Video inserter

CI-HDA-HCP145

Compatible with
Audi vehicles
with 14.5inch MMI touchscreen and HCP3 head unit



Example

Please note!
The video signal type of each video source must be selected in the OSD menu of the corresponding video input.

Product features

- **1 x CVBS/AHD input for rear-view camera**
- **1 x CVBS/AHD input for front camera**
- **2 x CVBS/AHD inputs for side cameras or additional after-market video-sources (e.g. USB devices, DVB-T2 tuners, etc.)**
- **All inputs are compatible with NTSC and PAL**
  Supported AHD resolutions 720p NTSC (30Hz)**, 720p PAL** (25Hz)**, 960p NTSC** (30Hz)**, 960p PAL** (25Hz)**, 1080p NTSC** (30Hz)**, 1080p PAL** (25Hz)
- **Automatic switch to rear-view camera input while reverse gear is engaged**
- **Automatic front camera switch while reverse gear is engaged for 5, 10, 15 or 20- -second intervals**
- **Adjustable guide lines (fixed or dynamic) for rear-view camera can be activated (dynamic guide lines not available for all vehicles)**
- **Picture-in-picture whilst driving (ONLY for fed-in video sources)**

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Legal notice

The driver must not be distracted, either directly or indirectly, by moving pictures whilst driving. In most countries/states, this is prohibited by law. We therefore exclude all liability for property damage and personal injury caused directly or indirectly by the installation and operation of this product. Apart from stationary use, this product is intended solely for displaying static menus (e.g. MP3 menus from USB devices) or pictures from (rear-view) cameras whilst driving.

Changes/updates to the vehicle software may impair the functionality of the interface. Software updates for our interfaces are provided free of charge to customers for up to one year after purchase of the interface. The interface must be sent in free of charge for the update. Costs for installation and removal will not be reimbursed.

1 Before installation

These instructions must be read before installation. Specialist knowledge is required for installation. The interface must not be installed near sources of moisture or heat.

Before final installation in the vehicle, we recommend carrying out a test run after connection to ensure that the vehicle and the interface are compatible. Due to production-related changes by the vehicle manufacturer, there is always a possibility of incompatibility.

1.1 Contents



Note down the interface serial number and keep the manual for support purposes:

_____

1.2 Checking interface compatibility with the vehicle and accessories

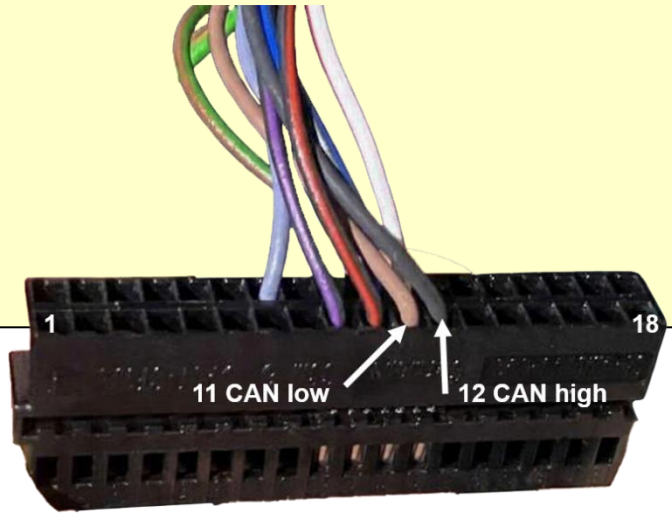
Requirements

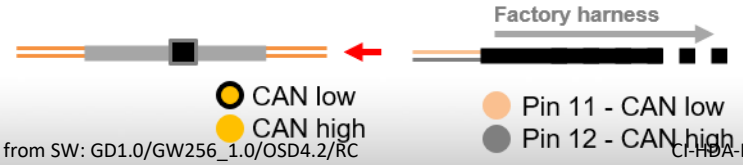
Manufacturer	Compatible vehicles	Compatible systems
Audi	A5 (FU) from 07/2024, A6 e-tron (GH) from 09/2024, Q5 (GU) from 09/2024, Q6 e-tron (GF) from 07/2024	MMI panoramic display with 11.9inch instrument cluster, 14.5inch MMI touchscreen and HCP3 head unit

Limitations

CAN bus compatibility

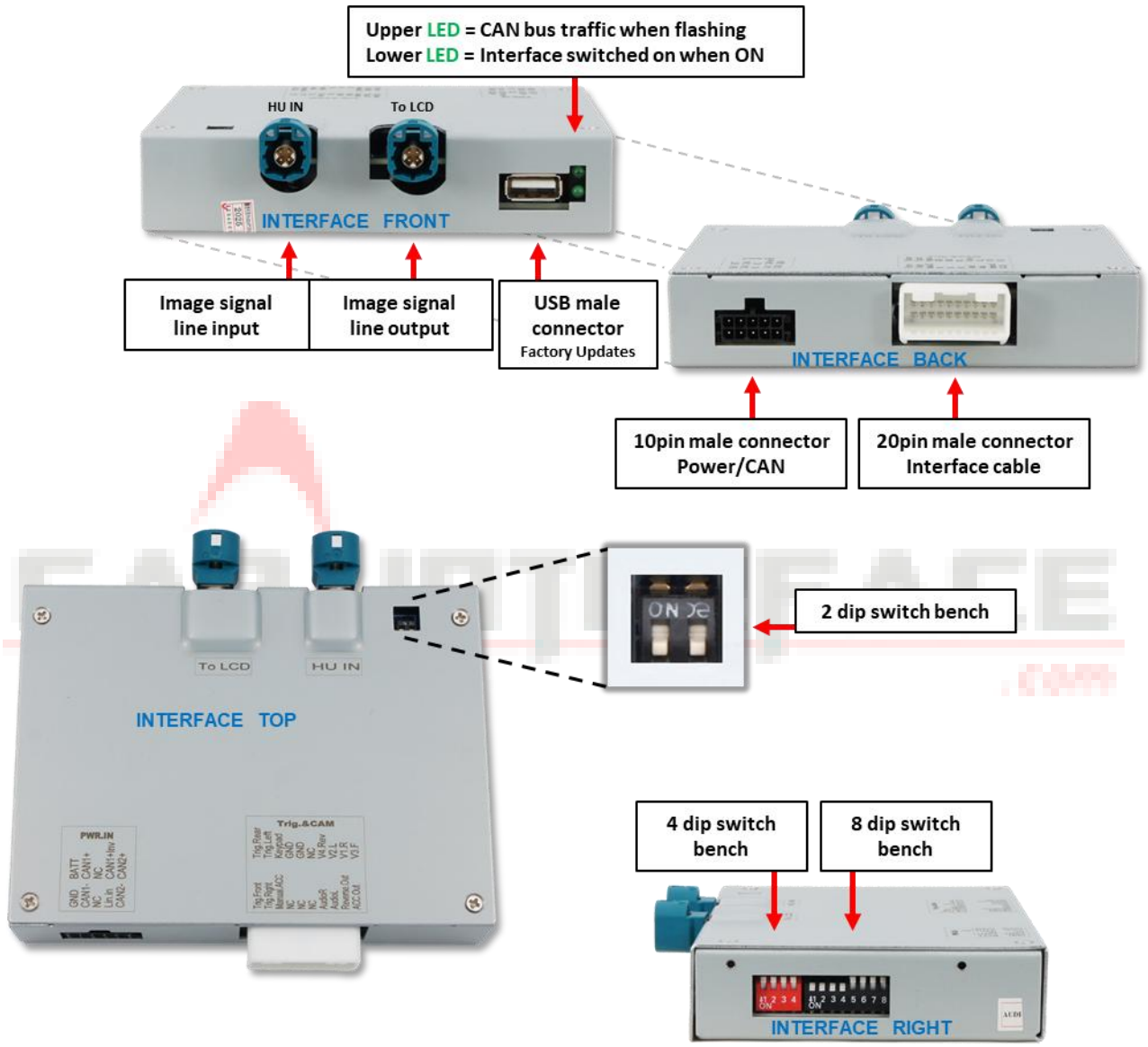
The CAN bus compatibility of the interface may be restricted for some vehicles, either completely or for individual functions. This may become apparent during installation or at a later date.
The interface with all video inputs can be operated with analogue switch signals without being connected to the vehicle's CAN bus.
In this case, individual additional functions are not available, see the chapter*0*
Disconnect the black 36-pin female connector from the vehicle wiring harness at the Body Control Module (left-hand side wall in the boot).
Slide the female connector open and use a pin removal tool to remove **pin 11 (CAN low)** and **pin 12 (CAN high)**.
Insert the two pins of the 2-pin CAN cable: the **orange-black** cable into pin 11 (CAN low) and the **orange** cable into pin 12 (CAN high).
Ensure the pins are oriented correctly.





1.3 Boxes and connections – Interface

The video interface converts video signals from after-market sources into a video signal compatible with the factory head unit. This is inserted into the factory monitor via various switching options. It also reads digital signals from the vehicle CAN bus and converts these for its own functions.



Interface box, right side, black

1.4 Settings – 8 dip switch bench (interface functions)

Dip switch position **UP = OFF** and **DOWN = ON**

Dip	Function	ON (down)	OFF (up)
1	Video 1 / V1-Left	Enabled	deactivated
2	Video 2 / V2-Right	enabled	disabled
3	Front camera / V3-Front	enabled*	disabled
4	Type of rear-view camera (V4-Reverse)	Aftermarket	Factory or none
5	Connection type of the aftermarket rear-view camera	-	V4 Reverse (CVBS/AHD)
6	No function	-	Set to OFF
7	No function	-	Set to OFF
8	No function	-	Set to OFF

Power reset interface after each dip change to activate changes!

* Switching to the front camera occurs automatically for 5, 10, 15 or 20 seconds (depending on the OSD menu setting) after reverse gear is engaged.

See following chapters for detailed information about 8dip switch bench.

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1.4.1 Interface video inputs "V1-Left" and "V2 Right" (DIP 1-2)

With DIP 1 (DIP 2) = **ON**, the CVBS/AHD/CVBS input **V1-Left** (**V2 Right**) is activated for the side camera or other video sources. Only activated video inputs can be accessed – both during automatic and manual switching. It is recommended to activate only those inputs that are in use, to prevent accidental switching.

1.4.2 Front camera input "V3-Front" (Dip 3)

When Dip 3 = **ON**, the interface switches to the AHD/CVBS front camera input **V3-Front** after reverse gear is engaged. In addition, manual switching to the front camera input is possible via an external keypad (short press) from any picture mode.
In the OSD menu settings, the automatic display time for the front camera can be set to 5, 10, 15 or 20 seconds, or switched off. In this case, a different video source could also be connected to instead of a front camera.

1.4.3 Rear-view camera settings (Dip 4)

When DIP 4 is set to **OFF,** the interface switches to the factory display for the factory-fitted rear-view camera or factory PDC display as long as reverse gear is engaged.
When Dip 4 = **ON**, the interface switches to its CVBS/AHD rear-view camera input **V4-Reverse** while reverse gear is engaged (provided Dip 5 is set to OFF) .

1.4.4 Rear-view camera connection type (Dip 5)

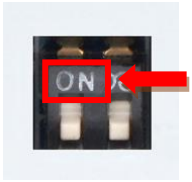
With DIP 5 = **OFF,** the **V4 -Reverse** input is selected as the rear-view camera input.

Note: DIP switches 6, 7 and 8 have no function and must be set to **OFF**

Power reset interface after each dip change to activate changes!

1.5 Settings – 2 dip switch bench (Monitor Definition)

Interface box, top, black



Note: Unlike the other switch benches (8 dip switch bench and 4 dip switch bench), on the 2 dip switch bench the DIP position UP = ON and DOWN = OFF!

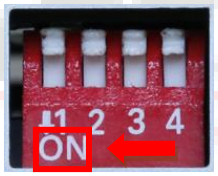
Caution!
Flip the DIP switches very carefully using a micro-tool.

Monitor size	Dip 1	Dip 2
All monitor sizes	OFF	OFF

If you experience picture or touch problems, try the other DIP switch settings as well!
Power reset interface after each dip change to activate changes!

