# Video-inserter RL4-NAC12 *Attention! Do not connect to vehicle monitor Damage to hardware!*



Compatible with Citroen, Opel and Peugeot vehicles with NAC infotainment

Video-inserter for front- and rear-view camera and two additional video inputs

#### **Product features**

- Video-inserter for factory-infotainment systems
- 1 CVBS Input for rear-view camera
- 1 CVBS Input for front camera
- 2 CVBS video-inputs for after-market devices (e.g. 2 mirror cameras, USB-Player, DVB-T2 tuner)
- Automatic switching to rear-view camera input on engagement of the reverse gear
- Automatic front camera switching after reverse gear for 10, 15 or 20 seconds (adjustable)
- Activatable parking guide lines for rear-view camera in combination with PDC display (not available for all vehicles)
- Activatible PDC (not available for all vehicles)
- Video-in-motion (ONLY for connected video-sources)
- Video-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 place of installation must be free of moisture and away from heat sources.

### **1.1.** Delivery contents



### **1.2.** Checking the compatibility of vehicle and accessories

Compatibility				
Brand	Compatible	vehicles	Infotainment systems	
Citroen	C4 since 11/2020, C5 X since 02/2022, DS3 Crossback since 12/2018, DS4 since 11/2021-		NAC oder DS Connect Radio/Nav with 10.25inch touch monitor For Continental High version an additional cable CAB-HSD-MF026 might be required	
Opel	Corsa F since model year 2019 Mokka B since 09/2020		NAC or RCC with 10.25inch touch monitor For Continental High version an additional cable CAB-HSD-MF026 might be required	
Peugeot	208 II since 06/2019, 2008 II since 11/2019, 308 III since 09/2021, 3008 II since 05/2021, 508 II since 10/2018, 5008 II since 10/2020		NAC or RCC with 10.25inch touch monitor For Continental High version an additional cable CAB-HSD-MF026 might be required	
′ideo only		<ul> <li>camera, video 1 and video 2) a 2-3 mm wide stripe is known which remains on the right side and cannot be faded out.</li> <li>The interface inserts ONLY video signals into the infotainment.</li> <li>For audio inserting, use the possibly existing factory audio-AUX-input or a FM-modulator. If 2 AV-sources shall be connected to the infotainment, for audio switching an additional electronic part is required.</li> </ul>		
actory rear-view camera		required. Automatic 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.		
After market front camera		The front camera will automatically be switched for 10, 15 or 20 seconds (adjustable) after disengaging the reverse gear. A manually front camera switching is possible by external keypad.		
/ideo input signal		NTSC video sources compatible only.		
		If mirror cameras are connected, use only cameras which are resistant to continuous current.		
			and optical PDC are not available in all can only be displayed together with PDC.	
re		reconnection of the v	ctors cannot be separated for the white HSD socket, the separately available 16 can optionally be connected here.	



### **1.3.** Warning notes:

**Damage** to the head-unit is possible, if this RL4-NAC12 interface is installed to older Citroen / Peugeot SMEG or SMEG+ head-units (by Magneti Marelli)! Use this RL4-NAC12 interface only on Citroen/Opel/Peugeot head-units NAC (by Continental) or RCC (Bosch) with **10.25inch monitor**.

Designs and features – see the following pictures:

Furthermore, even when installed to the correct NAC systems, there is also **damage** to the head-unit possible **if the 4pin HSD connectors of this harness are wrong-plugged.** 

Prior to installation must be determined whether the head-unit of the vehicle is a

low version head-unit (single black male 4pin HSD on backside)

OR

high version head-unit (double black male 4pin HSD on the backside)

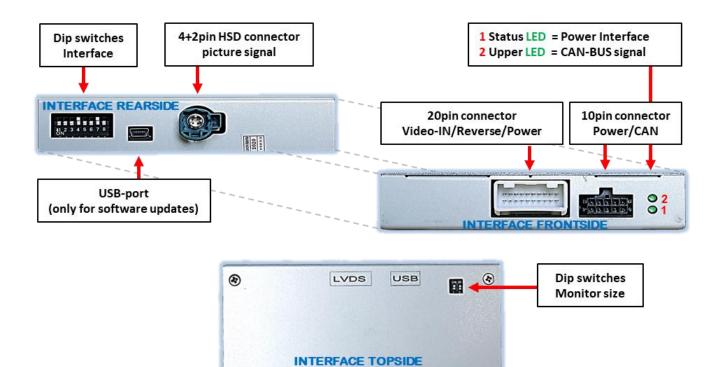




Please, carefully follow the manual for high or low version connection of the head unit!

