

# r.LiNK Video inserter

## RL3-MIB-4

**Compatible with VAG infotainment systems from MIB/MIB2 construction kits - High und Standard executions**

Compatible with Audi vehicles with MMI ( on MIB base)

Bentley vehicles with MIB with 8" monitor

Lamborghini vehicles with MIB with monitor in instrument

Porsche vehicles with PCM 4.0

Seat vehicles with Media System Plus – navigation system PLUS

Skoda vehicles with Columbus, Amundsen and Bolero

VW vehicles with Discovery Pro, Discover Media, Composition Media



**Video-inserter for one rear-view camera and two more video inputs**

### Product features

- Video-inserter for factory-infotainment systems
- CVBS Input for one rear-view camera
- 2 CVBS Video-inputs for after-market Video sources (e.g. DVD-Player, DVB-T Tuner)
- Automatic switching to rear-view camera input on engagement of the reverse gear
- Activatable parking guide lines for rear-view camera (not available for all vehicles)
- Video-in-motion (ONLY for connected video-sources)
- AV-inputs NTSC compatible

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## 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. Apart from using this product in an unmoved vehicle, it should only be used 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. Up to one year after purchase we offer free software-updates for our interfaces. To receive a free update, the interface has to be sent in at own cost. Wages for de-and reinstallation and other expenditures 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 video interface's place of installation must be free of moisture and away from heat sources.

**Before the final installation in the vehicle of the video sources, we recommend a test-run to ensure the compatibility of vehicle and interface. Due to changes in the production of the vehicle manufacturer there's always a possibility of incompatibility.**

### 1.1. Delivery contents



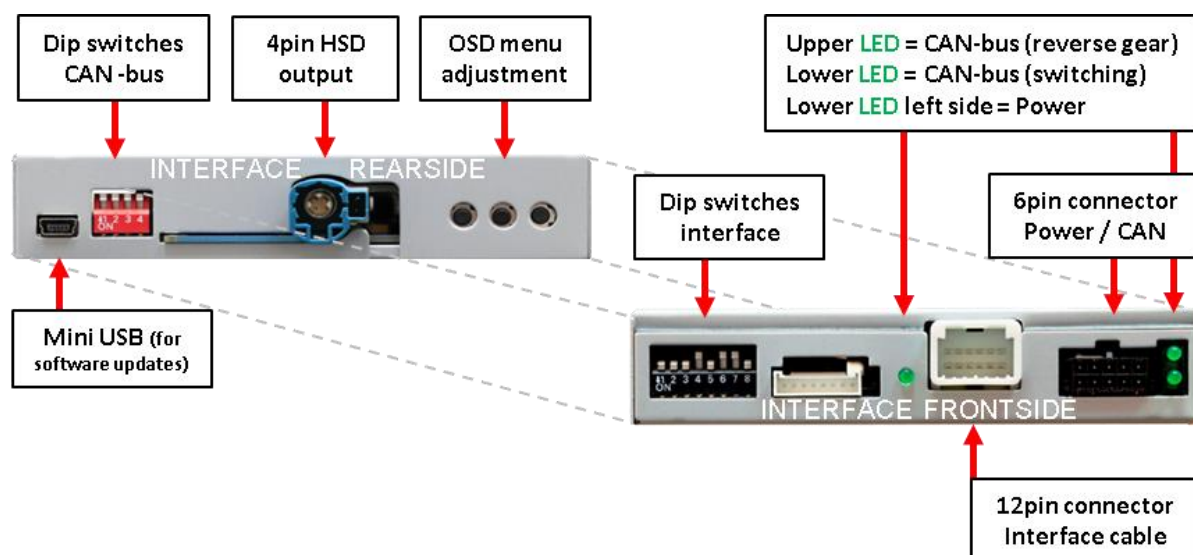
*Take down the serial number of the interface and store this manual for support purposes: \_\_\_\_\_*

## 1.2. Checking the compatibility of vehicle and accessories

Requirements		
Brand	Compatible vehicles	Compatible systems
Audi	A3 (8V) since 05/2012, A4 (8W) since 08/2015, A5 (8T) since 07/2016, A6 (4G) since 09/2014, A7 (4G) since 05/2014, Q2 (GA) since 09/2016, Q5 since 2017, Q7 (4M) since 03/2015	MMI Navigation Plus with MMI Touch 7", 8" or 8.3" - MIB/MIB II Main-Unit
	A3 (8V) since 05/2012, A4 (8W) since 08/2015, A5 (8T) since 07/2016, Q2 (GA) since 09/2016, Q5 from 2017, Q7 (4M) since 03/2015	MMI Navigation 7" - MIB Std Nav/MIB Std Plus MMI Radio Plus 5.8" or 7" - MIB Entry Plus/MIB Std
Bentley	Bentayga	MIB with 8" monitor
Lamborghini	Huracan since 2016	MIB with monitor in instrument
Porsche	911 (991.2 face-lift) from 12/2015, Cayenne, Macan and other vehicles with	PCM 4.0
Seat	Arona since 2018-, Ateca (KH7) since 2017-, Ibiza (6P) since 2016, Leon3 (5F) since 2013, Toledo4 (KG) since 2016	MIB/MIB2 High/Standard – navigation system Plus or Media system Plus - 6.5inch or 8inch monitor
Skoda	Fabia3 (NJ) since 11/2014, Karoq (NU7) since 2018, Kodiaq (NS7) since 2017, Octavia3 (5E) since 2012, Rapid (NH1) since 2016, Superb3 (3V) since 2015	MIB High/Columbus and Standard/Bolero/Amundsen - 5.8inch, 6.5inch or 8inch monitor. <b>NOT: 2018 9.2inch monitor</b>
VW	Arteon (3H) since 2018, Crafter (SZ/SY) since 2017, Golf7 since 2012, Golf7 Sportsvan since 2014, Passat (B8) since 2016, Polo5 (6C) since 2014-2017 Polo6 (AW1) since 2018, T-Cross (C1) from 04/2019, T-Roc (A11) since 2018-, Tiguan2 (AD1) since 2016, Touran (5T) since 2016	MIB/MIB2 - High/Discovery Pro and Standard/Composition Media - 5.8inch, 6.5inch or 8inch monitor. <b>NOT: 2018 9.2inch monitor</b>
<b>Limitations</b> <i>Video only</i> <p>The interface inserts ONLY video signals into the infotainment. For inserting Audio signals either the possibly existing factory audio-AUX-input or a FM-modulator can be used. If 2 audio sources shall be connected to the infotainment, an additional electronic is necessary to switch them.</p> <i>Factory rear-view camera</i> <p>Automatically switching-back from inserted video to factory rear-view camera is only possible while the reverse gear is engaged. To delay the switch-back an additional electronic part is required.</p> <i>PDC and guidelines</i> <p>If the video interface does not receive the required information from the vehicle CAN-bus, neither guide-lines nor optical PDC display will be supported.</p> <i>AV input signal</i> <p>only NTSC compatible</p>		

### 1.3. Boxes and connectors – video interface

The video-interface converts the connected after-market sources video signals into a LVDS signal which is inserted in the factory monitor using separate trigger options. Further it reads the vehicle's digital signals out of the vehicle's CAN-bus and converts them for the video interface.



