

v.LiNK Video-inserter VL2-UCON8-AO



**Compatible with
Dodge and Jeep vehicles
with Uconnect 8.4AN/RA4 und 8.4A/RA3 Systems**

Video-inserter with 2 video + rear-view camera input and CAN control

Product features

- Video-inserter for factory infotainment monitors
- 2 CVBS video-inputs for after-market devices (e.g. DVD-Player, DVB-T tuner)
- Rear-view camera video-input
- Automatic switching to rear-view camera input on engagement of reverse gear
- Activatable parking guide lines for the rear-view camera (vehicle specific restrictions possible)
- Video-in-motion in drive mode (ONLY for inserted video-sources)
- AV-inputs PAL and 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 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

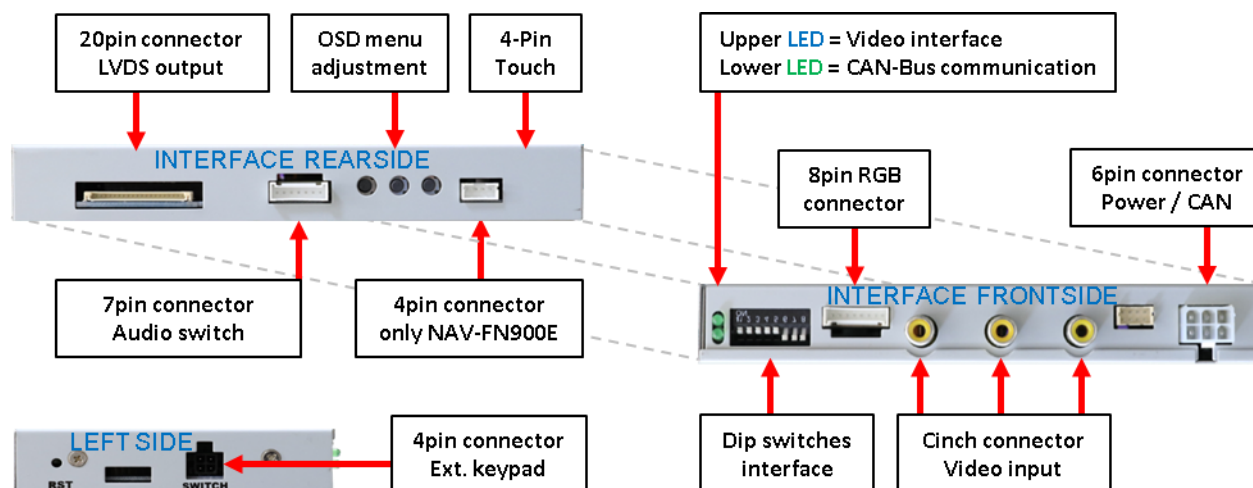
Compatibility		
Brand	Compatible vehicles	Infotainment systems
Dodge	RAM 1500/2500/3500 model years since 2013, Durango model years since 2014 Viper model years since 2013 and other vehicles with all-in-one head-unit	Uconnect 8.4AN/RA4 und Uconnect 8.4A/RA3
Jeep	Cherokee model years since 2014 Grand Cherokee model years since 2014 and other vehicles with all-in-one head-unit	Uconnect 8.4AN/RA4 und Uconnect 8.4A/RA3

Limitations

<i>Video only</i>	The interface inserts ONLY video signals into the infotainment. For audio inserting, use the possibly existing factory audio-AUX-input or a FM-modulator.
<i>Factory rear-view camera</i>	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.

1.3. Connection Video-Interface

The video-interface converts the connected after-market sources video signals into an LVDS signal which is inserted in the factory monitor using separate trigger options and it reads 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 8 dip-switches of the video-interface. Dip position down is ON and position up is OFF.



Dip	Function	ON (down)	OFF (up)
1	RGB-input	enabled	disabled
2	CVBS AV1-input	enabled	disabled
3	CVBS AV2-input	enabled	disabled
4	RGB-input resolution	800x480	1080p H+V sync
5	Rear-view cam type	after-market	factory or none
6	No function		set to OFF
7	No function		set to OFF
8	No function		Set to OFF

See the following chapters for detailed information.

1.4.1. Enabling the interface's video inputs (dip 1-3)

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

1.4.2. RGB-video input signal selection for after-market navigation (Dip 4)

If an after-market RGB navigation or other RGB video source is connected, the source's RGB output signal must match the interface's RGB video input setting.

1.4.3. 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 switches to its rear-view camera input "Camera-IN" while the reverse gear is engaged.

Note: Dip 6, 7 and 8 are out of function and have to be set to **OFF**.

2. Installation

Switch off the ignition and disconnect the vehicle's battery! The interface needs a permanent 12V source. If -according to factory rules- a disconnection of the battery has to be avoided, it should be sufficient to use the vehicle's sleep-mode. In case, the sleep-mode doesn't succeed, the battery has to be disconnected with a resistor lead.

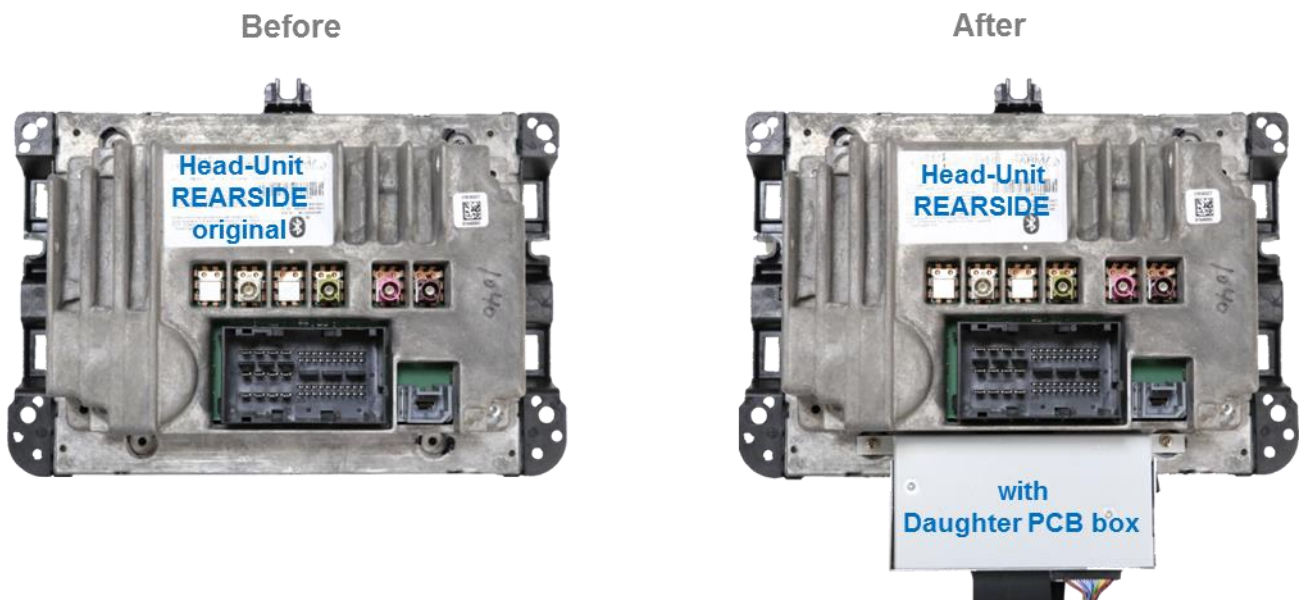
The Interface needs a permanent power supply! If power isn't directly taken from the battery, the connection's power has to be checked for being start-up proven and permanent.

