Video inserter

HDV-SY4

Compatible with
Ford vehicles with Sync 4 infotainment
with horizontal 12inch or 13.2inch tablet monitor
and with Sync 4A infotainment
with vertical 12inch tablet monitor
VW vehicles with 13inch touch colour monitor

example

Attention!
Video signal type of each video source must be preset in OSD-menu of 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-input for side-cameras or additional after-market video-sources (e.g., USB-device, DVB-T2 Tuner, etc.)**
- **All inputs NTSC and PAL compatible**
  Supported AHD resolutions 720p NTSC (30Hz)**, 720p PAL** (25Hz)**, 960p NTSC** (30Hz)**,**
  960p PAL (25Hz)**, 1080p NTSC** (30Hz)**, 1080p PAL** (25Hz)
- **HDV-SY4 only: 1 HDMI-input for HD rear-view camera or additional HDMI-sources (e.g., IOS/Android, laptop, streaming stick, DVD-Player, DVB-T2 Tuner, etc.)**
  Supported HDMI resolutions 720p NTSC (60Hz)**, 720p PAL** (50Hz)**,**
  1080p NTSC (60Hz)**, 1080p PAL** (50Hz)
- **HDV-SY4 only: Analogue audio output for HDMI source**
- **Automatic switching to rear-view camera input while reverse gear is engaged**
- **Automatic front camera switching after reverse gear for 5, 10, 15 or 20 seconds**
- **Adjustable guide lines (fixed or movable) can be activated for rear-view camera (movable guide lines not available for all vehicles)**
- **Activatable PDC graphic (not available for all vehicles)**
- **Picture free during the car ride (only for inserted video-sources)**

Contents

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 (for example the MP3 menu of USB devices) or (rear-view) cameras' video when the vehicle is moving.

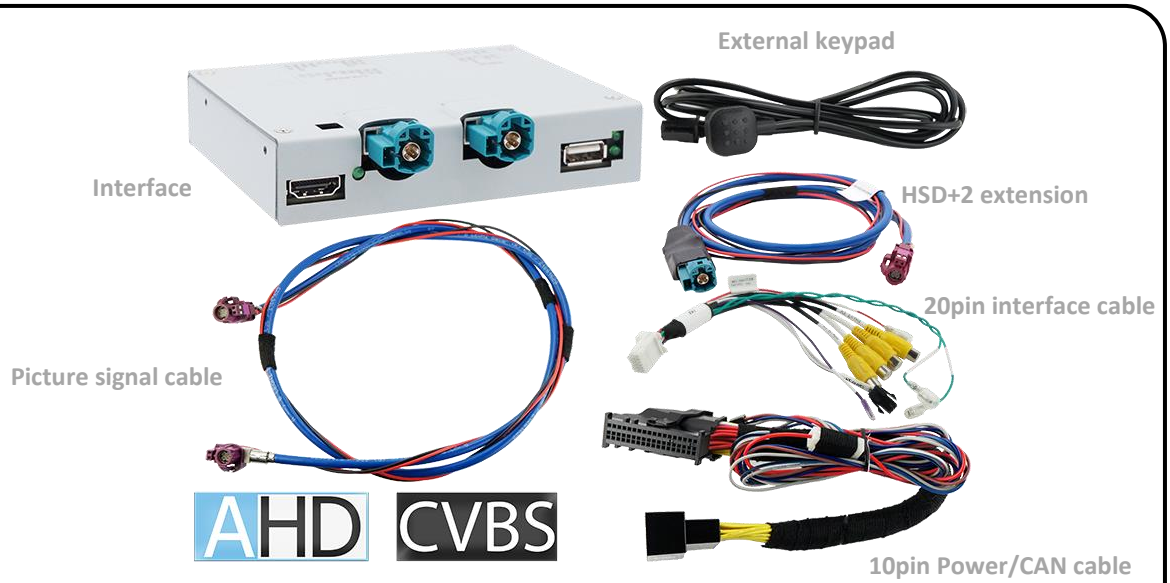
Changes/updates of the vehicle's software can cause malfunctions of the interface. Up to one year after purchase we offer free software-updates for our interfaces. To receive a free update, the interface has to be sent in at own cost. Wages for de- and reinstallation or other expenditures involved with the software-updates will not be refunded.

1 Prior to installation

Read the manual prior to installation. Technical knowledge is necessary for installation. The video interface's place of installation must be free of moisture and away from heat sources.

Before the final installation in the vehicle, 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



Take down the serial number of the interface and store this manual for support purposes: _____

1.2 Checking the compatibility of vehicle and accessories

Requirements

Brand	Compatible vehicles	Infotainments
Ford	Bronco from 06/2021, Focus from model year 2022, Kuga 3 Facelift from 06/2024, Mustang7 from 02/2024, Puma2 Facelift from 02/2024, Tourneo Custom 2 from 07/2023, E-Transit from 11/2020, Transit Custom 2 from 07/2023	SYNC 4 full version with APIM Module and horizontal 12 or 13.2inch tablet monitor
	Ranger from 11/2022*	SYNC 4A full version with APIM Module and vertical 12inch tablet monitor*
VW	T7 Transporter/Caravelle (TV - NEWTR) from 2025	Radio with 13inch touch colour display *No PDC display and external R-gear signal required.*

*****Not compatible with Sync4 with vertical 10.1inch tablet monitor. The RL4-SY3 is the appropriate interface for this.*

