

## Video-inserter RL3-UCON65

Compatible with  
Fiat, Jeep and Alfa Romeo vehicles  
with Uconnect 6,5 inch monitors (VP3 + VP4)



example

**Video-inserter with 2 video inputs and rear-view camera input**

### Product features

- Video-inserter for factory infotainment systems
- 2 CVBS video-inputs for after-market devices (e.g. DVD-Player, DVB-T tuner)
- 1 CVBS Rear-view camera video-input
- Automatic switching to rear-view camera input on engagement of reverse gear
- Video-in-motion in drive mode (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).

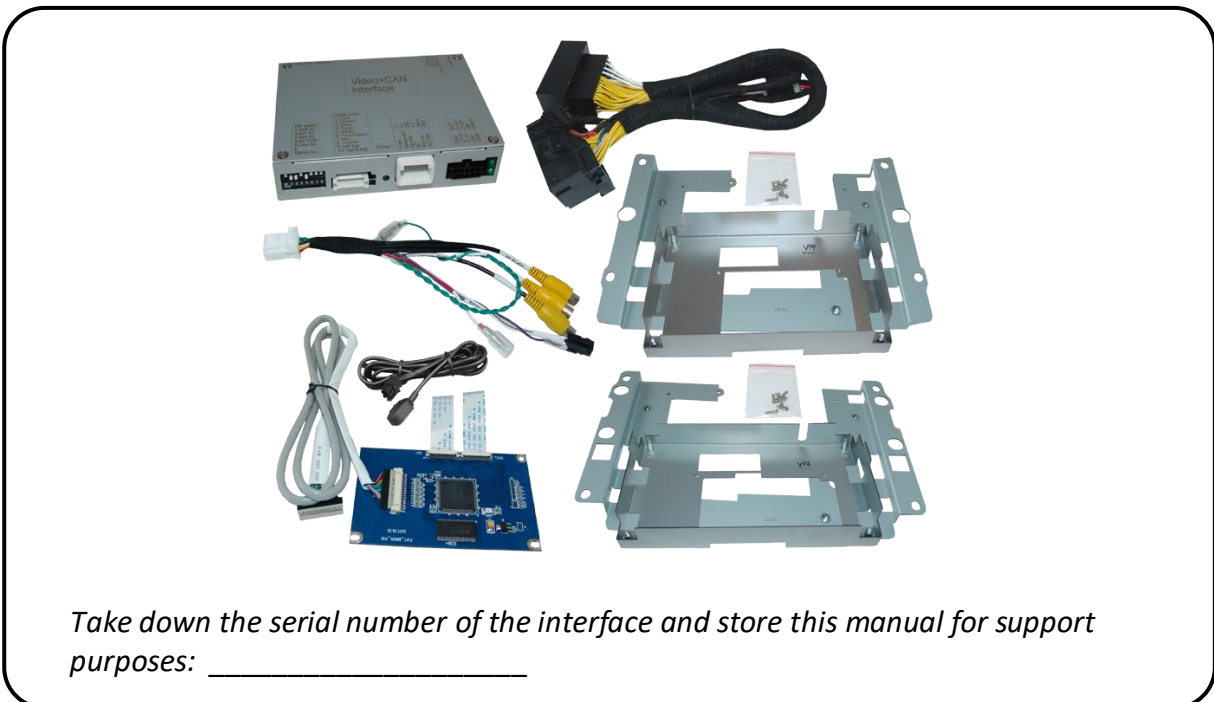
Changes/updates of the vehicle's software can cause malfunctions of the interface. Up to one year after purchase we offer free software-updates for our interfaces. To receive a free update, the interface has to be sent in at own cost. Wages for de-and reinstallation and other expenditures involved with 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.

**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

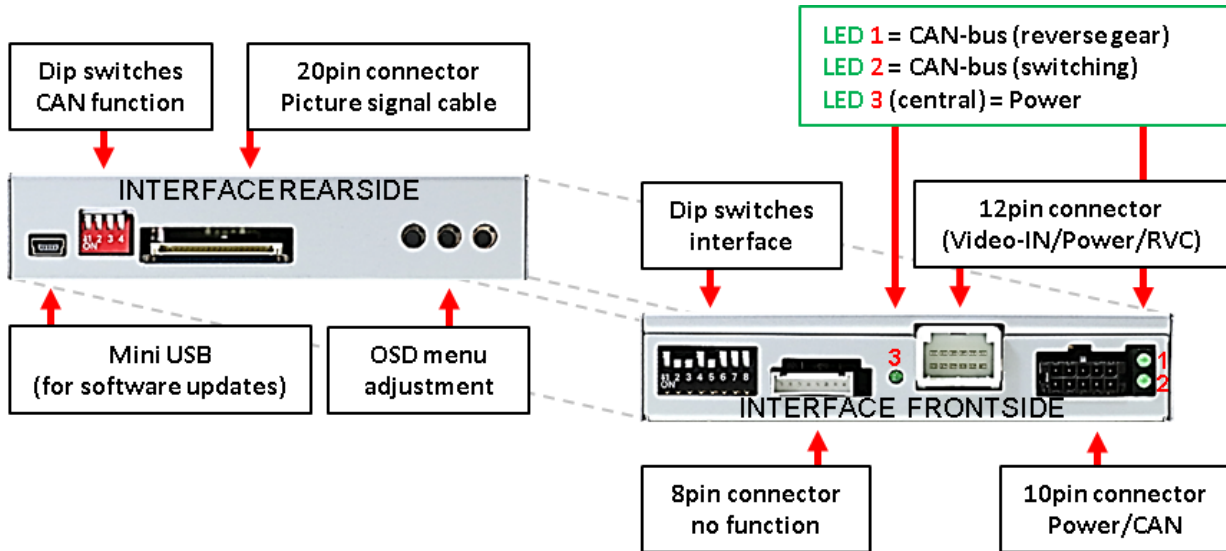


## 1.2. Checking the compatibility of vehicle and accessories

Requirements		Compatibility
Brand	Compatible vehicles	Compatible systems
Alfa Romeo	Giulietta (940) facelift 2016 since 04/2016	Uconnect Infotainment with 6,5inch monitor VP3 and VP4 with all in one head unit
Fiat	500, 500L, 500X	
Jeep	Renegade model year 2015 -2018	
<b>Limitations</b>		
<i>Video only</i>	The interface inserts ONLY video signals into the infotainment. For audio insertion factory-audio-AUX-input or a FM-modulator is required.	
<i>Factory rear-view camera</i>	Automatic switch to factory rear-view camera only while reverse gear is engaged. To delay the switch reset, additional electronics is required.	
<i>Alfa Romeo</i>	The original housing must be adapted by hand, as the enclosed exchange metal sheets do not fit Alfa Romeo. Make sure that the ground springs of the PCBs are still in contact with the housing!	
<i>Video input signal</i>	NTSC video sources compatible only.	

## 1.3. Connection - Video-Interface

The video-interface converts the connected after-market sources video signals into an RGB digital 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 at the video-interface. Dip position down is ON and position up is OFF.



Dip	Function	ON (down)	OFF (up)
1	No function		set to OFF
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	No function		set to OFF
7	No function		set to OFF
8	No function		set to OFF

See the following chapters for detailed information.

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

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

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

## 1.4.2. Rear-view camera setting (dip 5)

If set to OFF, the interface switches to factory RGB digital 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 1, 4, 6, 7 and 8 are out of function and have to be set to **OFF**.

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

Dip position down is **ON** and position up is **OFF**.

Navigation / System	Dip 1	Dip 2	Dip 3	Dip 4
All vehicles	OFF	OFF	OFF	OFF



For all vehicles, use the OFF position of all the 4 dip switches.

**After each Dip-switch-change, a power-reset of the interface-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.**

**As with any installation of retrofit equipment, a stand-by test is necessary 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.**

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

## 2.1. Place of connection

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

The video-interface has to be connected at the rear-side of the head-unit.

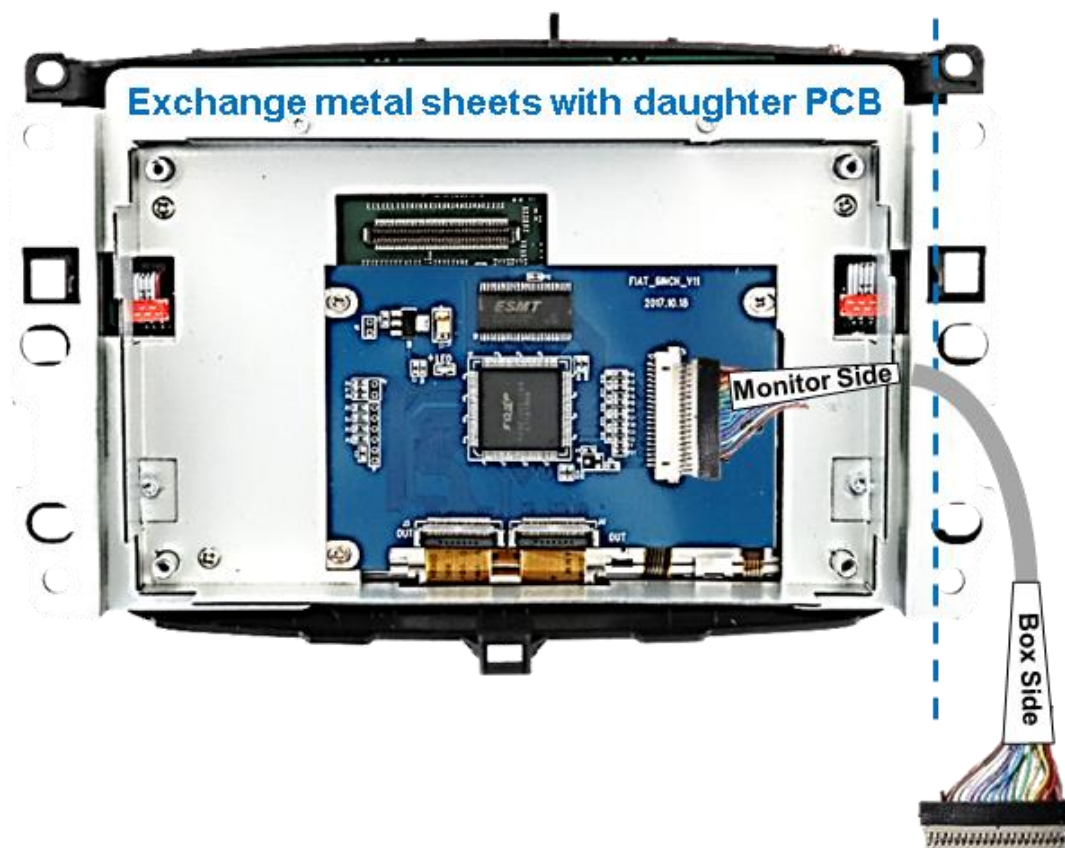
### 2.1.2. Place of installation - Exchange metal sheets with daughter PCB

The daughter PCB has to be installed inside the head unit by using the according enclosed metal sheets.