2.1. Place of installation – video-interface

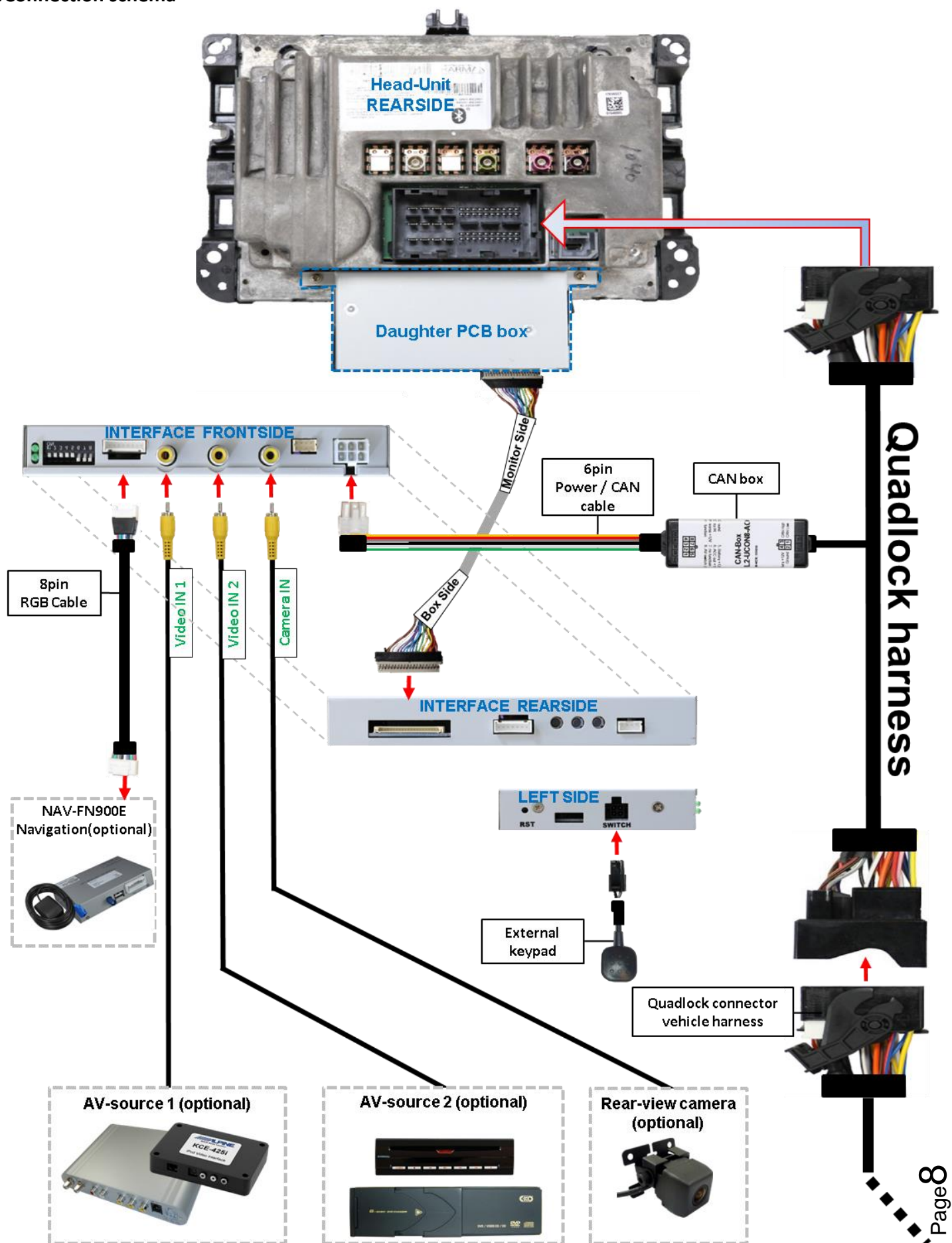
The video-interface is installed on the backside of the head-unit.

2.1.1. Place of installation - daughter PCB-box

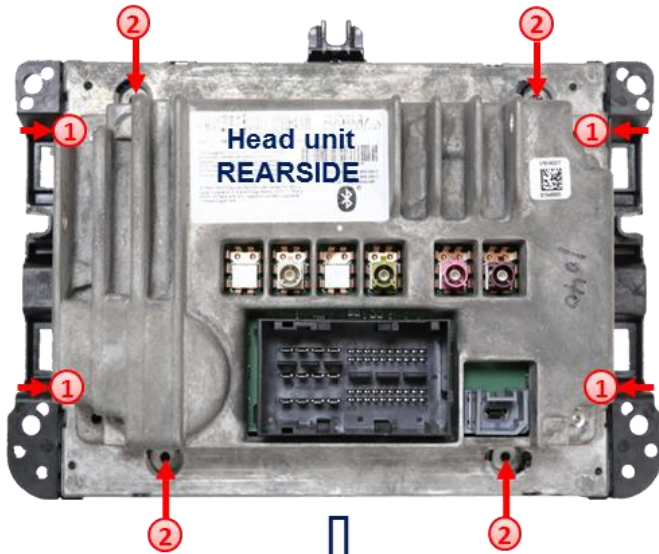
The daughter PCB is performed to be installed on the rearside of the head unit. The connection has to be done between the monitor panel and the head unit's motherboard.



