Audi MMI3G basic/high, MMI3G+ basic/high and VW RNS850 navigation systems with 4pin HSD LVDS connector

Video-inserter for front- and rear-view camera input and additional video source

ATTENTION! The interface is installed on the backside of the head-unit, not on the monitor!!!

Product features

- **Video-Inserter for Factory-Infotainment Monitors**
- **Rear and Front Camera FBAS Input**
- **FBAS Video Input for After-Market Devices (e.g. DVD-Player, DVD-Tuner)**
- **Automatic Switching to Rear View Camera, Input by Engagement of Reverse Gear**
- **Manual Switching to Front Camera by Keypad or MMI-Button**
- **Activatable Parking Guide Lines for Rear-View Camera (not all vehicles)**
- **Video-in-motion (ONLY for connected video-sources)**
- **AV-inputs PAL/NTSC compatible**

Contents

Legal Information

By law, watching moving pictures while driving is prohibited, the driver must not be distracted. We do not accept any liability for material damage or personal injury resulting, directly or indirectly, from installation or operation of this product. This product should only be used while standing or to display fixed menus or rear-view-camera video when the vehicle is moving, for example the MP3 menu for DVD upgrades.

Changes/updates of the vehicle's software can cause malfunctions of the interface. We offer free software-updates for our interfaces for one year after purchase. To receive a free update, the interface must be sent in at own cost. Labor cost for and other expenses involved with the software-updates will not be refunded.

1. Prior to installation

Read the manual prior to installation.
Technical knowledge is necessary for installation. The place of installation must be free of moisture and away from heat sources.

1.1. Delivery contents

Take down the serial number of the interface and store this manual for support purposes: _____

1.2. Checking the compatibility of vehicle and accessories

Requirements

Vehicles	Navigation system (with 4pin HSD video connector)	Item no.
Audi Q3 (8U)	All head-units with monitor	**Q3 cable**
Audi A1 (8X), **Q7** (4L)	All head-units with monitor	**GW cable**
Audi A4 (8K, 8K allroad), **A5** (8T), **A6** (4F, 4F allroad), **A6** (4G) till about 10/2014, **A7** (4G), **A8** (4E, 4H), **Q5** (8R)	MMI3G, MMI3G+ basic/high	
VW Touareg from model year 2011	RNS850	

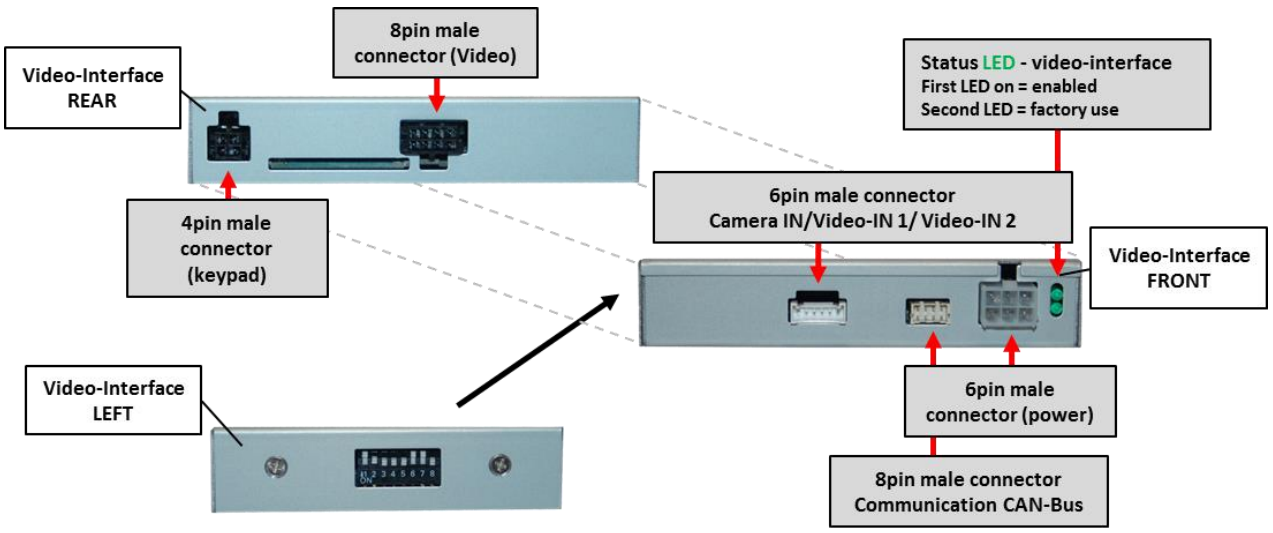
Limitations

Video only	The interface inserts ONLY video into the infotainment. For sound use the possibly existing factory-audio-AUX-input, a FM-modulator or the AUX-in interface AUX-110.
Factory OPS	Display of an optical park display (OPS) isn't possible if an after-market rear-view camera is connected and reverse gear is engaged. Acoustic signals are still existing.
Factory rear-view camera	Automatic switch-back from inserted video to factory rear-view camera only while reverse gear is engaged. To delay the switch-back time, additional electronics is required.

