

Video-inserter MI1324

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



examples

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)
- 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



1.3. 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

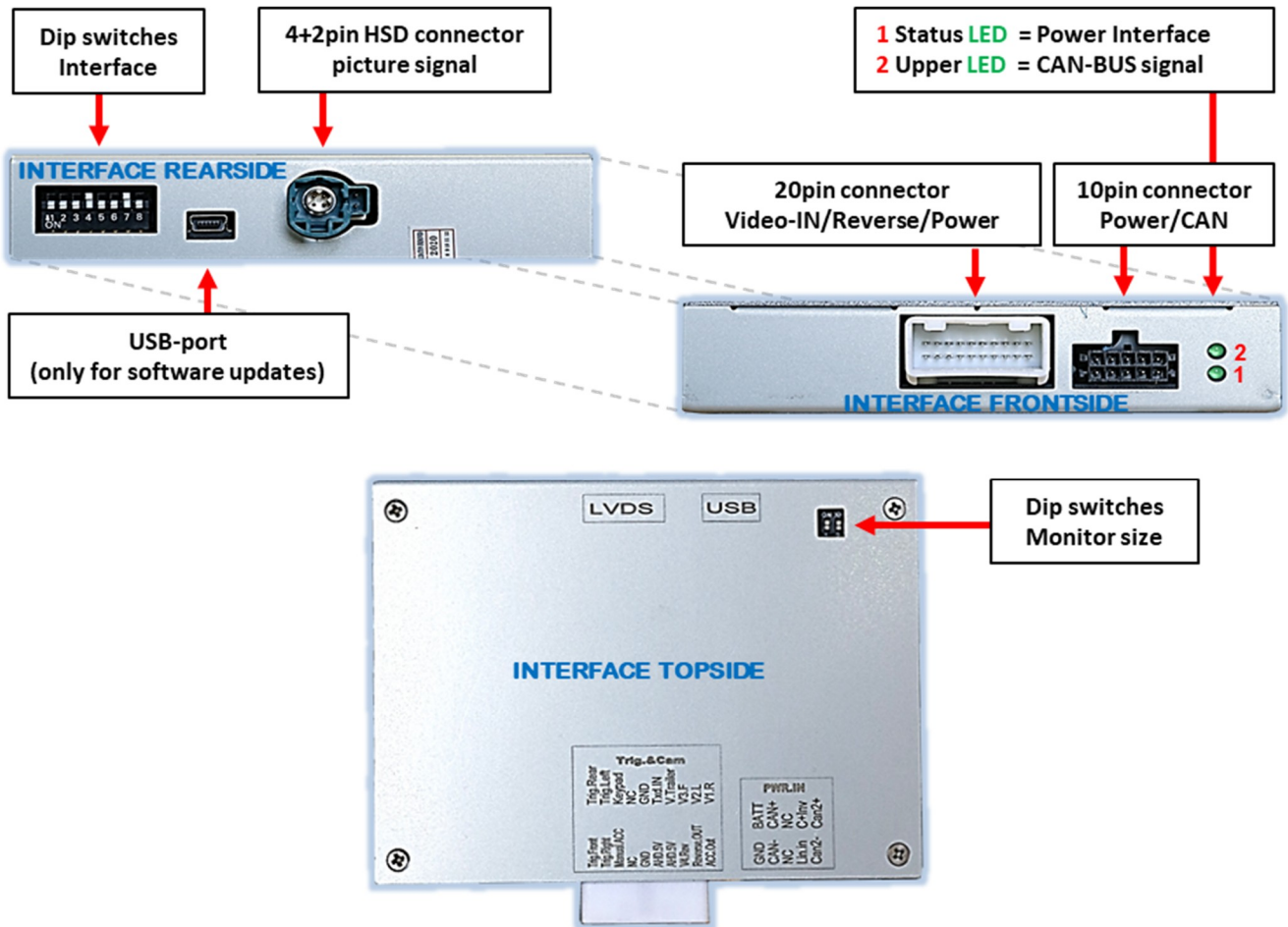
(**double** black male 4pin
HSD on the backside)



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.



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 after-market 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: 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.

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.

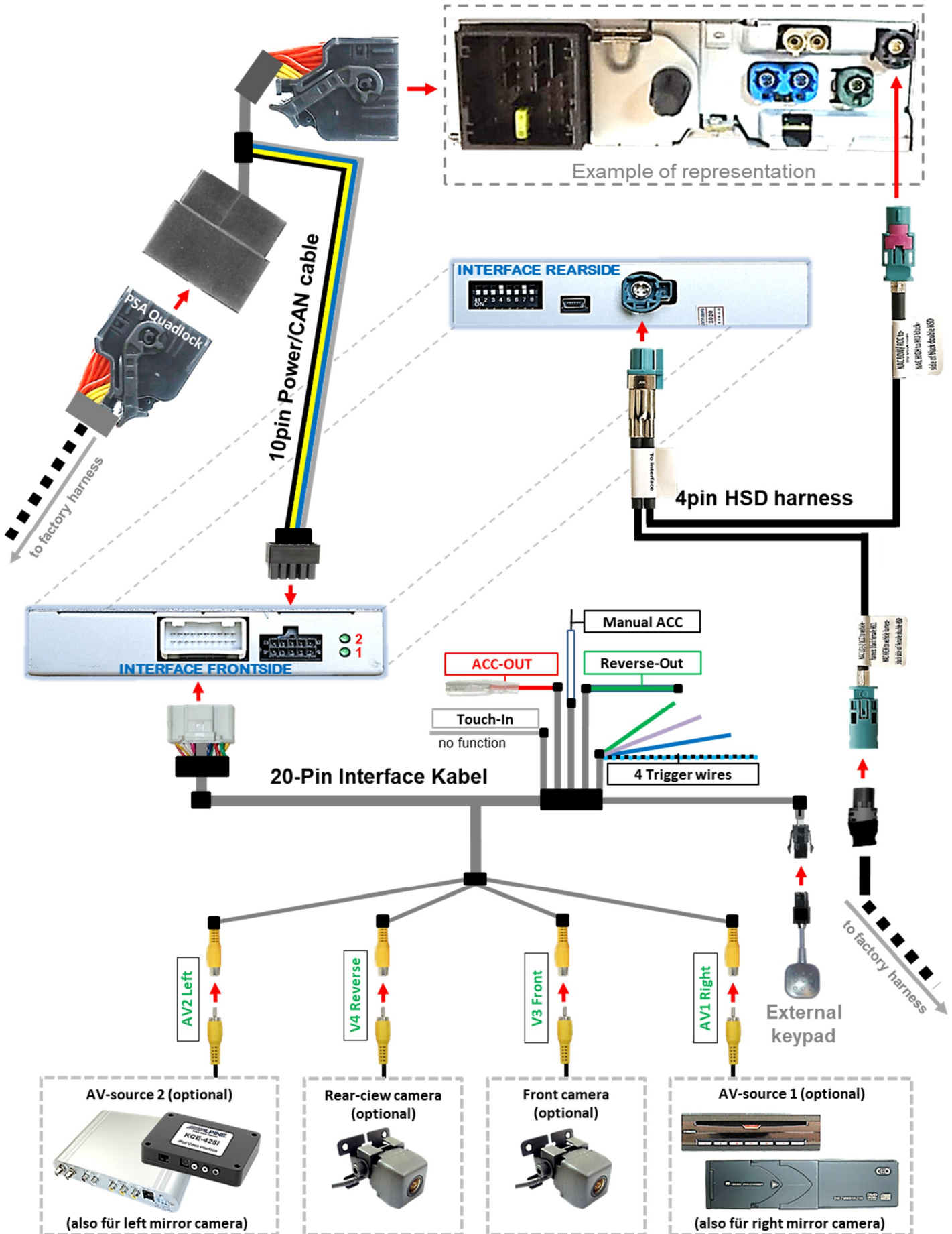
Before the final installation, we recommend a test-run of the interface. Due to changes in the production of the vehicle manufacturer, there's always the possibility of incompatibility.