### 1.4. Connection - Video-Interface

The video-interface converts the video signals of connected after-market sources in a factory monitor compatible picture signal which is inserted in the factory monitor, by 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.



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

Some settings have to be selected by the 8 dip-switches at the video-interface. Dip position down is ON and position up is OFF.



Dip	Function	ON (down)	OFF (up)
1	AV1-R input	enabled	disabled
2	AV2-L input	enabled	disabled
3	V3 Front camera input	enabled*	disabled
4	Input signal Video sources	By trigger wires	By CAN
5	Rear-view cam type	after-market	factory or none
6	Guidelines	Enabled**	disabled
7	No function		Set to OFF
8	Factory PDC		
	for after-market rear- view camera	enabled	disabled

See the following chapters for detailed information.

\*The front camera will automatically be switched for 10, 15 or 20 seconds (adjustable) after disengaging the reverse gear.

The camera power supply +12V will automatically be provided by the green wire "**Reverse-Out**" when the reverse gear is engaged, plus 10, 15 or 20 seconds delay for the front camera, and also +12V when the front camera is manually selected by external keypad (see chapter "Power Supply Output").

\*\*The display of the guidelines only works with simultaneous PDC display (Dip8 = ON).

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



### 1.5.1. Enabling the interface's video inputs AV1-R and AV2-L (dip 1-2)

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

### **1.5.2.** Activating – front camera back-switching V3 Front (dip 3)

If set to **ON**, the interface switches for 10, 15 or 20 seconds from the rear-view camera to the front camera input after having disengaged the reverse gear. In addition, a manual switch-over to the front camera input is possible via keypad (short press) from any image mode.

To power up the front cam, the video interfaces' green wire **"Reverse-Out"** will supply +12V (max 3A) with engaging the reverse gear and additionally 10, 15 or 20 more seconds power delay for the time of the front camera's back-switching after the reverse gear has been disengaged. Furthermore, the green wire's power supply for the front cam becomes active with manually front camera switching (short press of the external keypad).

### 1.5.3. Activation signal – video sources (dip 4)

For source activation **via CAN**, dip switch position **ON** must be selected. For manual source activation **via trigger wires**, the switch position must be **OFF**.

### 1.5.4. Rear-view camera settings (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.

### 1.5.5. Activating the guidelines (dip6)

If set to ON, the guide lines will be shown on the display. If set to OFF, the guide lines won't be visible on the display.

Note: The display of the guidelines only works with simultaneous PDC display (Dip8 = ON).

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!

### **1.5.6.** Activating the factory PDC display (Dip-8)

Dip 8 is used to activate the factory PDC display (if available) when retrofitting an aftermarket rear view camera. When dip switch is set to **ON**, the factory PDC display is shown on the right side of the display. With Dip switch position **OFF**, the factory PDC display is not shown.

**Note:** If there is no communication between interface and the vehicle's CAN-bus (several vehicles aren't compatible), the PDC can't be shown during the vehicle's operation!

Note: Dip 7 is out of function and has to be set to OFF.

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

### 1.6. Settings of the 4 Dip switches (CAN function - red)

In contrast to the 8-dip switches dip position **up = ON** and position **down = OFF**!

Monitor size	Dip 1	Dip 2
10.25	OFF	ON



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

### 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.

As with any installation of retrofit equipment, a stand-by test is neccessary after the installation of the video interface, to ensure that the unit also switches off after reaching the vehicle's sleep mode.

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.