1.3. Boxes and connectors

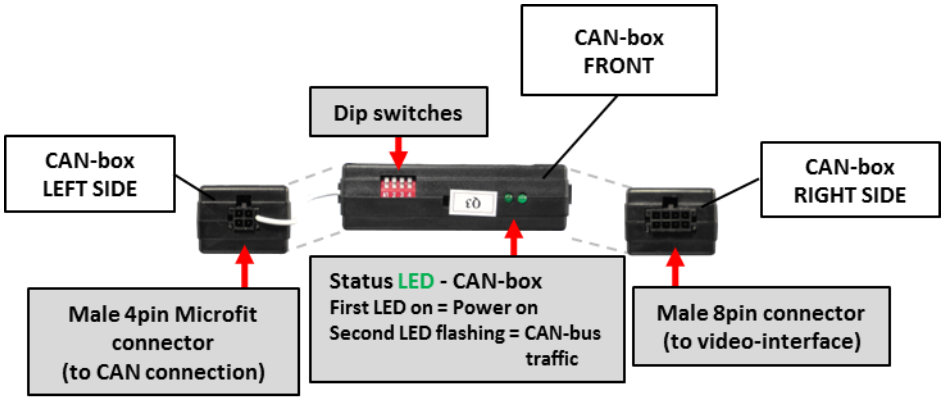
1.3.1. Video-interface

The video-interface converts the connected after-market sources video signals to an LVDS signal which is the inserted into the factory monitor on certain trigger options.



1.3.2. CAN-box

The CAN-box reads digital signals from the CAN-bus and converts them for the video-interface.



1.4. Dip-switch settings

Some settings must be selected by the dip-switches on the video-interface. Dip position down is ON and position up is OFF.

Dip	Function	ON (down)	OFF (up)
1	No Function		Set OFF
2	Input Front Camera	enabled	disabled
3	Video 2	enabled	disabled
4	No Function		Switch to OFF
5	Rear-view cam type	After-Market	Factory or none
6	No function	-	Set OFF
7	Monitor selection	Try all 4 possible combinations of dip 7 and 8 to find the best picture (quality and size)	
8			

See following chapters for detailed information.

1.4.1.1. Enabling the interface's video inputs (dip 2-3)

Only the enabled video inputs can be accessed when switching through the interface's video sources. It is recommended to enable only the required inputs for the disabled will be skipped when switching through the video-interfaces inputs.

1.4.1.2. Rear-view camera setting (dip 5)

If set to OFF, the interface switches to factory LVDS picture while the reverse gear is engaged to display factory rear-view camera or factory optical park system picture.
If set to ON, the interface witches to its rear-view camera input CAM while the reverse gear is engaged.

1.4.1.3. Monitor selection (dip 7-8)

Dip 7 and 8 are for monitor-specific video settings which cannot be predicted as even within the same head-unit version, the monitor specifications may vary. It is necessary to try all possible combinations (both OFF, both ON, 7 OFF and 8 ON, 7 ON and 8 OFF) - while a working video source is connected to the chosen input of the interface - to see which combination gives the best picture quality and size (some may give no picture). It is possible to first hot plug through the dip combinations, but if you do not experience any change of picture after trying all 4 options, retry and disconnected the 6pin power plug of the video-box between every change of the dip setting.

1.5. Dip-switch settings of CAN-box

Choose the navigation the interface is to be installed in and set dip 1 to 4 according to the below table.

ON ↓

Fahrzeug/Navigation	Dip 1	Dip 2	Dip 3	Dip 4
A1, A4, Q3	**OFF**	OFF	OFF	OFF
A6, Q7	**ON**	OFF	OFF	OFF

2. Installation

Switch off ignition and disconnect the vehicle's battery! The interface needs a permanent 12V source. If according to factory rules disconnecting the battery is to be avoided, it is usually sufficient to put the vehicle is sleep-mode. In case the sleep-mode does not show success, disconnect the battery with a resistor lead.
If power source is not taken directly from the battery, the connection has to be checked for being start-up proven and permanent.