2.1. Place of installation – video-interface

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

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2.2. Connection schema

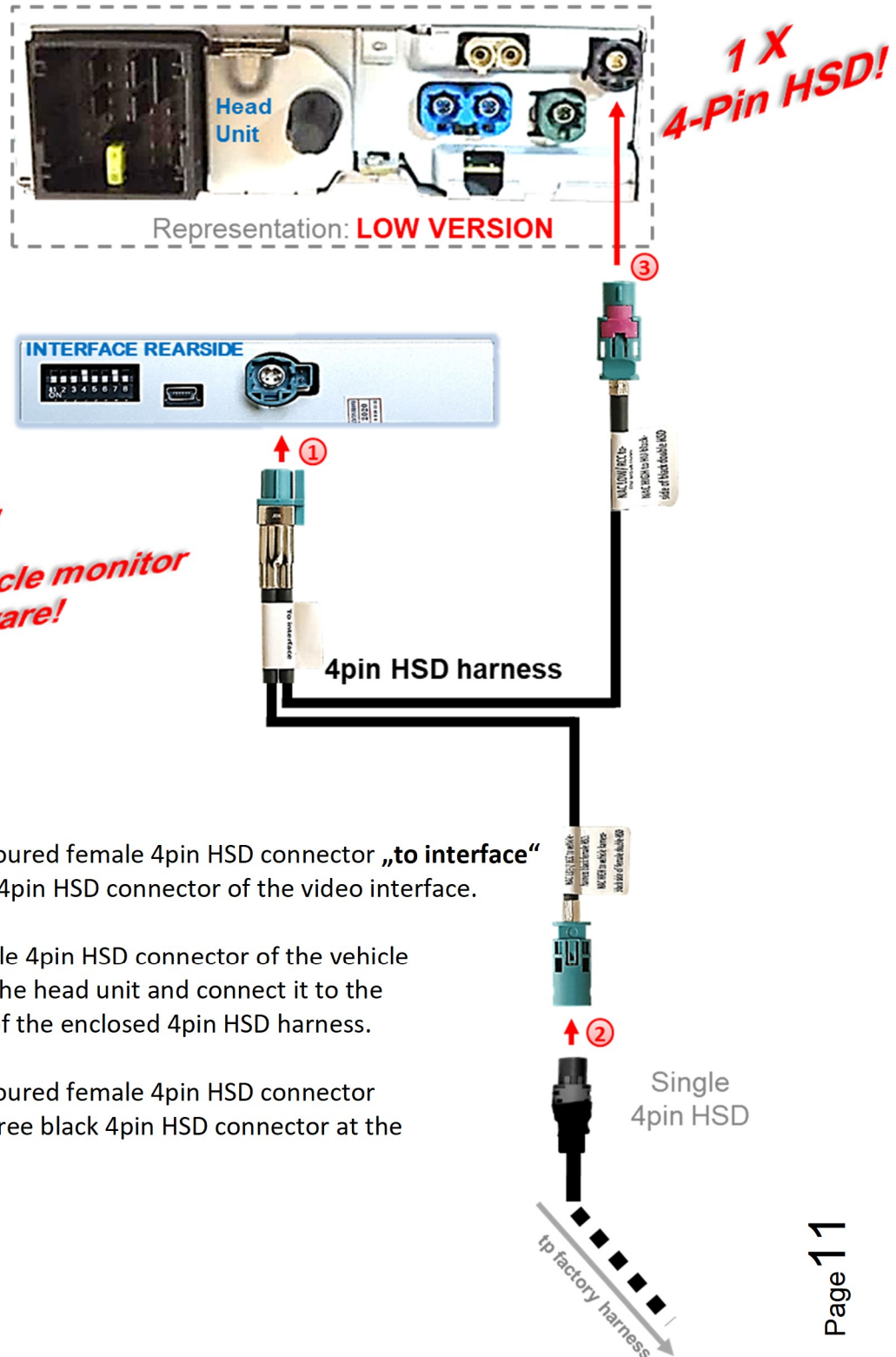


2.3. Connections to the head-unit

Remove the vehicle's head unit

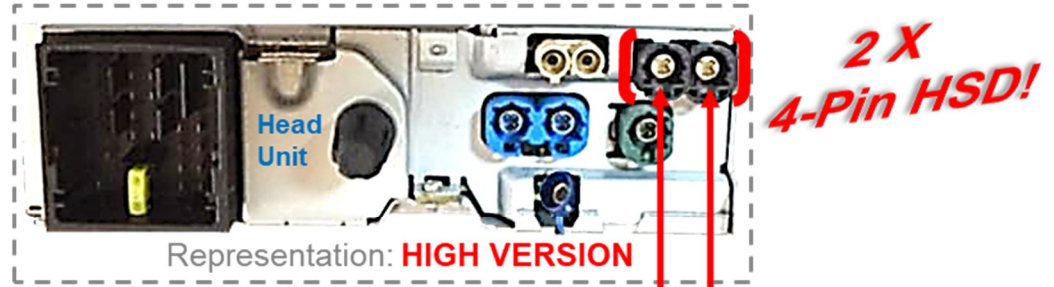
2.3.1. Connection - picture signal cable