### 1.4. Settings of the 8 Dip switches (black)

Some settings have to 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	PDC	enabled	disabled
2	CVBS Video 1-input	enabled	disabled
3	CVBS Video 2-input	enabled	disabled
4	No function		set to OFF
5	Rear-view cam type	after-market	factory or none
6	Monitor adjustment	Try all 6 possible combinations of Dips 6, 7 and 8 to receive the best picture (quality and size) or see chapter "Monitor adjustment (Dip 6-8)"	
7			
8			

See the following chapters for detailed information.

**1.4.1.1. Enabling the optical PDC function (dip 1)**

If set to ON the interface will display an image of a car on the right side of the factory monitor.

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

Only by dip switches enabled video inputs can be accessed by switching through the interface's video sources. It is recommended to enable only the required inputs. Disabled inputs will be skipped while switching through the video interfaces inputs.

**1.4.1.3. Rear-view camera setting (dip 5)**

If set to OFF, the interface switches to factory 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 switches to its rear-view camera input while the reverse gear is engaged.

**1.4.1.4. Monitor selection (Dip 6-8)**

Dips 6-8 customize the monitor-specific video settings which sometimes even vary within head units of the same version, caused by different monitor specifications. It is necessary to try all possible combinations while a working video source is connected to the chosen input of the interface. One of the six combinations will show the best picture size and quality (some may give no picture). It is possible to first hot plug through the dip combinations. If there is no change of picture visible after trying all 6 options, retry and disconnect the 10pin plug of the Quadlock connector between every change of the dip setting.

**Note:** Dip 4 is out of function and has to be set to **OFF**!

**Empirical value:**

Vehicle	Monitor	Dip 4	Dip 6	Dip 7	Dip 8
VW Golf7	8"	OFF	OFF	OFF	OFF
	5.8"	OFF	OFF	OFF	ON
Audi A3 (8V)	7"	OFF	OFF	ON	OFF
	5.8"	OFF	OFF	ON	ON
Audi A4 (8W), A5 (8T)	8.3"	OFF	ON	OFF	OFF
	7"	OFF	OFF	OFF	OFF
Audi A6/A7 (4G)	8"	OFF	OFF	ON	ON
Audi Q7 (4M) Touch	8.3"	OFF	ON	ON	OFF
Audi Q7 (4M) MMI	7"	OFF	OFF	OFF	OFF
Porsche		OFF	OFF	OFF	OFF
VW Touran		OFF	OFF	OFF	OFF

### 1.5. Settings of the 4 Dip switches (CAN functions – red)

All 4 dip-switches of the video interface have no function for normal use and have to be set to OFF (except Porsche vehicles with PCM 4.0).



Dip position down is ON and position up is OFF.

Vehicle/Navigation	Dip 1	Dip 2	Dip 3	Dip 4
All vehicles	OFF	OFF	OFF	OFF
Porsche with PCM 4.0	OFF	ON	OFF	ON

**After each Dip-switch-change a power-reset of the Can-box has to be performed!**

## 2. Installation

**To install the interface, first switch off the ignition and disconnect the vehicle's battery. Please read the owner's manual of the car, regarding the battery's disconnection! If required, enable the car's Sleep-mode (hibernation mode)**

**In case the sleep-mode does not succeed, the disconnection of the battery can be done with a resistor lead.**

**If the necessary stabilized power supply for the interface is not taken directly from the battery, the chosen connection has to be checked for being constantly stabile.**

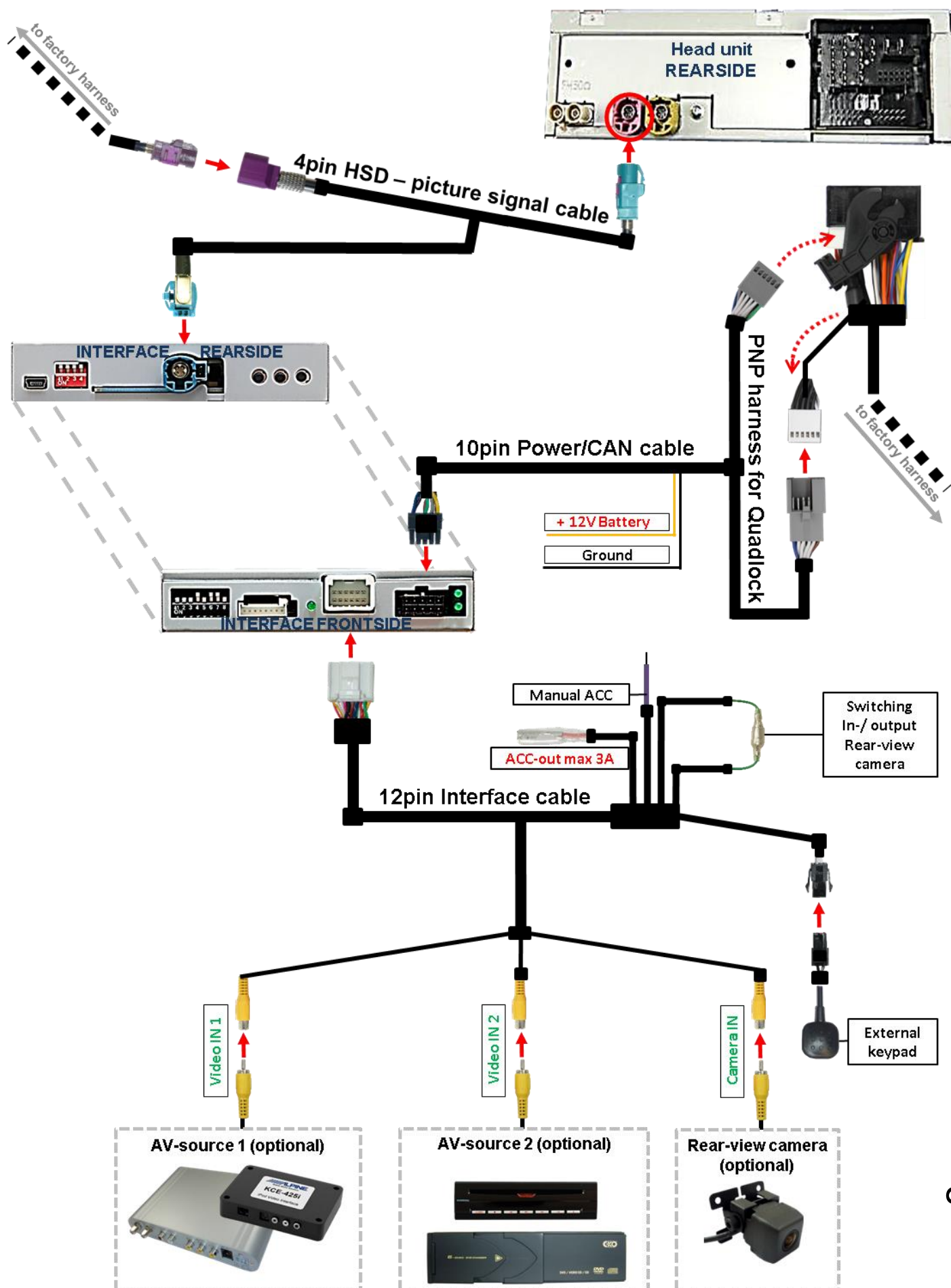
**The interface needs a permanent 12V source!**