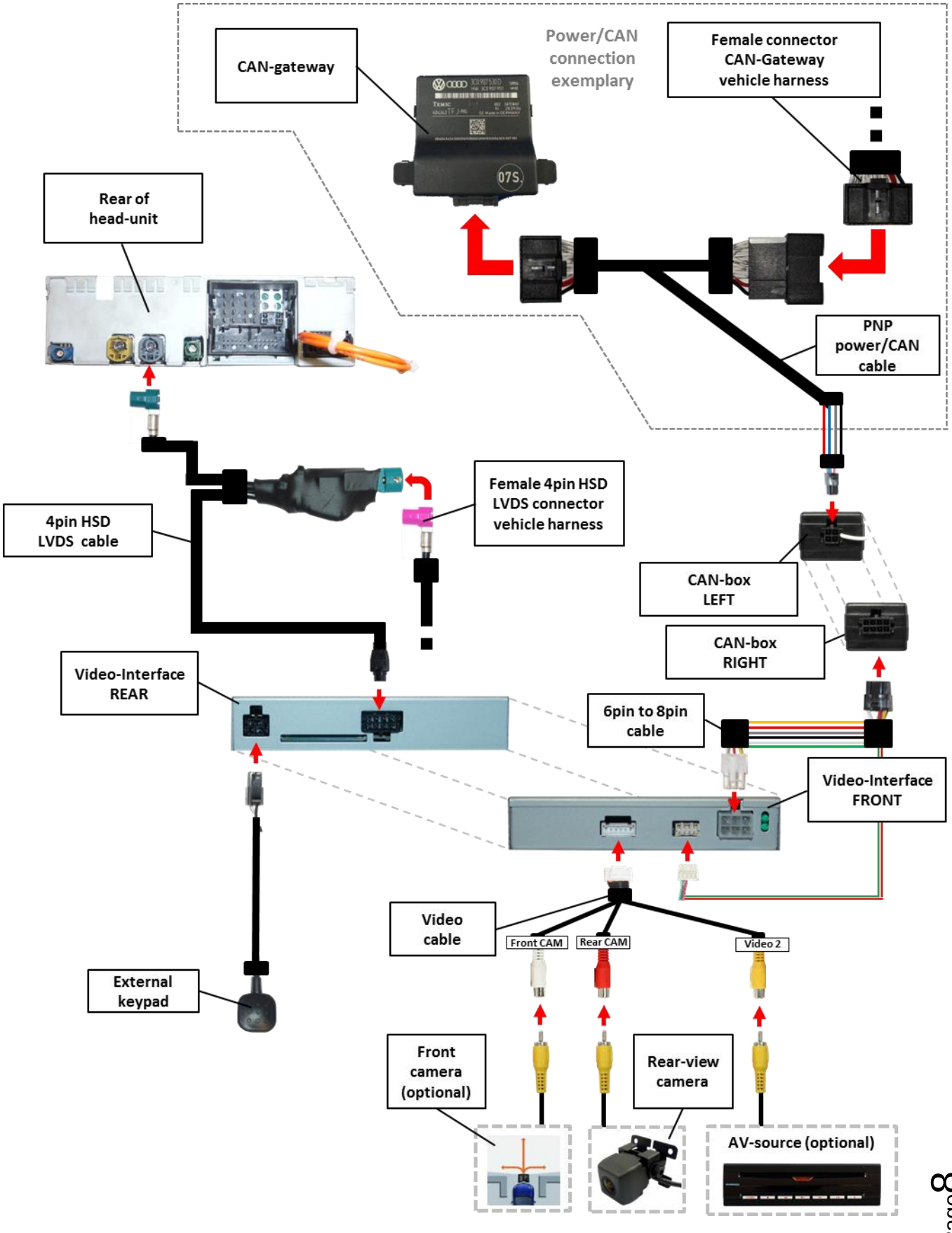
2.1. Place of installation

The interface is installed on the backside of the head-unit (navigation computer/radio).

Depending on the version of the interface the connection to CAN-Bus and power is different:

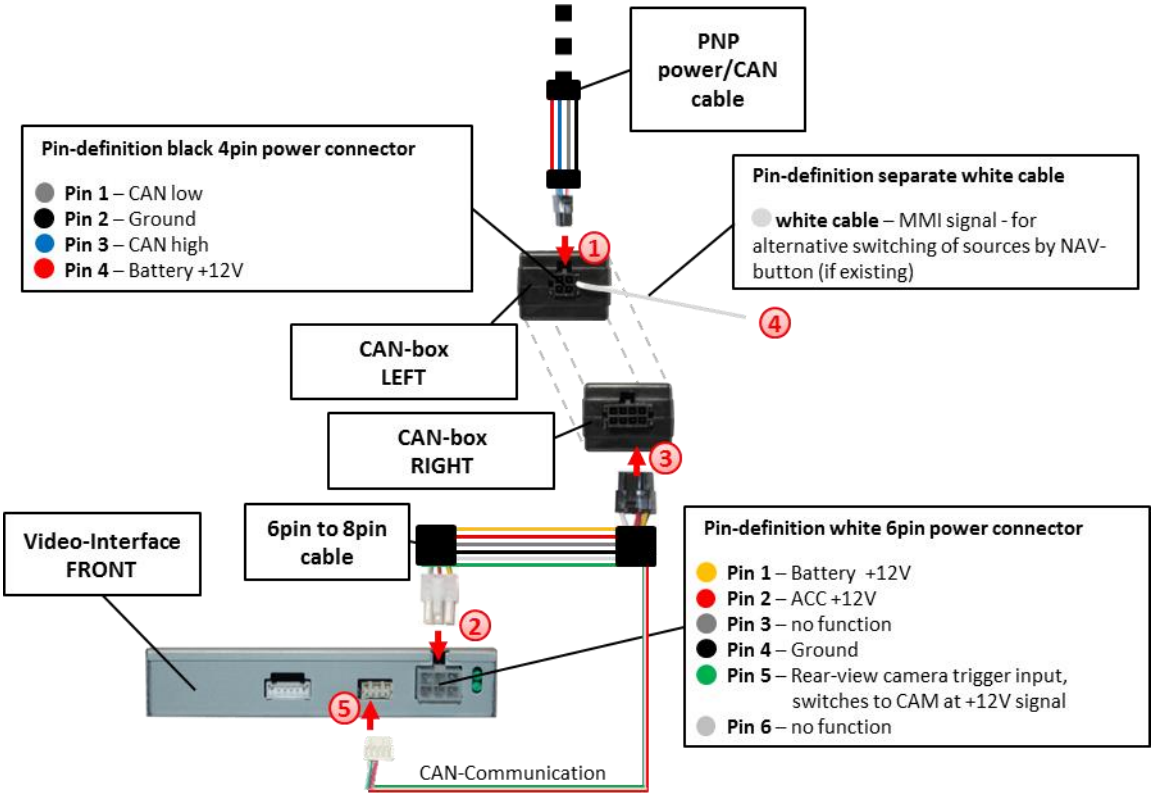
Item no.	PNP cable CAN-bus/power
Q3 cable	Climate control panel + head unit
GW cable	CAN-gateway
Special case RNS850: GW cable	Cable with open ends

2.2. Connection schema



2.3. Connecting Video-interface and CAN-box

The CAN-box reads digital signals from the CAN-Bus and converts them for the video-interface. ACC +12V max. 0.5A (red wire of 6pin) and reverse gear +12V max. 0.5A (green wire of 6pin) constant signal.



Note: It is possible to use the interface without MMI-box. In this case sort the female 8pin connector out from the 6pin to 8pin cable.