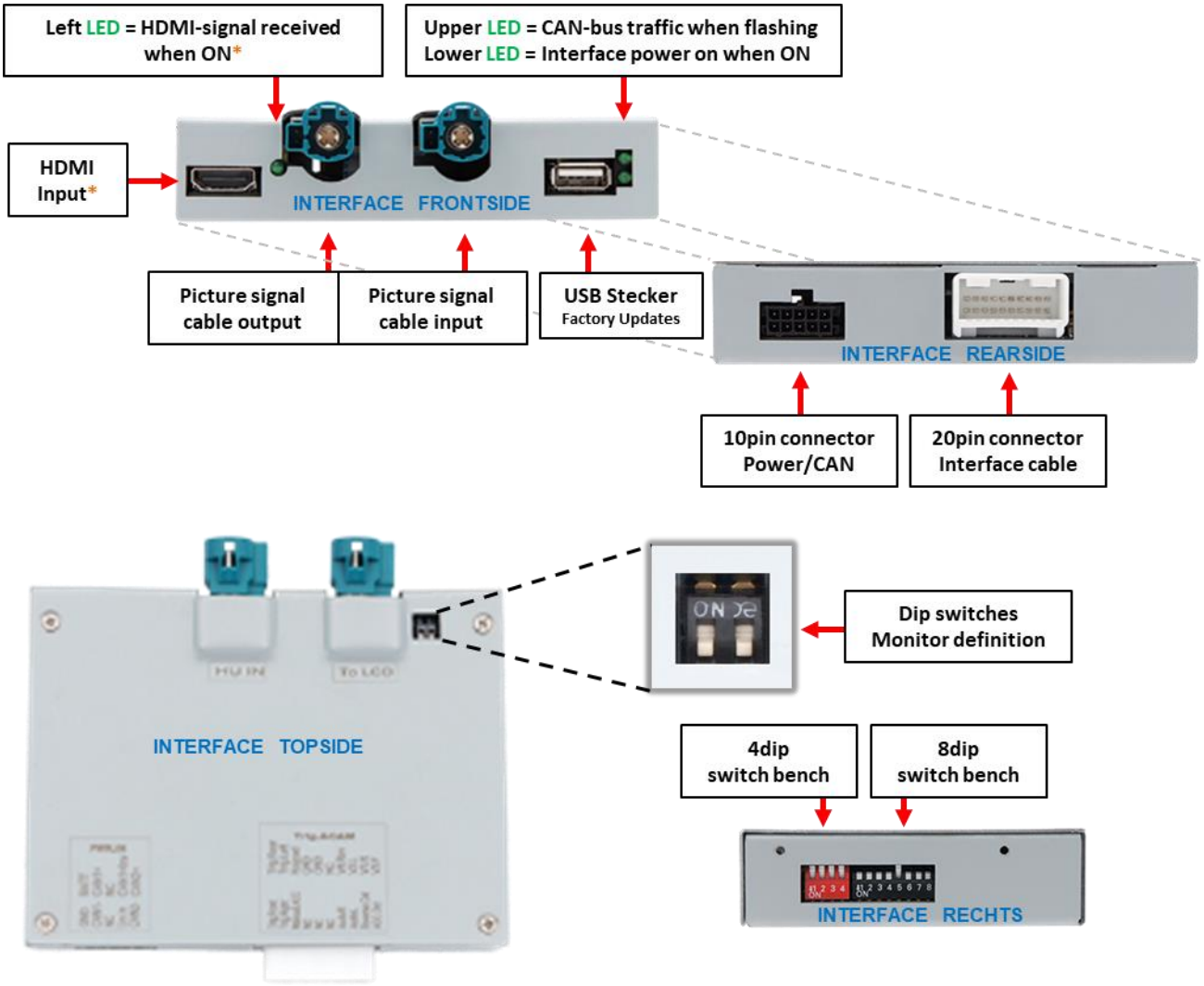
1.3 Limitations

Limitations

CAN-bus compatibility	CAN-bus compatibility of interface may to some vehicles have no or limited compatibility. This can show on installation as well as later. Interface and all its video-inputs can be operated with analogue trigger signals, without connection to vehicle CAN-bus. Yes, in this case, some features do not work, see chapter *2.4.2. Analogue connection without CAN-bus*.
Video only	Interface inserts **only video-signal**s into the infotainment. To insert audio signals a possibly existing factory audio-AUX-input or other optional products (e.g. FM-Modulator) must be used. For HDMI source, the audio is output via an analogue audio output (3.5mm jack socket).
Factory rear-view camera	Automatic switching to factory rear-view camera input is only possible while reverse gear is engaged. For deviating switching times optional accessories are required.
After market front camera	Front camera will automatically be switched to for 5, 10, 15 or 20 seconds (depending on menu setting) after disengaging the reverse gear. Manual switching to front camera is possible by external keypad.
Guide lines for rear-view camera and PDC	If the vehicle CAN bus is not fully compatible with the interface or if the connection is analogue, the moving guide lines and optical PDC display function cannot be used. When the rear-view camera picture is displayed with the PDC display superimposed, the correct PDC display – depending on the submenu in which the factory head unit is located – is not possible.

1.4 Boxes and connectors - interface

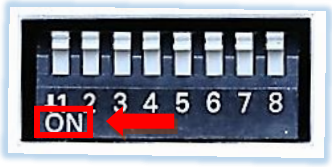
The interface converts connected after-market sources' video-signals into a video-signal compatible with the factory monitor. It can then be inserted, using separate trigger options. The interface also reads the vehicle's CAN-bus signals and uses them for own functions.