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

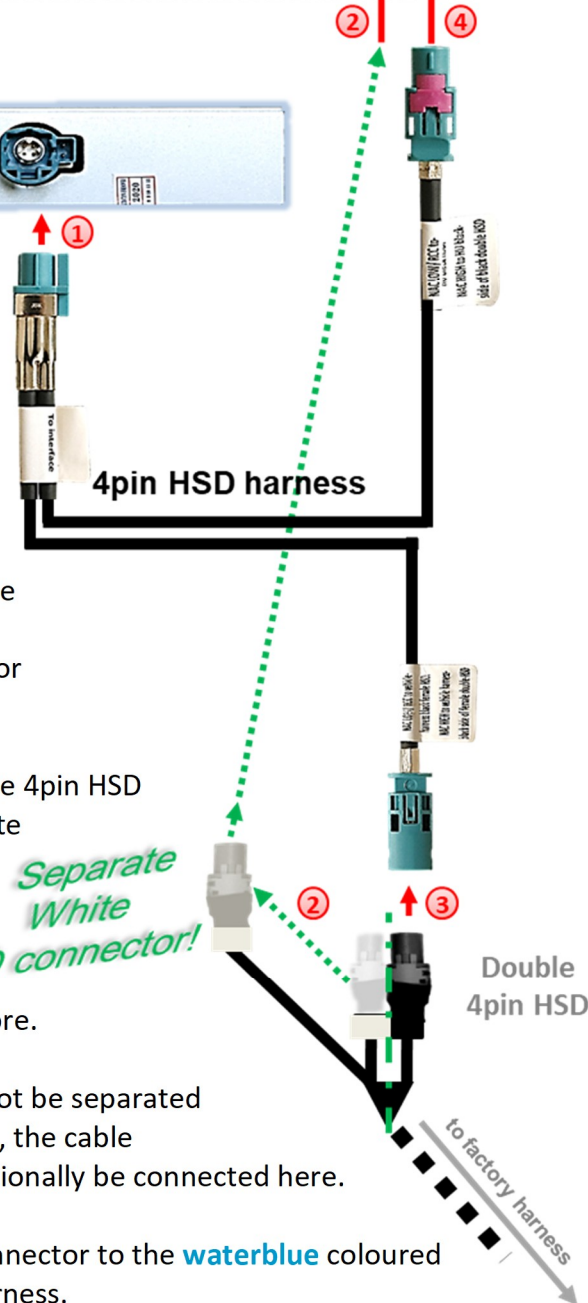


- 1 Connect the **waterblue** coloured female 4pin HSD connector „to interface“ to the **waterblue** coloured 4pin HSD connector of the video interface.
- 2 Disconnect the single female 4pin HSD connector of the vehicle harness at the rearside of the head unit and connect it to the male 4pin HSD connector of the enclosed 4pin HSD harness.
- 3 Connect the **waterblue** coloured female 4pin HSD connector to the previously become free black 4pin HSD connector at the rearside of the head unit.

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



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- ① Connect the single **waterblue** coloured female 4pin HSD connector of the 4pin HSD harness to the **waterblue** coloured 4pin HSD connector of the video interface.
- ② Disconnect the vehicle harness' female double 4pin HSD connector at the head unit's rearside, separate the white 4pin HSD connector from the black one and again connect the single white 4pin HSD connector to the head-unit's same male 4pin HSD connector, where it has been connected before.

Special case: If the two HSD connectors cannot be separated for the reconnection of the white HSD socket, the cable **CAB-HSD-MF100** or **CAB-HSD-MF026** can optionally be connected here.

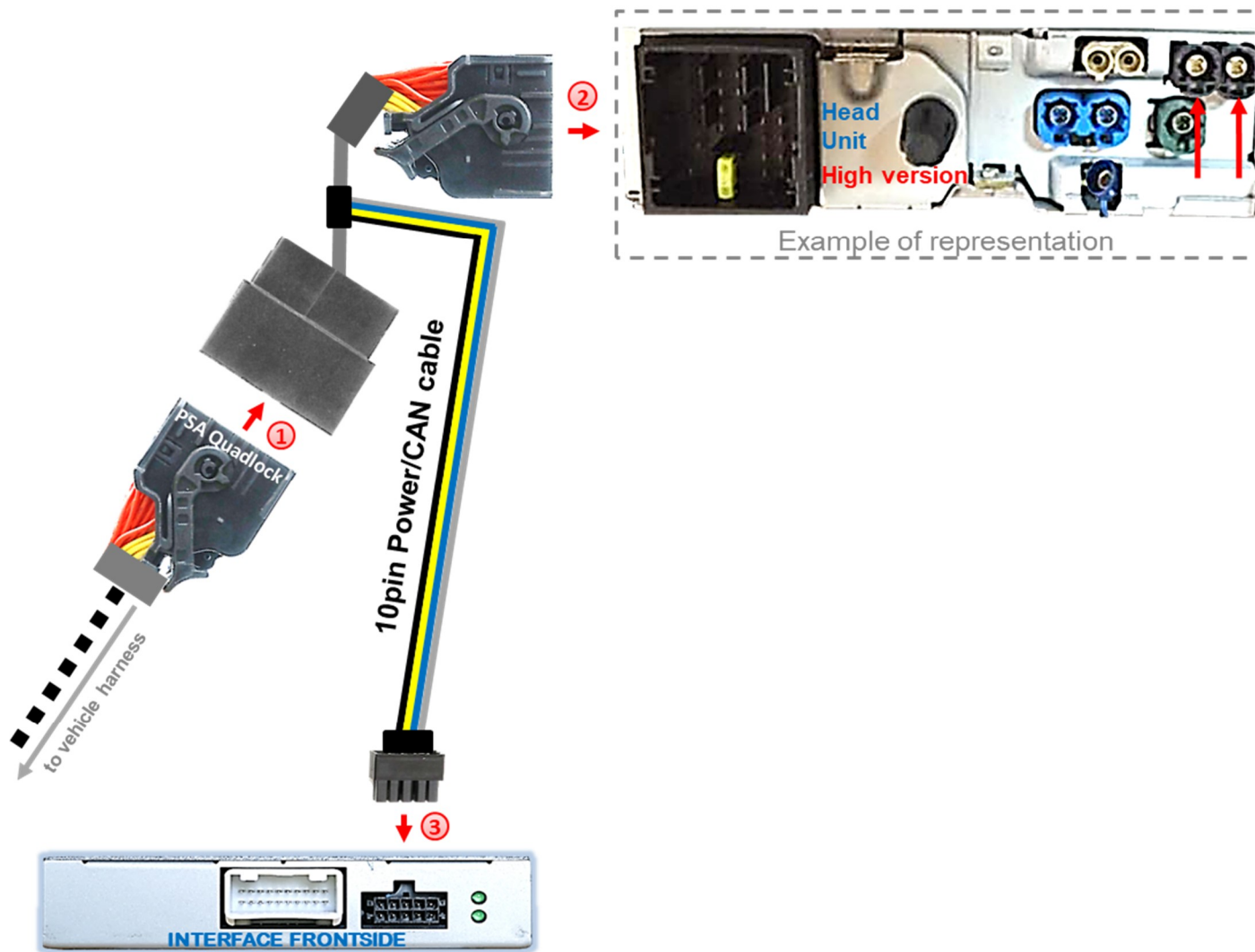
- ③ Connect the female black single 4pin HSD connector to the **waterblue** coloured male 4pin HSD connector of the 4pin HSD harness.