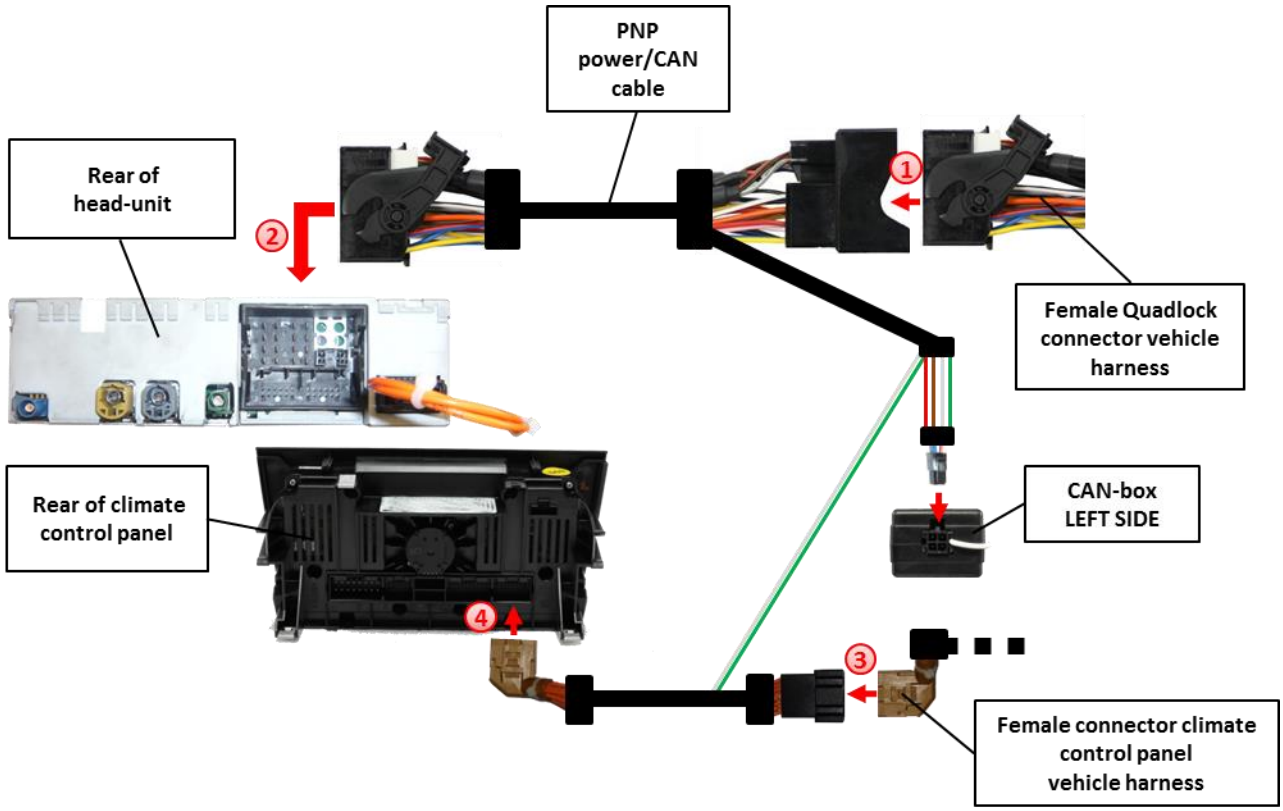
1. Connect black female 4pin Micro-Fit connector of the PNP power/CAN cable to the male 4pin Micro-Fit connector of the CAN-box.
2. Connect white female 6pin connector of the 6pin to 8pin cable to the male 6pin connector of the video-interface.
3. Connect black female 8pin Micro-Fit connector of the 6pin to 8pin cable to male 8pin Micro-Fit connector of the MMI-box.

   Note: Check LEDs on video-interface after reconnecting the battery, one must be on.
4. Connect the separate white cable to MMI signal – only for alternative switching of sources by NAV button in the centre console (if existing).
5. Connect the red and green twisted wire of 6Pin to 8Pin cables to 4Pin female connector of Video-Interface.

Note: The CAN-box is not compatible with all vehicles. If the CAN-Box does not deliver ACC to pin2 of the video-interface or blocks the vehicle CAN, it is possible to install without CAN-Box. In this case see also note in chapter after-market rear-view camera if one is supposed to be connected.