*** HDMI-input only available on HDV-SY4**

1.5 Settings - 8dip switch bench (interface functions)

Interface box, right side, black



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

Dip	Function	ON (down)	OFF (up)
1	Video 1 / V1-Left	enabled	disabled
2	Video 2 / V2-Right	enabled	disabled
3	Frontcamera / V3-Front	enabled *	disabled
4	Rear-view cam type (V4-Reverse)	after-market	factory or none
5	Connection type of After-market rear-view camera*	**HDMI***	V4-Reverse (FBAS/AHD)
6	HDMI-Input*	enabled	disabled
7	Picture position - for **vertical** monitors	lower half	upper half
	Picture position - for **horizontal** monitors	-	set to OFF
8	PDC	enabled	disabled

Power reset interface after each dip change to activate changes!

* The front camera will automatically be switched for 5, 10, 15 or 20 seconds after disengaging reverse gear (depending on OSD-menu setting).

* On **RL4-SY4-A**, dip 5 and dip 6 have no function. Set both **OFF**.

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

1.5.1 Video inputs V1-Left and V2-Right (dip 1-2)

With dip 1 (dip 2) = **ON**, the CVBS/AHD input **V1-Left** (**V2-Right**) for side-camera or other video-sources is enabled. Only enabled video inputs can be accessed – no matter whether automatically or manually switched. We recommend to enable only used inputs to avoid unwanted switching.

1.5.2 Front camera input V3-Front (dip 3)

With dip 3 = **ON** the interface switches to its CVBS/AHD front camera input **V3-Front** after disengagement of reverse gear. Additionally, manual switching to front camera input is possible by the external keypad (short press) from any video mode.

In the OSD-menu settings it is possible to set the automatic front camera display time from 5, 10; 15 or 20 seconds or shut it off. Therefore, it is also possible to connect a video-source other than from camera.

1.5.3 Rear-view camera settings (dip 4)

With dip 4 = **OFF**, the interface switches to factory picture while reverse gear is engaged, to display factory rear-view camera or factory optical park system picture.
With dip 4 = **ON**, while the reverse gear is engaged the interface switches to its CVBS/AHD rear-view camera input **V4-Reverse** (provided that dip 5 is set to **OFF**) or to its **HDMI**-input* (provided dip 5 and dip 6 are set to **ON**).

Note: **V4-Reverse** remains without function with HDMI rear-view camera (dip 5 = ON).

1.5.4 Rear-view cam connection type (dip 5)

With dip 5 = **ON**, the **HDMI**-input* will be used as rear-view camera input. Additionally, the **HDMI**-input* must be enabled with dip 6 = ON.
With dip 5 = **OFF**, the **V4-Reverse** input is used as rear-view camera input.

Note: Automatic switching to front camera for the pre-set time, after disengaging reverse, is working in both cases.

1.5.5 HDMI-input* (dip 6)

With dip 6 = **ON**, the **HDMI**-input* is enabled and can be used for various HDMI-sources (e.g., rear-view camera or 360° camera-system, smartphone, laptop, streaming stick, DVB-T2 tuner, etc.). For rear-view camera or 360° camera system, additionally set dip 5 = **ON**.
With dip 6 = **OFF**, the **HDMI**-input* is disabled.

1.5.6 Picture position on vertical 12inch monitors (dip 7)

Only for vertical 12inch monitors:

With Dip 7 = **ON**, the input picture is displayed on the **lower half** of the monitor.
With Dip 7 = **OFF**, the input picture is displayed on the **upper half** of the monitor.

Note: Dip 7 has no function on horizontal monitors.

1.5.7 PDC Graphic (dip 8)

With dip 8 = **ON**, the interface PDC-graphic will be enabled and shown picture-in-picture in combination with the rear-view camera image.
With dip 8 = **OFF**, the rear-view camera image is shown full-screen, without PDC-graphic.

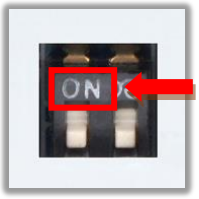
Note: On vehicles, where the PDC-graphic due to lack of CAN-bus compatibility cannot be used or is subject to post installation problems, the function cannot be used. In this case set dip 8 = **OFF**. When the rear-view camera picture is displayed with the PDC display superimposed, the correct PDC display – depending on the submenu in which the factory head unit is located – is not possible. **Please test the PDC display in all submenus beforehand to see whether this function or display is acceptable for the client!**

*** HDMI-input only available on HDV-SY4**

Power reset interface after each dip change to activate changes!

1.6 Settings - 2dip switch bench (monitor definition)

Interface box, top side, black



Attention: Opposite to other dip benches (8dip and 4dip), the 2dip position here is UP = ON and DOWN = OFF!

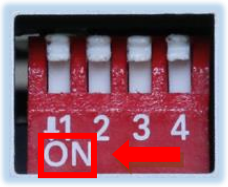
Monitor Größe	Dip 1	Dip 2
Alle Monitorgrößen	OFF	OFF

Attention!
Flip the dip switch very carefully with a micro tool.

If picture- or touch problems appear, try also the other dipswitch settings!
Power reset interface after each dip change to activate changes!

1.7 Settings - 4dip switch bench

Interface box, right side, red



Set dips according to below table.
Dip position UP = OFF and DOWN = ON.

Monitor size	Dip 1	Dip 2	Dip 3	Dip 4
12inch horizontal	ON	OFF	OFF	OFF
13.2inch horizontal	OFF	OFF	OFF	OFF
12inch vertical	OFF	ON	OFF	OFF

Power reset interface after each dip change to activate changes!

2 Installation

For installation, first switch off the ignition and disconnect the vehicle's battery following the instructions of the vehicle manufacturer regarding battery disconnection! If disconnecting battery is not suggested, enable vehicle sleep-mode (hibernation mode).
In case the sleep-mode does not succeed, the disconnection of battery can be done with a resistor lead.