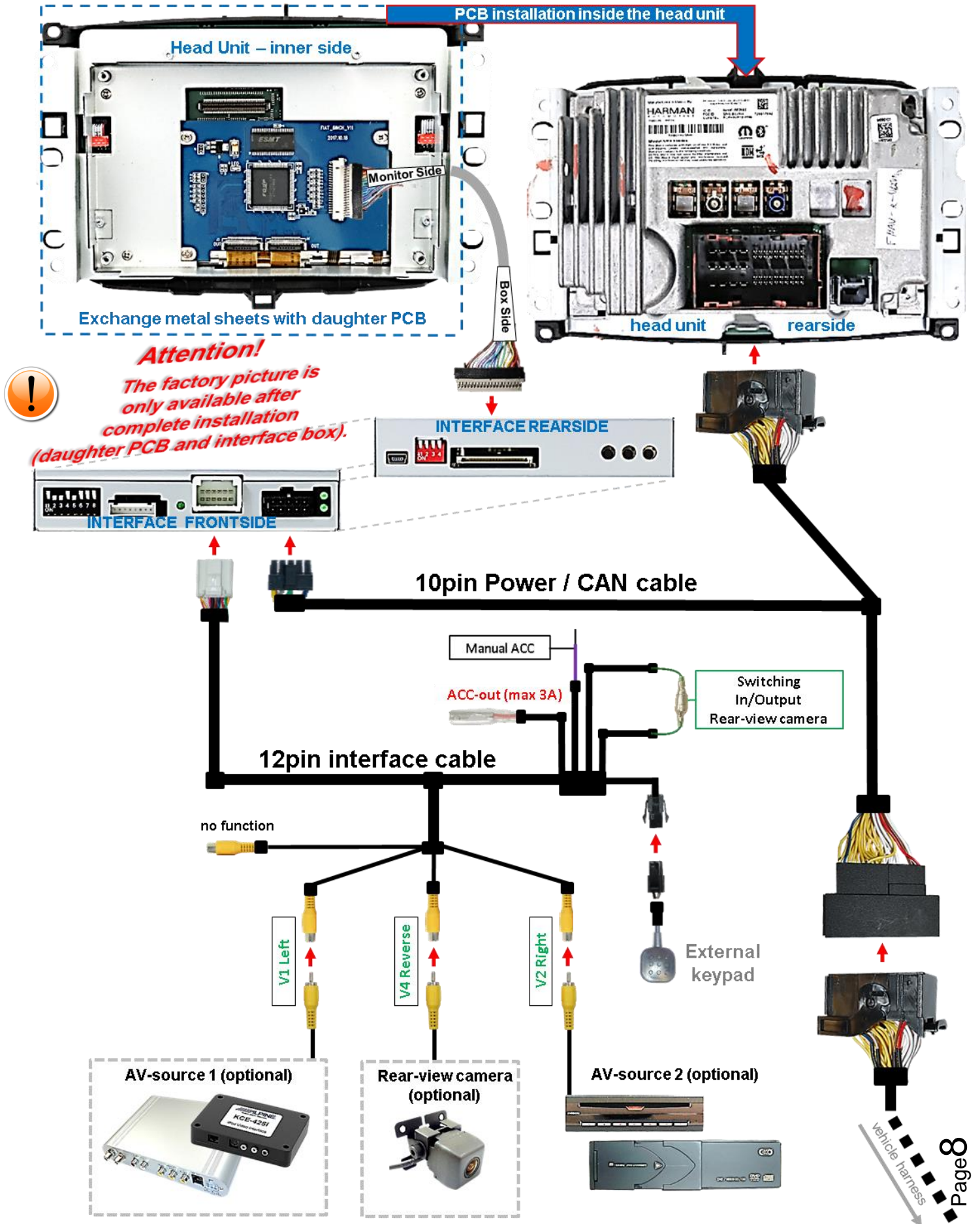
In head units of **Jeep** vehicles, only the exchange metal plates with the imprint **VP4** have to be installed.

In head units of **Fiat** vehicles either the **VP3** or the **VP4** exchange metal plates have to be installed, depending upon the head unit's execution.

In head units of **Alfa Romeo Giulietta**, the daughter PCB has to be installed **without** an exchange metal plate. In this case, the modifying of the original plate or the head unit housing is accordingly required.