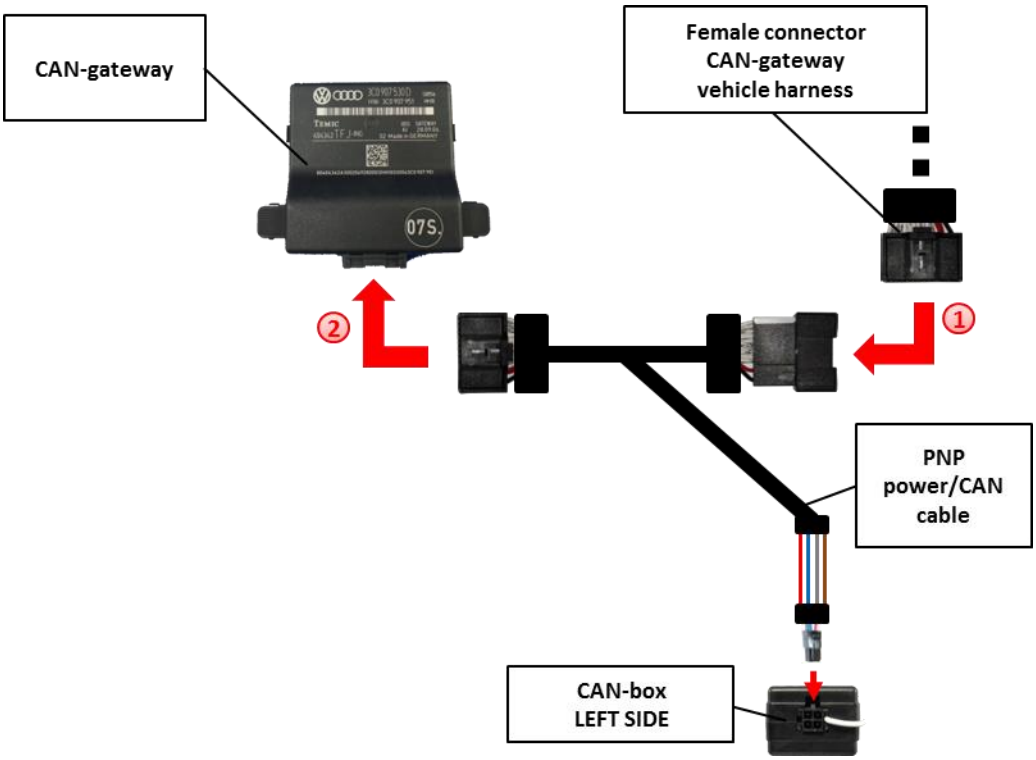
2.4. Connecting power and CAN-bus

2.4.1. Q3 cable – Connection to the climate control panel and head-unit



1. Remove the female Quadlock connector of the vehicle harness from the rear of the Head-unit and connect it to the male Quadlock connector of the PNP power/CAN cable.
2. Connect the female Quadlock connector of PNP power/CAN cable to the male Quadlock connector of the head-unit.
3. Remove the female connector of climate control panel of vehicle harness from the rear of climate control panel and connect it to the male connector of the PNP power/CAN cable.
4. Connect the female connector of PNP power/CAN cable to the male connector on the rear of climate control panel.

2.4.2. GW cable – Connection to the CAN-gateway



1 Remove the female connector CAN-gateway of the vehicle harness from the rear of the CAN-gatewayHead-unit and connect it to the male connector of the PNP power/CAN cable.

Pin-definition 4pin cable	Pin-definition CAN-gateway
● **CAN low**	●● Pin 5
● **CAN high**	●● Pin 15
● **Ground**	Pin 10 of Quadlock!

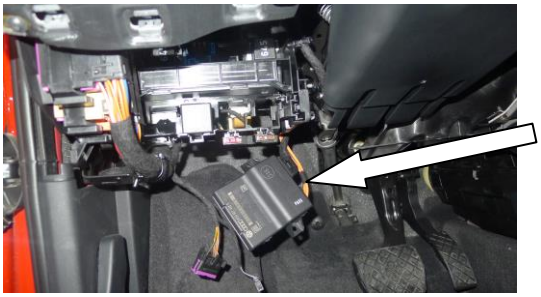

CAN-gateway

Note: No liability for vehicle wire colours and pin definition!
Possible changes by the vehicle manufacturer. The given information must be verified by the installer.

2 Connect female connector of PNP power/CAN cable to the male connector of CAN-gateway.

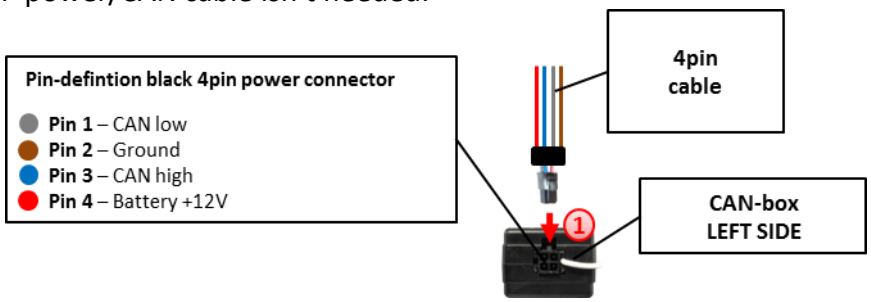
Location of CAN-gateway

- A1/A3 below the steering-wheel
- A6/A7/A8 footwell on the passenger side below right (A6 from 2013 middle of rear bench seat)
- Q5/Q3 footwell on the passenger side top left


Location under the steering-wheel

2.4.3. RNS850 – Cable with open ends

For installation in VW vehicles with RNS850 use the additional 4pin power cable with open ends. The PNP power/CAN cable isn't needed.