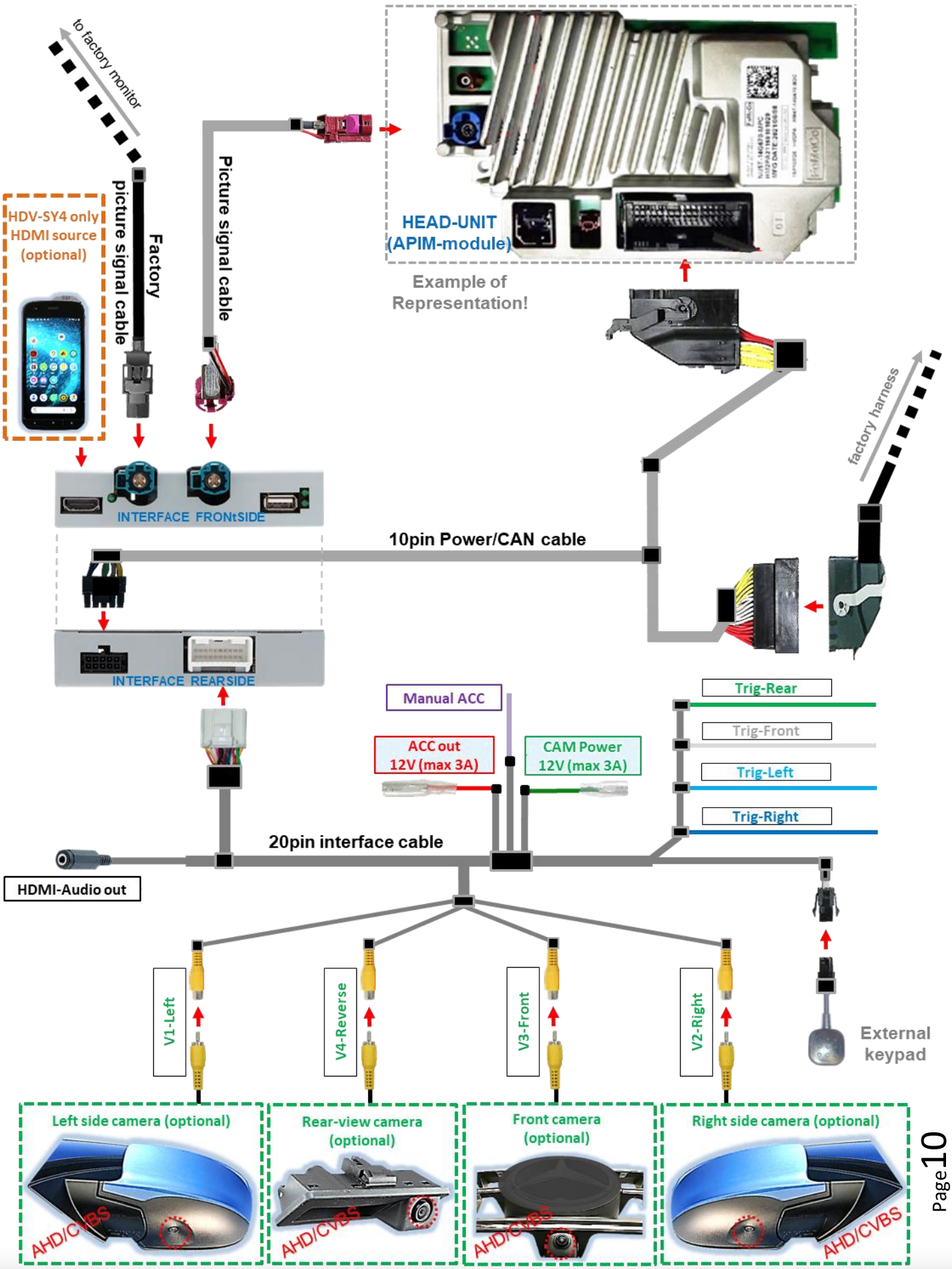
Before final installation, a test-run of interface and all connected devices is recommended to ensure compatibility of the complete installation. Due to at any time possible changes in the vehicle manufacturers' productions, incompatibilities can never be ruled out.

As on any installation of retrofit equipment, a stand-by test is necessary after installation to ensure that the retrofit products switch off after the vehicle enters sleep mode.