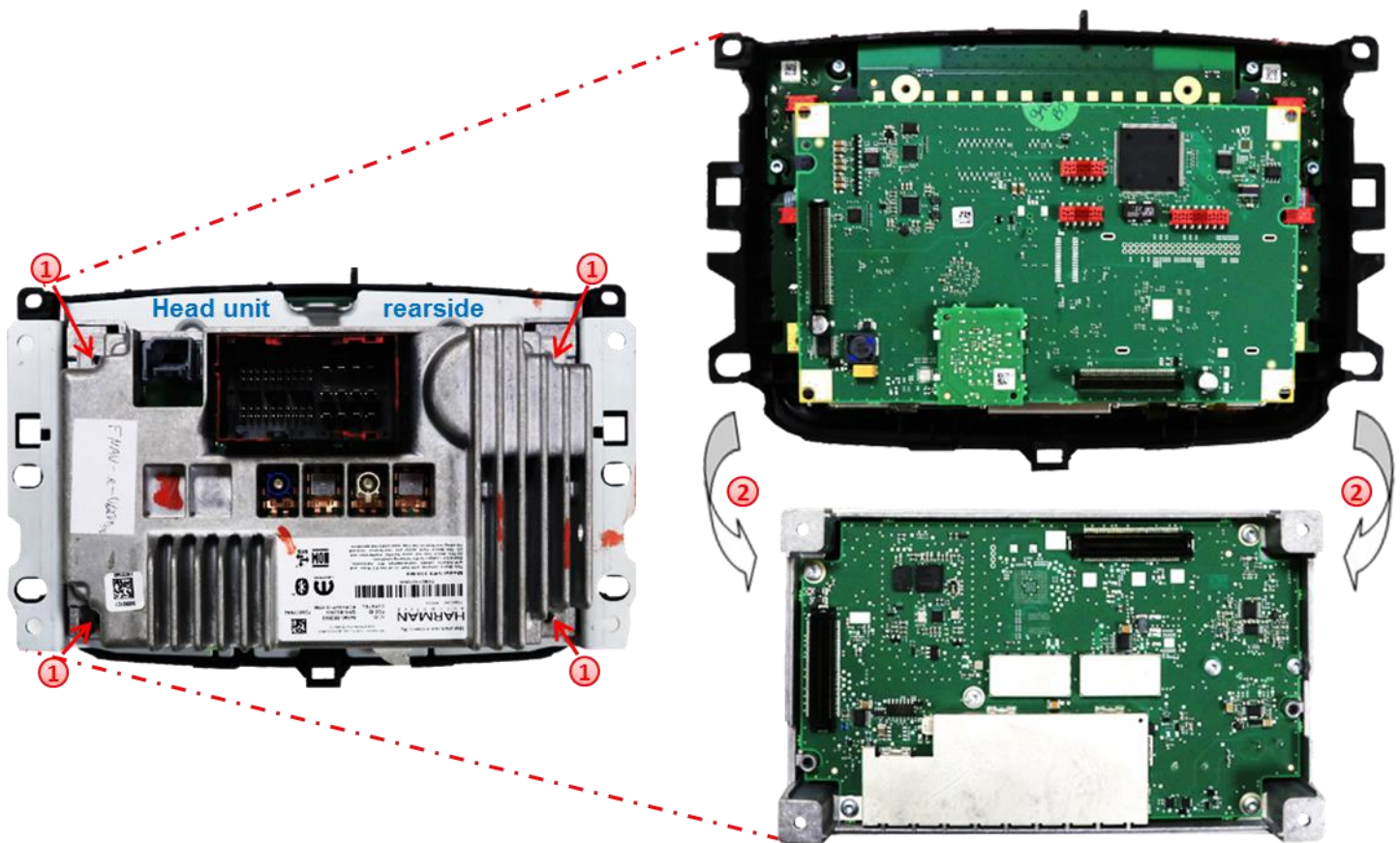
## 2.2. Connection schema





## 2.3. Connections to the head-unit

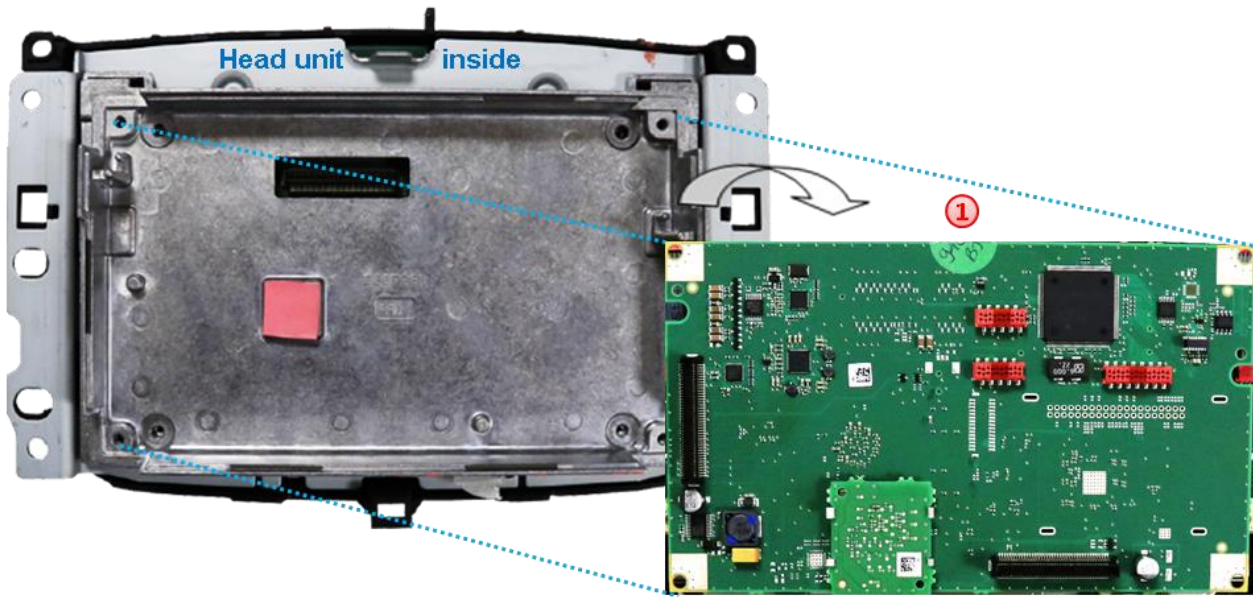
### 2.3.1. Installation of the exchange metal sheets – step 1



- 1 Remove the head unit and turn out the 4 screws on the rear side of the head-unit
- 2 Carefully loosen the rear part of the head unit and set it away together with its bolted PCB.

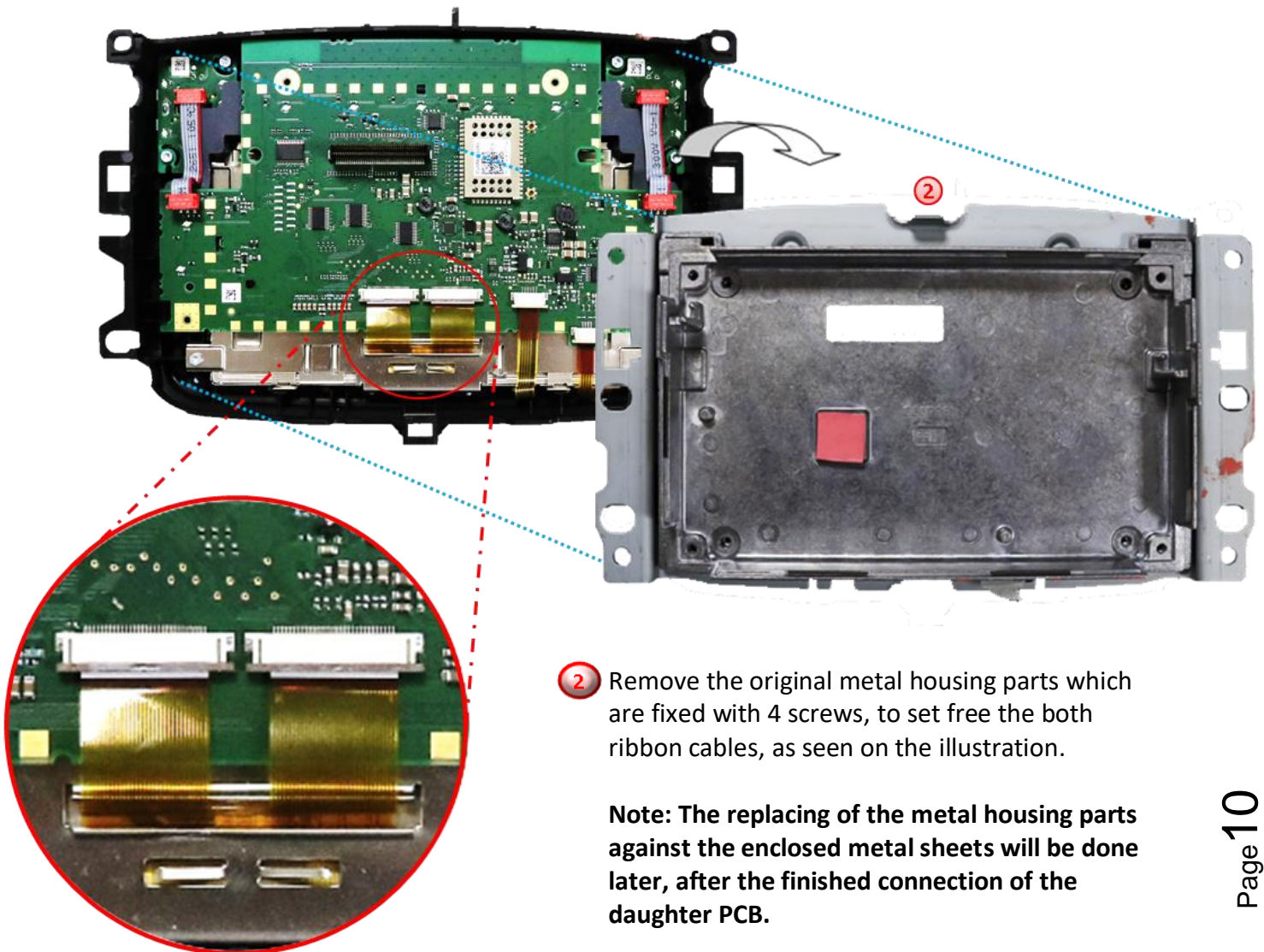
**Note:** Take special care of an antenna cable which could be built in between both parts.

## 2.3.2. Installation of the exchange metal sheets - step 2



① Carefully plug the PCB out of the original metal housing parts and lay it aside.

## 2.3.3. Installation of the exchange metal sheets - step 3

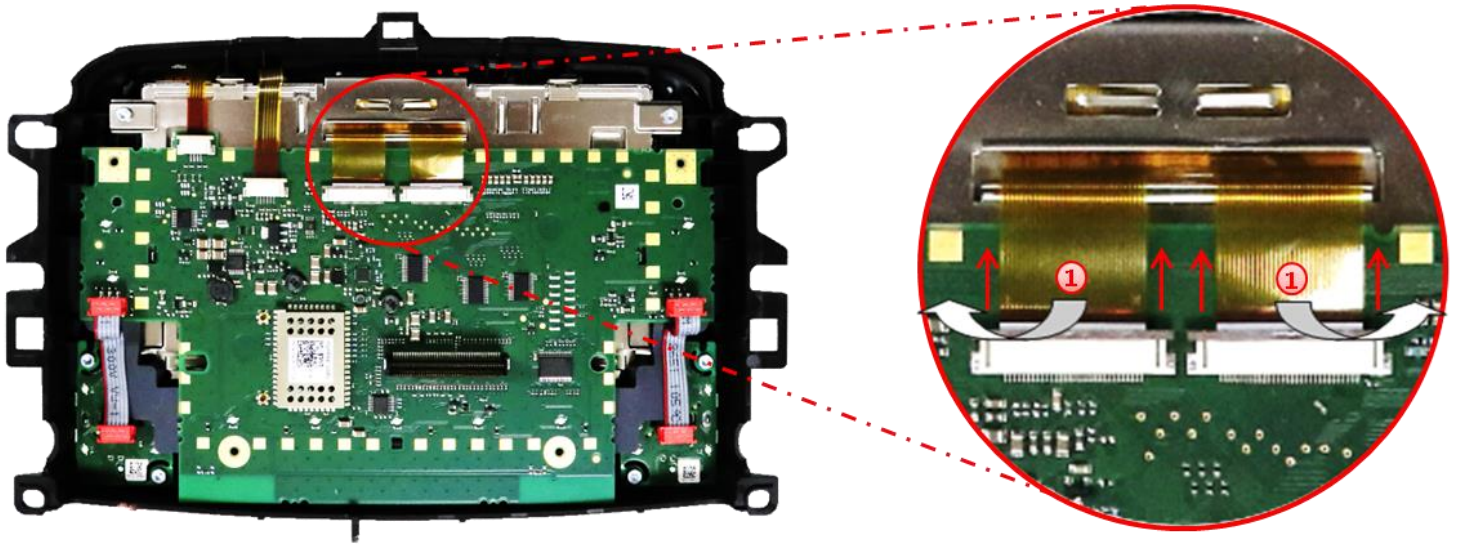


② Remove the original metal housing parts which are fixed with 4 screws, to set free the both ribbon cables, as seen on the illustration.

**Note:** The replacing of the metal housing parts against the enclosed metal sheets will be done later, after the finished connection of the daughter PCB.