Connect the opposite **waterblue** coloured female 4pin HSD connector of the 4pin HSD harness to the previously become free male 4pin HSD connector of the head-unit.



Attention: The picture's representation of the double 4-pin HSD connector may be reversed. Make sure that the white 4pin HSD connector is reconnected to the same position of the head unit, where it has been connected before!

2.3.2. Connection – Power / CAN



- 1 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.
- 2 Connect the opposite female quadlock connector of the enclosed 10pin power/CAN cable to the previously released quadlock connector of the Head Unit.
- 3 Connect the power / CAN cable's female 10pin connector to the 10pin connector of the video interface.



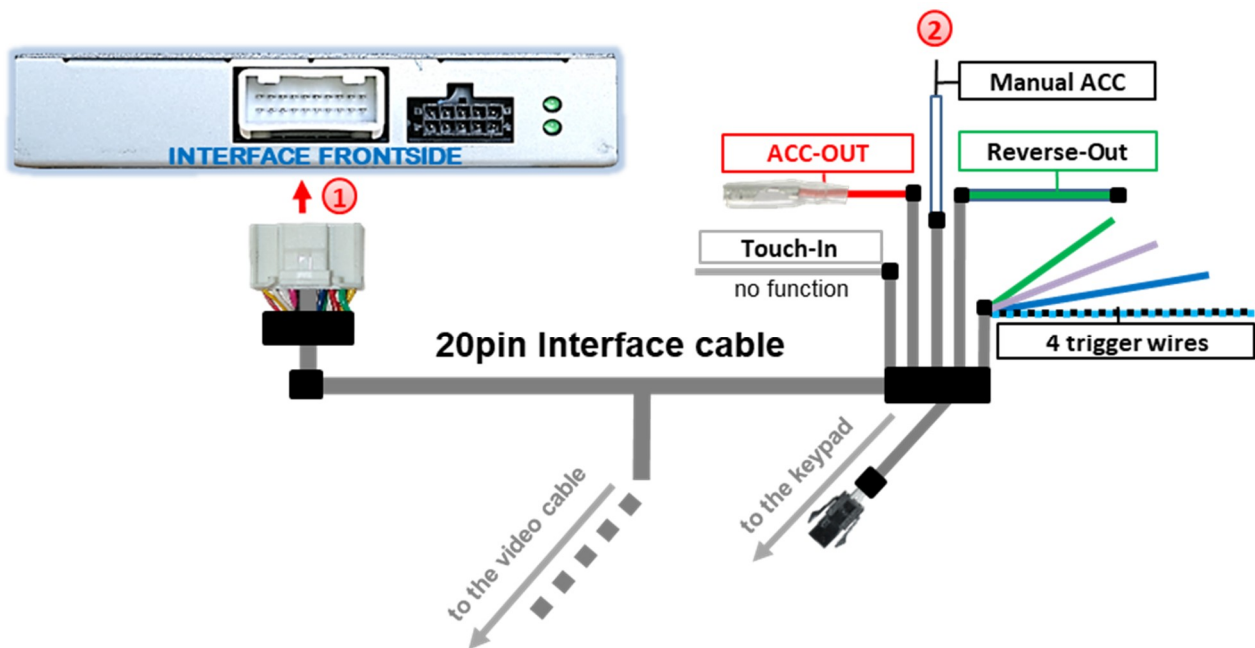
Check 1

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)

Check 2

Exceptionally, the power supply to the video interfaces may not be interrupted 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)