### 2.1. Place of installation

The interface is supposed to be installed at a suitable location behind the vehicle's head-unit.



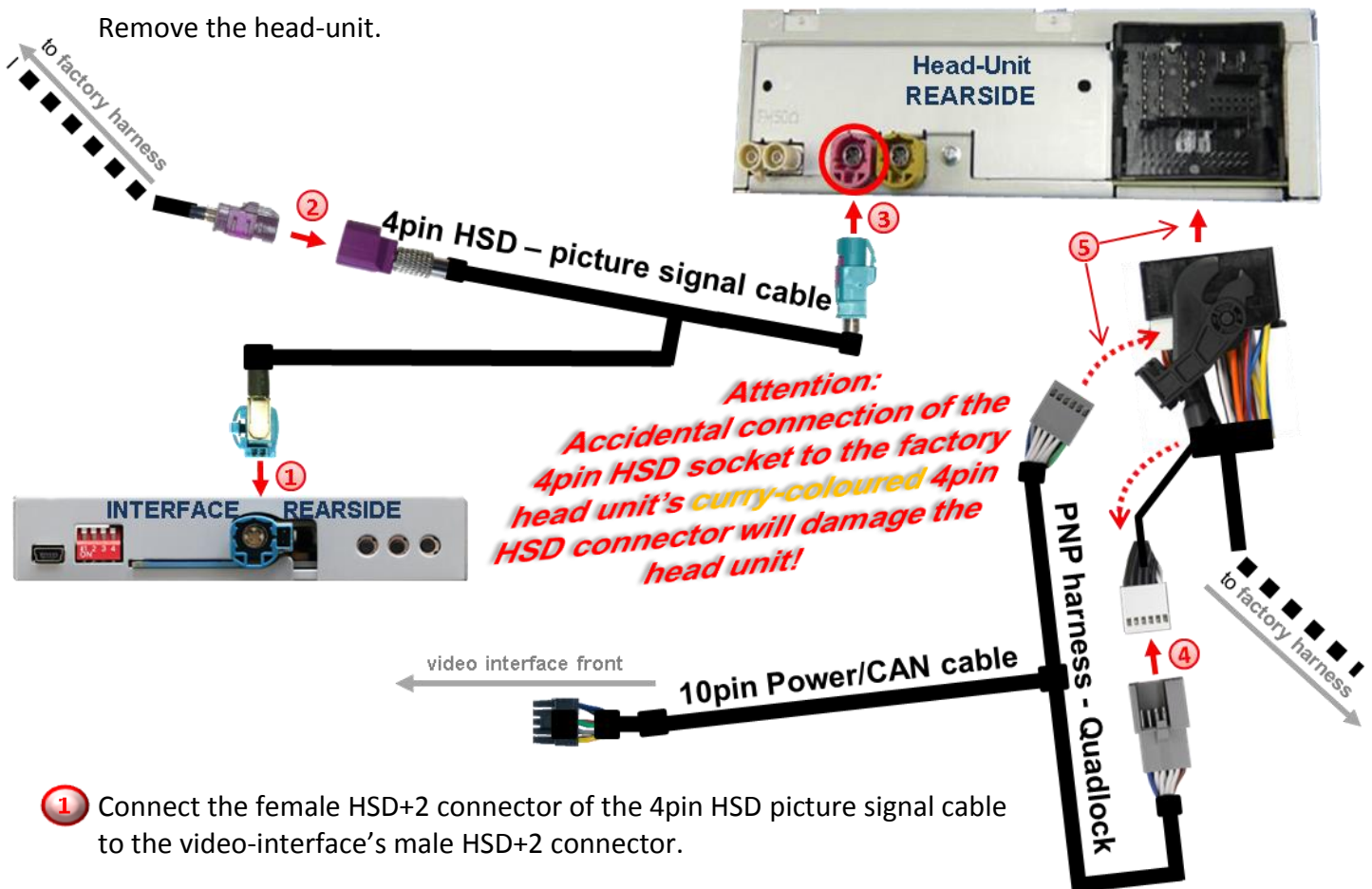
## 2.2. Connection schema





### 2.3. Connections to the factory head-unit

Remove the head-unit.

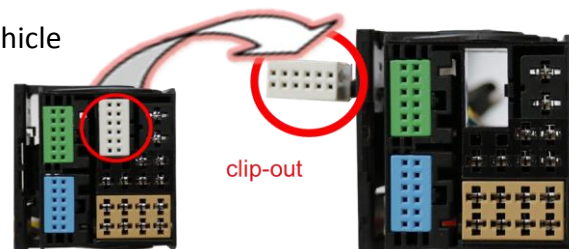


- ① Connect the female HSD+2 connector of the 4pin HSD picture signal cable to the video-interface's male HSD+2 connector.
- ② Disconnect the female 4pin HSD connector of the vehicle harness from the rear of the head-unit and connect it to the male 4pin HSD connector of the 4pin HSD picture signal cable.