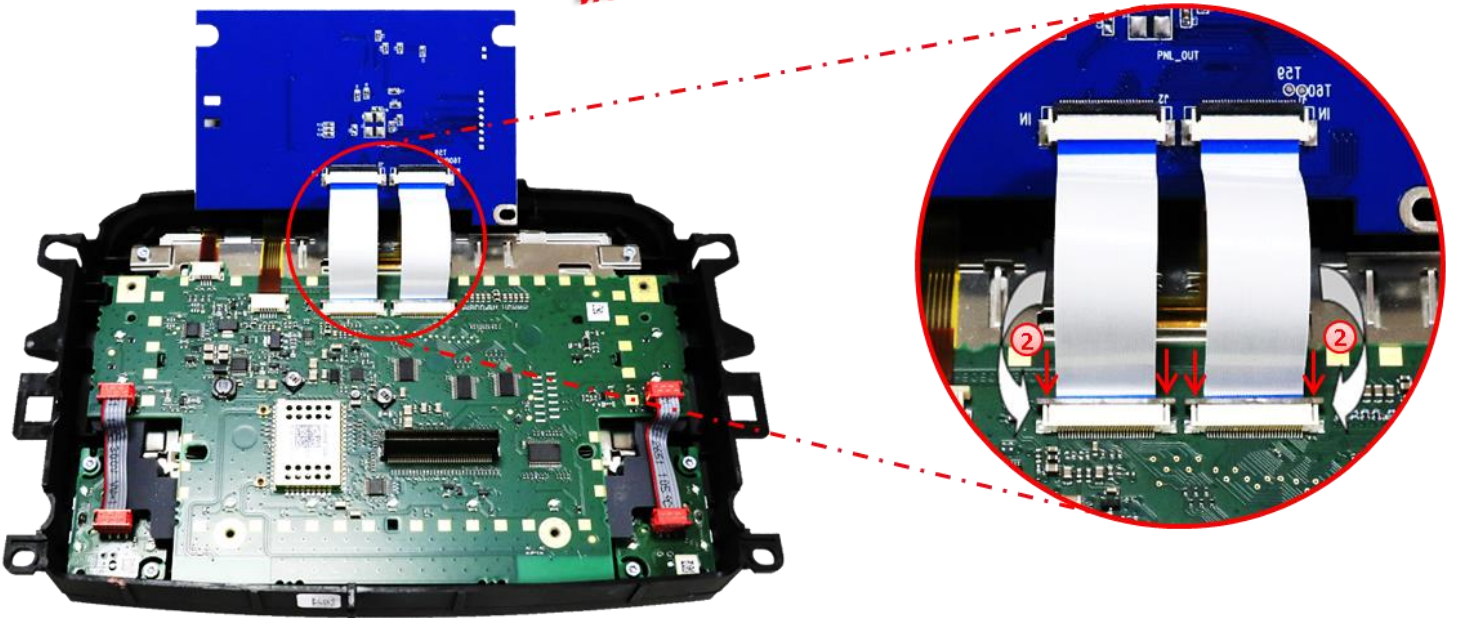
## 2.3.4. Connection and installation of daughter PCB

### 2.3.4.1. Ribbon cables – step 1



- 1 Open both black locks of the PCB's ribbon cable bases in direction to the arrows and carefully set free the two ribbon cables.

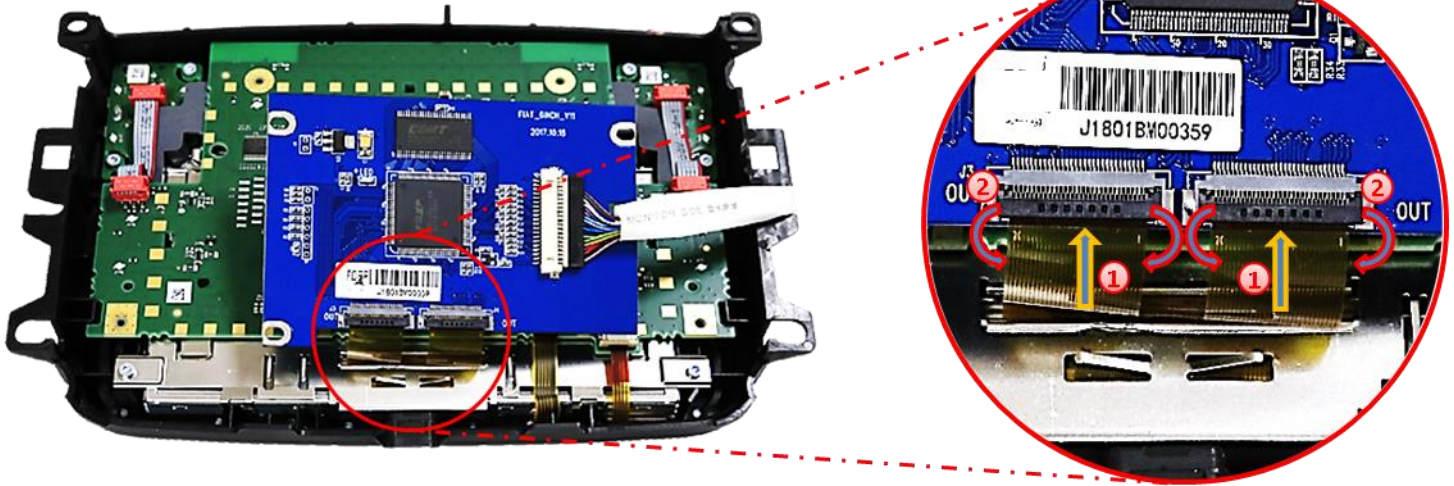
*Read following warning notes!*



- 2 Bring the daughter PCB in position and connect its preconnected ribbon cables "IN" to the previously become free ribbon cable bases of the original PCB. Carefully fix the ribbon cables by pushing the locks in direction of the arrows as shown in the illustration.

**Note:** Due to the very short length of the ribbon cable, there's only limited space for mounting available.

## 2.3.4.2. Ribbon cables – step 2



- 1 Carefully lead both mainboard's previously become free gold coloured ribbon cables into the daughter PCB's ribbon cable bases "OUT".
- 2 Fix both ribbon cables by clapping down the black locks, like shown in the illustration.