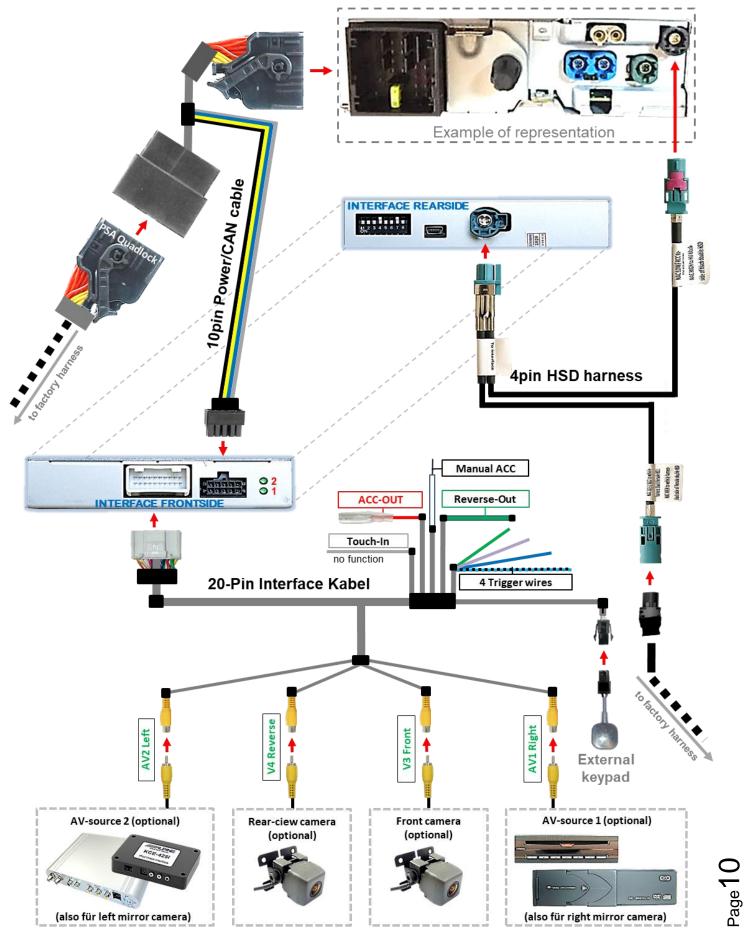
### 2.1. Place of installation – video-interface

The video-interface is performed to be installed at the head unit's rear side.