1.6 Settings – 4 dip switch bench (CAN bus)

Interface box, right side, red



Set the DIP switch positions according to the following table.
DIP position UP = OFF and DOWN = ON

DIP	Function	ON (down)	OFF (up)
1	No function	-	Set to OFF
2	No function	-	Set to OFF
3	No function	-	Set to OFF
4	No function	-	Set to OFF

Power reset interface after each dip change to activate changes!

2 Installation

Switch off the ignition and disconnect the vehicle battery in accordance with the manufacturer's instructions!
If the vehicle battery must not be disconnected according to the manufacturer's instructions, it is usually sufficient to put the vehicle into sleep mode. If this does not work, disconnect the vehicle battery using a resistor lead.

Before final installation, we recommend carrying out a test run of the interface with all connected devices to ensure that all components are compatible. Due to changes in the vehicle manufacturer's production processes, which may occur at any time, incompatibility can never be ruled out.

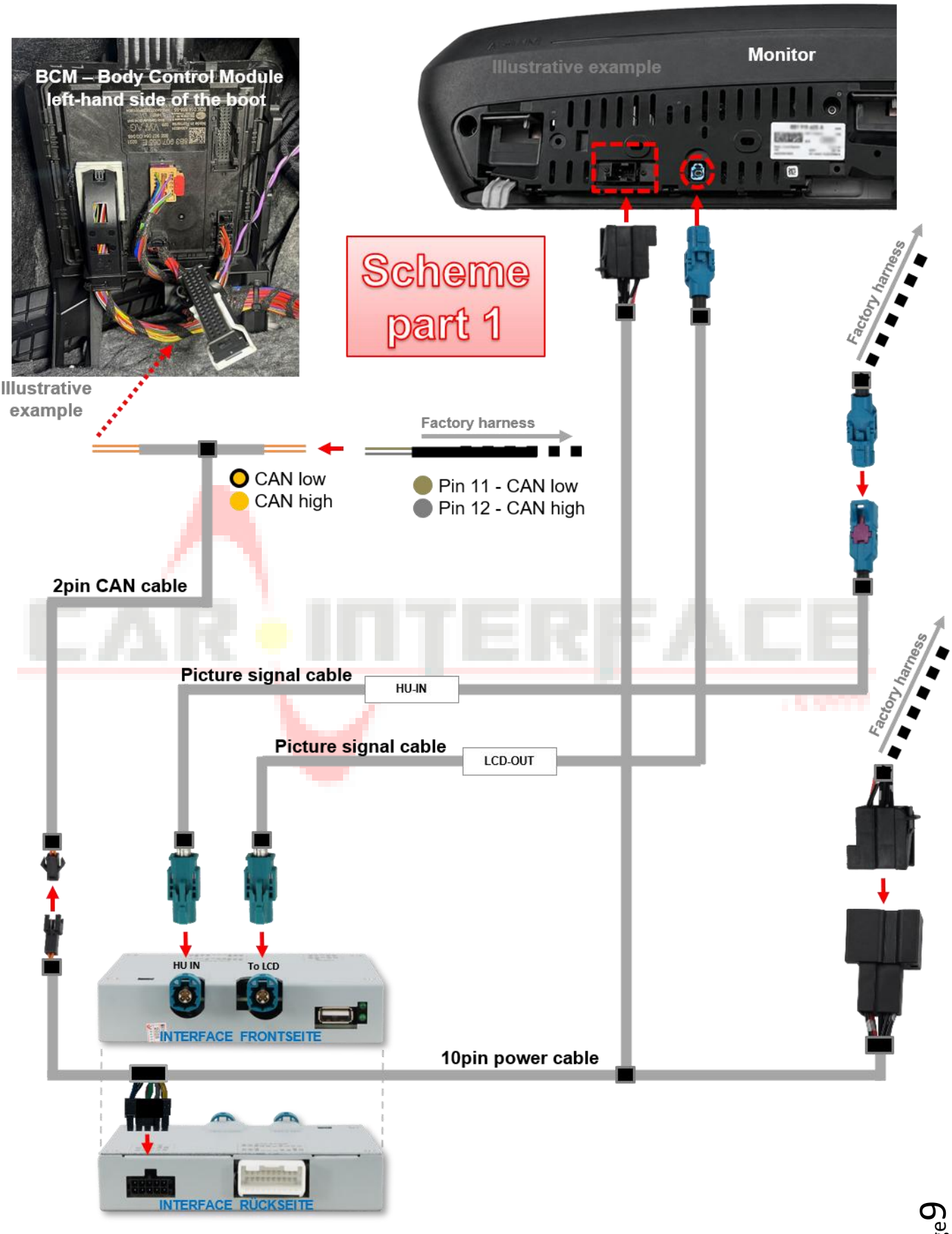
As with any installation of retrofit devices, a quiescent current test must be carried out on all retrofitted devices after installation to ensure that the devices switch to standby mode when the vehicle is in sleep mode.

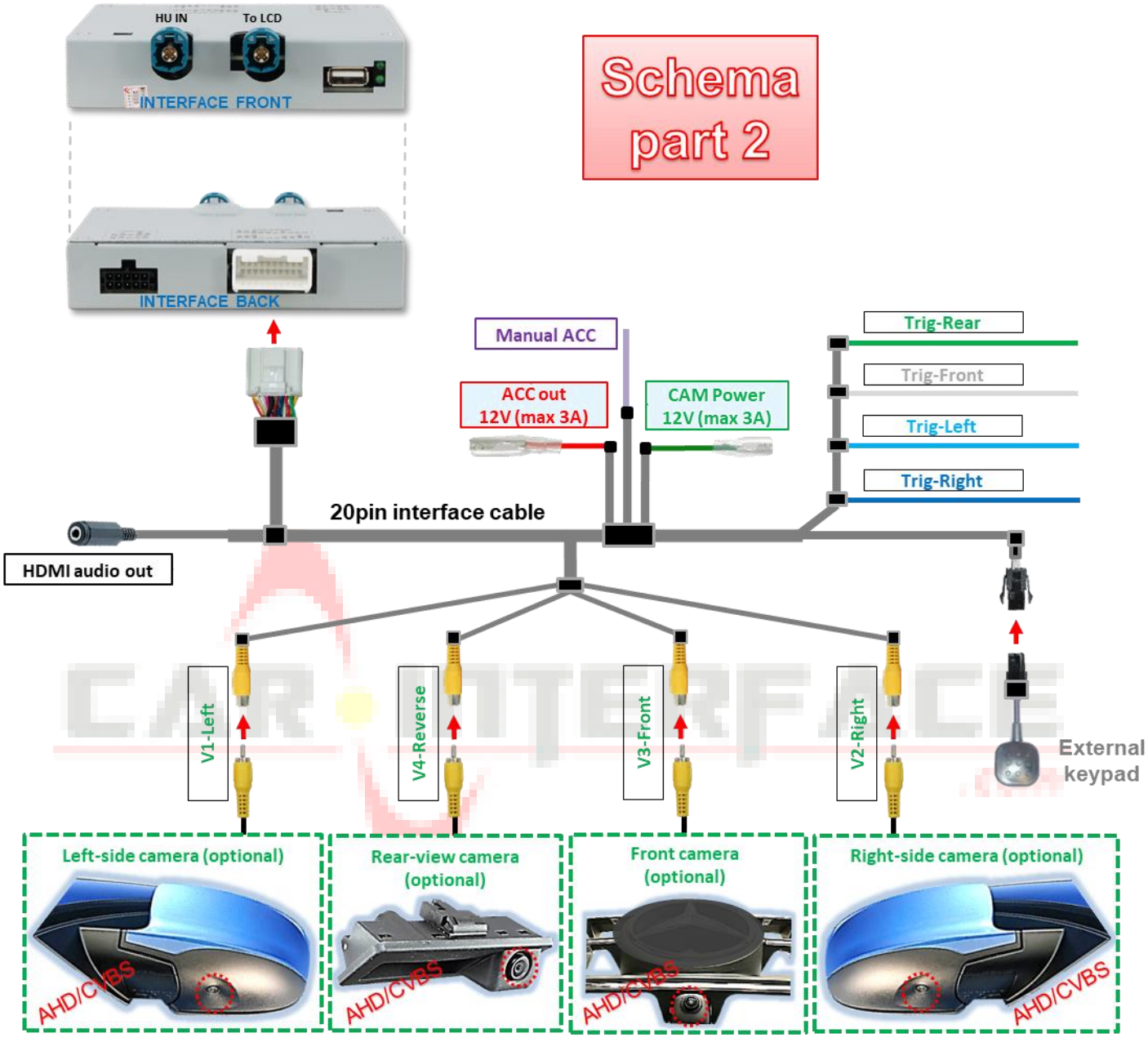
2.1 Place of connection

The video interface is connected to the rear of the factory monitor and to the rear of the Body Control Module (on the left-hand side of the boot).

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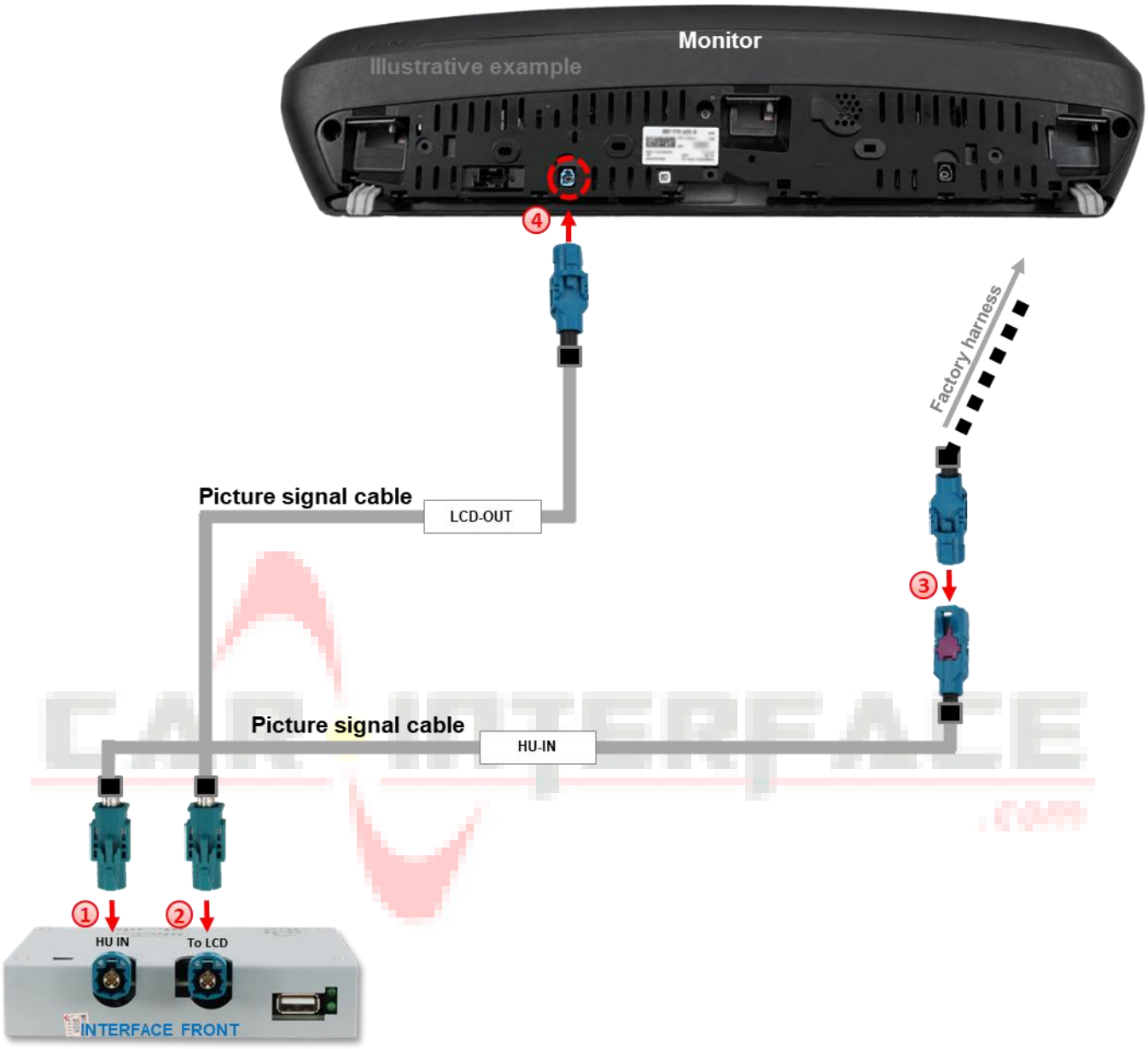
2.2 Connection schema




HU IN
To LCD
INTERFACE FRONT
INTERFACE BACK
Schema part 2
Manual ACC
ACC out 12V (max 3A)
CAM Power 12V (max 3A)
Trig-Rear
Trig-Front
Trig-Left
Trig-Right
20pin interface cable
HDMI audio out
V1-Left
V4-Reverse
V3-Front
V2-Right
External keypad
Left-side camera (optional)
Rear-view camera (optional)
Front camera (optional)
Right-side camera (optional)
AHD/CVBS
AHD/CVBS
AHD/CVBS
AHD/CVBS

2.3 Connection – picture signal cable

The connection is made to the factory monitor.