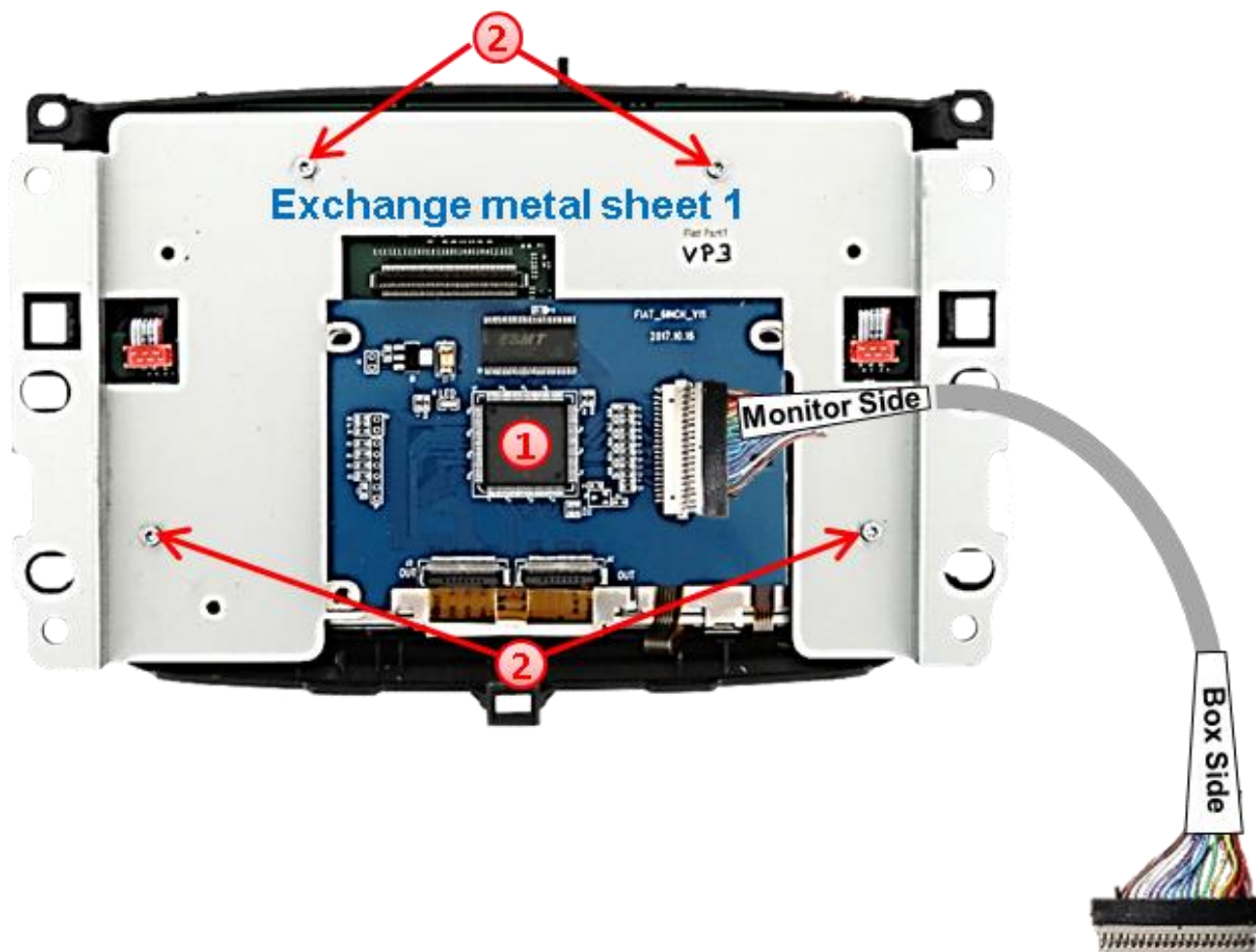
*Read following warning notes!*

**Note:** Due to the very short length of the ribbon cable, there's only limited space for mounting available.

## 2.3.5. 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.

## 2.3.6. Installation of the exchange metal sheets – step 4

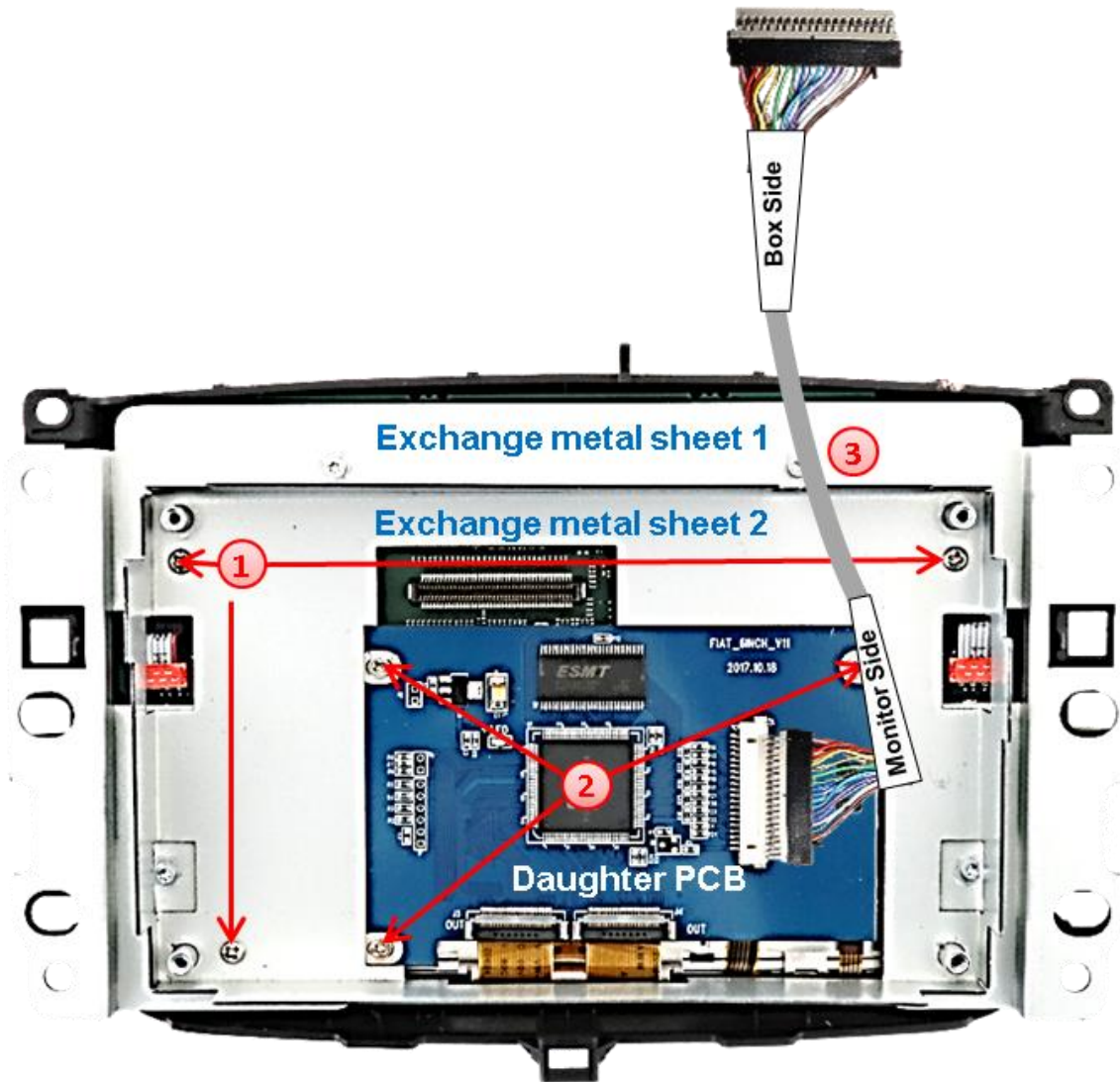


- 1 Pass the exchange metal sheet-1 between the motherboard and the previously connected daughter PCB with the daughter PCB laying on top.
- 2 Fasten the exchange metal sheet-1 to the monitor housing with the 4 original screws.



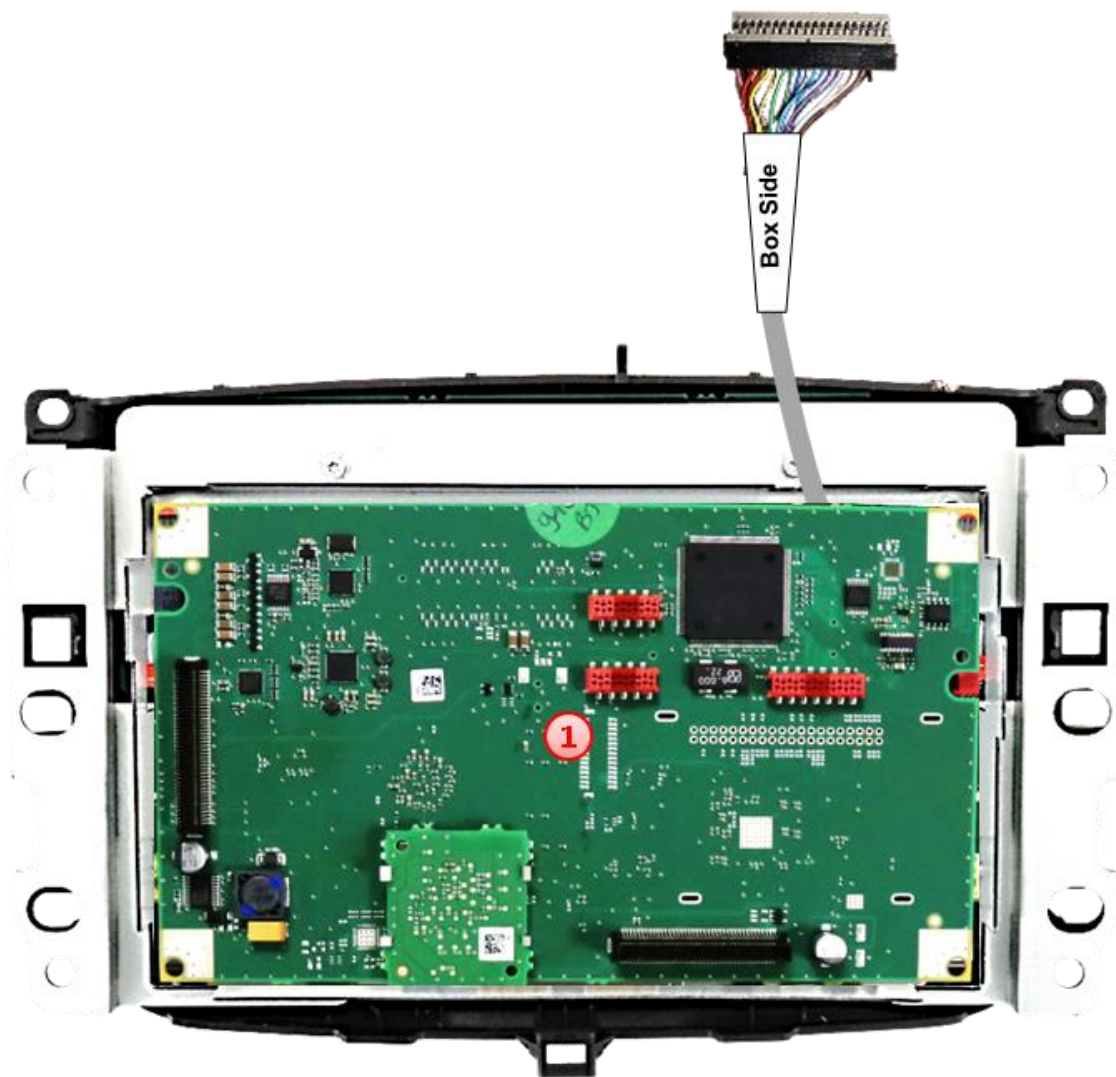
In head units of **Alfa Romeo Giulietta**, the daughter PCB has to be installed **without** an exchange metal plate. In this case, the modifying of the original plate or the head unit housing is accordingly required.

## 2.3.7. Installation of the exchange metal sheets – step 5



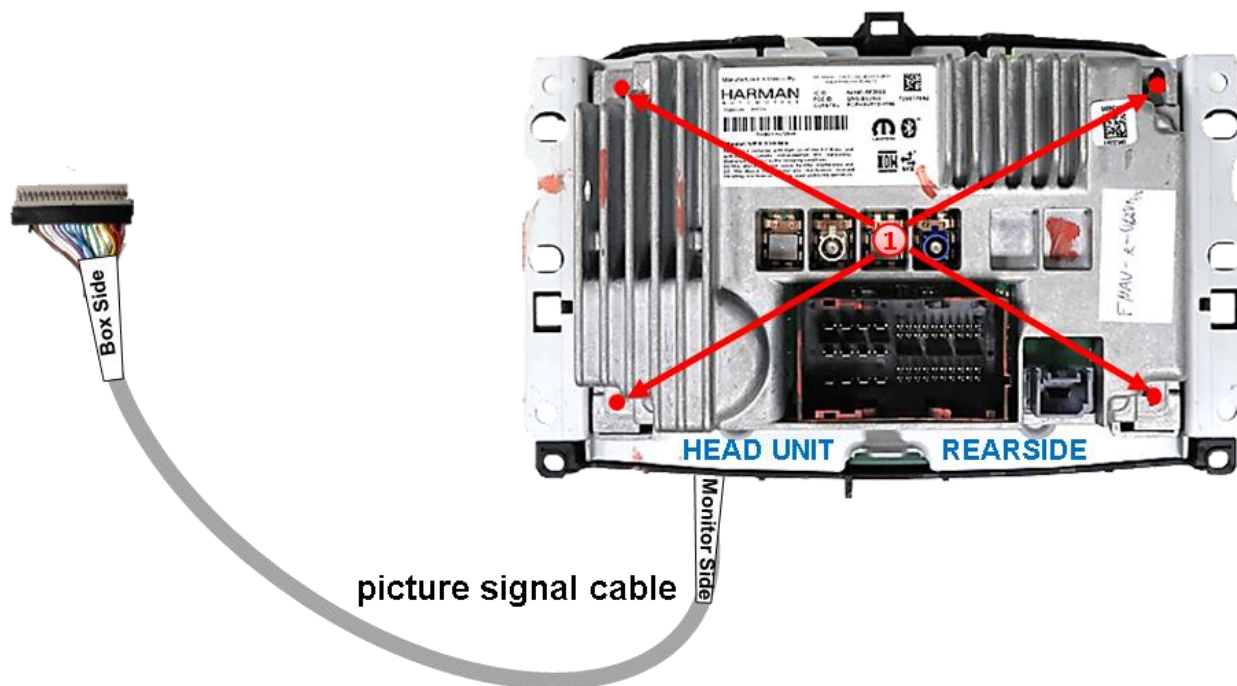
- 1 Pass the daughter PCB through the opening of the exchange metal sheet-2 and fix that sheet to the exchange metal sheet-1 with 3 of the short enclosed screws.
- 2 Fasten the daughter PCB to the exchange metal sheet-2 with 3 of the short enclosed screws.
- 3 Pass the daughter PCB's signal picture cable through the dedicated slot of the exchange metal sheet-2.