# Attention!

*Do not connect to vehicle monitor Damage to hardware!* 

### 2.2. Connection schema

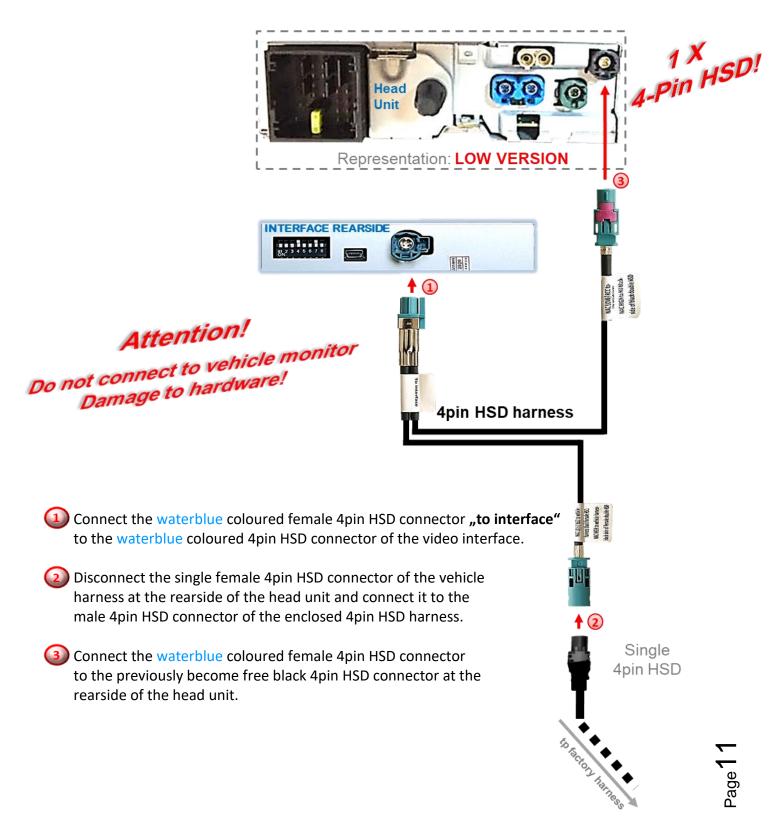


### 2.3. Connections to the head-unit

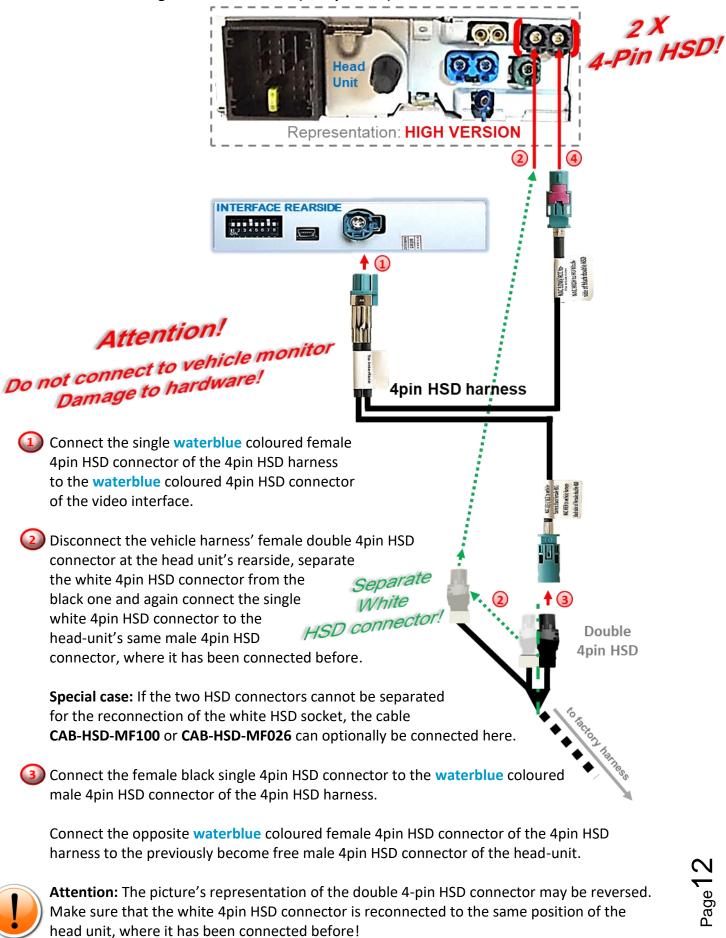
Remove the vehicle's head unit

#### 2.3.1. Connection - picture signal cable

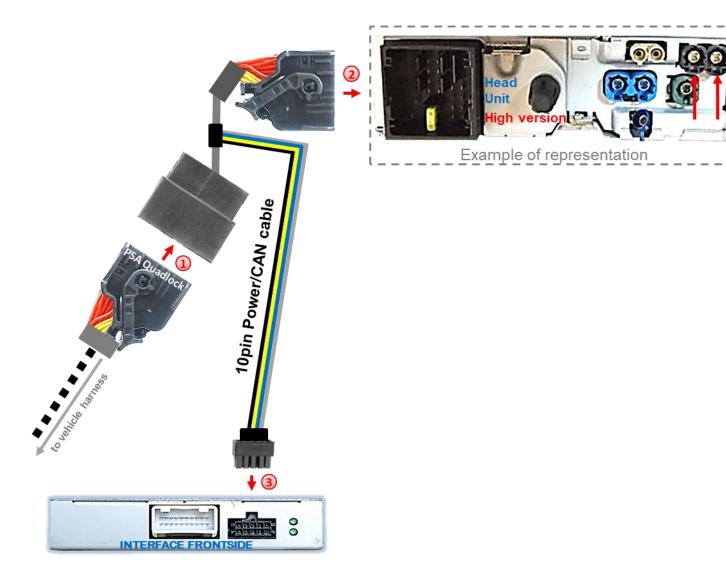
### 2.3.1.1. Low version head unit (1 X 4pin HSD)



2.3.1.2. High version head unit (4 X 4pin HSD)



### 2.3.2. Connection - Power / CAN



Disconnect the female PSA Quadlock connector of the vehicle harness at the rearside of the head unit and connect it to the quadlock connector of the enclosed 10pin power/CAN cable.

Connect the opposite female quadlock connector the enclosed10pin power/CAN cable to the previously released quadlock connector of the Head Unit.