1. Connect the **aqua-blue** 4pin HSD female connector of the **"TO HU"** picture signal cable to the **aqua-blue** 4pin HSD male connector **"TO HU"** on the interface.
2. Connect the **aqua-blue** 4pin HSD female connector of the **"LCD-OUT"** picture signal cable to the **aqua-blue** 4pin HSD male connector **"To LCD"** on the interface.
3. Disconnect the H-MTD single female connector of the factory picture signal cable from the factory monitor and connect it to the **aqua-blue** H-MTD single male connector of the **"TO HU"** picture signal cable.
4. Connect the **aqua-blue** H-MTD single female connector of the **"LCD-OUT"** picture signal cable to the previously freed-up H-MTD single male connector on the factory monitor.

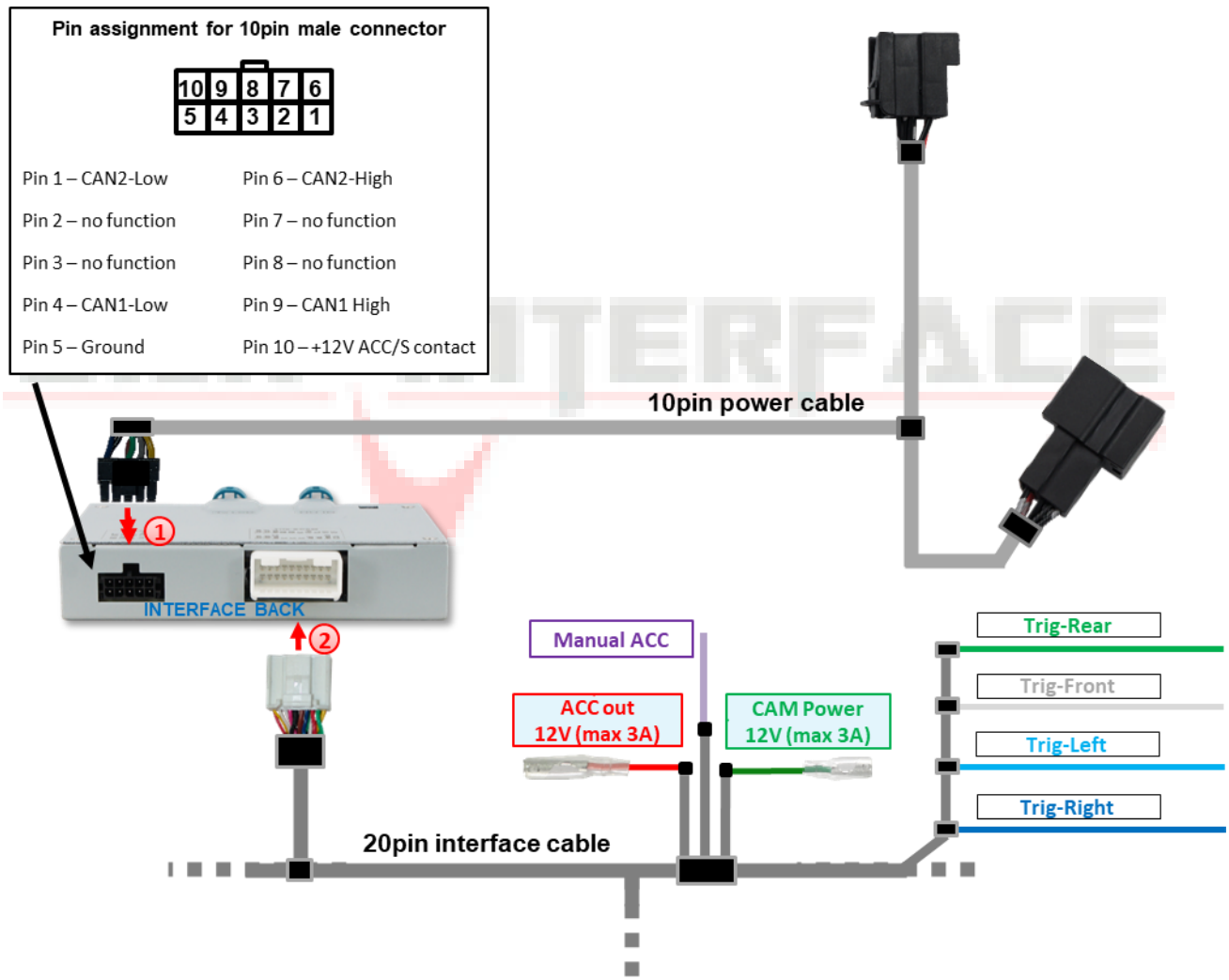
Note: The colours of the connections on the factory monitor may differ from those shown in this manual.

2.4 Connection – Cable sets, power supply and CAN bus or analogue- og without CAN bus

The interface can be integrated via CAN-Bus or operated completely in analogue mode without any connection to the CAN-Bus.
When integrated via CAN bus, the interface is switched on via the CAN bus, and the reverse gear signal and turn signals are usually detected from it. In some vehicles, dynamic guide lines can also be displayed based on the CAN bus steering signals.

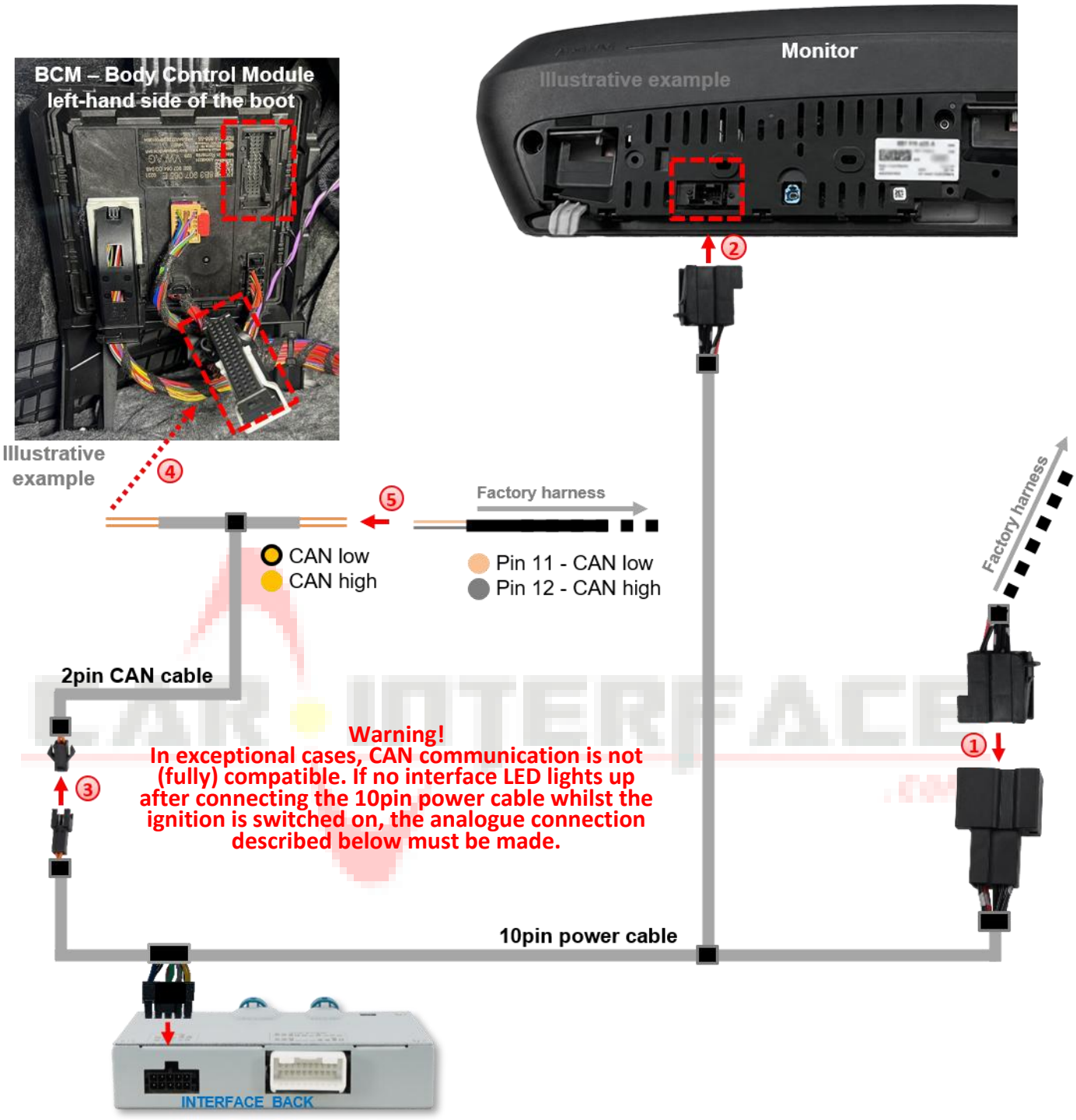
In exceptional cases, CAN communication may not be (fully) compatible. If, after connecting the 10pin power/CAN cable set, the interface LED does not light up when the ignition is switched on, the analogue connection described below must be made. The analogue connection is also possible to avoid any potential subsequent CAN bus incompatibility . In this case, the interface must be switched on and its inputs selected via +12V switch inputs.

The display of dynamic guide lines for the rear-view camera is not available with an analogue connection.



1. Connect the 10pin female connector of the 10pin power cable to the 10pin male connector of the interface.
2. Connect the 20pin female connector of the 20pin interface cable to the 20pin male connector of the interface.

2.4.1 Connection with CAN bus

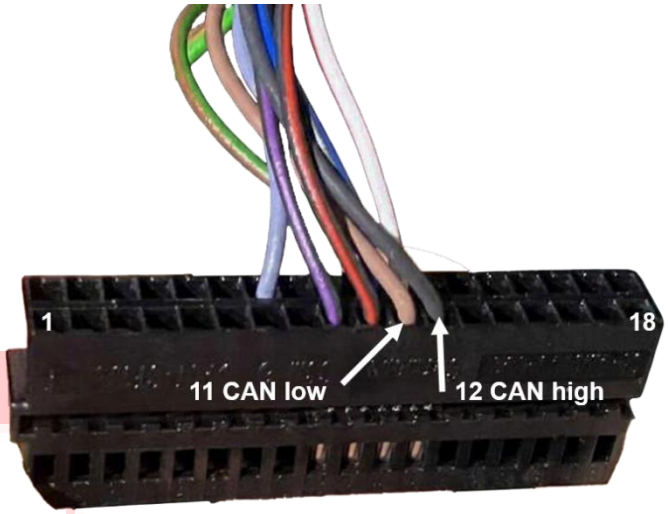


1. Disconnect the 8pin female connector of the vehicle wiring harness from the rear of the factory monitor and connect it to the 8pin male connector of the **10pin power cable**.
2. Connect the opposite 8pin female connector of the **10pin power cable** to the previously freed-up 8pin male connector on the factory monitor.
3. Connect the 2pin female connector of the **2pin CAN cable** to the 2pin male connector of the **10pin power cable.**

4 Disconnect the **black** 36-pin female connector from the vehicle wiring harness at the Body Control Module (left-hand side wall in the boot).