2.2.Connection schema



2.3. Connections to the head-unit – LVDS

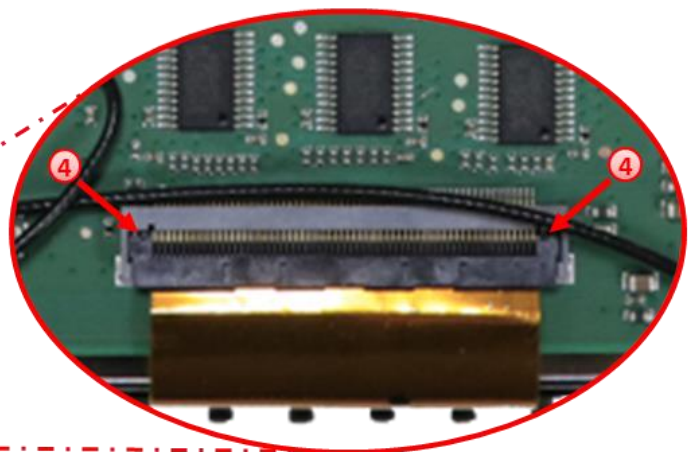
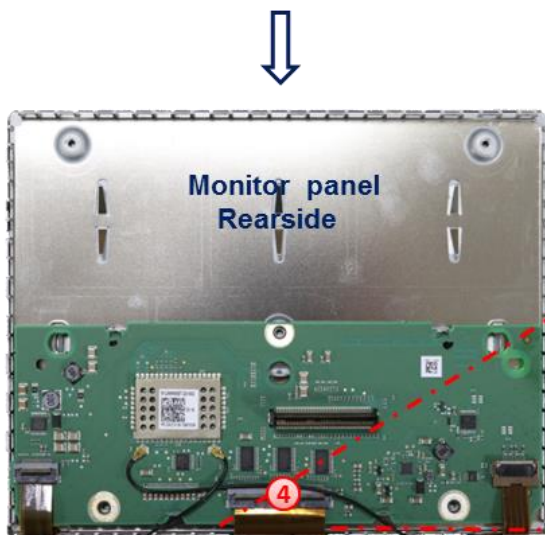


1 Remove the head-unit and further remove the original housing plastic frame which is fixed to the head-unit housing by 4 Torx screws (T10).

2 Turn out the 4 Torx screws (T10) of the head-unit housing. After disconnecting the head unit's mainboard, take both parts together away from the head unit's mainboard housing and put them aside.

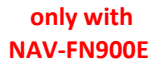


3 Turn out the Torx screw (T10) at the middle of the head unit's mainboard housing and carefully put the housing aside to set free the monitor panel with its kopper coulored picture ribbon cable



4 Carefully clip out the kopper coulored 60pin ribbon cable at the monitor panel's ribbon cable base and lead it out.

Note: The connected ribbon cables have to be handled with care to avoid each damage of the sensitive electrical inductors.



-
- Monitor panel REARSIDE
- Daughter - PCB box
- PCB IN
- only with NAV-FN900E
- Ribbon cable base → to PCB IN



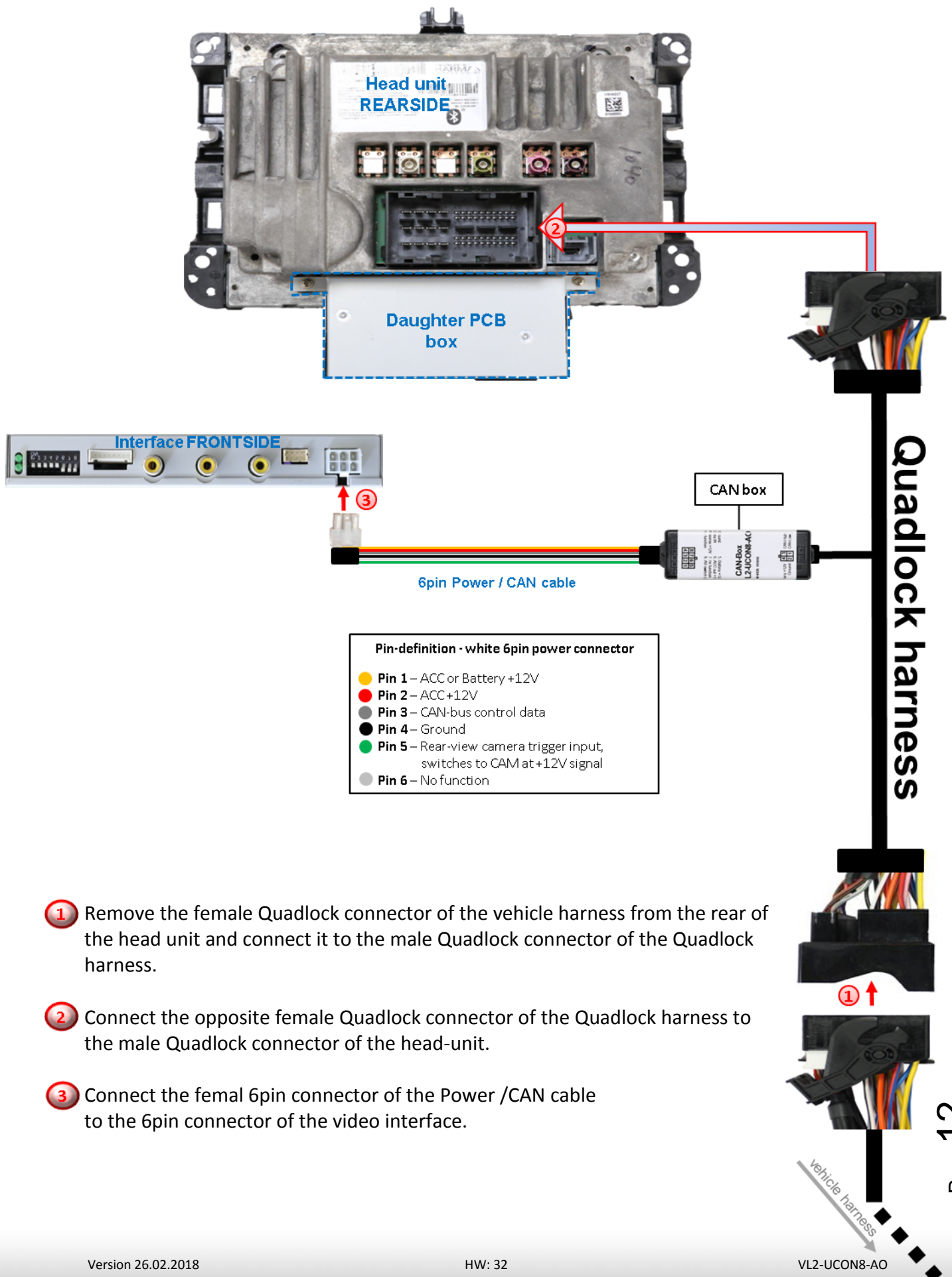
- 1 Screw in the daughter PCB box at the rearside of the head-unit by using the enclosed screws

Note: If the ribbon cables might come in contact with the housing components, they have to be isolated to avoid short circuits and cable injury.

2.3.1. Warning notes, concerning the installation of ribbon cables

- 1) The contacting ends of ribbon cables always have to be installed in a straight and precise 180° position to the connector. Each deviation from a perfect contact position will cause faulty contact and even danger of short circuit
- 2) The ribbon cable's contacting side always has to correspond to the contacting side of the connector, concerning the mounting position.
- 3) Avoid cable contusion or cable injury caused by sharp-edged metal.