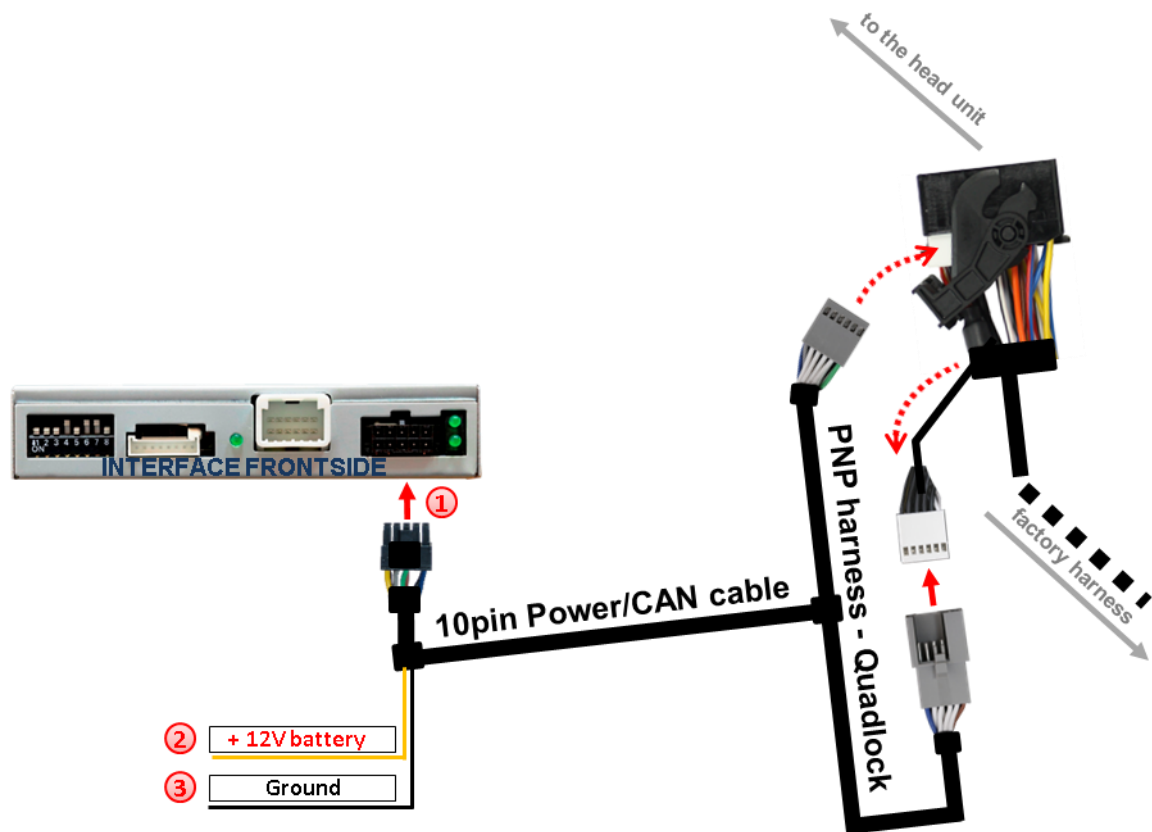
**Note:** If required, the marked lugs of the female 4pin HSD LVDS connector have to be cut off! Further, the colour of the female 4pin HSD connector may vary between **green** (only some Porsche PCM4.0), **pink** and **grey**, depending on the installed head-unit.



- ③ Connect the female 4pin connector of the 4pin HSD picture signal cable to the male 4pin HSD LVDS connector of the head-unit (**colours may vary!**).
- ④ Remove the female Quadlock connector of the vehicle harness from the rear of the head-unit and connect the previously clipped out white female 12pin connector (see graphic) to the male 12pin connector of the PNP harness.
- ⑤ Clip in the female 12pin connector of the PNP harness in the previously become free position of the female Quadlock connector before finishing the Quadlock reconnection at the rear of the head-unit.

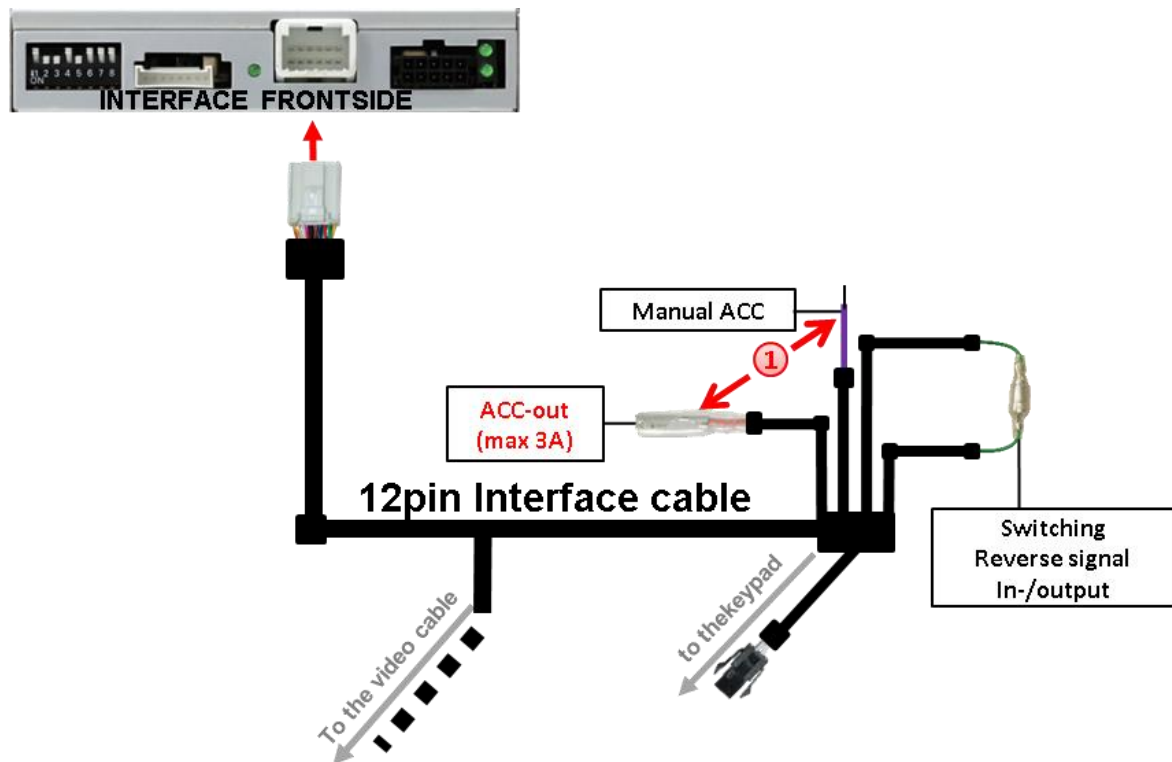


## 2.4. Power – and CAN connection for the video interface



- ① Connect the 10pin power/CAN cable's female 10pin connector to the 10pin connector of the interface.
- ② Connect the single, yellow wire of the 10pin power/CAN cable to +12V permanent and stabile power supply.
- ③ Connect the single, black wire of the 10pin power/CAN cable to the vehicle's negative ground.