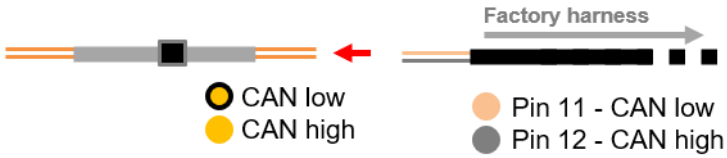
Slide the female connector open and use a pin removal tool to remove **pin 11 (CAN low)** and **pin 12 (CAN high)**.

Insert the two pins of the 2-pin CAN cable: the **orange-black** cable into pin 11 (CAN low) and the **orange** cable into pin 12 (CAN high). Ensure the pins are oriented correctly.



Push the female connector back together and connect it to the 36-pin male connector on the Body Control Module.

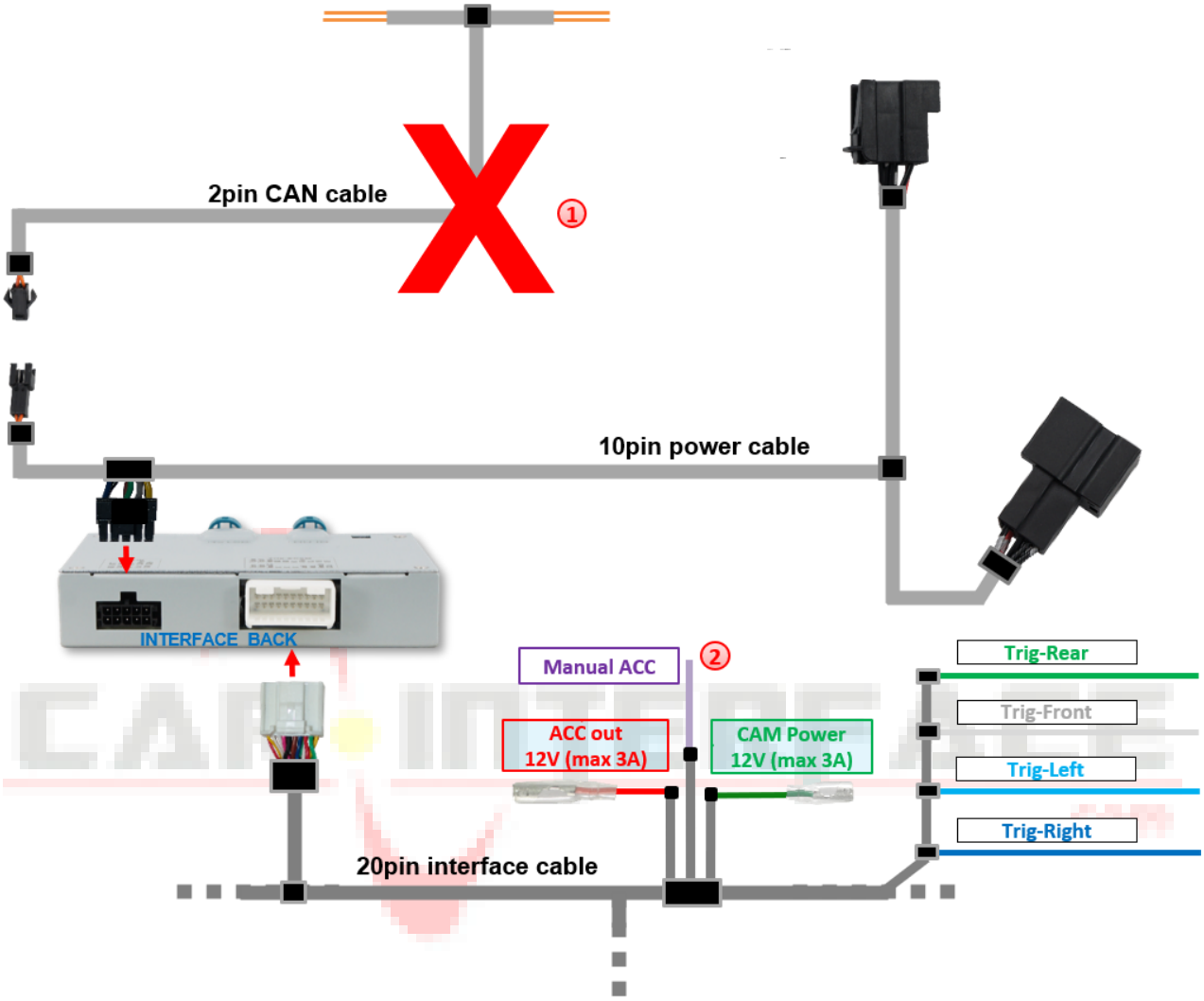
5 Insert the unmasked pins from the vehicle wiring harness into the two open pins on the 2-pin cable (CAN high to CAN high, CAN low to CAN low). Then insulate both connections using the heat-shrink tubing provided.



Note: Alternatively, the CAN wires (pin 11 and pin 12) in the vehicle wiring harness can be cut and the 2-pin CAN cable soldered in between (CAN high to CAN high, CAN low to CAN low). Insulate the solder joints using the heat-shrink tubing provided.

2.5 Analogue connection without CAN bus

With an analogue connection, the 2pin CAN cable is not connected.



1 **Do not** connect the 2pin CAN cable to the 10pin power cable.

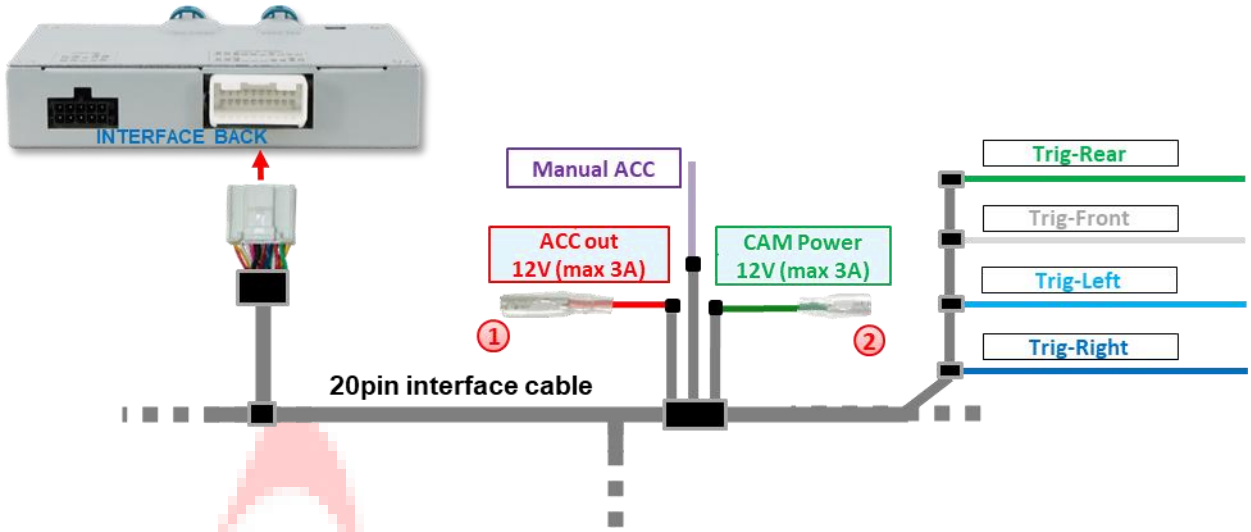
2 Connect the purple **Manual ACC** wire of the 20pin interface cable to **the +12V S-contact (terminal 86s) or ACC terminal 15r** (e.g. cigarette lighter, glove box light).

Notes

- The picture is only switched on as long as the video interface is switched on via +12V to **Manual ACC**. Otherwise, the factory picture will also be black.
  When selecting the switch-on signal, check whether the factory picture is available in all desired operating modes.
- The display of driving lines is not available with an analogue connection.
- If the interface is connected via an analogue connection (without CAN bus), the rear-view camera and side cameras must also be connected via an analogue connection.
  See points:
  2.7.2 Case 2: Reversing signal from analogue signal
  2.9.2 Case 2: Turn signals from an analogue signal

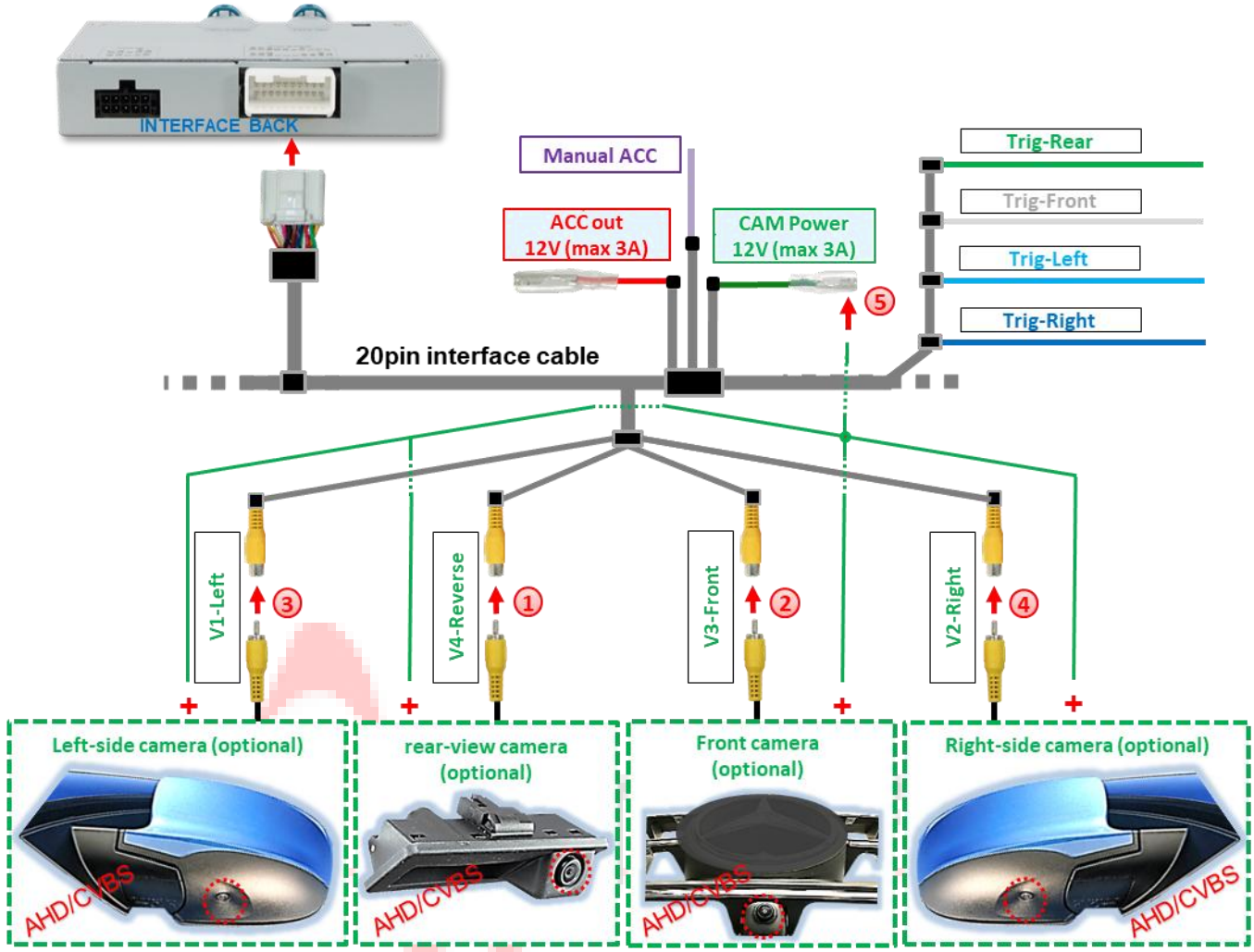
2.6 Power supply outputs

The two **red** and **green** power supply lines, **ACC out 12V (max 3A)** and **CAM Power 12V (max 3A),** on **the 20pin interface cable** can be used either as an ACC power supply for external video sources connected to **V1-Left**, **V2–Right or V3–Front** , or as a power supply for the **aftermarket cameras** (e.g. side, front and rear-view cameras) connected to **V1-Left**, **V2-Right**, **V3-Front or V4-Reverse**.