2.4. Connections to the head-unit - Quadlock

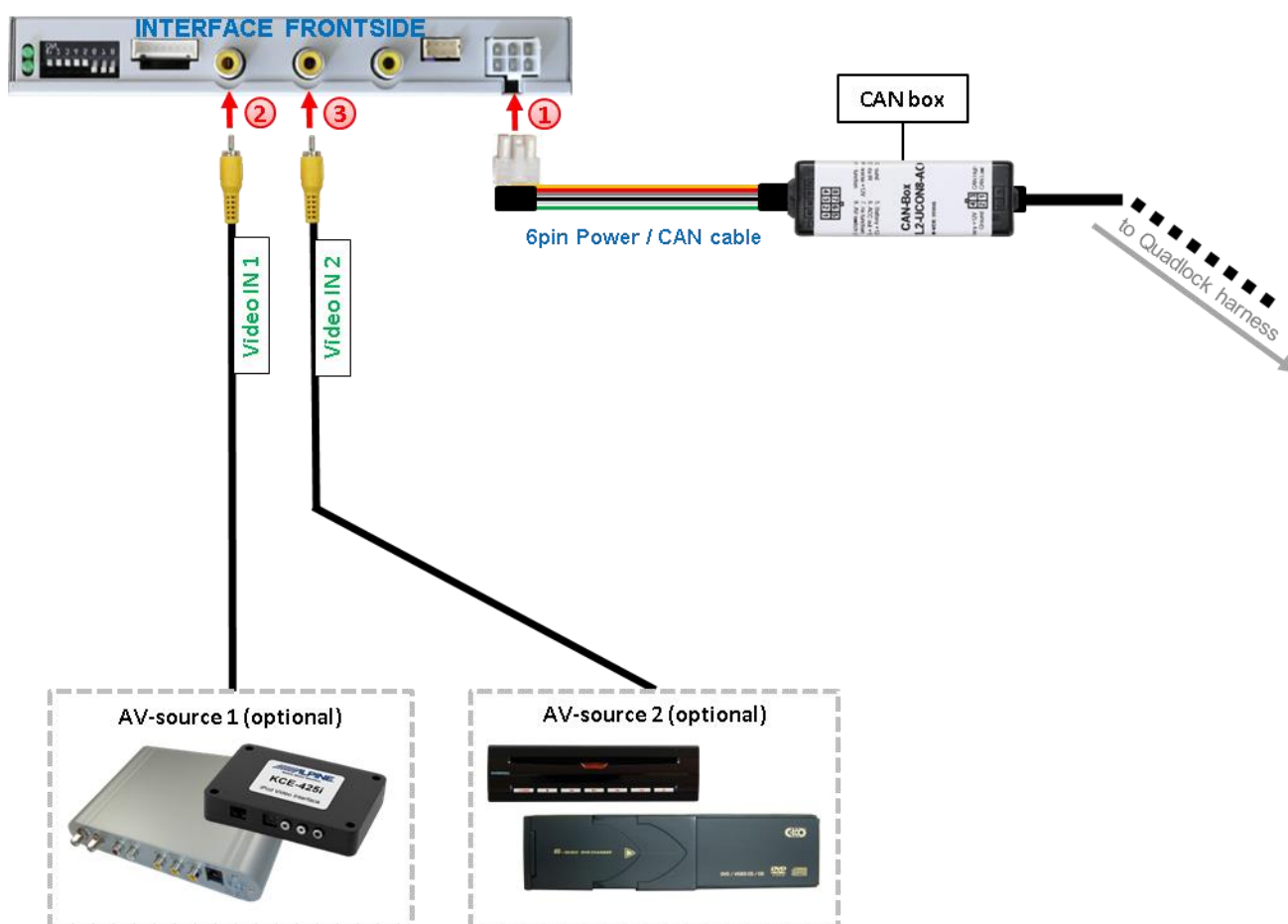


2.5. Connecting the Video sources

It is possible to connect one After-Market RGB navigation (or another RGB source), two After-Market AV sources and an After-Market rear view camera to the video-interface

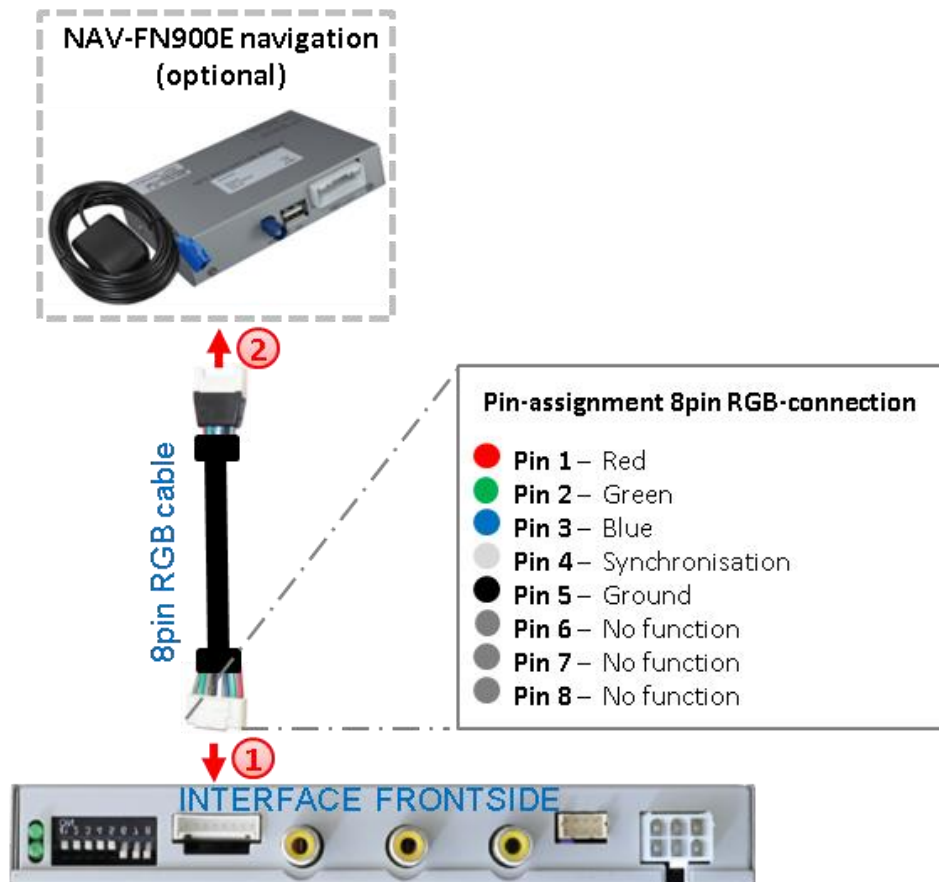
Before the final installation, we recommend a test-run of the interface. Due to changes in the production of the vehicle manufacturer, there's always the possibility of incompatibility.

2.5.1. Video-sources to Video AV1 and Video AV2



- 1 Connect the female 6pin connector of the 6pin Power / CAN cable to the video interface's 6pin connector.
- 2 Connect the video RCA of the AV-source 1 to the female RCA connector "AV1" of the video interface.
- 3 Connect the video RCA of the AV-source 2 to the female RCA connector "AV2" of the video interface.

