keys are : menu, +, - respectively. When menu is press, OSD strings will pop up on screen, and the installer may adjust the best video effect. The +/- will change the value.
- The brightness/contrast/saturation tunes the color of the current video input.
- The H position,V position sets the image position on screen.
- The DVD/TUNER/NAVI is to set the IR code output to the installed device, so people use original knob to control
- When set to "none", the control icons will not pop out
- When set to "Prog", the installer can use DIP6=Down to program the IR code into the interface, so extra new devices can be controlled.



The last option: "Guide Line.....ON": the installer can set ON/OFF to enable the parking guide line, which shows the safe zone when parking.

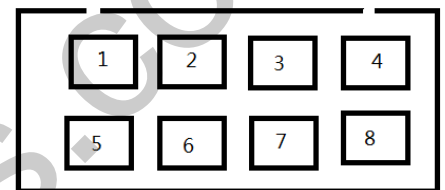


### The programming of IR code:

- There are >10 types of DVD, NAVI, and Tuners' IR code are stored inside the interface. The installer just adjusts the options to select to wanted one, then it works. If the wanted type is not there, he may set the option to be "Prog" in the menu.
- When programming, switch the input to AV1, and set DIP6 down once, then the control icons will be shown, and one of the them will be blinking. Point the IR remote controller to the IR port of interface, the blinking icon will be moved to the next one. Which means one code is programmed. Repeat this step until all icons are programmed.  
The gray wire of the 6P power connector is the same as IR-data wire, it can be connected to ir sensor-signal to program IR as well.
- The programming of AV2 is the same as above.



### 6. The Ctrl port.



The **Ctrl port** has 8 pins, it is not necessary for the installers to use it in most cases, however it can be used for installer's convenience in case many more extra devices are installed.

Pin 1, Pin2	+5V output voltage for sound switch relay when AV1 is selected, 0V when AV2 selected. [max output=2A, while most mechanical relay only needs 0.1~0.3A.]	This pin can pull the relay with +5V.
Pin3:	constant +5V when the unit is working.	max 2A output.
Pin 4,8	GND	It is tied to GND inside.
Pin 5: Pin 6:	data bus for touch screen clock bus for touch screen.	Pin5,6 should NOT be connected to GND, because it will halt the CPU inside. Leave it open for normal use.
Pin 7	+5V output voltage for touch screen switch relay, when in inserted video mode, this pin=5V, when in original car video mode, this pin=0V.	For imported cars which needs touch screen for installed navigation computer, this voltage can be used to switch the original touch screen. max 2A output.

### 7. Parameters

No.	name	parameter
1	RGB video amplitude	0.7Vpp with 75 ohm impedance
2	sync amplitude in RGB-navi port	3~5Vpp with 5K ohm impedance Sync should be NTSC composite with negative polarity. When in VGA mode, the Hsync and Vsync should be combined by a 74HC86 to make a Composite sync.[Xor operation], it can be XOR with '1' to get inverted to negative polarity.
3	RGB resolution	NTSC-RGB navigation, that is. 320X240,400X240,480X240

		Or VGA resolution[640X480 or 800X480]
4	Av1,Av2, cam video	0.7Vpp with 75 ohm impedance NTSC/PAL/SECAM automatic switch
5	IR RGB, IR_AV1 output	3.3V digital infrared control code with 4 data bytes [machine code1,machine code 2, user code, verification code]
6	Normal Power consumption	2.4W [0.2A @12V]
7	Standby current	< 10uA
8	Reverse trigger threshold	>5V trigger
9	Ctrl port Pin1,2 and Pin7: Output voltage	Relay pull voltage for Audio and touch screen selection 5V volts.
10	Ctrl port Pin1,2 and Pin7: Current	2A. Tested to have no damage when short-circuit to GND for 2 minutes. Leave it open when do not use.
11	Work temperature	-40 ~ +85C