1. **External video sources** (excluding cameras) can be powered via the red power supply line **ACC out 12V (max 3A)** on the **20pin interface cable**.
   The wire **continuously** supplies +12V ACC switching output current whilst the interface is switched on *(see the following chapters for connection diagrams)*.
2. The power supply for **aftermarket cameras** (e.g. rear-view, side and front cameras) can be provided via the green power supply line **CAM Power 12V (max 3A)** on the **20pin interface cable**. The wire supplies **+12V switching output current** only as long as one of the camera inputs is active, regardless of whether the connection is made via the vehicle CAN bus or via one of the trigger wires *(see the following chapters for connection diagrams)*.

2.6.1 Connection and power supply – video sources
Rear-view camera, front camera and 2 side cameras

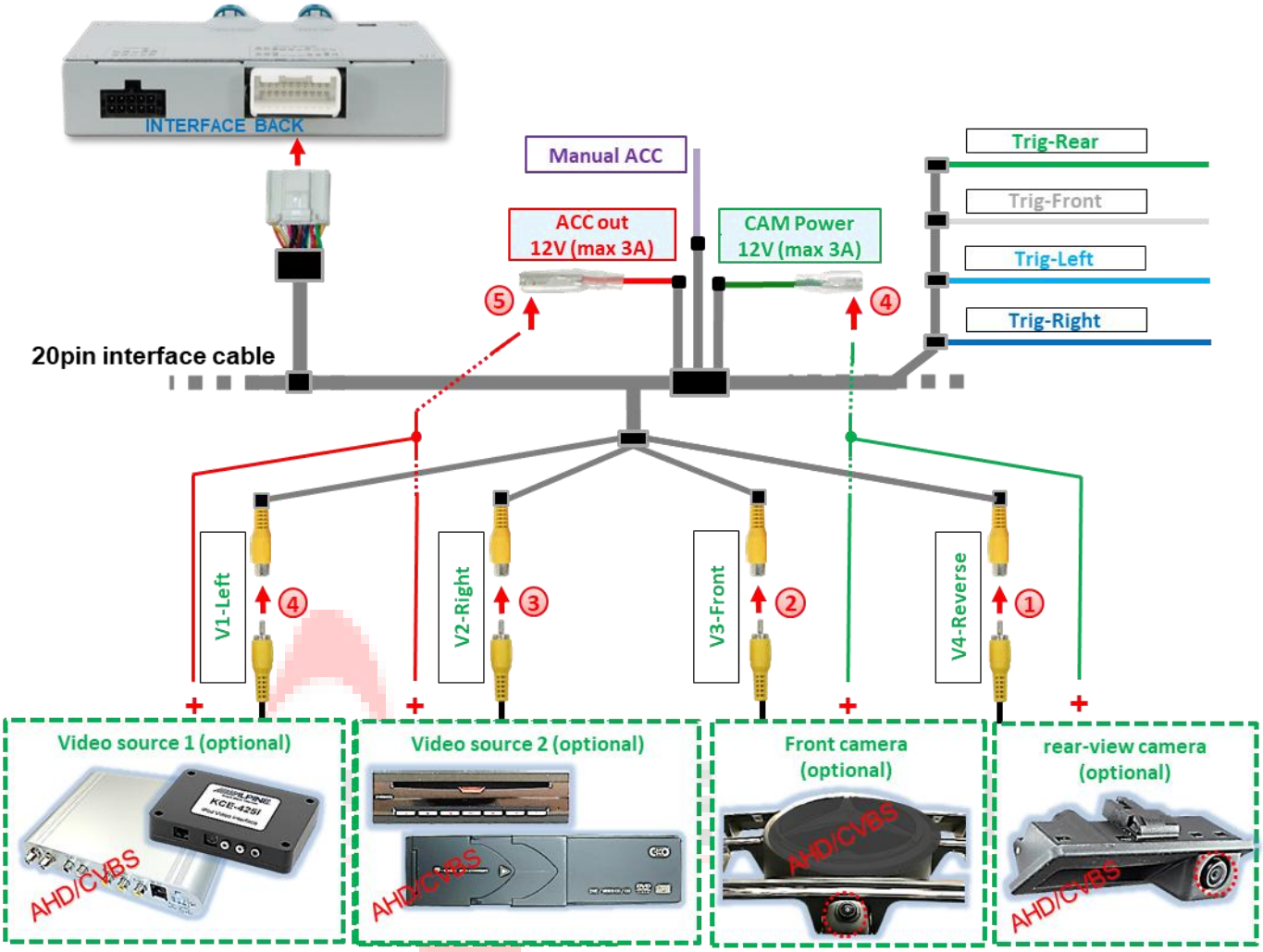


1. Connect the rear-view camera's RCA male connector to the **V4-Reverse** RCA female connector on the **20pin interface cable**.
2. Connect the front camera's RCA male connector to the **V3-Front** RCA female connector on the **20pin interface cable**.
3. Connect the RCA male connector of the left side camera to the **V1-Left** RCA female connector on the **20pin interface cable**.
4. Connect the RCA male connector of the right-side camera to the **V2-Right** RCA female connector on the **20pin interface cable**.
5. Connect the power supply for all aftermarket cameras to **the green wire CAM Power 12V (max 3A)** on the **20pin interface cable**.

Note: The type of camera selection (via vehicle CAN bus or trigger lines) can be preset individually for each input in the OSD menu settings.

Warning!
The video signal type for each video source must be defined in the OSD menu of the corresponding video input.

2.6.2 Connection and power supply – Video sources
Rear-view camera, front camera and 2 video sources



1. Connect the RCA male connector of the rear-view camera to the RCA female connector **V4-Reverse** of the **20pin interface cable** .
2. Connect the front camera's RCA male connector to the RCA female connector **V3-Front** of the **20pin interface cable**.
3. Connect the RCA male connectors of video sources 1 and 2 to the RCA female connectors **V1-Left** and **V2-Right** of the **20pin interface cable**.
4. Connect the power supply for aftermarket cameras to the **green wire CAM Power 12V (max 3A)** of the **20pin interface cable**.
5. Connect the power supply for video sources to the **red wire ACC out 12V (max 3A)** of the **20pin interface cable**.

Note: The type of camera selection (via vehicle CAN bus or trigger lines) can be preset individually for each input in the OSD menu settings.

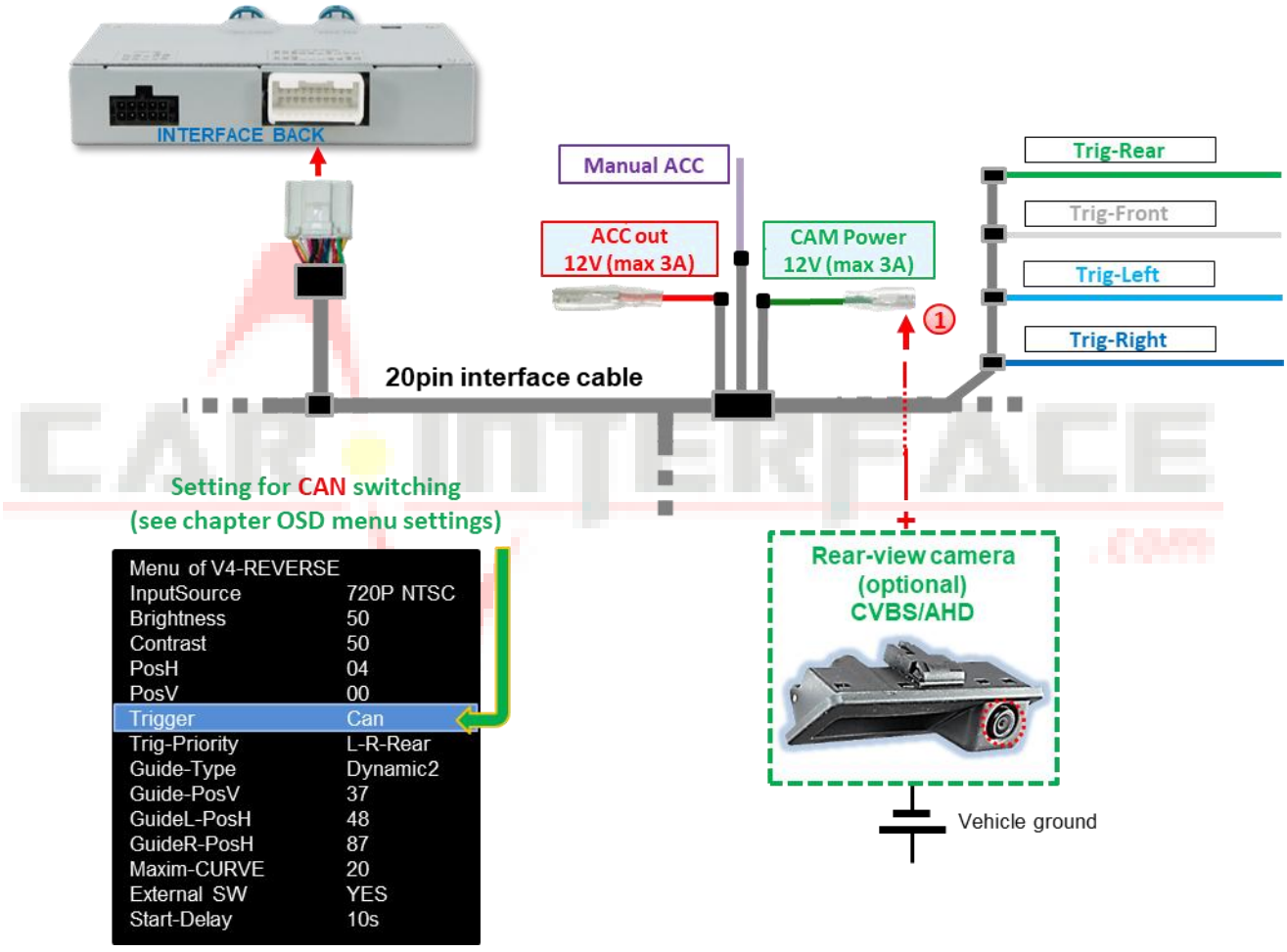
Important!
The video signal type for each video source must be defined in the OSD menu of the corresponding video input.

2.7 Aftermarket rear-view camera

Automatic switching to the rear-view camera can be triggered via the CAN bus or an analogue reverse gear signal.

2.7.1 Case 1: Reverse gear signal from CAN bus

The basic requirement is that the interface is connected to the CAN bus. Furthermore, the vehicle CAN bus reverse gear signal and the interface's detection must be compatible. The interface then supplies +12V on the **green wire CAM Power 12V (max 3A)** of **the 20pin interface cable** whilst reverse gear is engaged, and the interface automatically switches to the rear-view camera input **V4-Reverse**.
See also chapter1.4 Settings – 8 dip switch bench (interface functions) .