## 2.3.8. Installation of the exchange metal sheets – step 6



- 1 Bring the previously set aside original PCB in position with its 4 screw holes to the thread sockets of the exchange metal plate-2 and restore the connection of the plug contacts.

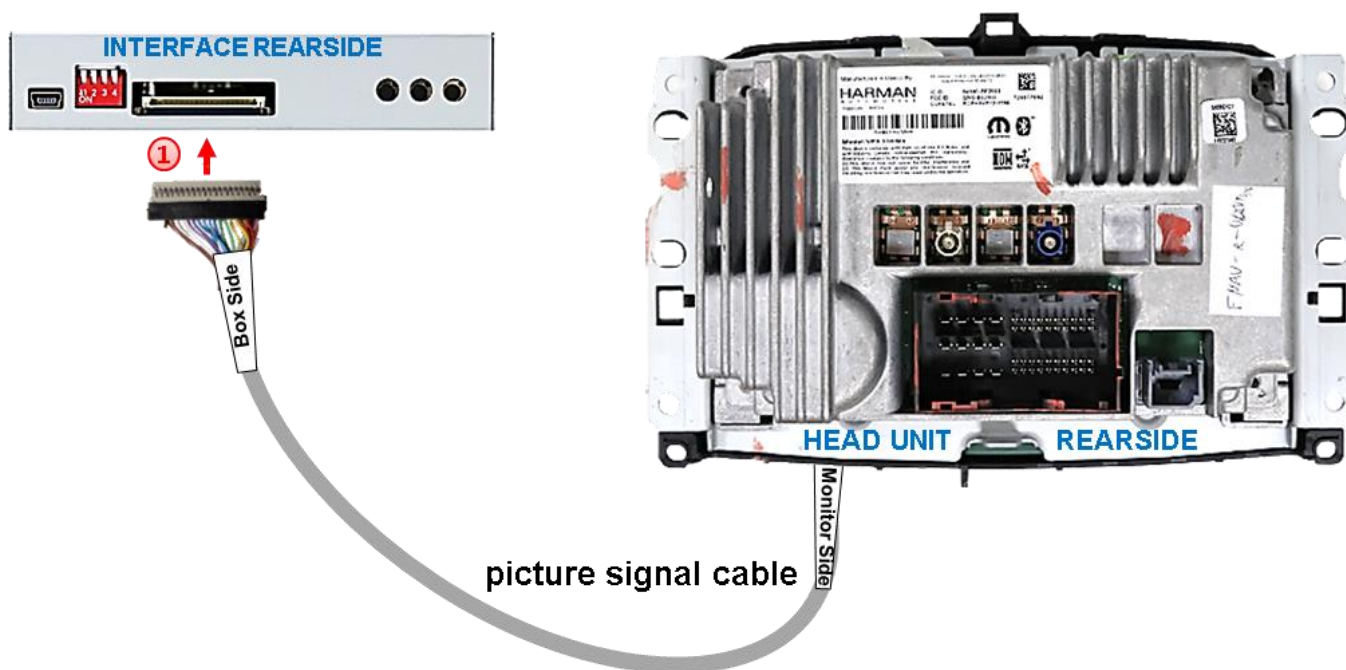
## 2.3.9. Installation of the exchange metal sheets – step 7



Carefully lead the monitor's rear part into the exchange metal plate-2, restore the connection of the plug contacts and fix it to the monitor's housing by using the 4 longer screws.

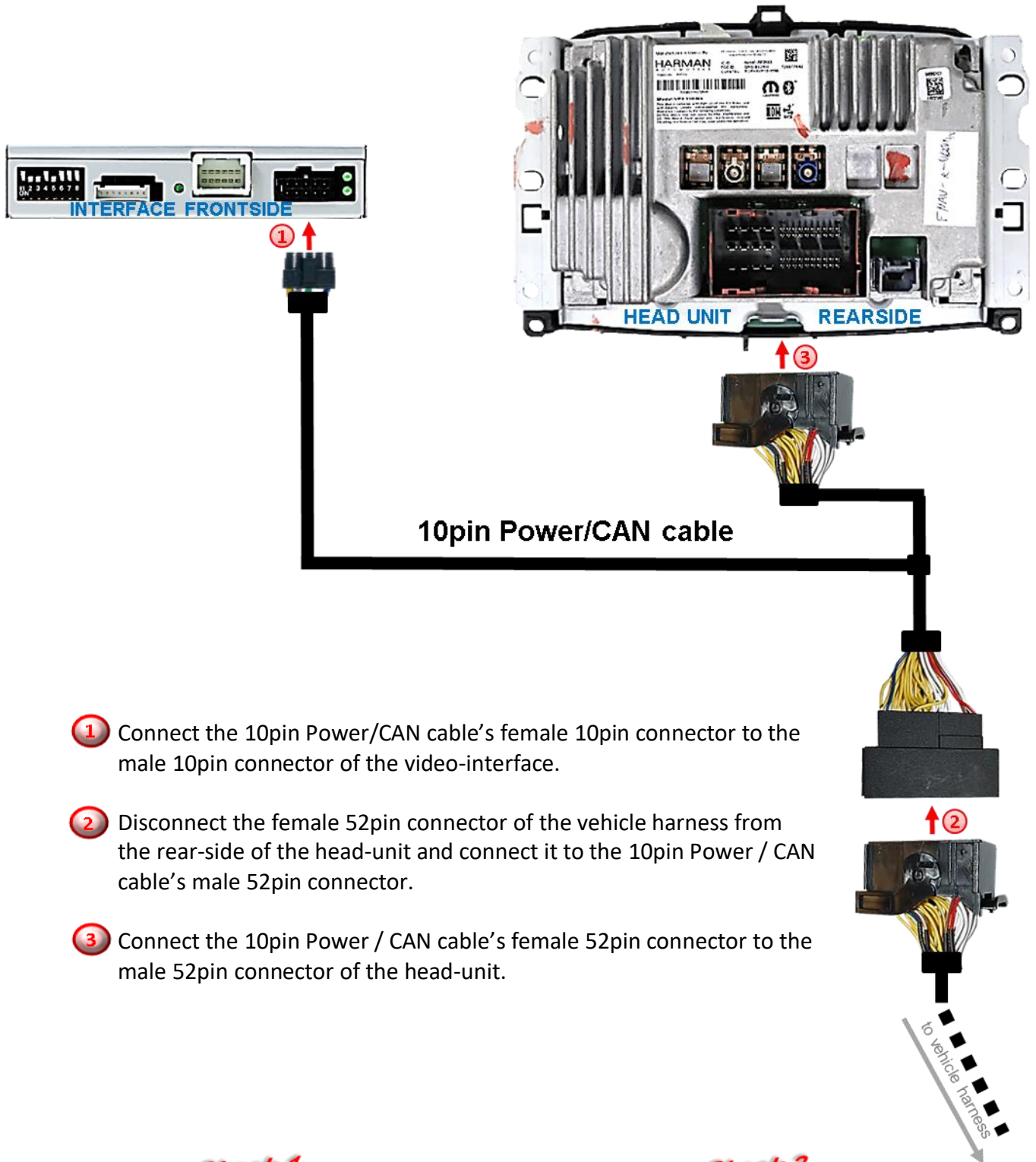


## 2.4. Connection head unit – 20pin picture signal cable



- 1 Connect the picture signal cable's beige coloured female 20pin connector, which is lead out from the head unit, to the male 20pin connector of the video-interface.

## 2.5. Connection head-unit – Power / CAN



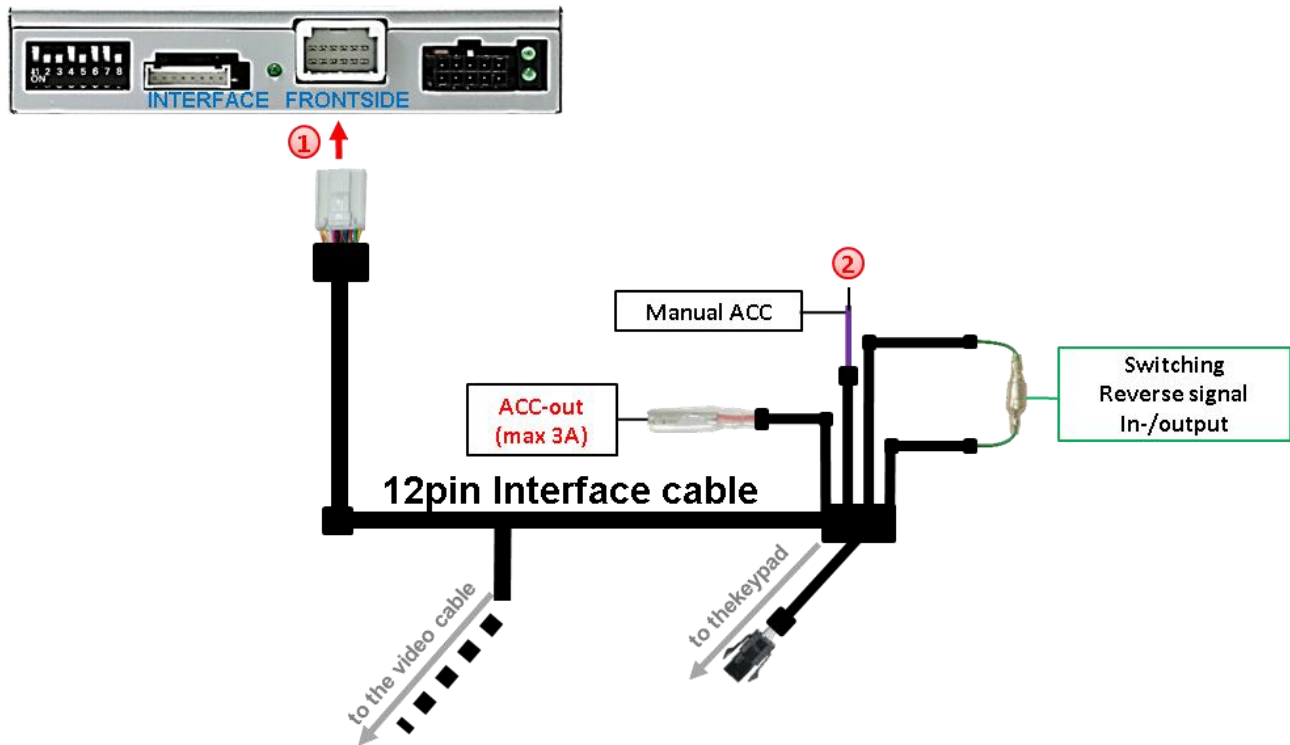
- 1 Connect the 10pin Power/CAN cable's female 10pin connector to the male 10pin connector of the video-interface.
- 2 Disconnect the female 52pin connector of the vehicle harness from the rear-side of the head-unit and connect it to the 10pin Power / CAN cable's male 52pin connector.
- 3 Connect the 10pin Power / CAN cable's female 52pin connector to the male 52pin connector of the head-unit.