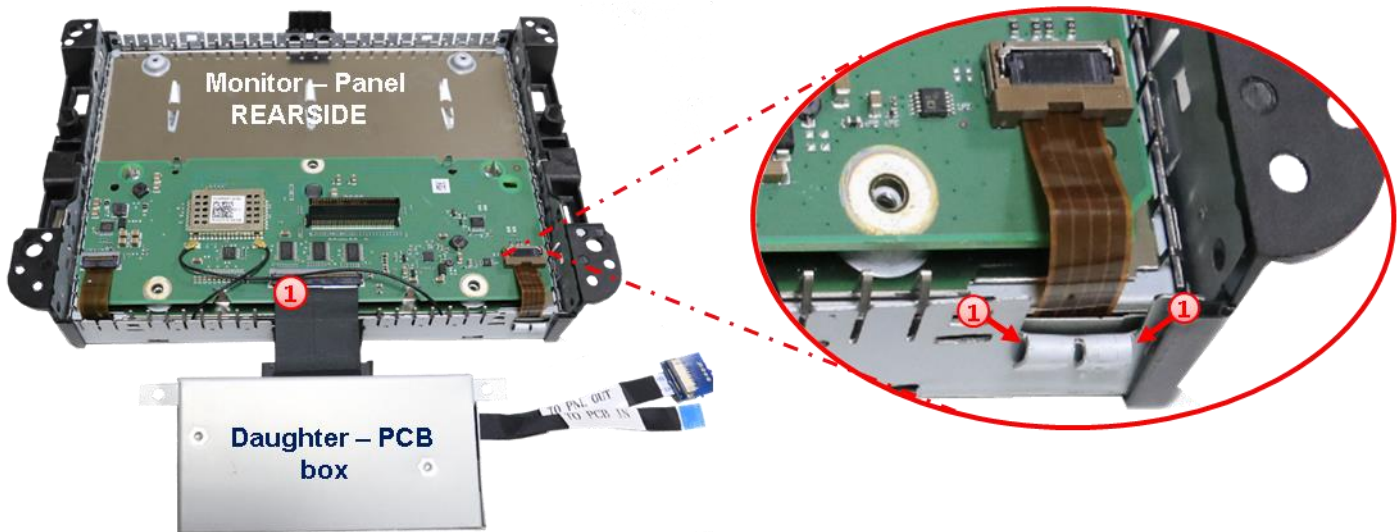
2.5.2. After-Market RGB navigation NAV-FN900E



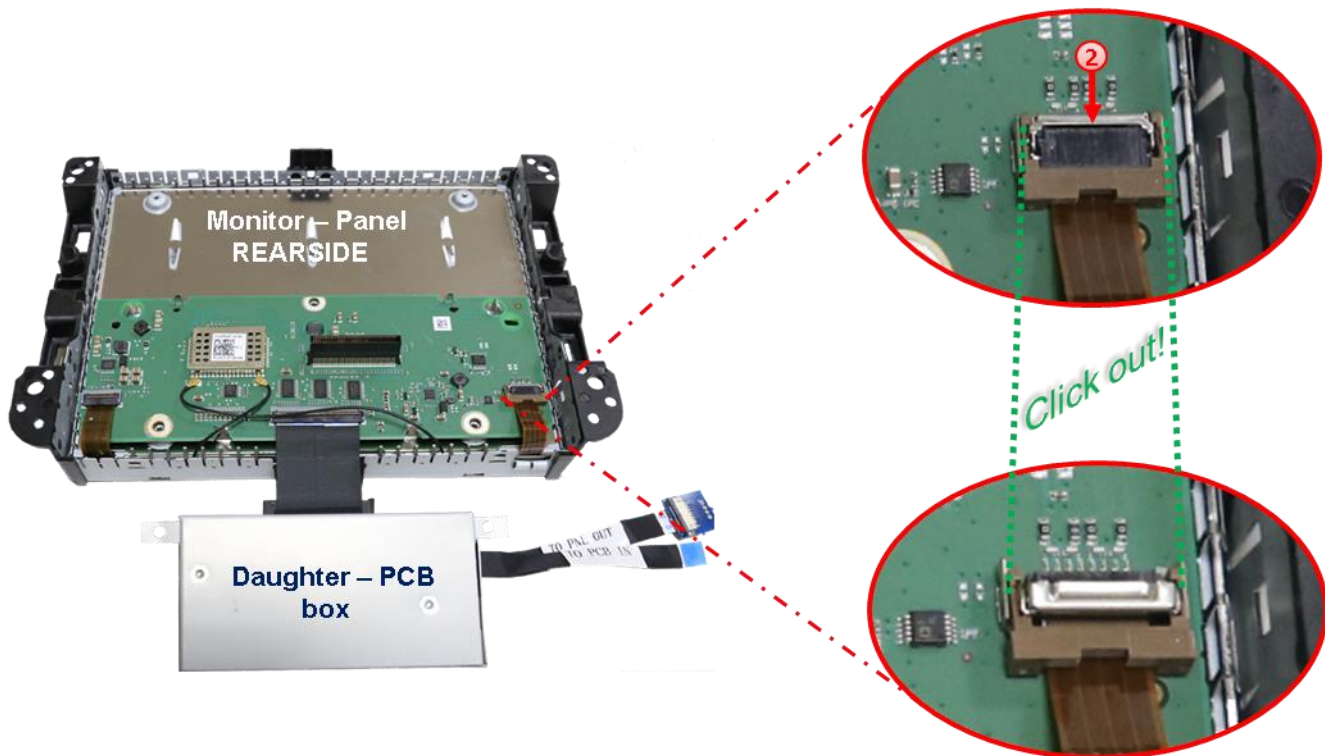
- 1 Connect the female 8pin connector of the RGB cable to the male 8pin connector of the video-interface. The loose grey wires are out of function and should be isolated.
- 2 Connect male 6pin connector of the RGB cable to the after-Market navigation NAV-FN900E.

Note: Operating the NAV-FN900E navigation is supported by the factory monitor's touch functions.

2.5.2.1. Connection of ribbon cables for the after-market navigation NAV-FN900E

Only for NAV-FN900E!

- ① For leading out the 8pin touch ribbon cables out of the monitor housing, both metal sheet tabs underneath have to be bent down to avoid a cable injury with later reassembly of the housing parts. Further, for saving the ribbon cables, the down bent sheet tabs should be covered with a piece of smooth tape.