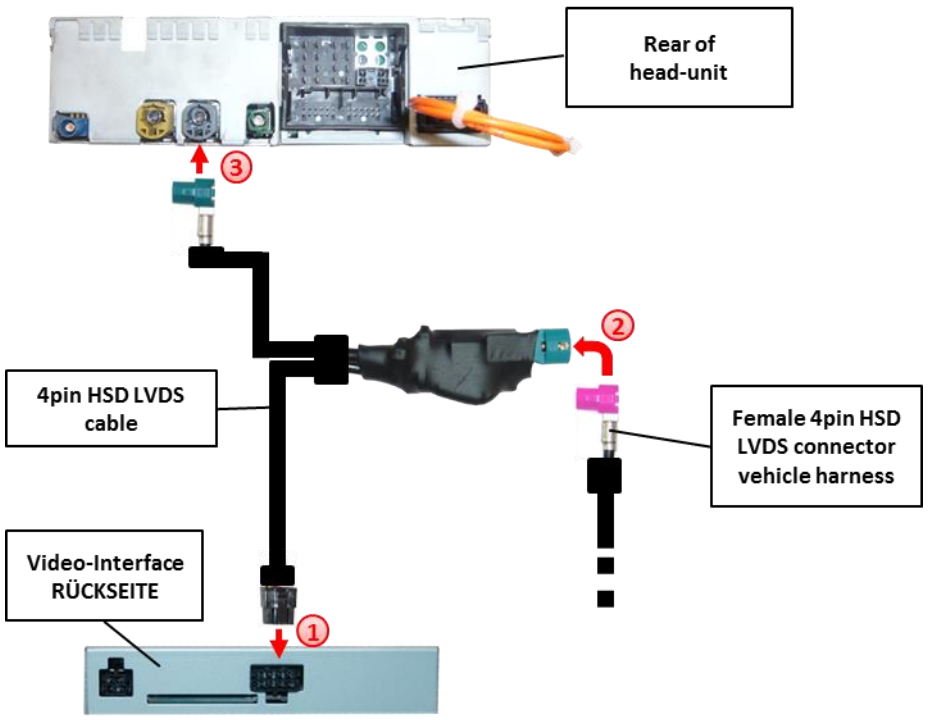
1 Connect loose ends of the 4pin cable to ground, battery, CAN high and CAN low.

Note: Connect CAN-bus to the climate unit to get ACC and reverse signal. Otherwise the CAN-box supplies only ACC.

No switching of video-sources by buttons of RNS850 or steering-wheel possible!

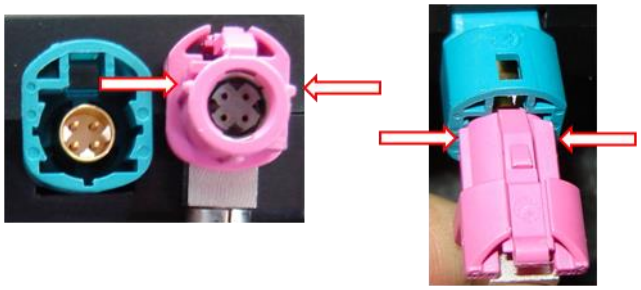
2.5. Connection to the head-unit

Remove head-unit (navigation computer/radio).



1. Connect female 8pin Micro-Fit connector of the 4pin HSD LVDS cable to male 8pin Micro-Fit connector of the video-interface.

2. Remove female 4pin HSD LVDS connector from the rear of the head-unit and connect it to the male 4pin HSD LVDS connector of the video-interface.



Note: The marked lug of the female 4pin HSD LVDS connector of the vehicle harness has to be cut off! Colour of the female 4pin HSD LVDS connector on vehicles with 8” monitor is grey.

3. Connect female 4pin connector of the HSD LVDS interface cable to the male 4pin HSD LVDS connector of the head-unit.

2.6. Connecting peripheral devices

It is possible to connect an after-market rear-view camera, an after-market front camera and an after-market AV-source to the video-interface.

Before final installation of the peripheral devices, we recommend a test-run of the interface. Due to changes in the production of the vehicle manufacturer is always the possibility of incompatibility.

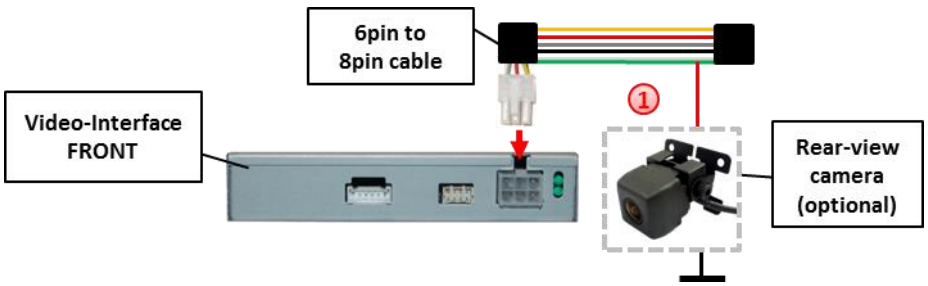
2.6.1 After-Market Rear View Camera

Some vehicles have a different reverse gear code on the Can-Bus, which is not compatible to the CAN-Box included in the scope of delivery. For this reason there are two possibilities of installation. If the Can-Box supports the reverse gear, the green wire of the 6Pin to 8pin cable is occupied by +12V, as long as the reverse gear is engaged.

Note: Before testing, please, don't forget to shift the Dip 5 of the Video Interface to ON.

2.6.1.1 Case 1: CAN-Box supports Reverse Gear

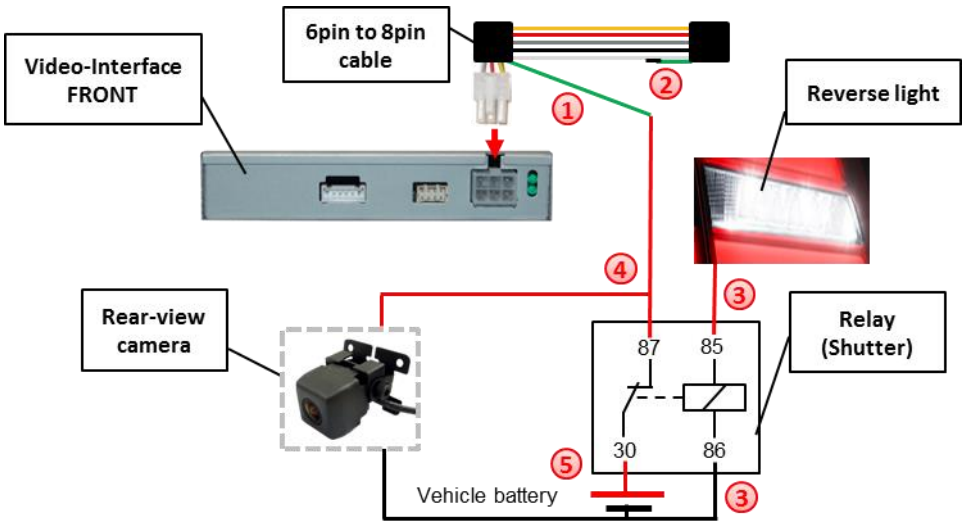
In case the Can-Bus-Box delivers +12V to the green wire 6Pin to 8pin cable while reverse gear is engaged, the Interface switches automatically to CAM input.