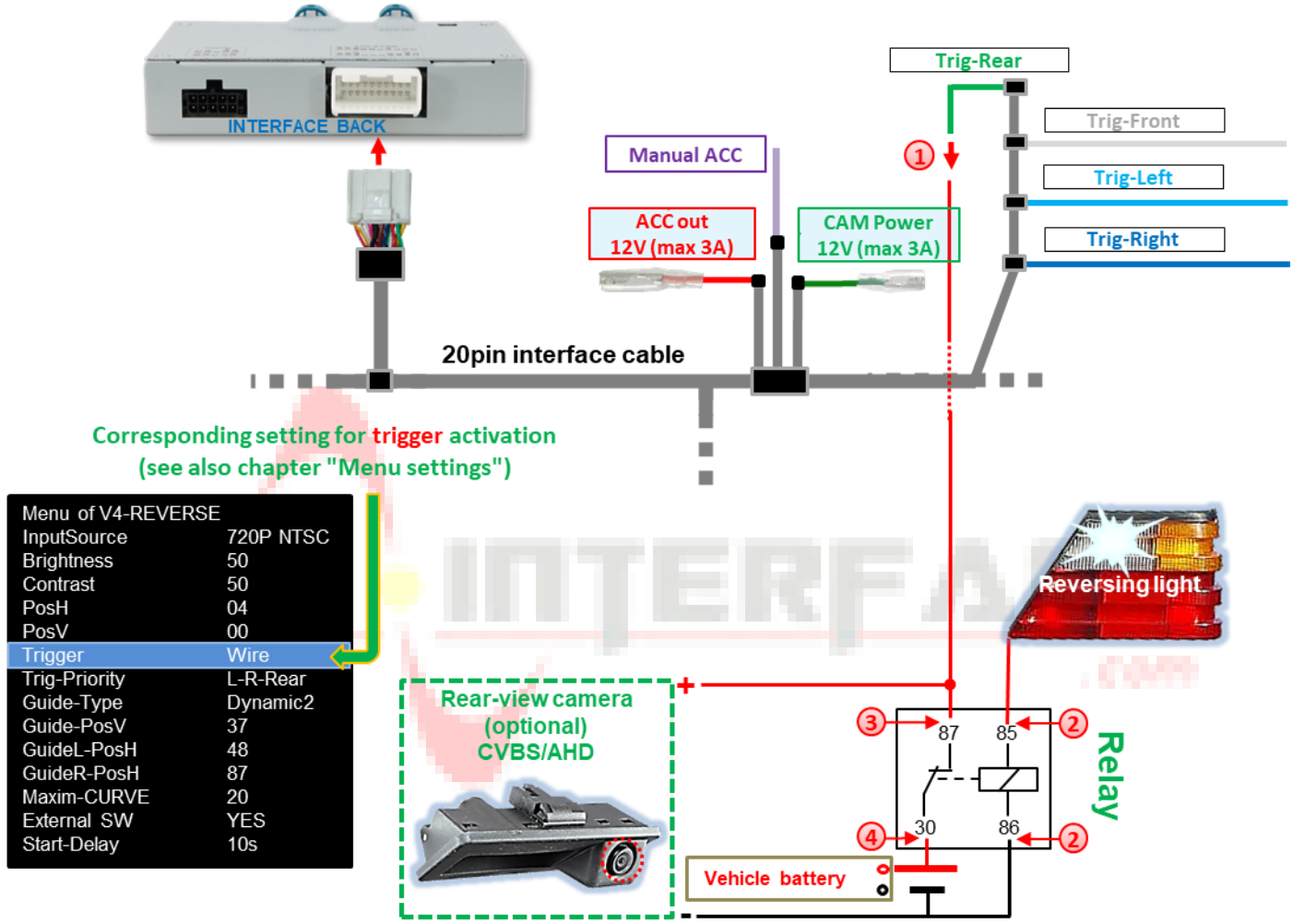
1 The +12V power supply for the aftermarket rear-view camera can be provided via the **green wire CAM Power 12V (max 3A)** of **the 20pin interface cable**, as this wire only carries current when the camera inputs are active (some cameras are not designed for continuous current).

Notes

- If the interface's reverse gear detection on the CAN bus does not work , the reverse gear signal must be connected via an analogue connection.

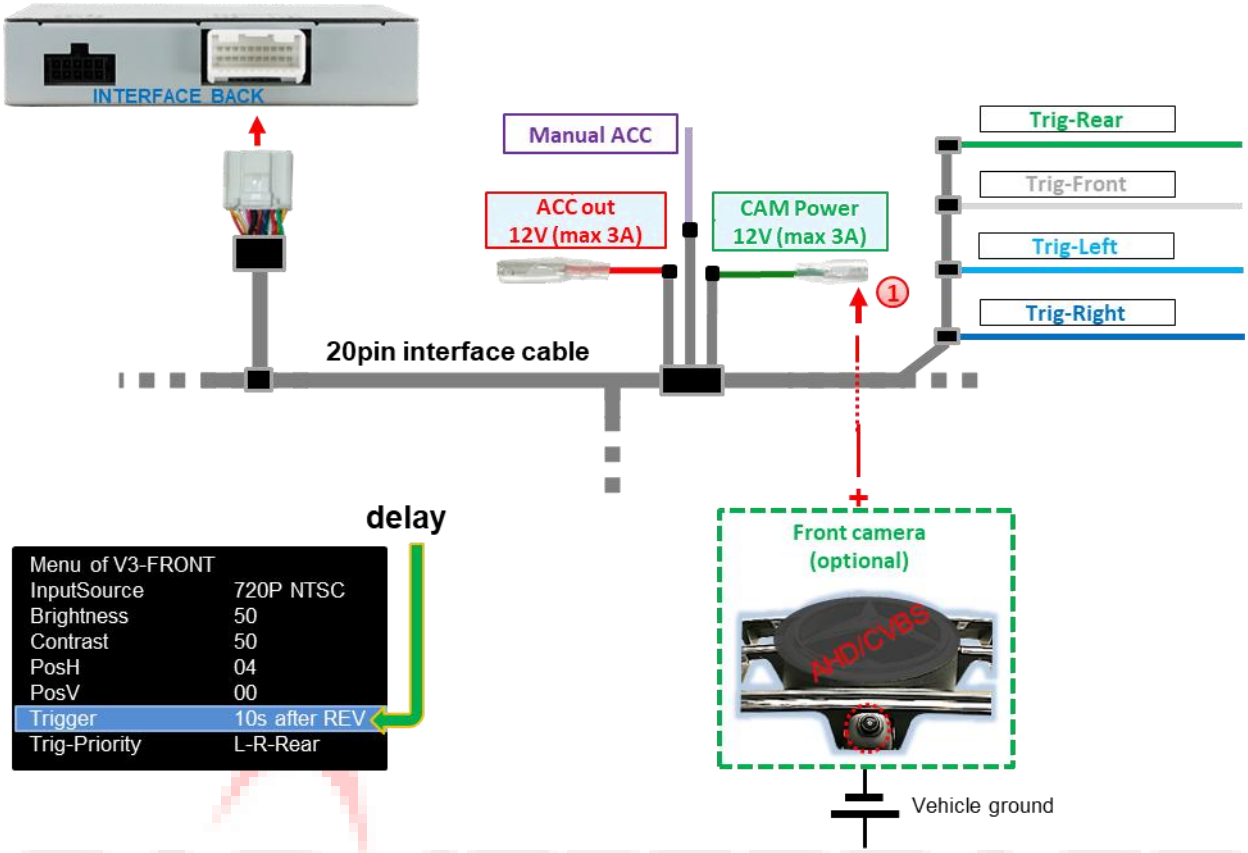
2.7.2 Case 2: Reversing signal from analogue signal

If the interface is connected without a CAN bus, or if the interface does not supply +12V on the **green CAM Power 12V (max 3A) wire** of the **20pin interface cable** while reverse gear is engaged (not all vehicles are compatible), an external switching signal from the reversing light is required. As the reversing signal contains electronic interference, a normally open relay (e.g. AC-MR-312 or AC-MR-201) or a noise filter (e.g. AC-PNF-RVC) is required. The diagram below shows the use of a normally open relay.



1. Connect the **green Trig-REAR wire** to output terminal (87) of the relay.
2. Connect the reversing light power cable to the coil terminal (85) and the vehicle ground to the coil terminal (86) of the relay.
3. Connect the rear-view camera power supply wire to the output terminal (87) of the relay, in addition to the **green Trig-REAR wire.**
4. Connect the +12V continuous power supply to the relay's input terminal (30).

2.8 Aftermarket front camera



1 **T**he **green wire CAM Power 12V (max 3A)** can be used to power the front camera (and all other cameras connected to the video inputs). This wire carries current only for the duration of any camera activation (some cameras are not rated for continuous current). A prerequisite is that Dip 3 = **ON** (black 8 dip switch bench). The **green wire** then supplies +12V (max. 3A) as power to the front camera for as long as the front camera input is displayed.
The duration of the delay can be individually selected in the front camera's OSD menu settings for **5**, **10**, **15** or **20** seconds.

Switching to the front camera after reverse gear is engaged, for the duration set in the OSD menu, occurs when a reverse gear signal is received from the CAN bus and when using an analogue connection.

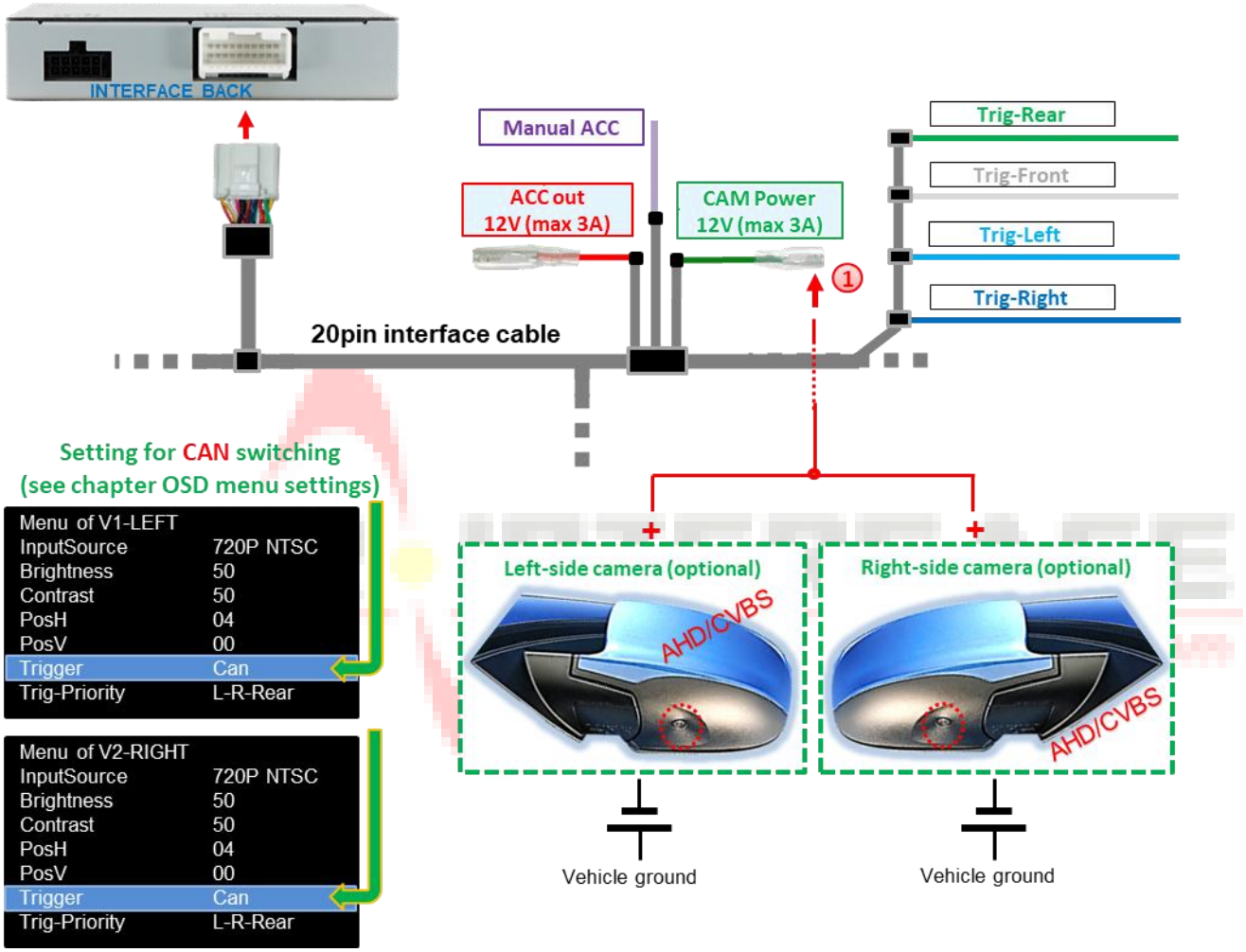
Note: It is also possible to switch manually to the front camera input (short press) via a keypad from any picture mode *(see chapter3 Operating the video interface)*.

2.9 Aftermarket side cameras

Side cameras can be connected via CAN bus or an analogue signal.