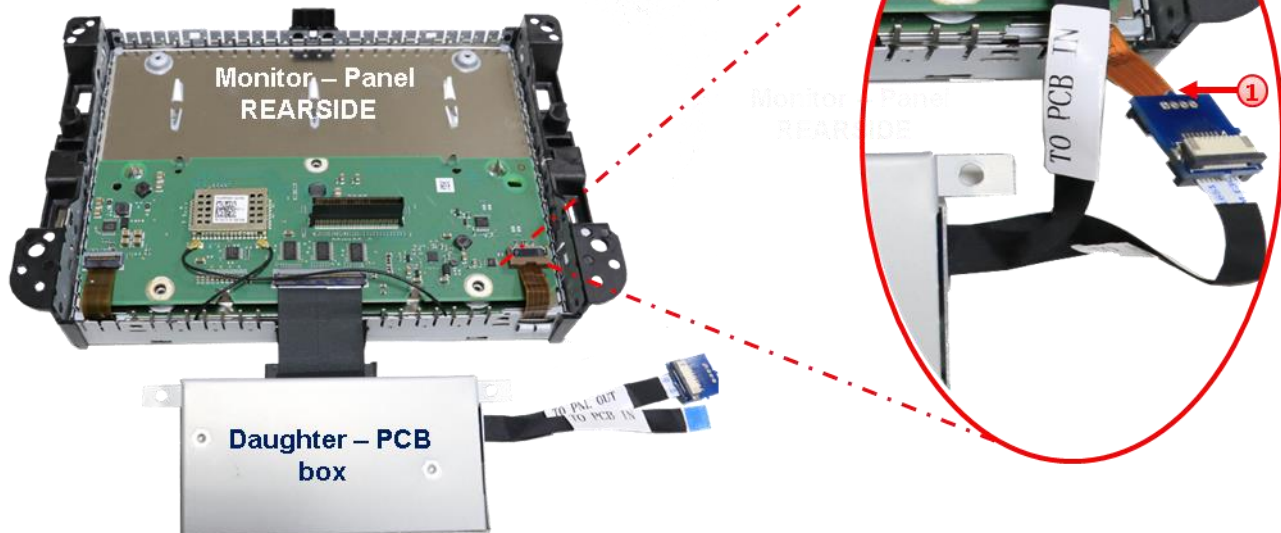


Carefully unlock and pull back the 8pin touch ribbon cable base closure on the right side of the monitor motherboard like shown in the picture.

*Only for
NAV-FN900E!*

Copper ribbon cable → to PNL OUT

Ribbon cable base → to PCB IN



- 1 Click out the copper coloured 8pin ribbon cable from the monitor mainbord's ribbon cable base, connect it to the daughter PCB's 8pin ribbon cable merger **PNL OUT** and lock it's closure.

Note: The ribbon cable has to be lead in with its contacting side towards the merger's PCB side!

- 2 Connect the daughter PCB's 8pi touch ribbon cable **PCB IN** to the previously become free monitor mainboard's ribbon cable base and lock it's closure.

Note: Lead in the ribbon cable with its contacting side towards the merger's PCB side!

Warning notes, concerning the installation of ribbon cables

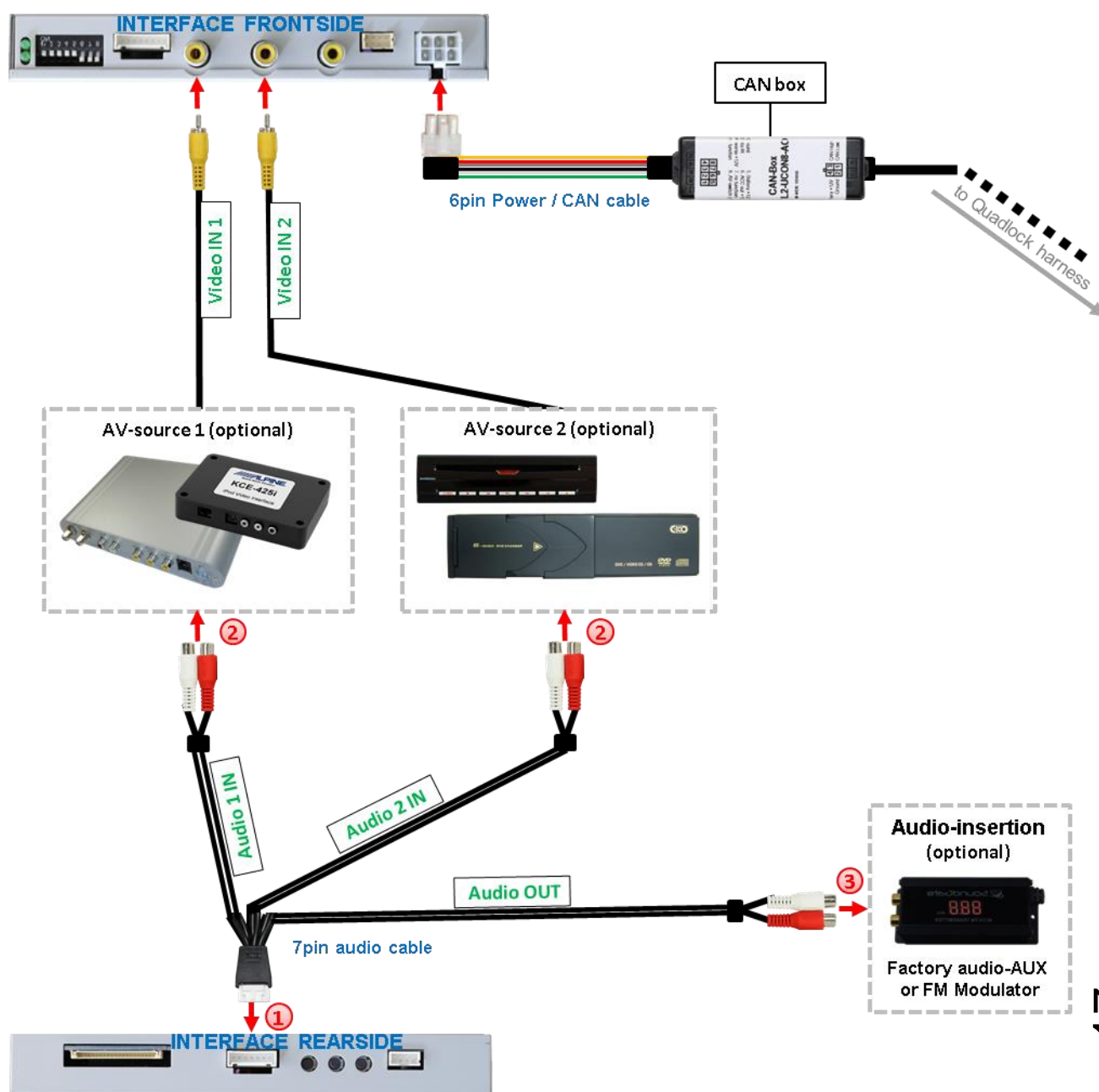
- 1) The contacting ends of ribbon cables always have to be installed in a straight and precise 180° position to the connector. Each deviation from a perfect contact position will curse faulty contact and even danger of short circuit
- 2) The ribbon cable's contacting side always has to correspond to the contacting side of the connector, concerning the mounting position.
- 3) Avoid cable contusion or cable injury caused by sharp-edged metal.