**Check 1**  
*Exceptionally, the CAN 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!*

## 2.5.1. Analog power supply for the video interface

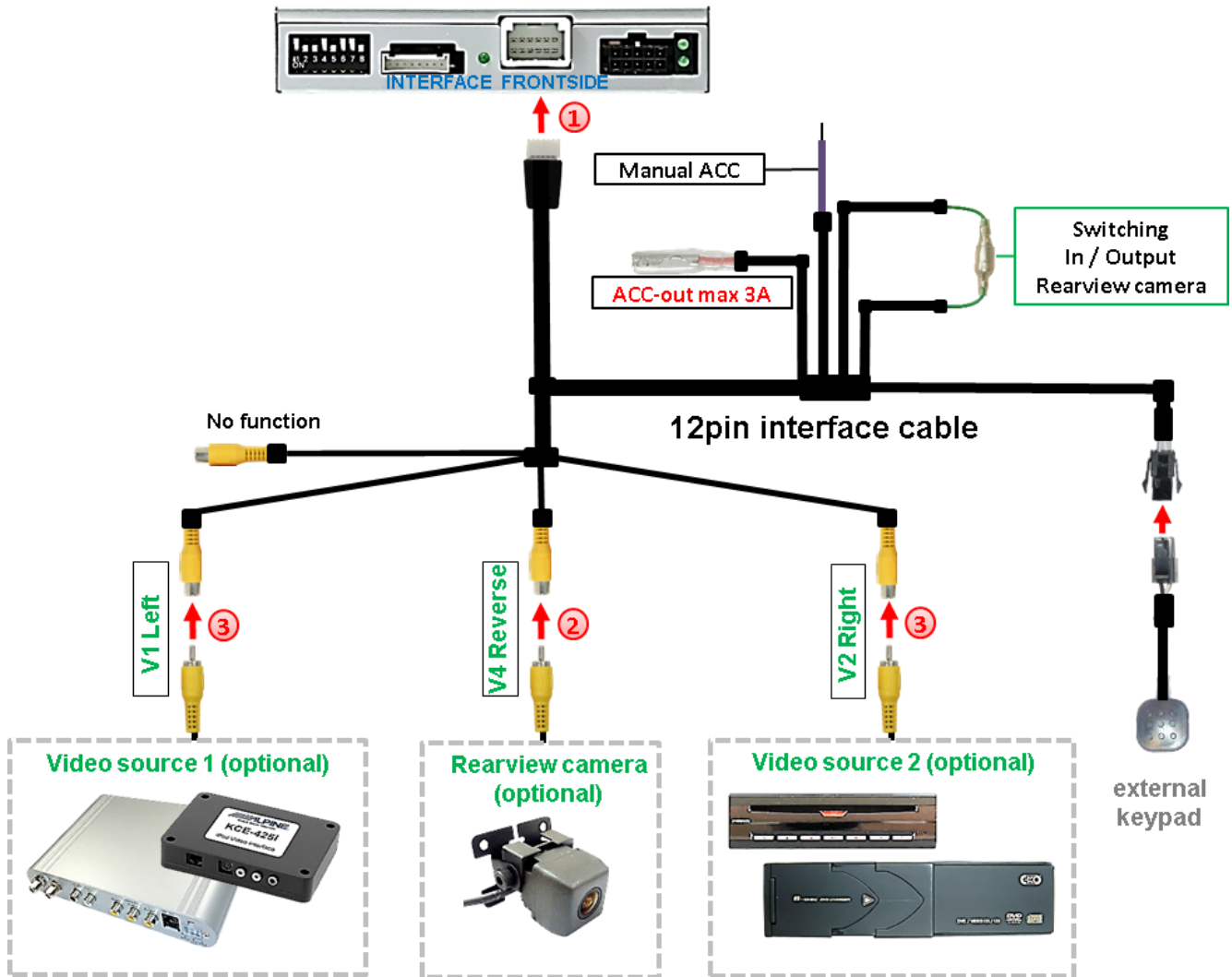


- 1 Connect the female 12pin connector of the 12pin interface cable to the male 12pin connector of the video interface.
- 2 Connect the single purple coloured wire **Manual ACC** of the 12pin interface cable to **+12V ACC** or **S-contact terminal 86s** (e.g. glove compartment illumination).

## 2.6. Connecting the AV sources

It is possible to connect two after-market AV-sources and one 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.



- 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 Rear-view camera to the female RCA connector "Camera IN" of the 12pin interface cable.
- ③ Connect the video RCA of the video source 1 and 2 to the female RCA connector "V1 Left" and " V2 Right" of the 12pin interface cable.

## 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.

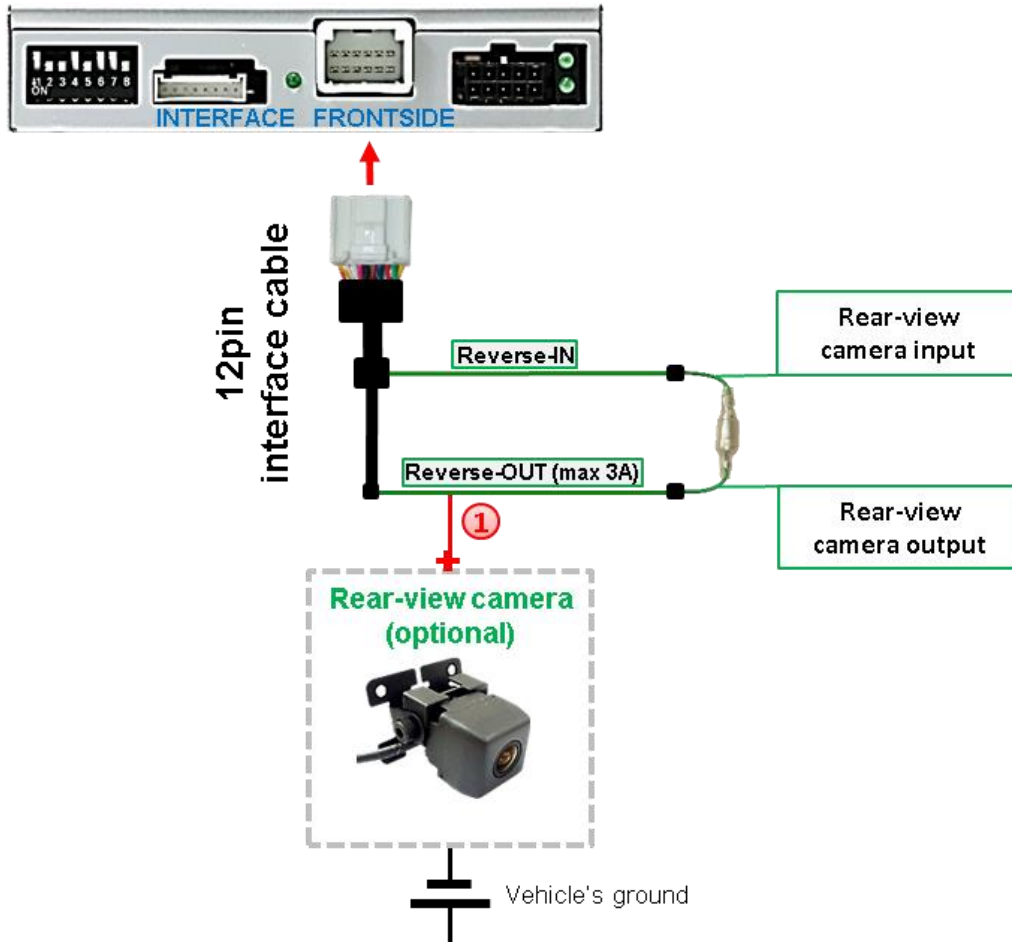
## 2.6.2. After-market rear-view camera

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 12pin cable should carry +12V while the reverse gear is engaged. See the following illustration for the according connection.