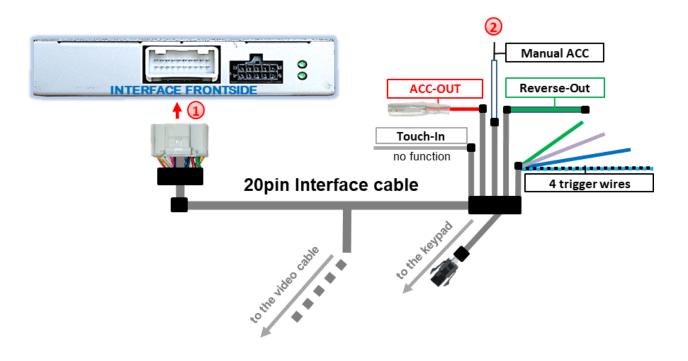
Connect the power / CAN cable's female 10pin connector to the 10pin connector of the video interface.



Check 1 Exceptionally, the GM LAN communication may not succeed in all vehicles! If, after connecting the PNP harness, no interface LED lightens up while the ignition is turned on, the analog power supply needs to be done! (see following chapter) in

tion Check 2 Exceptionally, the power supply to the video interfaces may not be interupted after switching to the vehicle's sleep mode. If the interface LEDs continue to shine even in the vehicle's sleep mode, please contact the support!

### 2.3.3. Installation with analogue connection (without CAN-Bus)



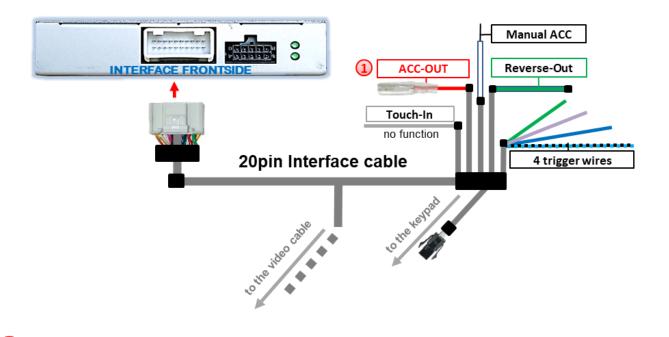
Connect the female 20pin connector of the 20pin interface cable to the male 20pin connector of the video interface.

Connect the 20pin interface cable's white wire "Manual ACC" to +12V ACC or to +12V Scontact terminal 86s +12V (e.g. glove compartment illumination).

**Note:** In case the analogue connection has to be made (because some vehicles are not compatible), the input signal for each connected video source must also be manually triggered via the corresponding 4 trigger lines **Trig-REAR/Trig-FRONT/Trig-RIGHT/Trig-LEFT** 

For analogue connection, don't forget to set dip4 to OFF!

### 2.4. Power supply output



(1) The red power supply output **"ACC-out"** can be used to power an external source.

### 2.4.1. Power supply output for mirror cameras



**Attention:** If mirror cameras shell be energized, only continuous current-resistant cameras are allowed to be connected to the red wire **"ACC-out"** as ,otherwise, non-resistent cameras would be damaged.

Continuous current-resistance is supported by our following cameras:

- CAM-E-B168
- CAM-E-B180
- CAM-E-B113

### 2.5. Connection - video sources

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

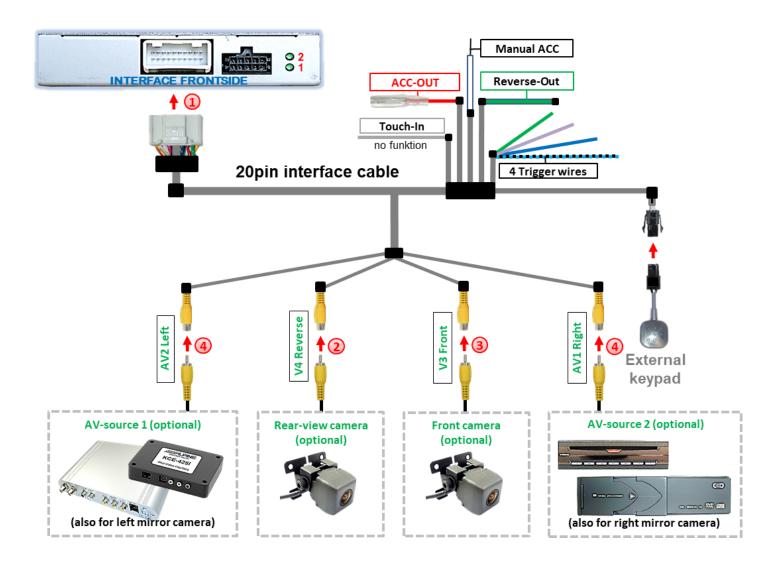
Before the final installation, we recommend a test-run to detect a incompatibility of vehicle and interface. Due to changes in the production of the vehicle manufacturer there's always a possibility of incompatibility.