2.9.1 Case 1: Turn signals from the CAN bus

The basic requirement is that the interface has been connected to the CAN bus. Furthermore, the vehicle CAN bus turn signals and their detection by the interface must be compatible. In this case, a +12V signal is present on the **green CAM Power 12V (max 3A) wire** of the **20pin interface cable** for the duration of turn signal operations.

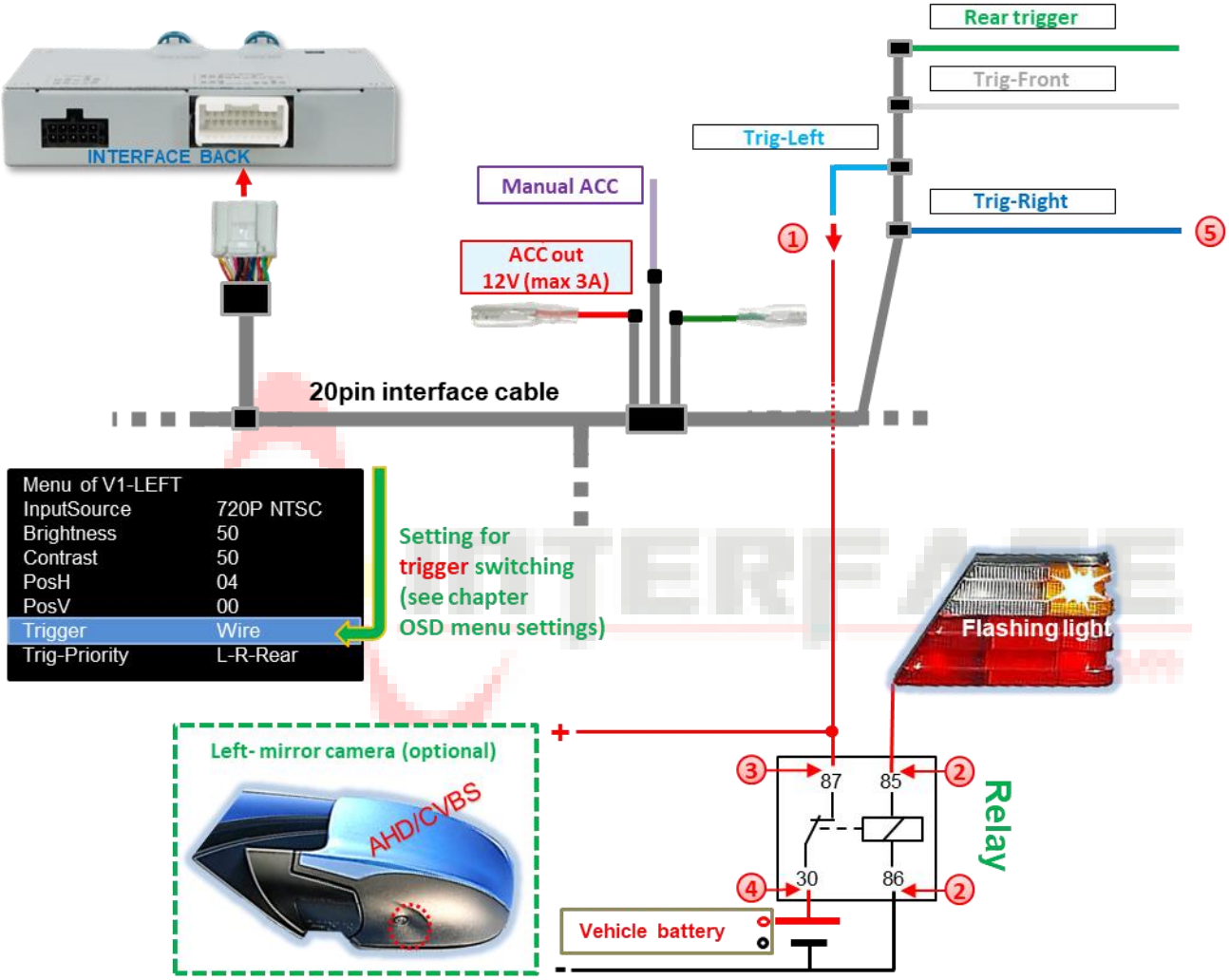


1 Power supply for the side cameras can be provided via the **green CAM Power 12V wire (max 3A)** of **the 20pin interface cable**, as this wire carries current only during camera activation (some cameras are not designed for continuous current).

Note: If the interface's turn signal detection on the vehicle CAN bus does not work, the turn signals must be connected via an analogue connection.

2.9.2 Case 2: Turn signals from an analogue signal

If the interface is connected without a CAN bus, or if the interface is connected with a CAN bus but the turn signals from the vehicle's CAN bus are not detected, the side camera inputs can be activated via the +12V switch input lines **Trig-Left** and **Trig-Right**. An analogue switching signal from the turn signal bulbs is required to switch to the side camera inputs. As turn signals may contain electronic interference, a normally open relay (e.g. AC-RW-1230 with AC-RS5 wiring) or a noise filter (e.g. AC-PNF-RVC) is required for each input. The diagram below shows the use of a normally open relay.



1. Connect **the light blue Trig-Left wire** to output terminal (87) of the relay.
2. Connect the power cable for the left indicator to the coil terminal (85) of the relay and the vehicle ground to the coil terminal (86) of the relay.
3. Connect the left-side camera power cable to output terminal (87) of the relay, in addition to **the light blue Trig-Left wire**.
4. Connect the +12V continuous power supply to the input terminal (30) of the relay.
5. The same connection method applies to the right-hand side camera via **the dark blue Trig-Right wire**.

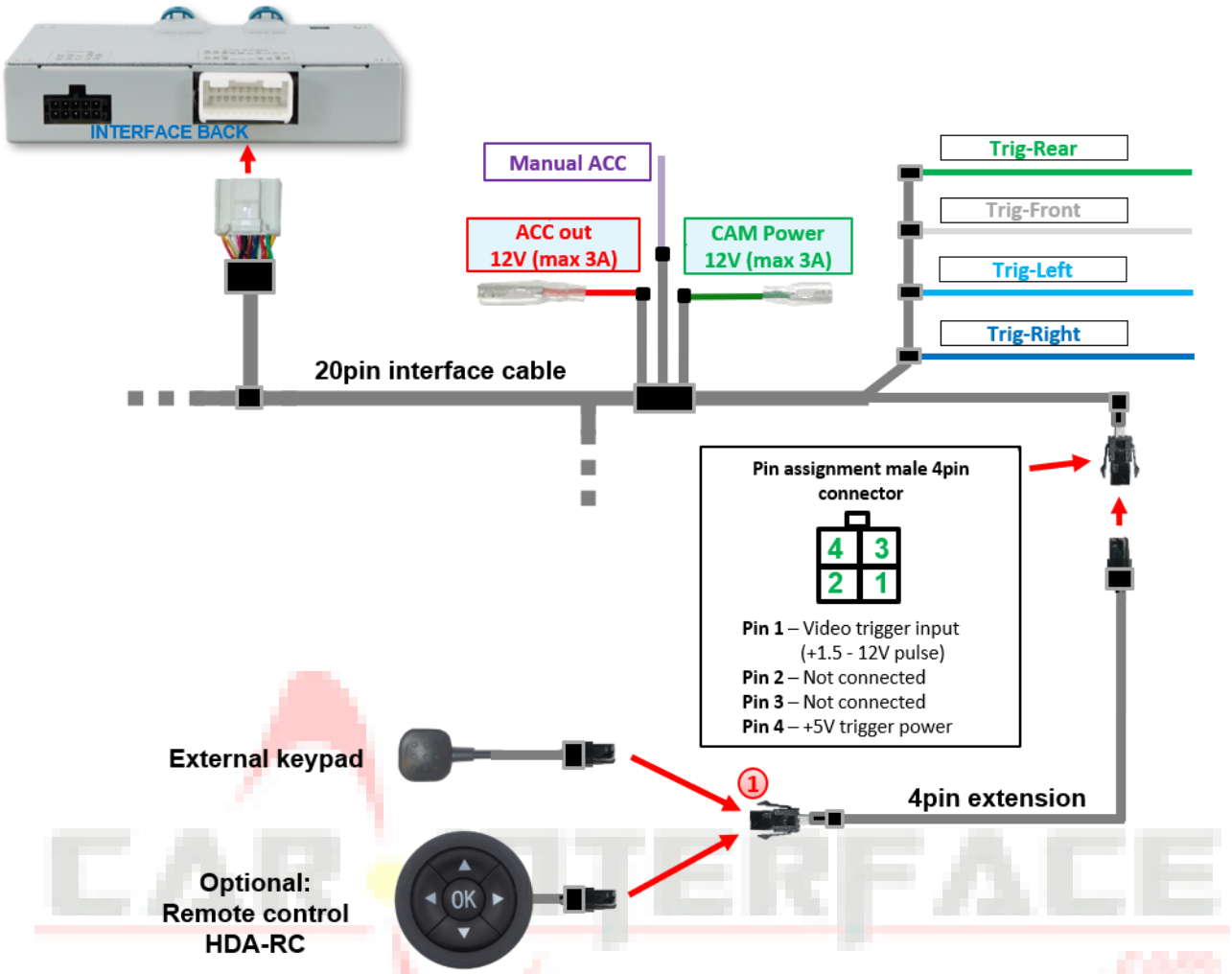
2.10 Audio insertion

The interface can only insert video signals into the factory infotainment system. For all connected AV sources, their audio output must be connected to the factory AUX input (if available) or an optional audio injector (e.g. FM modulator).

If multiple AV sources are connected to the infotainment system, an additional audio switch may be required. Input video signals can be activated in parallel with any audio mode of the factory infotainment system.

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2.11 Connection – Video interface and external keypad



1 Connect the 4-pin female connector on the external keypad to the 4-pin male connector on the 20pin interface cable.

Note: The keypad cable is supplied with an extended 4pin connector. **We strongly recommend that you install this connector in an accessible location, leave the supplied keypad connected to it, and document the installation location for future reference – even if the keypad is not required for switching between multiple sources.**

This may be particularly important for support purposes or if settings are to be adjusted in the interface's OSD menu after installation, e.g. using the optionally available "HDA-RC" remote control. If the 4pin connector is installed in an accessible location, the interface itself no longer needs to be accessed for subsequent setting changes.

The keypad should not be fitted in a 'pressed' position, but should remain loose and accessible at the connection point.

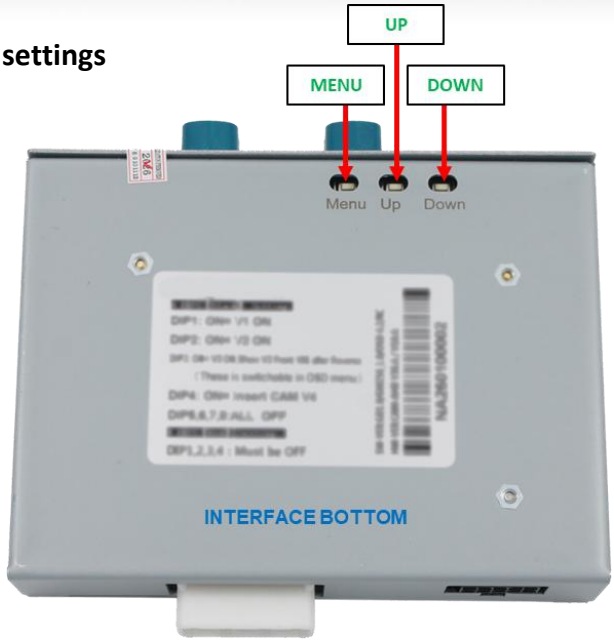
Optional: Instead of the external keypad, the interface can also be operated using the optionally available "HDA-RC" remote control.* This allows direct selection of the video/camera inputs and more convenient adjustment of settings in the respective OSD menus.



"HDA-RC" remote control available as an option

* The remote control is compatible with all HDA and HDV interfaces that are marked with 'RC' at the end of the software version.

2.12 OSD menu settings



Attention!
The video signal type for each video source must be defined in the OSD menu for the corresponding video input.

OSD menu settings can be changed using the 3 keys on the rear of the interface. MENU opens the OSD settings menu or moves the cursor to the next menu item. UP and DOWN change the values of the current menu item.