**Note:** Do not forget to set dip5 of the video-interface to ON before testing.

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

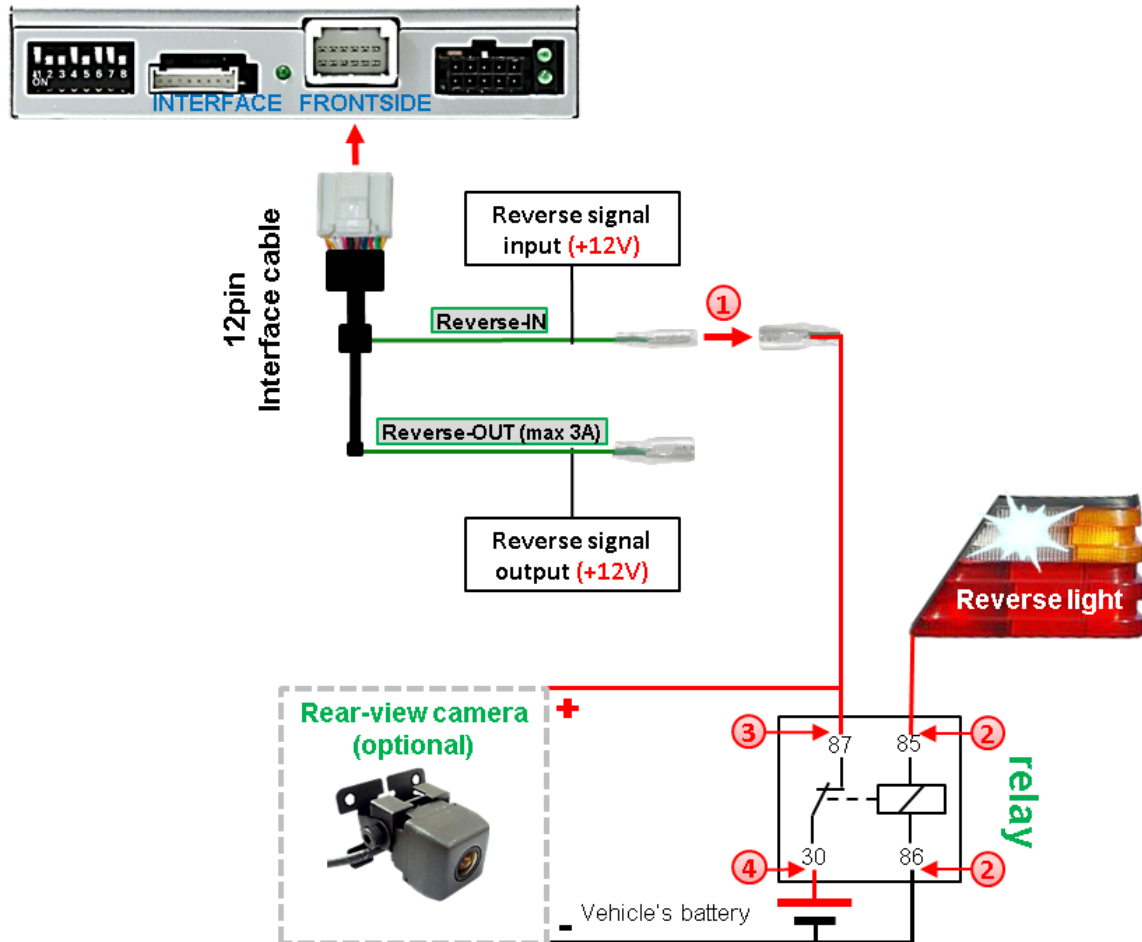
If the interface delivers +12V on the green output wire of the 12pin interface cable while reverse gear is engaged, the video interface will automatically switch to the rear-view camera input “**Camera IN**” while the reverse gear is engaged.



- 1 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.  
For the operation, both green cables “**Reverse IN**” and “**Reverse OUT**” have to stay connected.

## 2.6.2.2. 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.

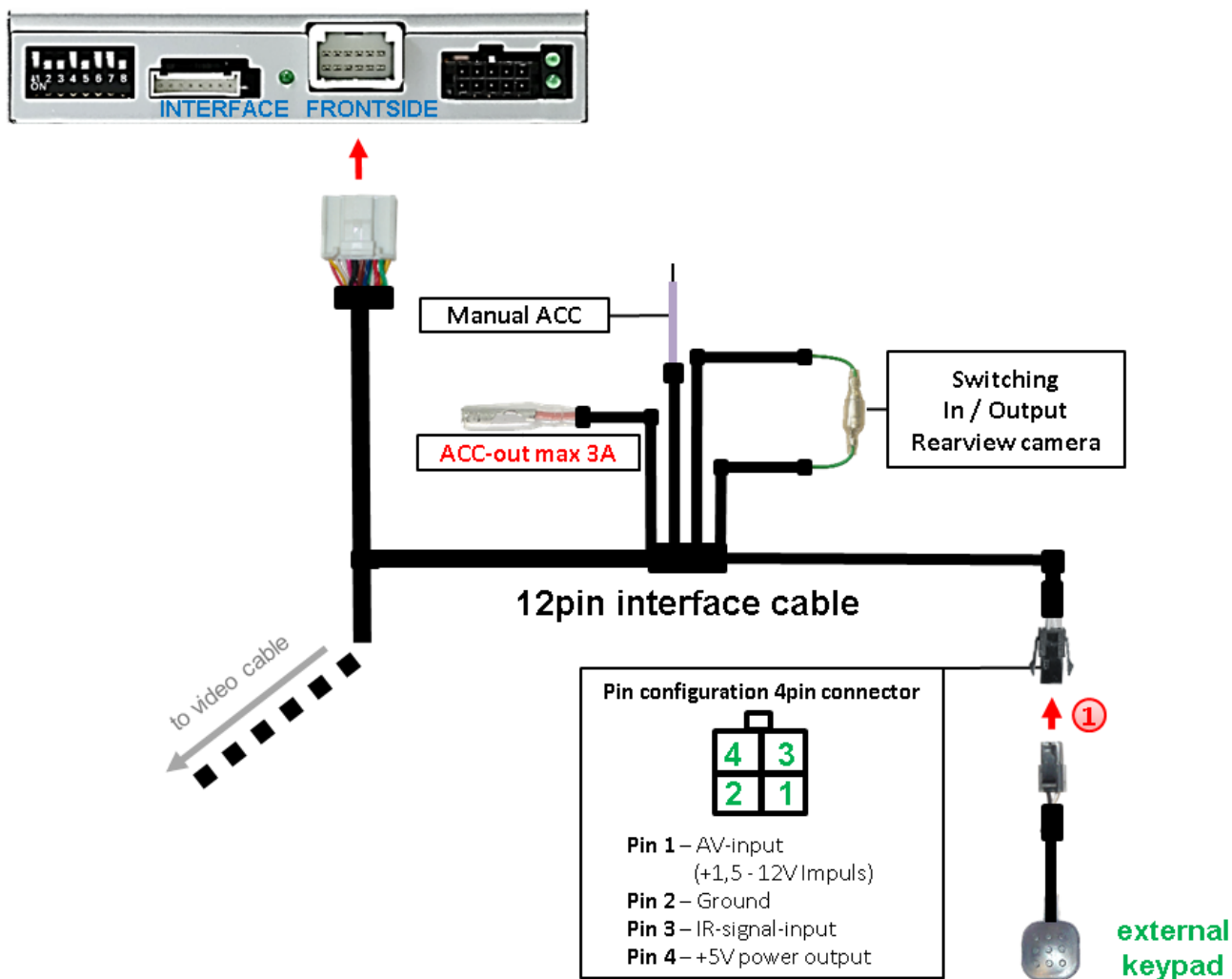


- 1 Disconnect the green cable's pre-connected male- and female connectors of the 20pin cable and connect the green input cable "Reverse-IN" to the output connector (87) of the relay.

**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 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 permanent power / 12V to the relay's input connector (30).

## 2.7. Connecting video-interface and keypad

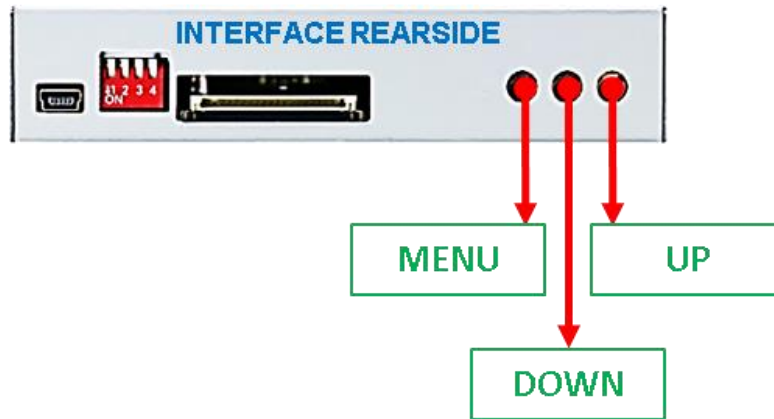


- 1 Connect the keypad's female 4pin connector to the video-interface's male 4pin connector.

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



## 2.8. Picture settings

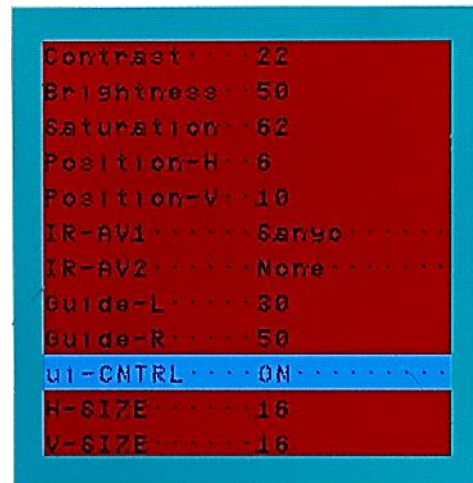


The picture settings can be adjusted by the 3 buttons on the video-interface. Press the **MENU** button to open the OSD settings menu. To switch to the next menu item, pressing **UP** and **DOWN** will change the selected value. The buttons are embedded in the housing to avoid accidental changes during or after installation. The picture settings have to be done separately, 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 picture position)
- Position V (vertical picture position)
- For the rearIR-AV1 (out of function)
- IR-AV2 (out of function)
- Guide-lines left (out of function)
- Guide-lines right (out of function)
- Guide lines (ON/OFF) (out of function)



## 3. Interface operation

The interface's enabled inputs can be switched by the external keypad. Each press of the external keypad switches the input from factory mode to the inserted video sources. If, by dip switch setting, all inputs are enabled, the order is the following:

*Factory video → video IN1 → video IN2 → factory video →...*

By dip switch deactivated inputs will be skipped. If an audio switch has been connected to the system, also the audio signal will be switched when switching from video IN1 to video IN2

### 3.1. By keypad

Alternatively or additionally to the steering wheel's voice key button,

## 4. Specifications

BATT/ACC range	7V - 25V
Stand-by power drain	10mA
Power	150mA @12V
Video input	0.7V – 1V
Video input formats	NTSC
RGB-video amplitude	0.7V with 75 Ohm impedance
Temperature range	-40°C to +85°C
Dimensions Video-Box	118 x 25 x 86 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.	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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