### Limitation:

In the inserted video picture of **Peugeot 308** (front and rear view camera, video 1 and video 2), a 2-3 mm wide stripe is known which remains on the right side and cannot be faded out (see picture).





- Connect the 20pin interface cable's female 20pin connector to the male 20pin connector of the video-interface.
- 2 Connect the video RCA of the rear-view camera to the 12pin interface cable's female RCA connector "V4 Reverse".
- Connect the front camera's video RCA connector to the 12pin interface cable's female RCA connector "V3 Front".
- Connect the video RCAs of the AV source 1 and 2 or alternatively of two mirror cameras to the 12pin interface cable's female RCA connector "AV1 Left" and "AV2 Right".

### 2.5.1. Audio insertion

This interface can only insert video signals into the factory infotainment. If an AV source is connected, the audio insertion has to be performed by a factory 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, for audio switching an additional electronic part is required.

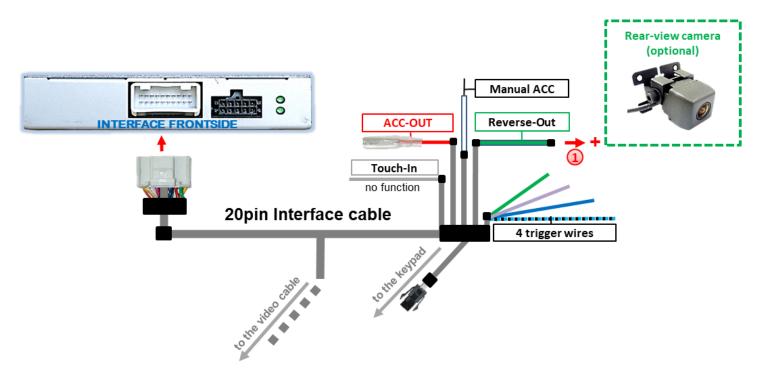
### 2.5.2. After-market rear-view camera

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

### 2.5.2.1. Case 1: Video interface receives the reverse gear signal

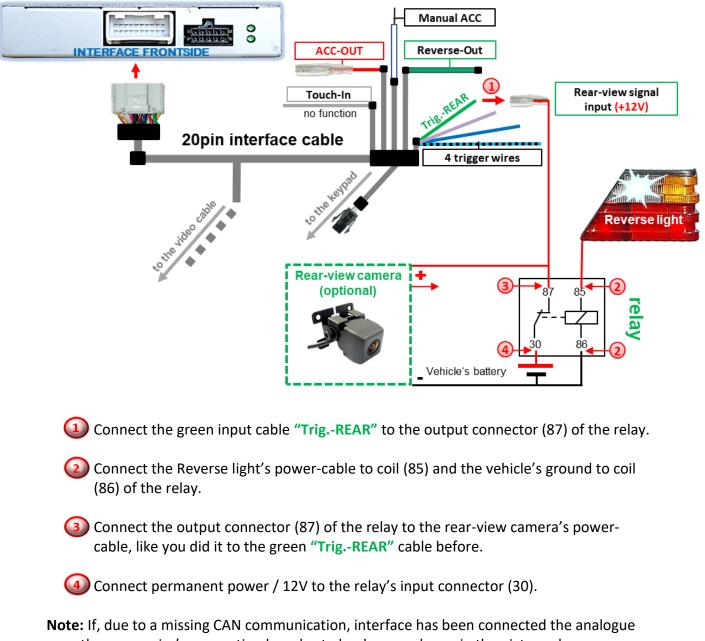
If the CAN-bus interface carries +12V on the green wire **"Reverse-OUT"** of the 20pin cable when reverse gear is engaged, it will also automatically be switched to the rear-view camera input **"V4 Reverse"** while reverse gear is engaged.



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

### 2.5.2.2. Case 2: Video interface does not receive the reverse gear signal

If the video interface does <u>not</u> carry +12V on the green wire **"Reverse-OUT"** 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.