1 In addition power supply of +12V (500mA max.) of the After-Market Rear View Camera can be realised by the green wire of of 6Pin to 8pin cable

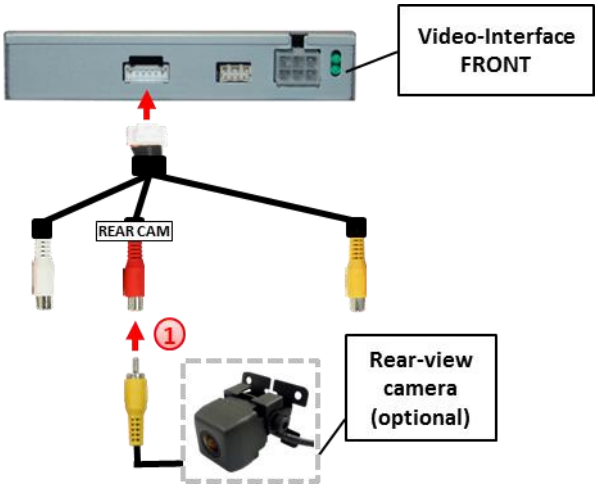
2.6.1.2 Case 2: Can Box does not support reverse gear

In case the Can-Bus-Box does not deliver +12V to the green wire 6Pin to 8pin cable while reverse gear is engaged (not all of the vehicles are compatible) an external switch-over signal of the reverse light will be required. Because of the fact that the reverse light signal is not free from electronic interferences, a relay will be required. The diagram below shows the use of the relay.



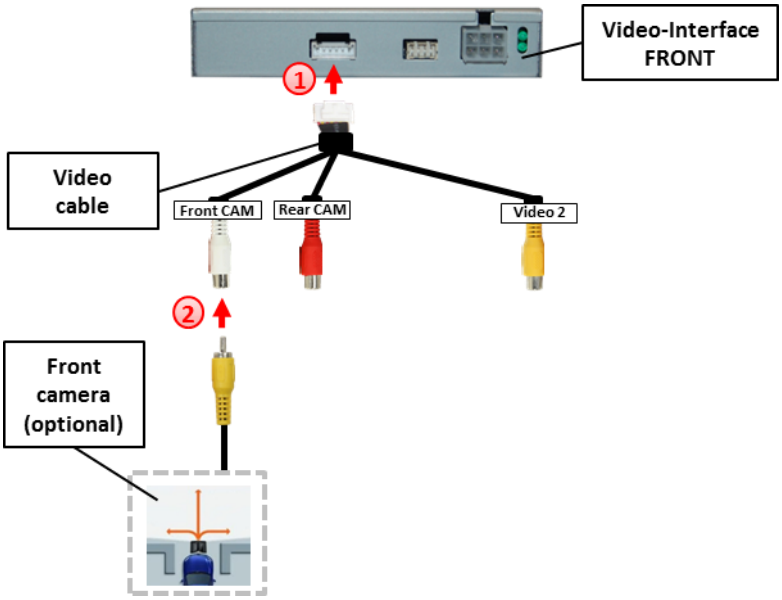
1. Disconnect green cable of 6pin to 8pin cable near the black 8pin connector .
2. Isolate short end of the green cable (CAN-Box side).
3. Connect Reverselight/Power with Coil (85) and Ground (86) to relay.
4. Connect power of rear view camera and the green cable (Video Interface side) of 6pin to 8pin cable with relay output (87)
5. Connect continuous battery current to relay input (87)

2.6.1.3 Video Signal Connection to Rear View Camera



1. Connect the video-RCA of the after-market rear-view camera to the female RCA port of the video-interface which is labeled as CAM.

2.6.2 After Market Front Camera

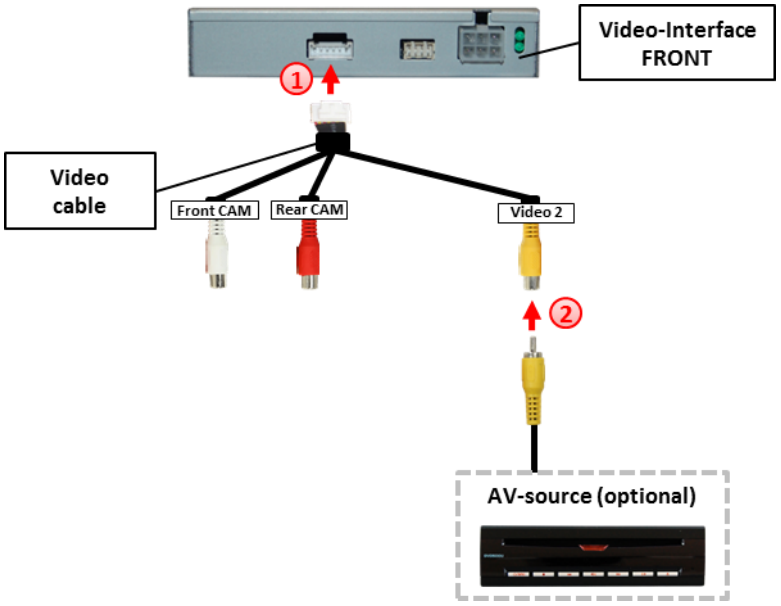


1. Connect 6pin male connector of video cable to 6pin female connector of video interface

2. Connect male RCA of front camera to the white female RCA “Front Cam” of video Cable

Note: There is no automatic switch to front camera. Only manual swiching by keypad or MMI button.