2.1 Place of connection

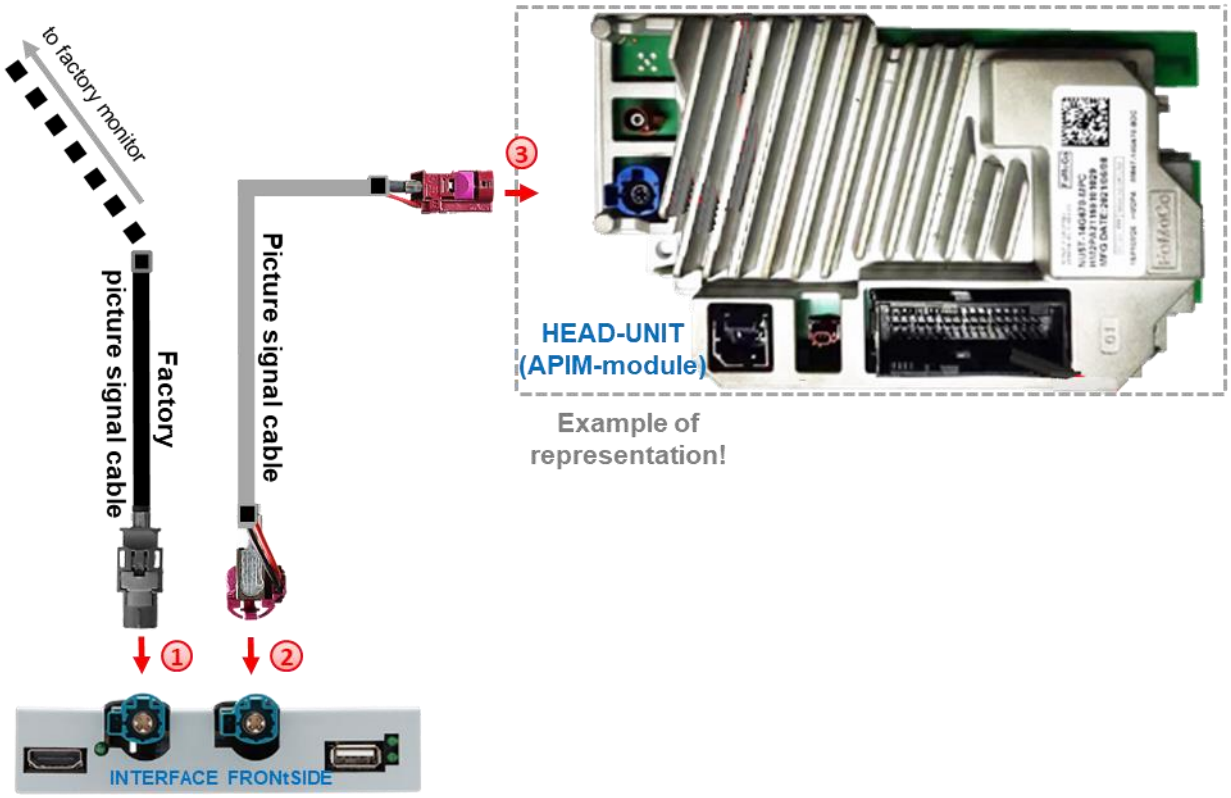
The video-interface has to be connected at the head-unit's rear side (APIM module). The APIM module is located behind the glove compartment.

2.2 Connection schema



2.3 Connection - picture signal cable

Remove head unit (APIM module) - **the APIM module is located behind the glove compartment.**



1 Disconnect the female HSD+2 connector (colours may vary) of the factory picture signal cable at the rear-side of the head unit (APIM module) and connect it to the waterblue male HSD connector „**TO LCD“** of the interface.

To extend the factory picture signal cable, the HSD+2 extension cable CAB-HSD2-MF100WB is included in the scope of delivery!

2 Connect the **bordeaux** angled female HSD+2 connector of the picture signal cable to the waterblue male HSD+2 connector „**HU IN“** of the interface.

3 Connect the not-angled **bordeaux** female HSD connector of the picture signal cable to the male HSD+2 connector of the head unit.

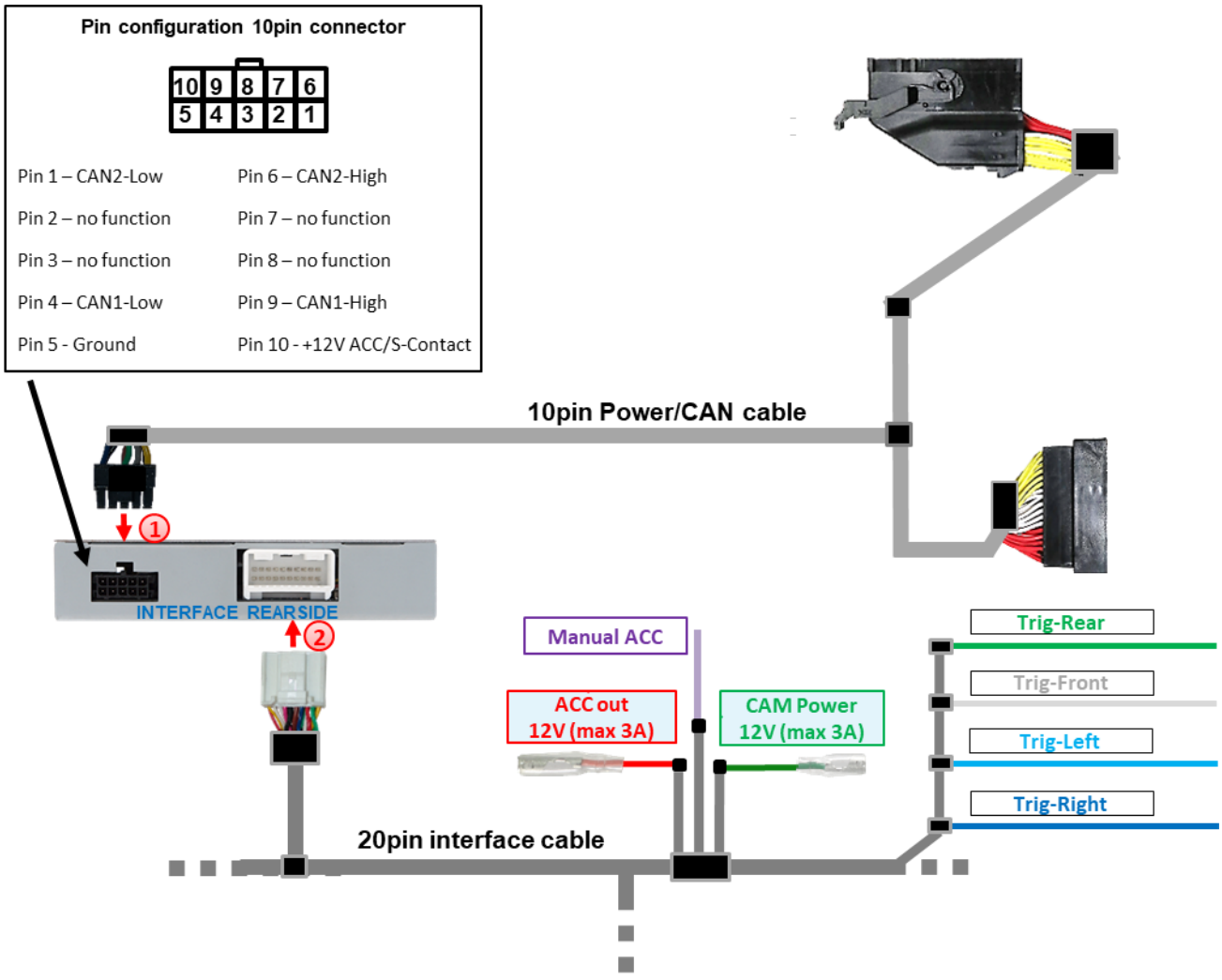
Note: Depending on the installation conditions, the enclosed picture signal cable may also be mounted upside down, concerning it’s HSD connectors. However, it‘s connection must only be made at the head unit!