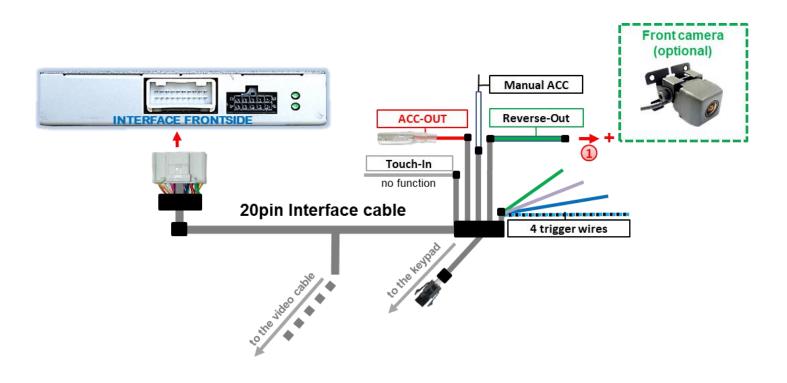


way, the green wire's connection has also to be done as shown in the picture above. For analogue connection, dont forget to set dip4 to OFF!

### 2.5.3. After-market front camera

To display the images from the front camera camera, the video interface also receives the data from the vehicle CAN bus. If, due to missing CAN bus data (as not all vehicles are compatible), the analogue power connection was previously made, the corresponding manual input signal by "Trig-FRONT" wire is also required here.

#### For analogue connection, dont forget to set dip4 to OFF.



 The green power supply output "Reverse-Out" can be used to power a front camera. If Dip 1 is set to ON (of the black 8 dips), the power supply output supplies +12V (max 3A) when the reverse gear is engaged ...



and additionally 10, 15 or 20 seconds delay after reverse gear is disengaged for the front camera.

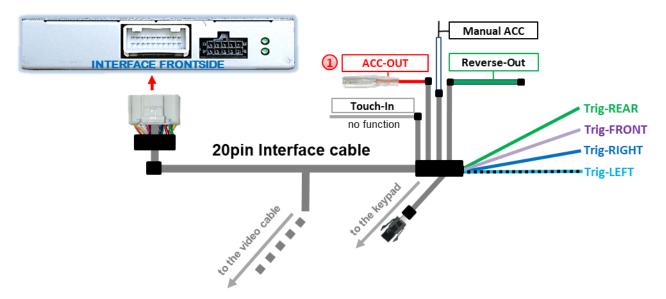
**Note:** In addition, a manual switch-over to the front camera input is possible via keypad (short press) from any image mode. The power supply output supplies +12V then, too (if Dip 3 is set to ON and the front camera input is selected).



### 2.5.4. After-market mirror cameras

To display the images from the left and right mirror camera, the video interface also receives the data from the vehicle CAN bus. If, due to missing CAN bus data (as not all vehicles are compatible), the analogue power connection was previously made, the corresponding manual input signals Trig-RIGHT/Trig-LEFT are also required here.

For analogue connection, dont forget to set dip4 to OFF!



Dewer is supplied to the mirror cameras via the red cable "ACC-out".

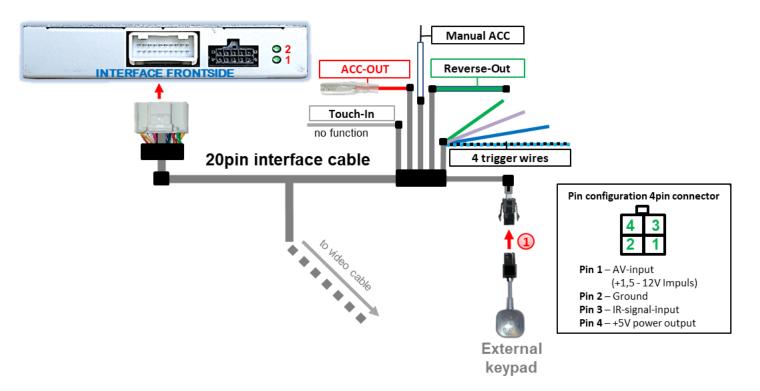


**Attention:** To energize the mirror camaras, only continuous current-resistant cameras may be connected to the red line **"ACC-out"**, as they would otherwise be damaged. Our following cameras are among others resistant to continuous current:

- CAM-E-B168
- CAM-E-B180
- CAM-E-B113



#### 2.6. Connection - external keypad

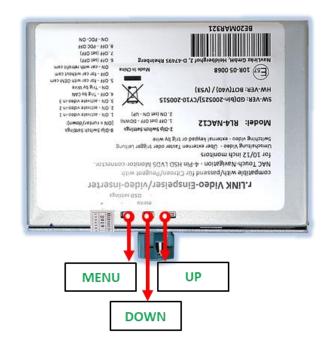


Connect the keypad's female 4pin connector to the 20pin interface cable's male 4pin connector.