The individual OSD settings menu for each video input can only be accessed whilst that input is displayed, regardless of whether a video source is connected.

The following settings are available in the OSD settings menus for the 5 video inputs:

Menu V1-Left (V2-Right) 8-position DIP switch panel DIP 1 (DIP 2) = ON

Menu of V1-LEFT	
InputSource	720P NTSC
Brightness	50
Contrast	50
PosH	10
PosV	15
Trigger	Can
Trig-Priority	L-R-Rear

Menu of V2-RIGHT	
InputSource	720P NTSC
Brightness	50
Contrast	50
PosH	10
PosV	15
Trigger	Can
Trig-Priority	L-R-Rear

Input Source Video input signal type for video source connected to **V1-Left (V2-Right)**.
This **must** be defined for correct image reproduction.
The following video source signal types can be selected:
CVBS video sources: **NTSC, PAL**
AHD video sources: **720p NTSC, 960p NTSC, 1080p NTSC, 720p PAL, 960p PAL, 1080p PAL**

Brightness Brightness

Contrast Contrast

Pos. H Horizontal image position

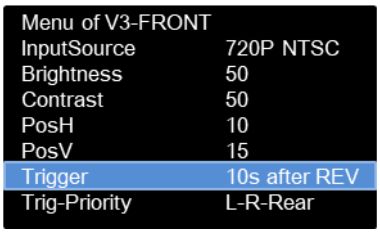
Pos. V Vertical image position

Trigger Selection method for video input **V1-Left (V2-Right)**.
"CAN" function for side cameras via CAN bus. Selection of video input **V1-Left (V2-Right)** when (right) turn signal is activated. Requirements include the turn signal being recognised by the vel bus
the vehicle's CAN bus. Manual selection of this input via an external keypad does not work with this setting.
"Wire" function for other video sources or side cameras (without CAN bus).
Selection of the video input **V1-Left (V2-Right)** is made exclusively via **the light blue** (**dark blue**) **Trig-Left** (**Trig-Right**) wire or manually via an external keypad.

Trig Priority Switching priority when switching signals are present for several inputs simultaneously (CAN bus or analogue +12 V triggers). The signal with the highest priority is displayed:
L-R-Rear: ***V1-Left*** → ***V2-Right*** → ***V4-Reverse***
Rear-R-L: ***V4-Reverse*** → ***V2-Right*** → ***V1-Left***

Menu V3-Front

8-position DIP switch panel DIP 3 = ON



Input Source Video input signal type for video source connected to V3-Front.
This **must** be defined for correct image reproduction.
The following video source signal types can be selected:
CVBS video sources: **NTSC, PAL**
AHD video sources: **720p NTSC, 960p NTSC, 1080p NTSC, 720p PAL, 960p PAL, 1080p PAL**

Brightness Brightness

Contrast Contrast

Pos. H Horizontal image position

Pos. V Vertical image position

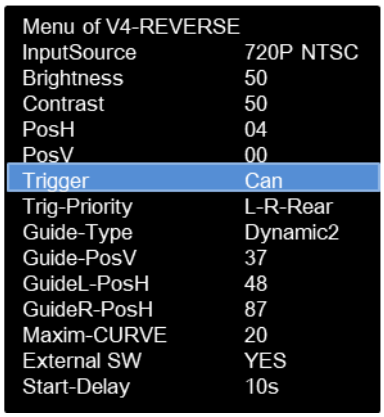
Trigger Method of selecting the **V3 front** video input.
'Delay' function for front camera. The 'Delay' setting determines the automatic switchover of a front camera connected to the V3 front input when reverse gear is engaged, as display duration on the screen. The following are available
5 seconds after REV, 10 seconds after REV, 15 seconds after REV, 20 seconds after REV.
'Wire' function for other video sources. If you wish to connect a video source other than a fron camera
video source to **the V3 front**, select the "Wire" setting. This disables
the **"Delay"** function off, and the input can only be selected via the white Trig-Front wire or manually via an external keypad.

Trig Priority Switching priority when switching signals are present simultaneously for multiple inputs (CAN bus or analogue +12 V triggers). The signal with the highest priority is displayed:
L-R-Rear: ***V1-Left*** → ***V2-Right*** → ***V4-Reverse***
Rear-R-L: ***V4-Reverse*** → ***V2-Right*** → ***V1-Left***

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Menu V4-Reverse

8 dip switch bench DIP 4 = ON, DIP 5 = OFF, DIP 6 = OFF



Input Source Video input signal type for video source connected to V4-Reverse. This **must** be set for correct image display.
The following video source signal types can be used:
CVBS video sources: **NTSC, PAL**
AHD video sources: **720p NTSC, 960p NTSC, 1080p NTSC, 720p PAL, 960p PAL, 1080p PAL**

Brightness Brightness

Contrast Contrast

Pos. Hl Horizontal image position

Pos. V Vertical image position

Trigger Method of selecting the V4-Reverse rear-view camera input.
"CAN" function with CAN bus connection. With the **"CAN"** setting, the system automatically switches to V4-Reverse for CVBS/AHD rear-view cameras when reverse gear is engaged. Requirements include the interface detecting reverse gear via the CAN bus.
"Wire" function with analogue connection. Selecting a rear-view camera connected to the V4-Reverse input via the **green Trig-Left wire** is possible with both the "Wire" and **"CAN"** settings. If an analogue (reversing signal) connection is to be used, it is recommended to set **"Wire"**.

Trig Priority Switching priority when switching signals are present for several inputs simultaneously (CAN bus or analogue +12 V triggers). The signal with the highest priority is displayed:
L-R-Rear: ***V1-Left*** → ***V2-Right*** → ***V4-Reverse***
Rear-R-L: ***V4-Reverse*** → ***V2-Right*** → ***V1-Left***

Guide Type Setting of 2 different angles for the guide lines for the rear-view camera

Dynamic guide lines	**Dynamic 1-6**
Fixed guide lines	**Fixed 1–6**
No guide lines	**OFF**

Guide-PosV	Vertical position of the guide lines	**00-69**
Guide L Pos.H	Horizontal position of the left guide line	**00-90**
Guide R Pos.H	Horizontal position of the right guide line	**00-121**
Max CURVE	Radius of the guide lines	**01-20**

External SW Can be selected via external keypad V4 Reverse
YES: *Factory video* → ***V1-Left*** → ***V2-Right*** → ***V4-Reverse*** → *Factory video*
NO: *Factory video* → ***V1-Left*** → ***V2-Right*** → *Factory video*

Start delay Start-up delay for the interface. This function is technically necessary for some vehicles, as failure to do so may result in malfunctions of the factory system (e.g. black screen, touchscreen issues). The following options are available (in seconds):
5s/6s/7s/8s/9s/10s/12s/15s/20s
Changing the default settings may cause malfunctions!

3 Operating the video interface

The external keypad can be used to switch between all active inputs.

- **Long press of the keypad (2–3 seconds)**

Pressing and holding the external keypad (2–3 seconds) switches from the factory video to the first activated interface video input. Each subsequent long press cycles through the activated interface video inputs until the last one is reached, at which point it switches back to the factory video. Deactivated inputs are skipped. If all inputs are activated via the corresponding DIP switches, the order is as follows:

*Factory picture → **V1-Left** → **V2-Right** → **V4-Reverse**** → *Factory picture*

***V4-Reverse** can only be selected via the external keypad if the "External SW" function is set to "Yes" in the **V4-Reverse** menu

- **Short press of the keypad (only possible if DIP 3 is set to ON)**

A short press of the external keypad switches from the current video mode to the front camera input **V3-Front** and ; a second short press returns to the previous video mode.

Note: Even if the keypad for switching between multiple sources is not required, it is strongly recommended that the keypad be connected and remain hidden on the interface. The keypad should then be installed in a 'non-pressable' position.

3.1 Optional: Operating the video interface via the "HDA-RC" remote control



"HDA-RC" remote control available as an option

Instead of the external keypad, the interface can also be operated using the optional "HDA-RC" remote control.* This allows you to select video/camera inputs directly and adjust settings more conveniently in the respective OSD menus.

* The remote control is compatible with all HDA and HDV interfaces that are marked with 'RC' at the end of the software version.

4 Specifications

BATT/ACC range	9V – 16V
Stand-by power drain	approx. 0.5mA
Power consumption	approx. 250mA @12V
Video input	0.7V - 1V (
) Video input signal types	CVBS/AHD
Signal standards CVBS/AHD	NTSC/PAL
Temperature range	-40°C to +85°C
Dimensions of video box	117 x 25 x 109 mm (W x H x D)

5 FAQ - Troubleshooting Interface functions - product-specific

Problem	Possible cause	Solution
Fault or no picture	Video input signal type for video source not defined in the OSD of the respective video input	See chapter*2.12 OSD menu settings* – Menu for the respective input

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6 FAQ - Troubleshooting Interface functions - general

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

Symptom	Possible 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.
	CAN-bus wires connected to CAN-bus in wrong place.	Refer to the manual where to connect 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 power connection of 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 5 of 8dip bench of video interface which inputs are enabled and switch to corresponding input(s).
	Setting of video signal type of active video input is not equal to video signal type of connected video-source.	Set the video signal type of the video source correctly in the OSD menu of the corresponding input.
	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 settings of video-interface.	Verify the vehicle-specific dip switch position in the instructions. If necessary, test different positions of the vehicle-specific dip switches. Perform a power reset after each change (briefly remove the black 10-pin micro-fit power socket once).
Inserted picture double or multiple 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.	(Only concerns video-sources with selectable output – e.g., DVD-Players, TV-Tuners, etc.) Set video source output fixed to PAL or NTSC. It is best to set all video sources to the same video signal type output.
	If error occurs only after source switching: Connected sources are not set to same video signal type output.	Set all video sources to the same video signal type output.
Inserted picture b/w.	Setting of video signal type of active video input is not equal to video signal type of connected video-source.	Set the video signal type of the video source correctly in the OSD menu of the corresponding input.

Symptom	Possible reason	Possible solution
Only on first inserted video activation after IGN on, the inserted picture is distorted.	Menu item *Trigger* of the corresponding video-input is set to *CAN-bus* though analogue signal triggering is used.	Open OSD-menu of corresponding video input and set the menu item *Trigger* to *Wire.*
Inserted picture qual. bad.	Picture settings have not been adjusted.	Use the 3 switches on interface-box or optional HDA-RC cable remote control to set the desired picture settings for the respective video source in the OSD menu of the interface.
Inserted picture size slightly wrong.		
Inserted picture position wrong.		
Camera input picture flickers.	Camera is being tested under fluorescent light (neon).	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.
Camera input picture black.	Camera power taken directly from reverse gear lamp.	Use relay or electronic filter to "clean" reverse gear lamp power. Alternatively, camera power can be taken from green wire CAM Power.
Camera input picture has distortion.		
Switching to inserted video does not work after IGN on or vehicle startup- temporary.	Interface has a start-up delay during which, after interface start-up for certain time, there is no switching to inserted video. Required to prevent the factory system from crashing.	In OSD menu of V4, default delay can be shortened time in menu item *StartDelay*, this might especially make sense on installations without connection to CAN-bus. Note: Too short *StartDelay* setting can cause (sporadically) black-screen of factory picture or loss of factory touch-screen control.
Not possible to switch video sources by OEM button.	Function not supported in this vehicle.	Use external keypad 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.
Interface does not switch to reverse camera input when reverse gear is engaged or does not switch to side camera input(s) when turn signal in on.	Video-input is not enabled.	Enable corresponding inputs (dips 1 to 5 of 8dip bench).
	CAN-bus of vehicle not fully compatible with interface. Function not supported.	Follow the manual for R-gear signal or turn signal from analogue signal.
	Menu item *trigger* in the OSD of the video-input was set to *Wire.*	Switch on corresponding input by external button or 12V to corresponding trigger input. Open OSD-menu of corresponding video input and set the menu item *Trigger* to *CAN bus.*
OSD-menu of interface cannot be accessed/opened.	No inserted video input of interface is active, factory picture is displayed.	Each video input of interface has its own OSD with its own settings. The OSD for each input can only be opened when the input is displayed.

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