2.4 Connection - harnesses, power supply and CAN-bus or analogue without CAN-bus

The interface can be integrated via CAN-bus as well as operated in analogue mode without CAN-bus connection.
When integrated via CAN-bus, the interface is switched on by the vehicle CAN-bus and R-gear signal and turn signals are usually recognized. In some vehicles also driving-path lines and optical PDC can be displayed, using CAN-bus steering signals and parking sensor data.

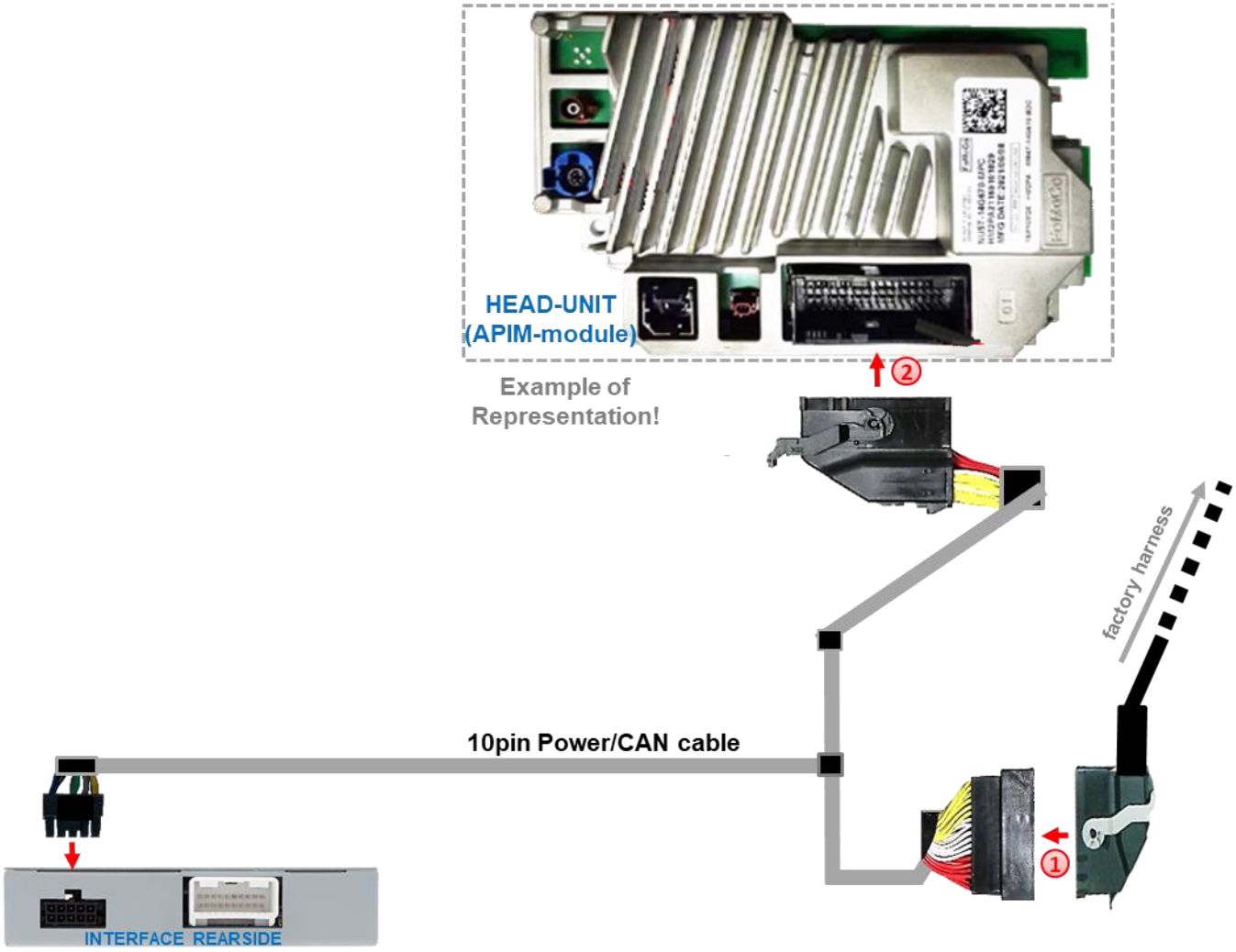
Exceptionally, the CAN-communication is not (fully) compatible. If after connection of **10pin power/CAN cable** with ignition on, no interface LED is on, the analogue connection described hereinafter must be made. Also, to avoid possible afterwards CAN-bus incompatibility, an analogue connection is also possible. Thereby the interface must be switched on as well as switched over to its inputs by +12V switch inputs.

The display of movable guide lines for rear-view camera is omitted with analogue connection.