**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



The picture settings can be 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 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 Pos H horizontal picture position Pos V vertical picture position Front Front camera switch back



Duration adjustable for 10, 15 or 20 seconds (10 seconds is preset)

#### Note:

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.



### 3. Interface operation

The interface's enabled inputs can be switched by the external keypad.

Long press of keypad (2-3 seconds)

By long pressing the external keypad (2-3 seconds), the video interfaces witches 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  $\rightarrow$  Left (V1)  $\rightarrow$  Right (V2)  $\rightarrow$  factory video

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

Note: The interface switches after releasing the switch (after long pressure).

#### Short press of keypad (only if DIP 3 is set to ON)

By short pressing the external keypad, the video interfaces witches from the factory video to the front camera input and back to factory video.

### 4. Specifications

BATT/ACC range Stand-by power drain Power Video input Video input formats Temperature range Dimensions Video-Box 7V - 25V 5mA 280mA @12V 0.7V – 1V NTSC -40°C to +85°C 117 x 25 x 108 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
	Not all connectors have been reconnected to factory head- unit or monitor after installation.	Connect missing connectors.
No picture/black picture (factory	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.
picture).	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 from video source.	Check on other monitor whether video source is OK.
No picture/black	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).
picture/white picture (inserted picture) but factory picture is OK.	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.
Inserted picture totally wrong size or position. Inserted picture double or 4 times on monitor.	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	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.
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	Check manual whether there is a limitation to NTSC
Inserted picture b/w. Inserted picture qual. bad.	handle NTSC input. Picture settings have not been adjusted.	mentioned. If yes, set source fixed to NTSC output.
Inserted picture size slightly wrong. Inserted picture		Use the 3 buttons and the interface's OSD to adjust the picture settings for the corresponding video input.
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		Use relay or electronics to "clean" reverse gear lamp
black.	Camera power taken directly	power. Alternatively, if CAN-bus box is compatible
Camera input picture	from reverse gear lamp.	with the vehicle, camera power can be taken from
has distortion.		green wire of 6pin to 8pin cable.
		Set dip 3 of video-interface to ON (if not input AV2 is
Camera input picture	Camera input picture settings	not already activated) and connect the camera to AV2.
settings cannot be	can only be adjusted in AV2	Switch to AV2 and adjust settings. Reconnect camera
adjusted.	mode.	to camera input and deactivate AV2 if not used for
		other source.
Graphics of a car in	Function PDC is ON in the	In compatible vehicles, the graphics will display the
camera input picture.	interface OSD.	factory PDC distance. If not working or not wanted, set
	Interface OSD.	interface OSD menu item UI-CNTRL to ALLOFF.
Chinese signs in	Function RET or ALL is ON	Set interface OSD menu item UI-CNTRL to ALLOFF or
camera input picture	(function for Asian market) in	PDCON.
	the interface OSD.	
Not possible to switch	CAN-bus interface does not	Use external keypad or cut white wire of 6pin to 8pin
video sources by OEM	support this function for	cable and apply +12V impulses for AV-switching.
button.	vehicle.	
button.	Pressed too short.	For video source switching a longer press of about 2.5
Not possible to switch		seconds is required.
video sources by	SW-version of interface does	Use OEM-button or cut white wire of 6pin to 8pin
external keypad.	not support external keypad.	cable and apply +12V impulses for AV-switching.
Interface does not		
switch to camera input	CAN-bus interface does not	Cut the green wire of the 6pin to 8pin cable and apply
when reverse gear is	support this function for the	+12V constant from reverse gear-lamp signal. Use
engaged.	vehicles.	relay to "clean" R-gear lamp power.
	CAN-bus interface	Cut the grey wire of 6pin to 8pin and isolate both
Interface switches	compatibility to vehicle is	ends. If problem still occurs, additionally cut the white
video-sources by itself.	limited.	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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