## 2.5. Analog power supply for the video interface

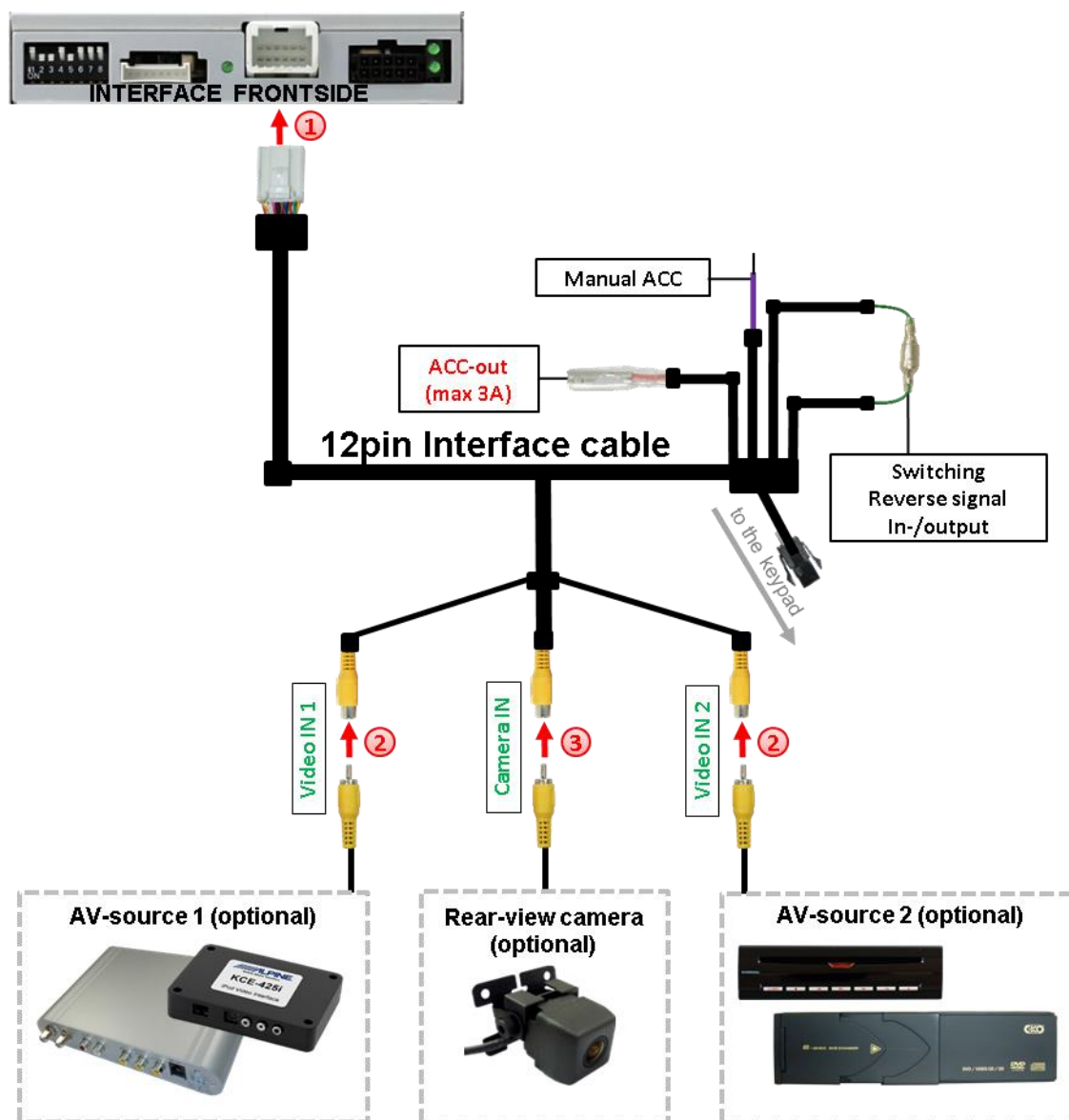


- ① If, after connecting the PNP harness, no interface LED lightens up while the ignition is turned on, the single red wire **ACC-out (max 3A)** and the purple coloured wire **Manual ACC** of the 12pin interface cable both have to be connected additionally to **S-contact terminal 86s +12V** (e.g. glove compartment illumination).

## 2.6. Connecting video sources

It is possible to connect an after-market rear-view camera and two more AV sources to the video-interface.

Before a final installation of the video sources, we recommend a test-run to ensure the compatibility of vehicle and interface. Due to changes in the production of the vehicle manufacturer there's always a possibility of incompatibility.



- ① Connect the female 12pin connector of the 12pin interface cable to the male 12pin connector of the video-interface.
- ② Connect the video RCA of the AV source 1 and 2 to the female RCA connector "Video IN1" and "Video IN 2" of the 12pin interface cable.
- ③ Connect the video RCA of the Rear-view camera to the female RCA connector "Camera IN" of the 20pin interface cable (refer also to chapter "Video signal connection of the rear-view camera")

### 2.6.1. Audio-insertion

This interface is only able to insert video signals into the factory infotainment. If an AV-source is connected, the audio insertion has to be done by the factory audio AUX input or an FM-modulator. The inserted video-signal can be activated simultaneously to each audio-mode of the factory infotainment. If 2 AV sources shall be connected to the infotainment, additional electronic is necessary to switch the audio signals.