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

2.4.1 Connection with CAN-bus

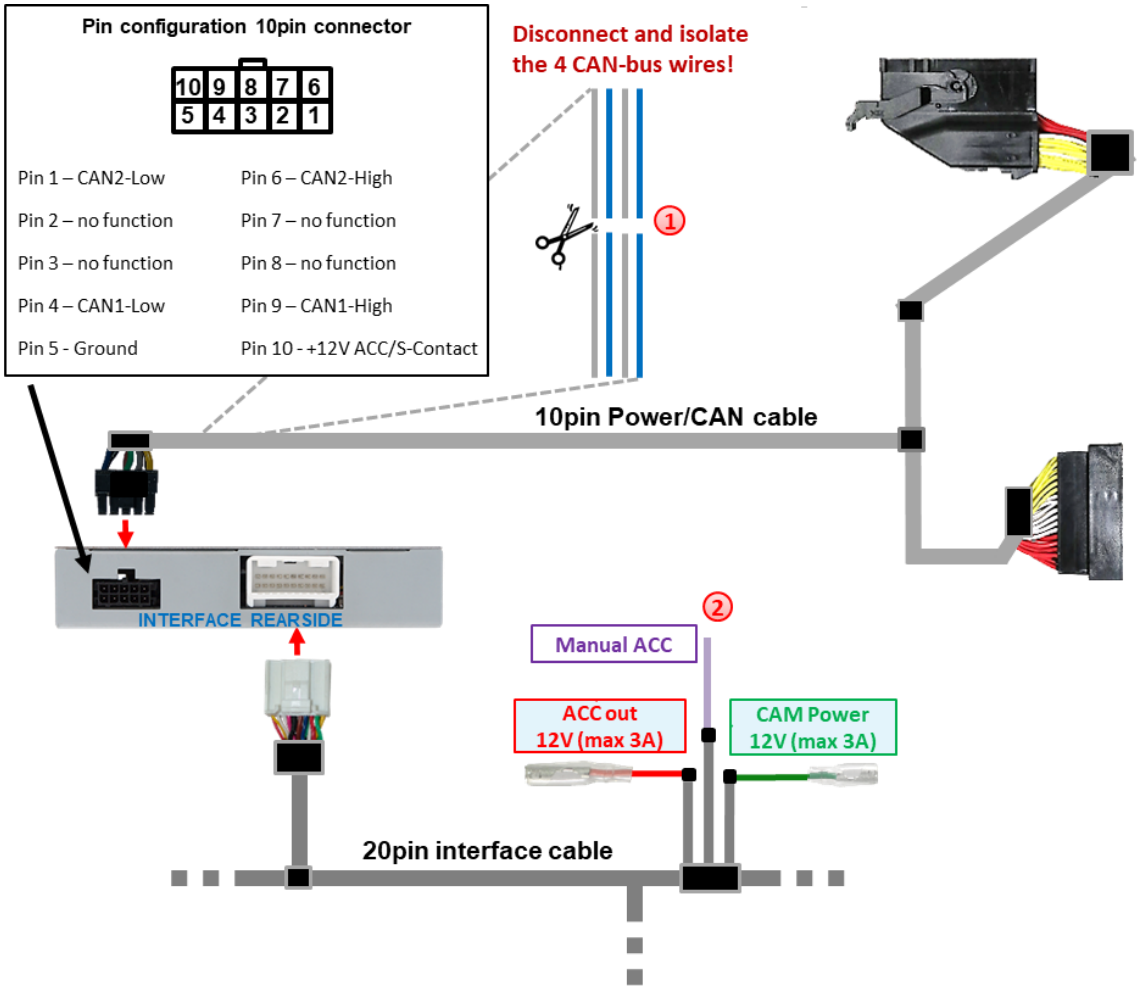


1. Disconnect the 54pin connectors of the vehicle harness at the rear-side of the head unit (APIM module) and connect them to the male 54pin connector of the 10pin power/CAN cable.
2. Connect the opposing female 54pin socket of the 10pin Power/CAN cable to the previously become free male 54pin connector of the head unit.

Attention!
Exceptionally, the CAN communication may not succeed in all vehicles. If, after connecting the 10pin power/CAN cable, no interface LED lights up while ignition is turned on, the analog connection described below must be made.

2.4.2 Analogue connection without CAN-bus

With analogue connection, the four CAN wires of the 10pin power/CAN cable are not connected - for this, the four wires of the 10pin power/CAN cable must be disconnected!



1 Disconnect and isolate the 4 CAN bus wires (**grey**, **blue**, **grey**, **blue**) of the 20pin interface cable about 4-5 cm behind the black connector.

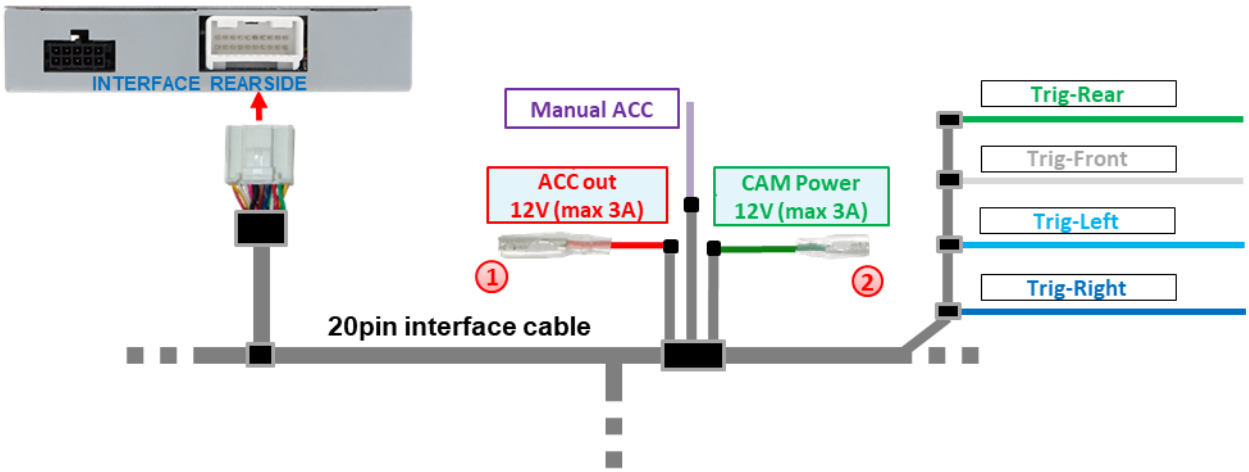
2 Connect **purple wire Manual ACC** of 20pin interface cable to **+12V S-contact terminal 86s or ACC terminal 15r** of vehicle (e.g., cigarette lighter, glove compartment illumination).