2.6.3 After Market Video Source



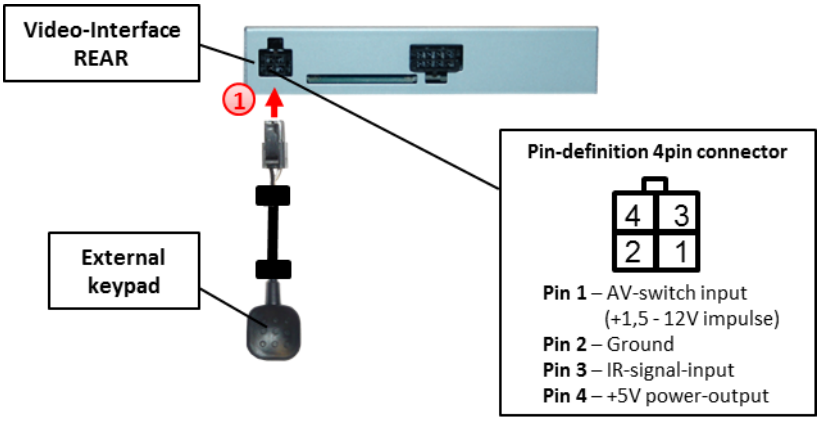
1 Connect 6pin male connector of video cable to female 6pin connector of video interface

2 Connect video RCA of video source to yellow RCA “Video2” of video cable.

2.6.4 Audio Insertion

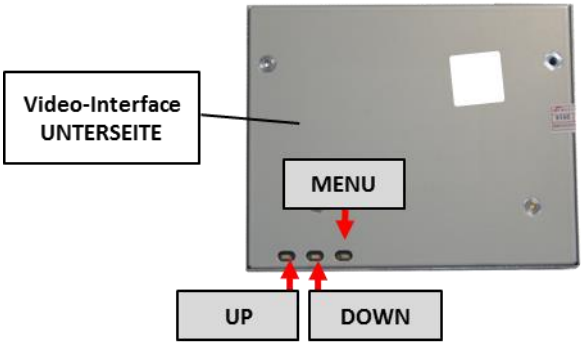
This interface can only insert video signals into the factory infotainment. If an AV-source is connected, audio insertion must be done by factory audio AUX input.

2.7 Connection Video Interface and external keypad



1 Connect 4pin female Microfit connector of external keypad to male 4pin Microfit connector of video interface

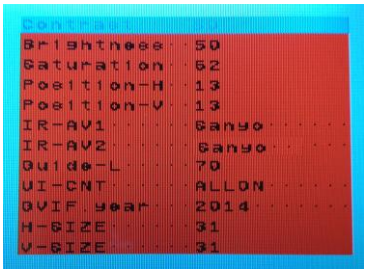
2.8 Picture settings and guide lines



The picture settings are adjusted by the 3 buttons on the video-interface. Press the MENU button to open the OSD settings menu or to switch to the next menu item. Press UP and DOWN change the selected value. The buttons are embedded in the housing to avoid accidental changes during or after installation. Picture settings must be done separately for RGB, AV1 and AV2 while the corresponding input is selected and visible on the monitor. AV2 and CAM share the same settings which must be adjusted in AV2.

Note: The OSD menu is only shown when a working video source is connected to the selected video-input of the interface.

The following settings are available:



Brightness
Contrast
Saturation
Position H (horizontal)
Position V (vertical)
Guide CNTRL = Guide lines for rear-view camera

GUIDE ON	=	Guide lines enabled
PDC ON	=	PDC display activated (function is only available in a few cars)
ALL ON	=	Guide lines and PDC enabled (PDC see above)
ALL OFF	=	Guide lines and PDC deactivated

Note: If the CAN-box does not support the very vehicle, the guide-lines cannot be used. PDC function is only available in a few cars.

3. Interface operation

3.1. By factory infotainment buttons

The **NAV** button and the **MODE** button of the **MMI** are used to execute interface functions.

MMI3G

Longress MODE or **NAV** button to switch the video-source

MMI3G+ and A1

Longpress NAVI button of the steering-wheel to switch the video-source.

Each press will switch to the next enabled input. If all inputs are enabled the order is:

Factory video → RGB-in → video IN1 → video IN2 → factory video →…

Inputs which are not enabled are skipped.

Switchover by vehicle keys isn't possible in all vehicles. In some vehicles the external keypad must be used.

3.2. By keypad

Alternatively or additionally to the factory infotainment buttons the interface's external keypad can be used to switch the enabled inputs.

4. Specifications

BATT/ACC range	7V ~ 25V
Stand-by power drain	<10mA
Power consumption	4,8W
Video input formats	PAL/NTSC
RGB-video amplitude	0.7V with 75 Ohm impedance
Temperature range	-40°C to +85°C
Weight	278g
Dimensions (box only) B x H x T	113 x 22 x 92 mm

CE ⎓12V DC