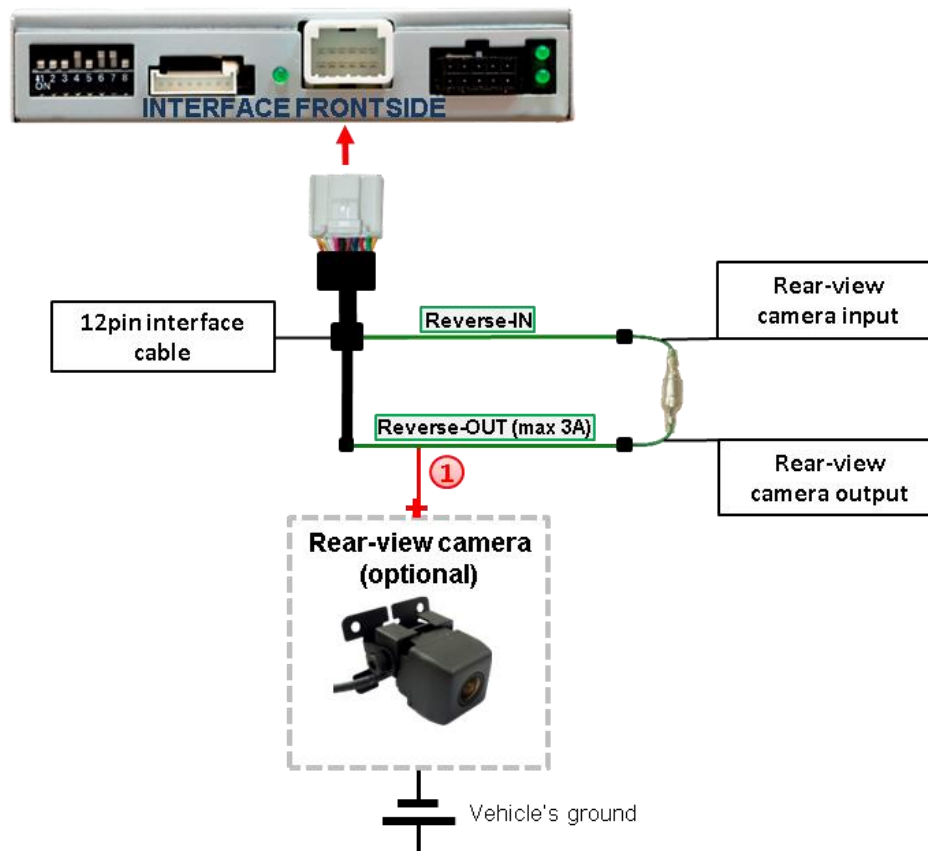
### 2.6.2. After-market rear-view camera

Some vehicles have a different reverse gear code on the CAN-bus which the video-interface is not compatible with. Therefore, there are two different ways of installation. If the video interface receives a signal of the reverse gear, the green wire **"Reverse-OUT"** of the 20pin cable should carry +12V while the reverse gear is engaged.

**Note:** Do not forget to set video interface's dip5 to ON before testing.

#### 2.6.2.1. Case 1: Interface receives the reverse gear signal

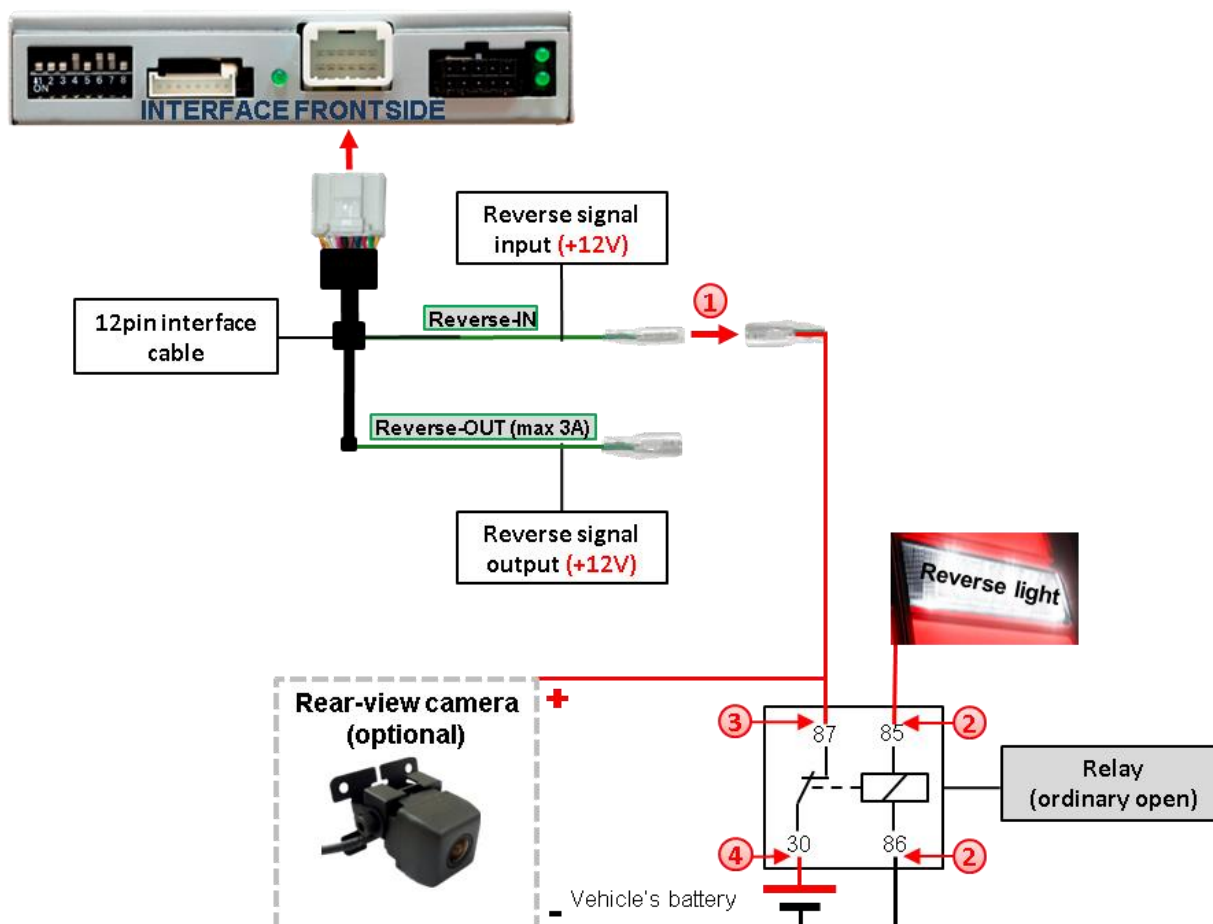
If the interface delivers +12V on the green output wire of the 12pin interface cable while reverse gear is engaged, the video interface will automatically switch to the rear-view camera input **"Camera IN"** while the reverse gear is engaged.



**1** Additionally, the +12V (max. 3A) power supply for the rear-view camera can be taken from the green wire of the 12pin interface cable.