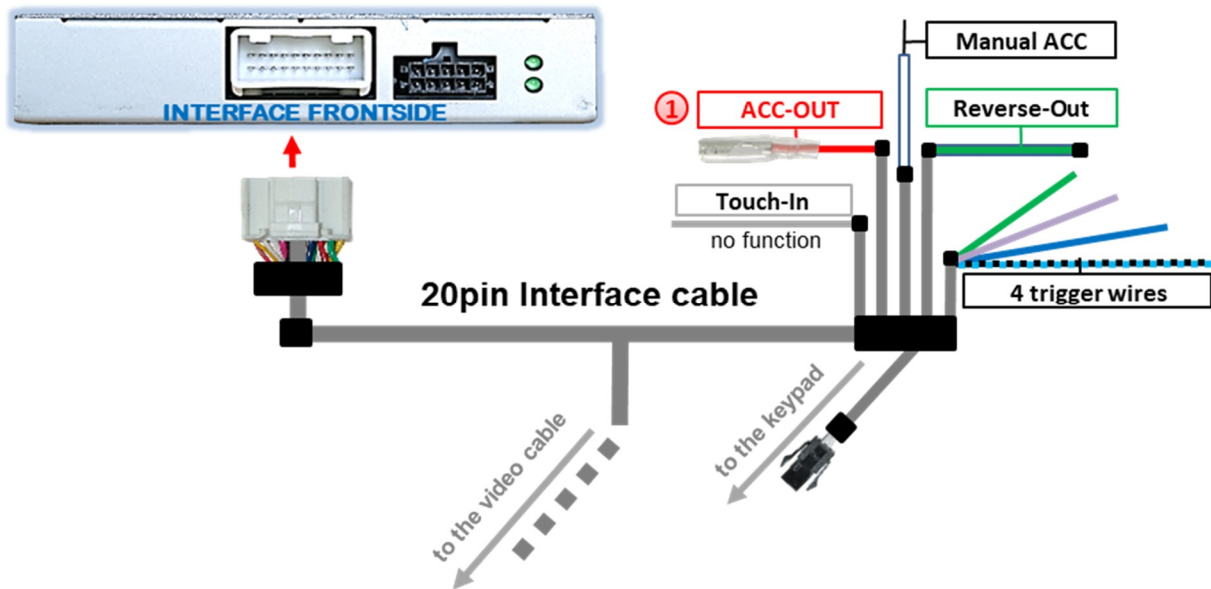
- 1 Connect the female 20pin connector of the 20pin interface cable to the male 20pin connector of the video interface.
- 2 Connect the 20pin interface cable's white wire "**Manual ACC**" to +12V **ACC** or to +12V **S-contact terminal 86s +12V** (e.g. glove compartment illumination).

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



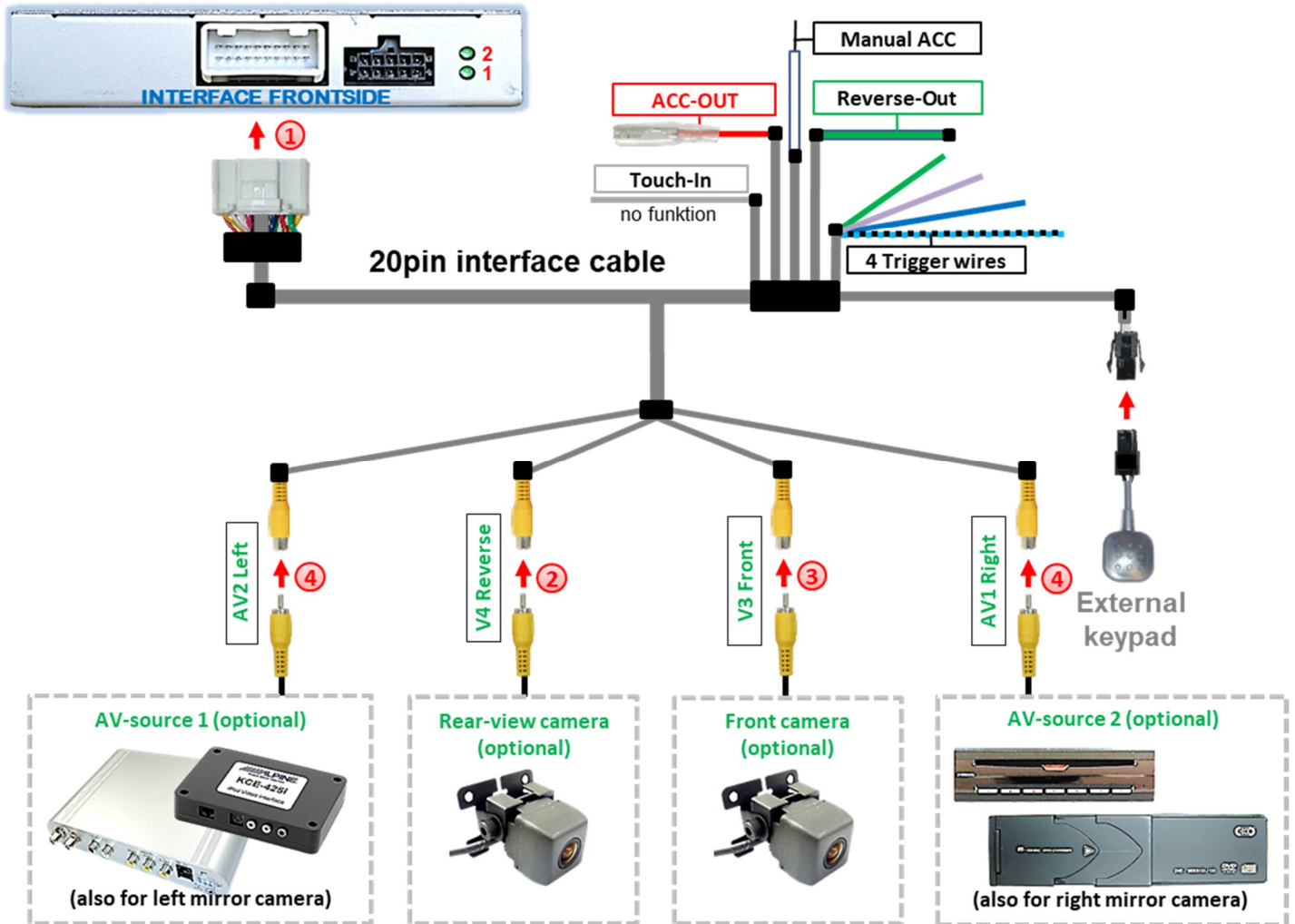
Attention: If mirror cameras shall be energized, only continuous current-resistant cameras are allowed to be connected to the red wire „ACC-out“ as ,otherwise, non-resistant cameras would be damaged.

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 two after-market video-sources (or mirror cameras), one after-market rear-view camera and one after-market front camera to the video-interface.



- 1 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“.
- 3 Connect the front camera's video RCA connector to the 12pin interface cable's female RCA connector „V3 Front“.
- 4 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.