2.5.3. Audio insertion

This interface can only insert video signals into the factory infotainment and switch audio signals. If an AV-source is connected to AV1 or AV2, the audio insertion has to be done by the factory audio AUX input or a FM-modulator to which the interface's sound-switch output is connected. The inserted video-signal can be activated simultaneously to each audio-mode of the factory infotainment.

The audio switching of the connected AV sources is performed by the video interface's audio switch.

2.5.3.1. Audio connection of the AV sources AV1 and AV2



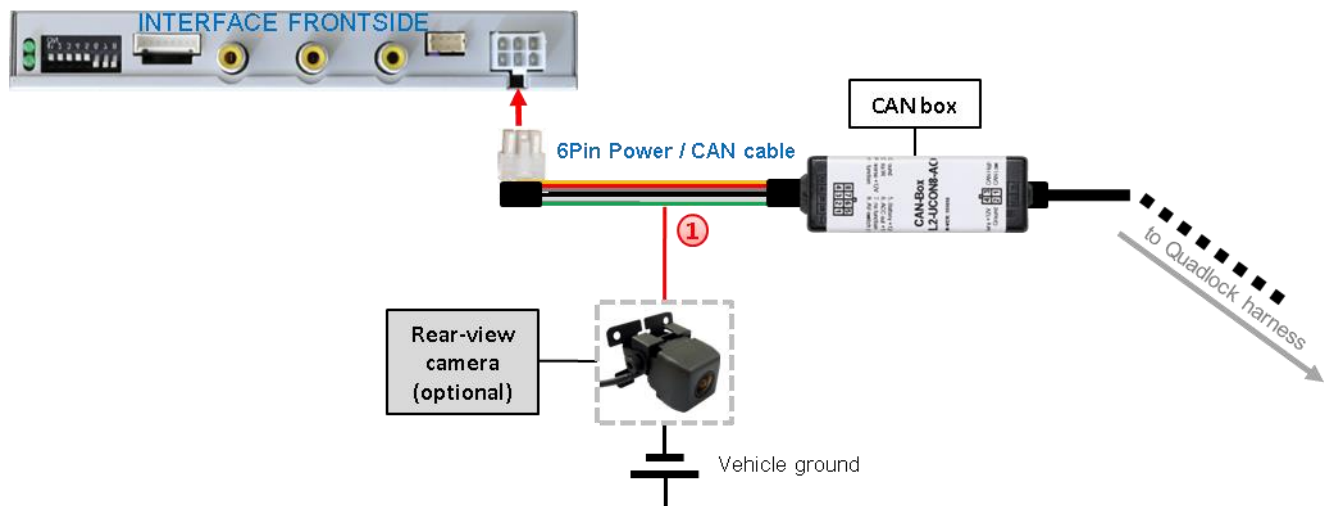
2.5.4. After-market rear-view camera

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 dip5 of the video-interface to **ON** before testing.

2.5.4.1. Case 1: Video interface receives the reverse gear signal

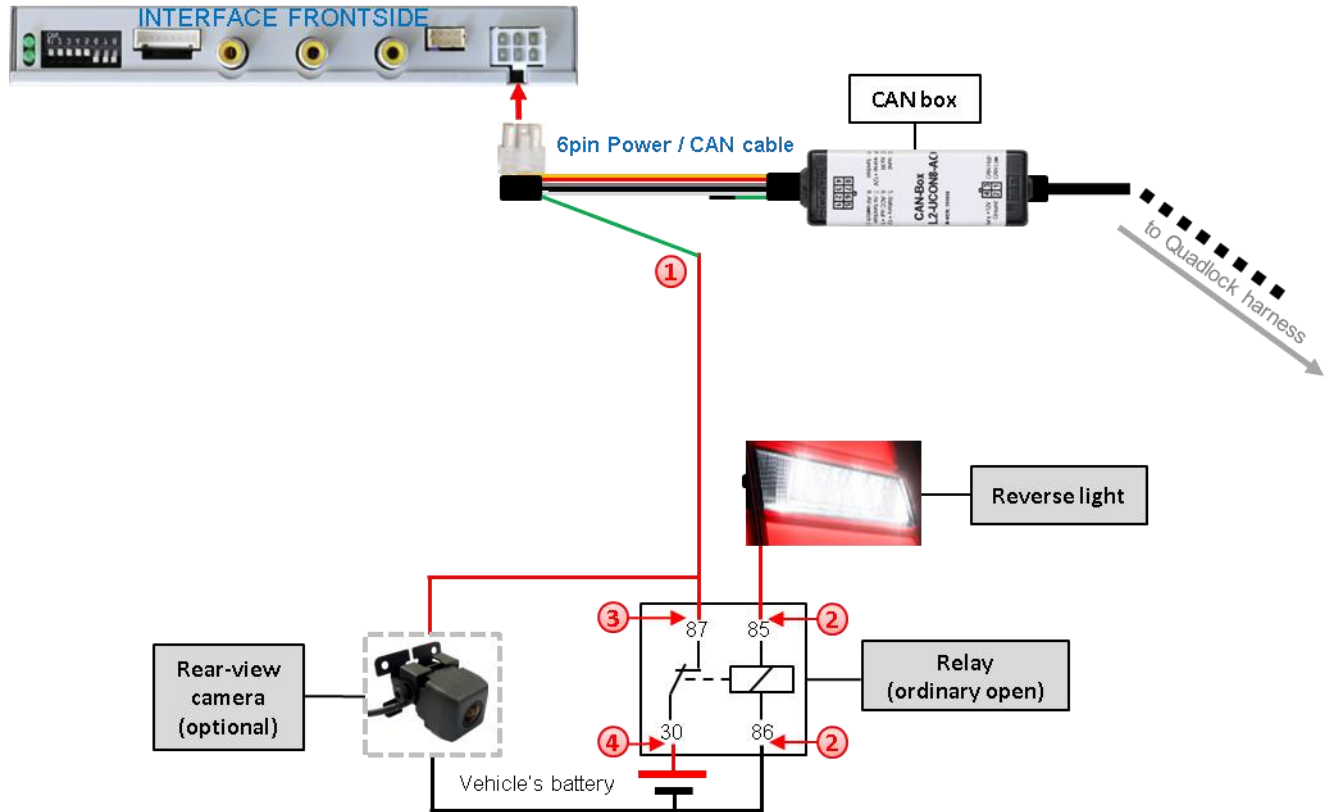
If the CAN-bus interface delivers +12V on the green wire of the 20pin cable when reverse gear is engaged, it will automatically be switched to the rear-view camera input "CAM" while reverse gear is engaged.



- 1** The 12 V power supply for the rear-view camera (max 3A) has to be taken from the green wire of the 20pin cable to avoid an unnecessary permanent power supply to the camera electronic.