### 2.6.2.2. Case 2: CAN-box does not receive the reverse gear signal

If the video interface does not deliver +12V on the green wire of the 12pin cable when reverse gear is engaged (not all vehicles are compatible), an external switching signal from the reverse gear light is required. As the reverse gear light's power supply isn't voltage-stable all the time, an ordinary open relay (e.g. AC-RW-1230 with wiring AC-RS5) or filter (e.g. AC-PNF-RVC) is required. The diagram below shows the connection type of the relay.



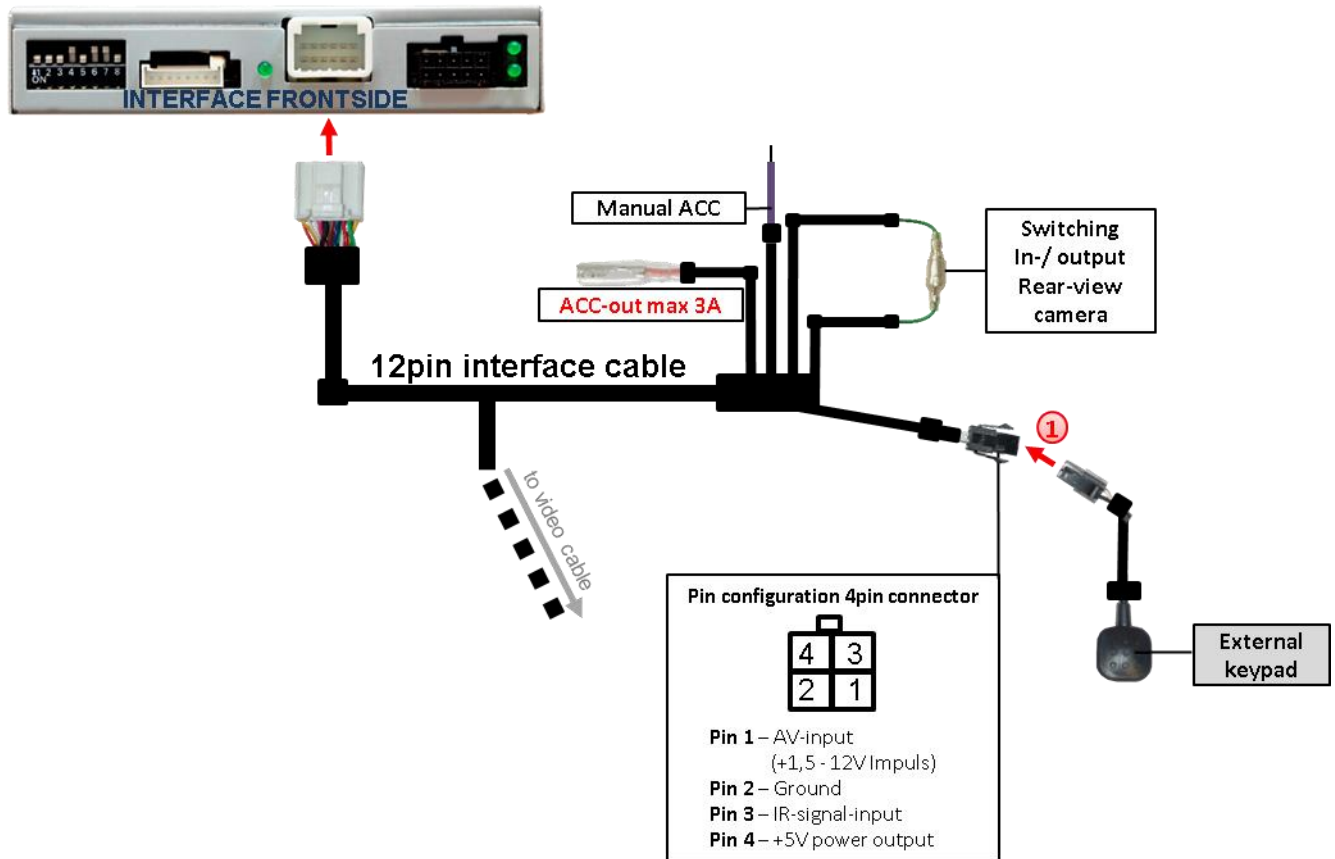
- ① Disconnect the green cable's preconnected male- and female connectors of the 12pin cable and connect the green input cable "**Reverse-IN**" to the output connector (87) of the relay.

**Note:** Last but not lot least to avoid short circuits, the best solution should be, to crimp a male 4mm connector to the relay's output cable and connect it to the green cable's female 4mm connector. The output-cable "**Reverse-OUT**" remains disconnected as it's out of function.

- ② Connect the Reverse light's power-cable to coil (85) and the vehicle's ground to coil (86) of the relay.
- ③ Connect the output connector (87) of the relay to the rear-view camera's power-cable, like you did it to the green "**Reverse-IN**" cable before.
- ④ Connect stabile and permanent +12V to the relay's input connector (30).



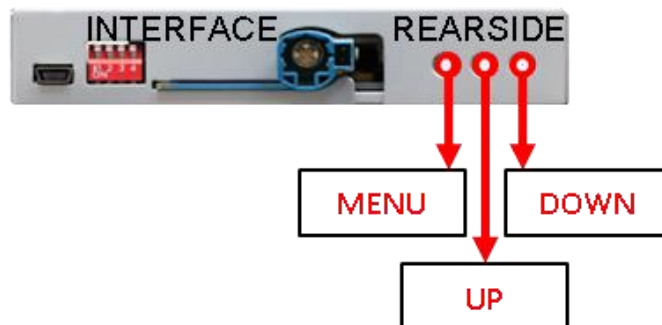
## 2.7. Connecting video-interface and keypad



- 1 Connect the female 4pin connector of the keypad to the male 4pin connector of the 12pin interface cable.

**Note:** Even if switching through several video sources by the keypad mightn't be required, the invisible connection and availability is strongly recommended.

## 2.8. Picture settings and guide lines

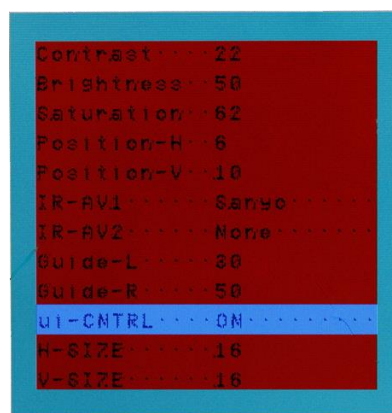


The picture settings are adjustable by the 3 push-buttons on the video-interface. Press the MENU button to open the OSD settings menu or to switch to the next menu item. Press UP and DOWN to change the selected value. The buttons are placed inside in the housing to avoid accidental changes during or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

**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:

- Contrast
- Brightness
- Saturation
- Position H (horizontal)
- Position V (vertical)
- IR-AV1/2 (no function)
- Guide L/R (no function)
- UI-CNTRL (guide lines ON/OFF) -
- Size H/V (picture size horizontal/vertical)



**Note:** If there is no communication between interface and the vehicle's CAN-bus (several vehicles aren't compatible), the reverse gear guide-lines can't be shown during the vehicle's operation, even if they once appear after having switched the system to powerless!