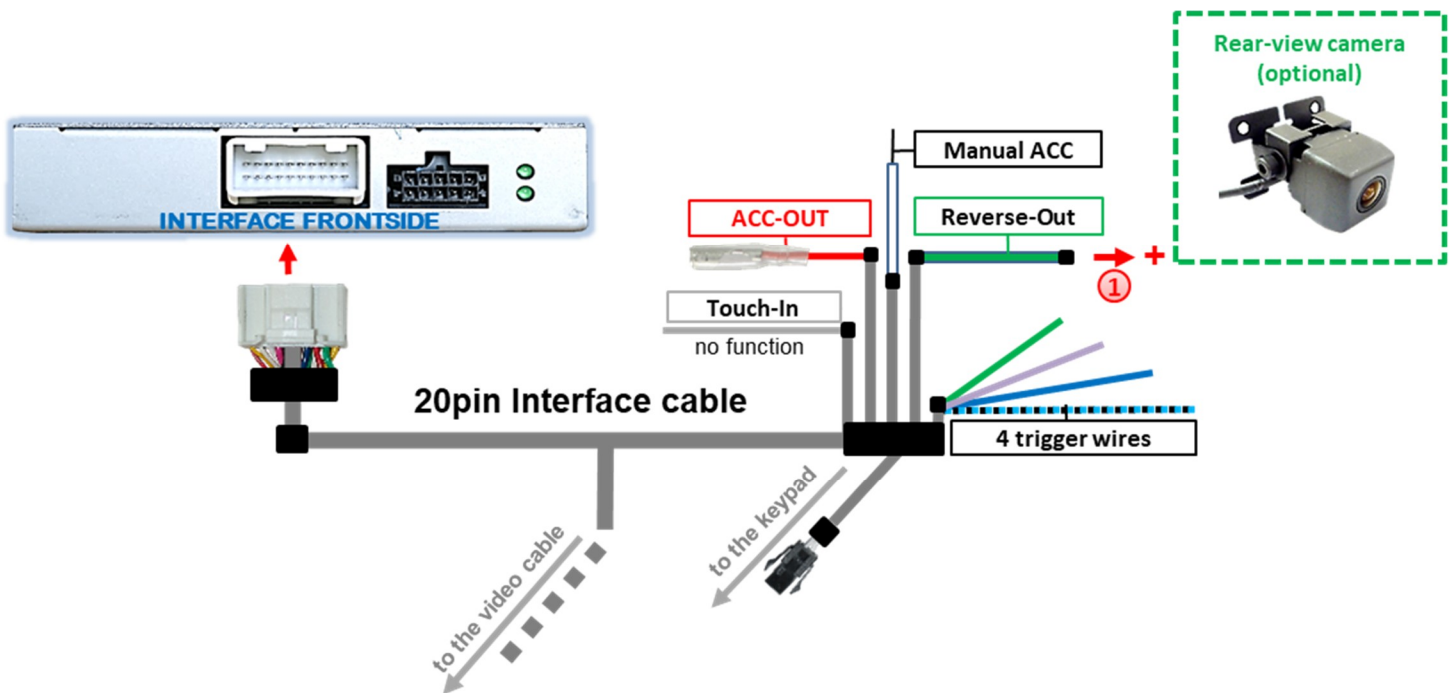
2.5.2. After-market rear-view camera

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

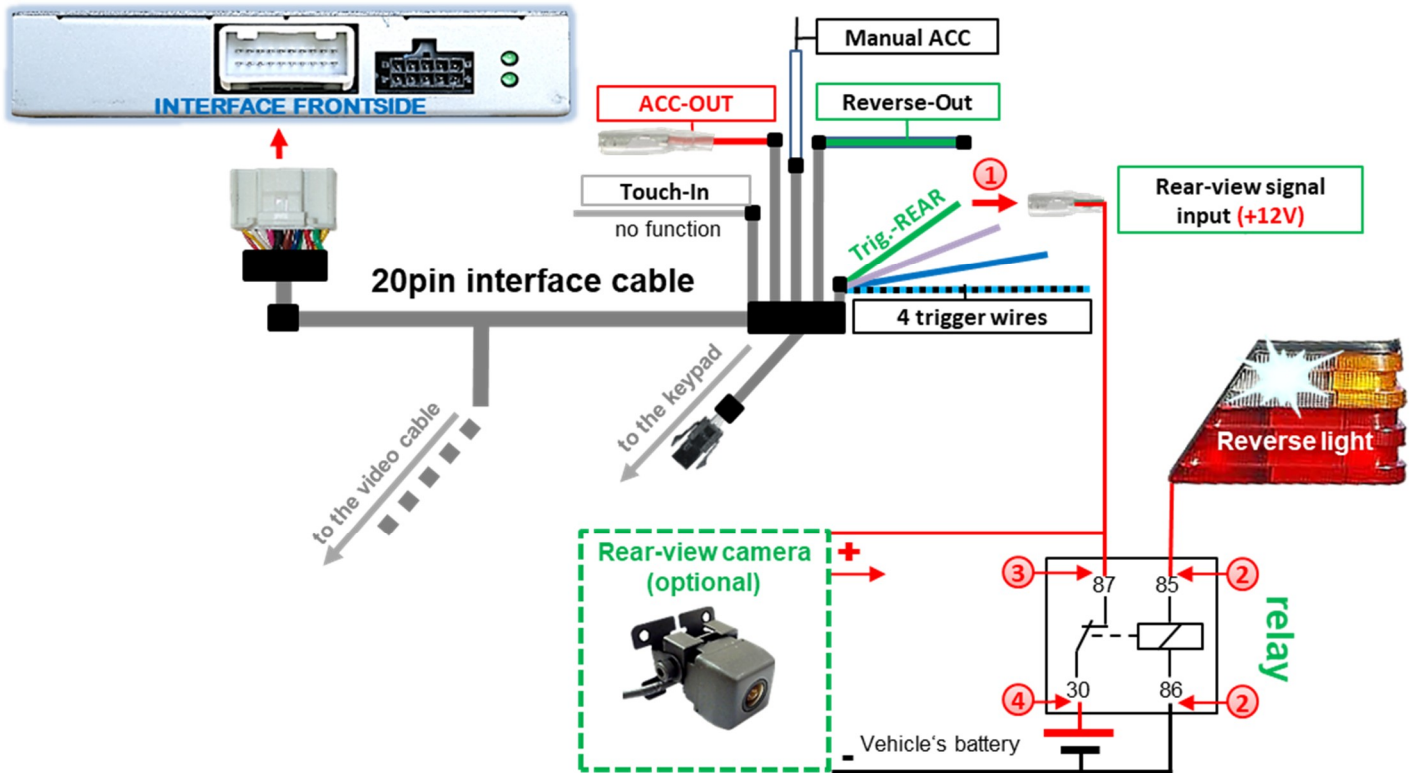
If the CAN-bus interface carries +12V on the green wire **“Reverse-OUT”** of the 20pin cable when reverse gear is engaged, it will also automatically be switched to the rear-view camera input „**V4 Reverse**“ while reverse gear is engaged.