2.5.4.2. Case 2: Interface does not receive any reverse gear signal

If the video interface does not deliver +12V on the green wire of the 20pin 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.

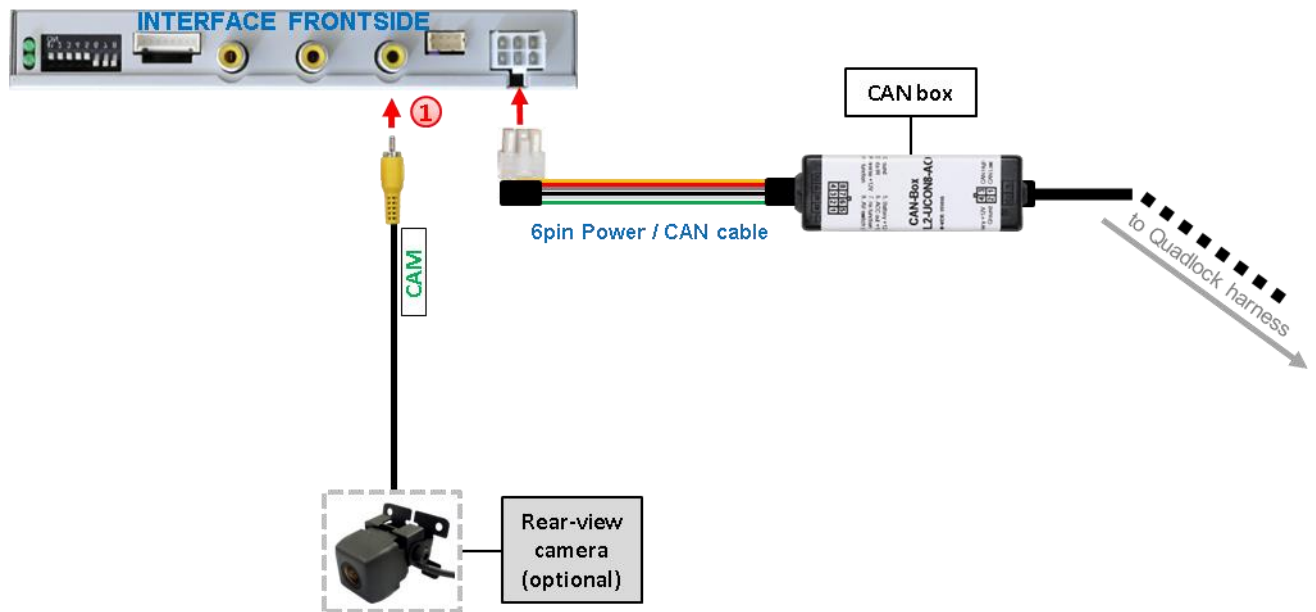


- ① Cut through the 6pin Power / CAN cable's green cable and connect the one side which is near to the 6pin Power /CAN connector to the output connector (87) of the relay.

Note: Not 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 a green cable's crimped female 4mm connector. The remaining opposite part of the green cable remains disconnected and should be isolated.

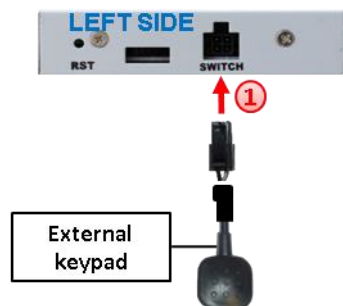
- ② Connect the Reverse light's power-cable to coil (85) and the vehicle's ground to coil (86) of the relay.
- ③ Additionally connect the output connector (87) of the relay to the rear-view camera's power-cable, like you did it to the green "Reverse-IN" cable before.
- ④ Connect permanent power / 12V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

2.5.4.3. Video signal connection for the rear-view camera



- 1 Connect the video-RCA of the after-market rear-view camera to the female RCA port "CAM" of the video-interface.

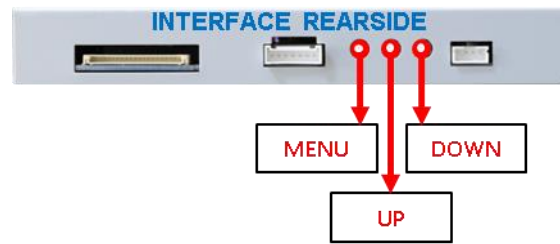
2.6. Connecting video-interface and external keypad



- 1 Connect the external keypad's female 4pin connector to the video-interface's male 4pin connector.

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

2.7. 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. To switch to the next menu item, pressing **UP** and **DOWN** will change the selected value. The buttons are embedded in the housing to avoid accidental changes during or after installation. The picture settings have to be done separately for RGB, 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 out of function
- IR-AV2 out of function
- Guide lines (ON/OFF)

```

Brightness...50
Contrast.....50
Saturation...50
Position.H...17
Position.V...26
IR.AV1.DVD.PROG
IR.AV2.....PROG
IR.RGB.....DDT
Guide.Line...ON
  
```

Note: If the CAN-box does not support the vehicle's CAN, the guide-lines cannot be used, even if they appeared once after connecting the system.

3. Interface operation

3.1. By volume key button



A press of the volume button on the right rear side of the steering wheel switches the input from factory mode to the inserted video sources. If -by dip switch setting- all inputs are enabled, the order will be the following:

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

By dip switch deactivated inputs will be skipped. The audio signal will be also be switched automatically by the interface's integrated audio switch when switching from AV1 to AV2

Switchover by vehicle buttons isn't possible in all vehicles. In some vehicles the external keypad has to be used.

3.2. By external keypad

Alternatively or additionally to the steering wheel's volume button, the interface's enabled inputs are also switchable by the external keypad.

4. Specifications

BATT/ACC range	7V - 25V
Stand-by power drain	36mA
Power	175mA @12V
Video input	0.7V – 1V
Video input formats	PAL/NTSC
RGB-video amplitude	0.7V with 75 Ohm impedance
Temperature range	-40°C to +85°C
Dimensions Video-Box	159 x 22 x 98 mm (W x H x D)
Dimensions Video-Box	114 x 52 x 15 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.	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.
Inserted picture double or 4 times on monitor.		
Inserted picture distorted, flickering or running vertically.	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.
	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 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 is being tested under fluorescent light which shines directly into the camera.	Test camera under natural light outside the garage.
Camera input picture flickers.		
Camera input picture is bluish.	Protection sticker not removed from camera lens.	Remove protection sticker from lens.

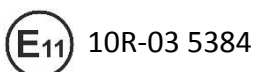
Symptom	Reason	Possible solution
Camera input picture black.	Camera power taken directly from reverse gear lamp.	Use relay or electronics to "clean" reverse gear lamp power. Alternatively, if CAN-bus box is compatible with the vehicle, camera power can be taken from green wire of 6pin to 8pin cable.
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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