### 3. Interface operation

#### 3.1. By factory infotainment button

To switch the interface's activated video sources, the factory infotainment buttons can be used.

##### For Skoda/Volkswagen/Audi vehicles

Press **MENU button** to switch the video-source

##### For Audi A3 vehicles

Press **NAVI** button to switch the video-source.

##### For Porsche vehicles

Press **NAV** button to switch the video-source.

Pressing the according infotainment button switches the input from the factory video to the inserted video sources. If all inputs are activated by dip switch settings, the order is the following:

*Factory video → Video IN 1 → Video IN 2 → factory video*

Each press will switch to the next enabled input. Inputs which are not enabled will be skipped.

**Switchover by vehicle buttons isn't possible in all vehicles. In some vehicles the external keypad has to 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. Even if not needed, the keypad should always remain connected to the video interface for support purposes.

### 4. Specifications

BATT/ACC range	7V - 25V
Stand-by power drain	12mA
Power	210mA @12V
Video input	0.7V - 1V
Video input formats	NTSC
Temperature range	-40°C to +85°C
Dimensions video-box	119 x 24 x 114 mm (W x H x D)

## 5. FAQ – Trouble shooting Interface functions

For any troubles which may occur, check the following table for a solution before requesting support from your vendor.

Symptom	Reason	Possible solution
No picture/black picture (factory picture).	Not all connectors have been reconnected to factory head-unit or monitor after installation.	Connect missing connectors.
	No power on CAN-bus box (all LED CAN-bus box are off).	Check power supply of CAN-bus box. Check CAN-bus connection of CAN-bus box.
	CAN-bus box connected to CAN-bus in wrong place.	Refer to the manual where to connected to the CAN-bus. If not mentioned, try another place to connect to the CAN-bus.
	No power on video-interface (all LED video-interface are off).	Check whether CAN-bus box delivers +12V ACC on red wire output of 8pin to 6pin cable. If not cut wire and supply ACC +12V directly to video-interface.
No picture/black picture/white picture (inserted picture) but factory picture is OK.	No picture from video source.	Check on other monitor whether video source is OK.
	No video-source connected to the selected interface input.	Check settings dips 1 to 3 of video interface which inputs are activated and switch to corresponding input(s).
	LVDS cables plugged in wrong place.	Double-check whether order of LVDS cables is exactly connected according to manual. Plugging into head-unit does not work when the manual says to plug into monitor and vice versa.
	Wrong monitor settings of video-interface.	Try different combinations of dips 7 and 8 of video-interface. Unplug 6pin power after each change.
Inserted picture totally wrong size or position.	Wrong monitor settings of video-interface.	Try different combinations of dips 7 and 8 of video-interface. Unplug 6pin power after each change.
Inserted picture double or 4 times on monitor.		
Inserted picture distorted, flickering or running vertically.	Video sources output set to AUTO or MULTI which causes a conflict with the interfaces auto detection.	Set video source output fixed to PAL or NTSC. It is best to set all video sources to the same standard.
	If error occurs only after source switching: Connected sources are not set to the same TV standard.	Set all video sources to the same standard.
	Some interfaces can only handle NTSC input.	Check manual whether there is a limitation to NTSC mentioned. If yes, set source fixed to NTSC output.
Inserted picture b/w.	Picture settings have not been adjusted.	Use the 3 buttons and the interface's OSD to adjust the picture settings for the corresponding video input.
Inserted picture qual. bad.		
Inserted picture size slightly wrong.		
Inserted picture position wrong.		
Camera input picture flickers.	Camera is being tested under fluorescent light which shines directly into the camera.	Test camera under natural light outside the garage.
Camera input picture is bluish.	Protection sticker not removed from camera lens.	Remove protection sticker from lens.

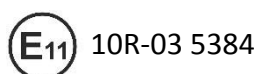
Symptom	Reason	Possible solution
Camera input picture black.	Camera power taken directly from reverse gear lamp.	Use relay or electronics to "clean" reverse gear lamp power. Alternatively, if CAN-bus box is compatible with the vehicle, camera power can be taken from green wire of 6pin to 8pin cable.
Camera input picture has distortion.		
Camera input picture settings cannot be adjusted.	Camera input picture settings can only be adjusted in AV2 mode.	Set dip 3 of video-interface to ON (if not input AV2 is not already activated) and connect the camera to AV2. Switch to AV2 and adjust settings. Reconnect camera to camera input and deactivate AV2 if not used for other source.
Graphics of a car in camera input picture.	Function PDC is ON in the interface OSD.	In compatible vehicles, the graphics will display the factory PDC distance. If not working or not wanted, set interface OSD menu item UI-CNTRL to ALLOFF.
Chinese signs in camera input picture	Function RET or ALL is ON (function for Asian market) in the interface OSD.	Set interface OSD menu item UI-CNTRL to ALLOFF or PDCON.
Not possible to switch video sources by OEM button.	CAN-bus interface does not support this function for vehicle.	Use external keypad or cut white wire of 6pin to 8pin cable and apply +12V impulses for AV-switching.
Not possible to switch video sources by external keypad.	Pressed too short.	For video source switching a longer press of about 2.5 seconds is required.
	SW-version of interface does not support external keypad.	Use OEM-button or cut white wire of 6pin to 8pin cable and apply +12V impulses for AV-switching.
Interface does not switch to camera input when reverse gear is engaged.	CAN-bus interface does not support this function for the vehicles.	Cut the green wire of the 6pin to 8pin cable and apply +12V constant from reverse gear-lamp signal. Use relay to "clean" R-gear lamp power.
Interface switches video-sources by itself.	CAN-bus interface compatibility to vehicle is limited.	Cut the grey wire of 6pin to 8pin and isolate both ends. If problem still occurs, additionally cut the white wire of 6pin to 8pin cable and isolate both ends.

## 6. Technical Support

Please note that direct technical support is only available for products purchased directly from NavLinkz GmbH. For products bought from other sources, contact your vendor for technical support.

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