- ① 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 not 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.



- ① Connect the green input cable “Trig.-REAR” to the output connector (87) of the relay.
- 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 “Trig.-REAR” cable before.
- ④ Connect permanent power / 12V to the relay's input connector (30).

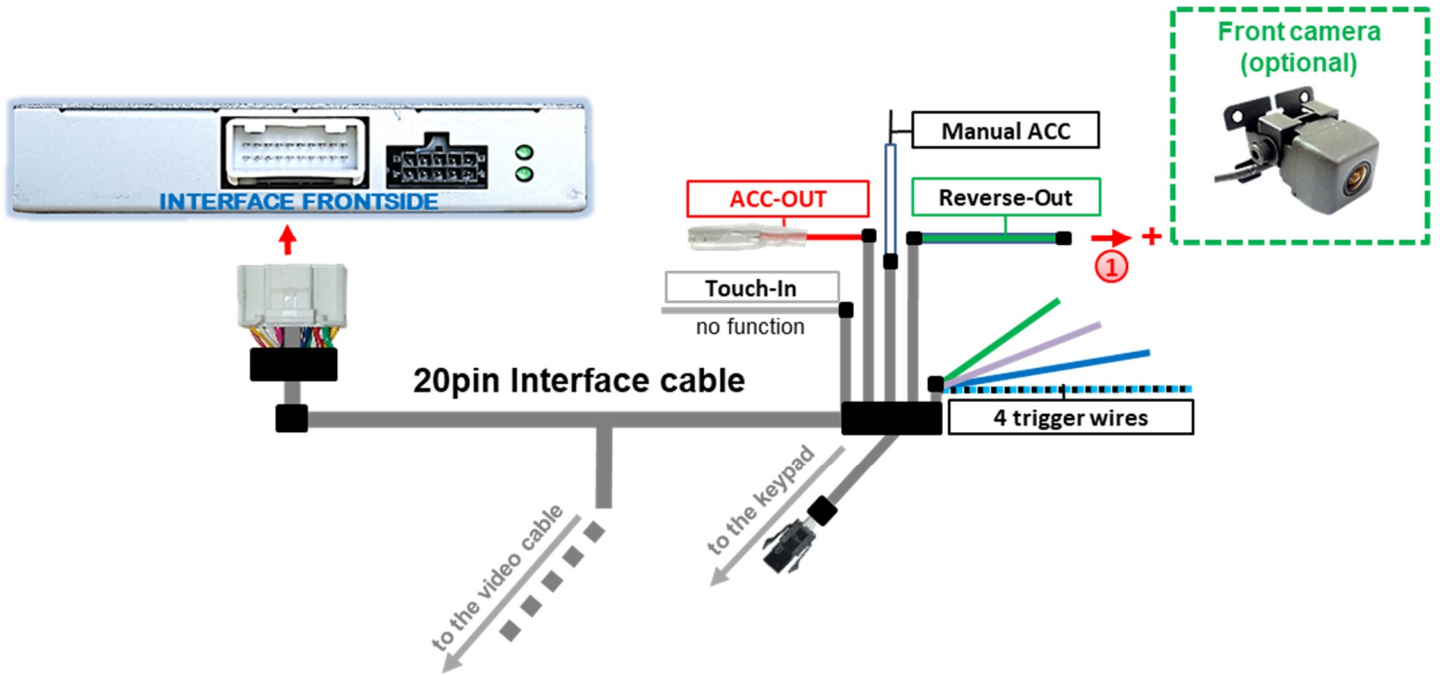
Note: If, due to a missing CAN communication, interface has been connected the analogue way, the green wire's connection has also to be done as shown in the picture above.

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

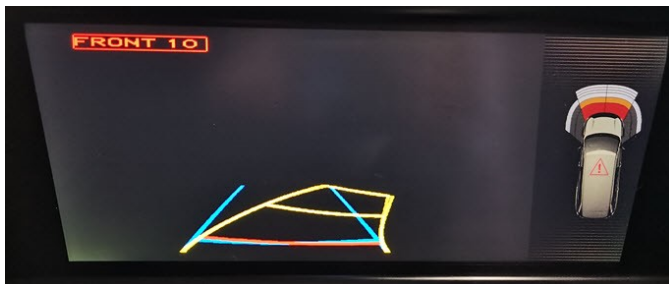
2.5.3. After-market front camera

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.



- ① 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 ...



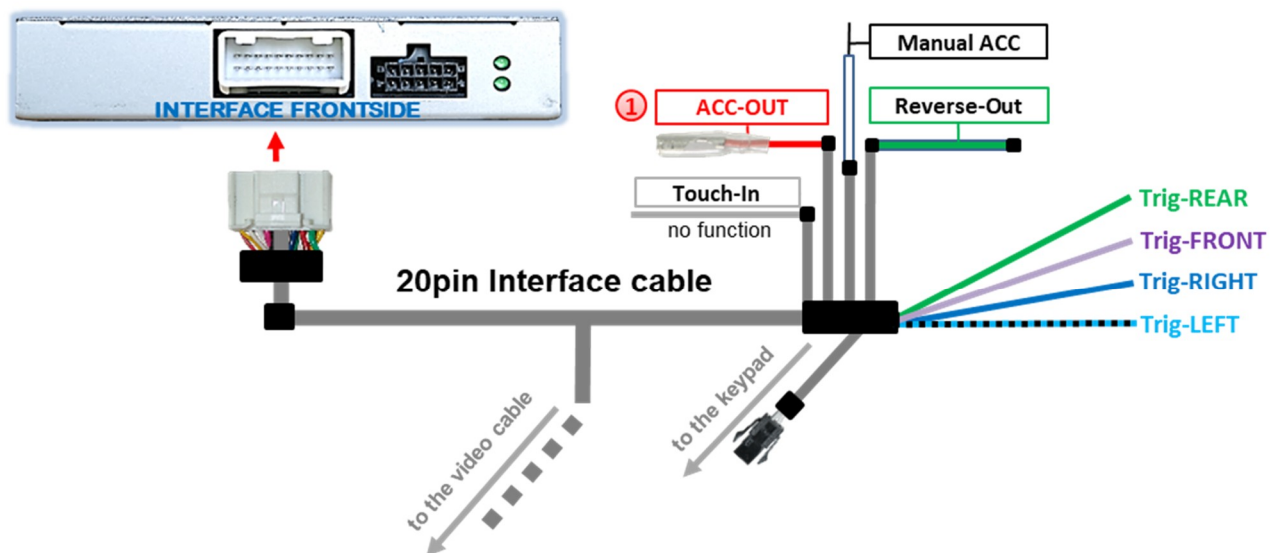
and additionally 10, 15 or 20 seconds delay after reverse gear is disengaged for the front camera.

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!



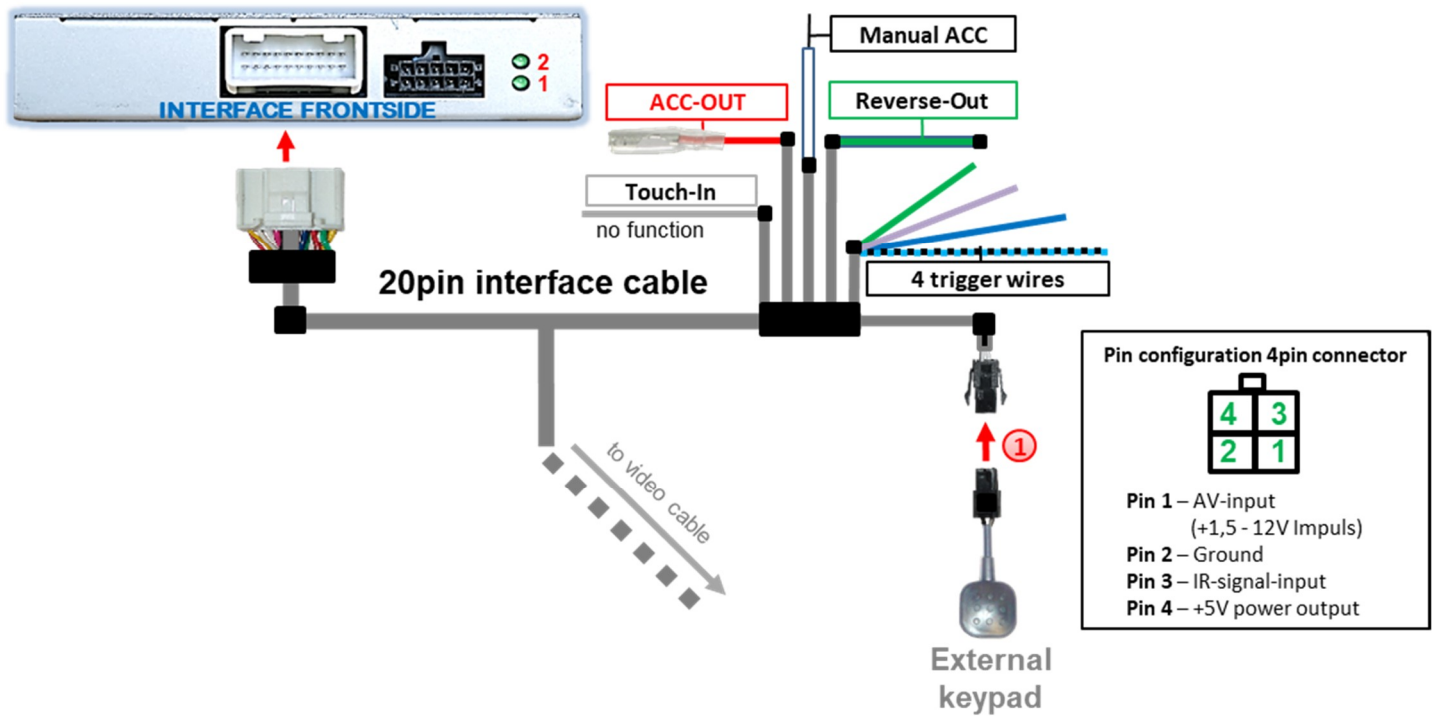
① Power is supplied to the mirror cameras via the red cable „**ACC-out**“.



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

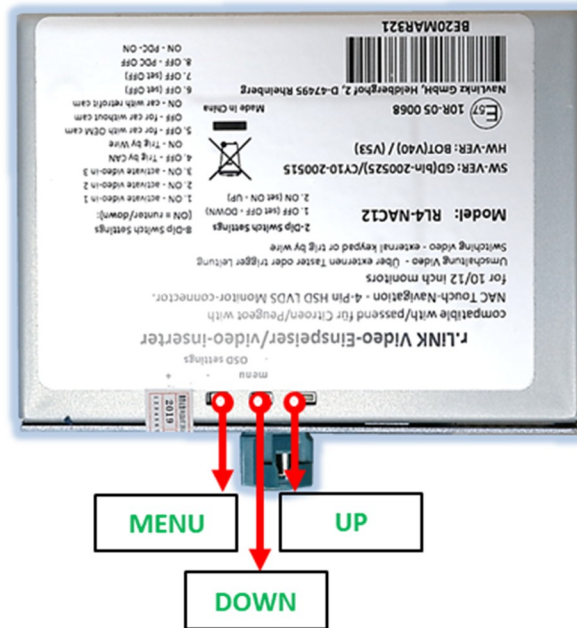
2.6. Connection - external keypad



- 1 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)



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 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 → Left (V1) → Right (V2) → 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 switches from the factory video to the front camera input and back to factory video.

4. Specifications

BATT/ACC range	7V - 25V
Stand-by power drain	5mA
Power	280mA @12V
Video input	0.7V – 1V
Video input formats	NTSC
Temperature range	-40°C to +85°C
Dimensions Video-Box	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
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.
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.		
Inserted picture qual. bad.		
Inserted picture size slightly wrong.	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 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 us. For products bought from other sources, contact your vendor for technical support.



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