Notes

- Only as long as the interface is switched on via +12V on **Manual ACC**, the monitor can show picture. Otherwise, also the factory picture is black.
  When selecting the switch-on signal, please check whether the factory picture is available in all desired operating states.
- With analogue connection, driving-path lines and PDC cannot be displayed.
- With analogue connection of interface (without CAN-bus), the connection of rear-view camera and side-cameras must also be made analogue.
  See chapters:
  2.6.2 Case 2: Reverse signal from analogue signal
  2.8.2 Case 2: Turn signal from analogue signal

2.5 Power supply outputs

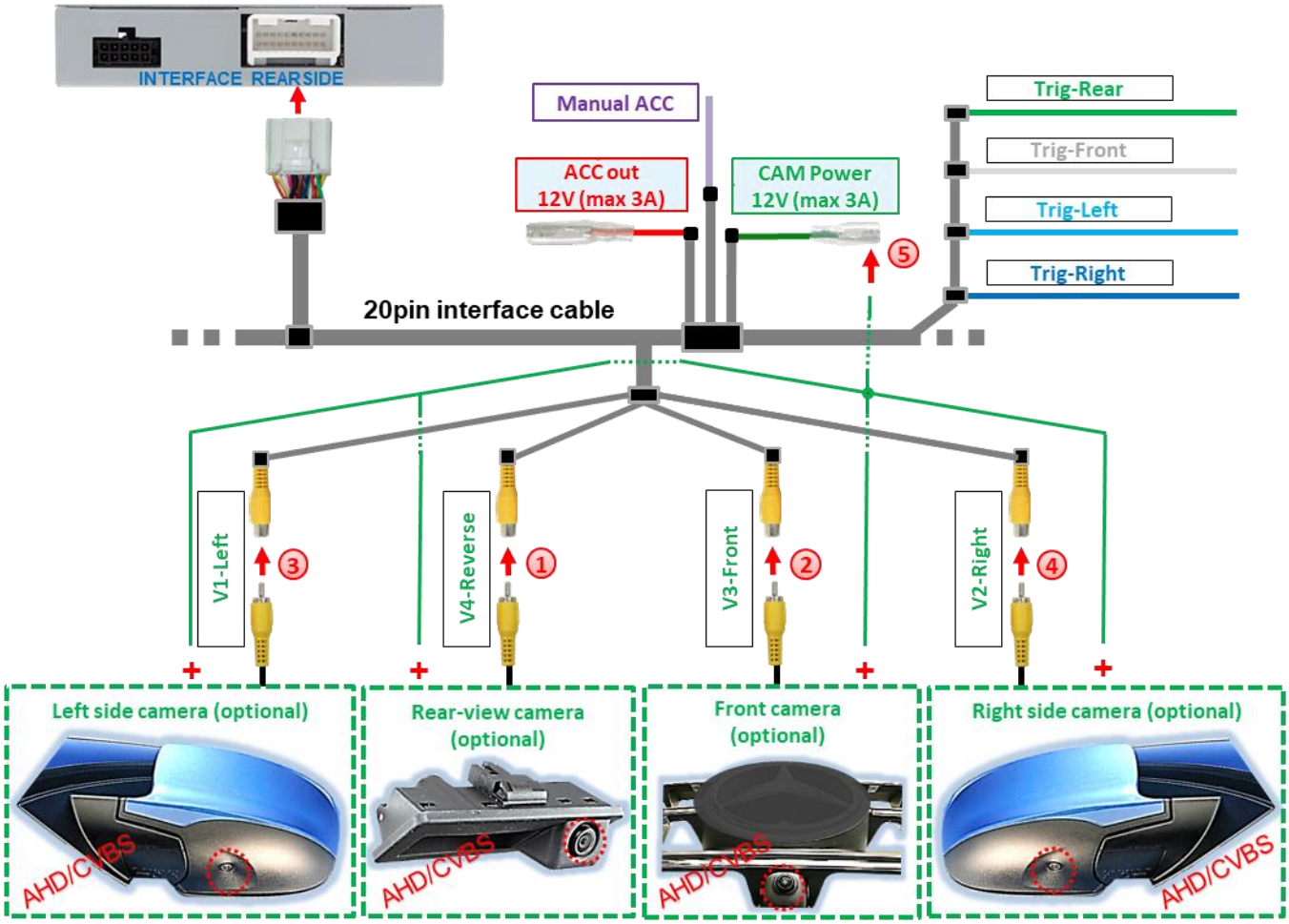
The two **red** and **green** power supply cables **ACC out 12V (max 3A)** and **CAM power 12V (max 3A)** of the **20-pin interface cable** can be used either as ACC power supply for **external video-sources** connected to the inputs **V1-Left**, **V2-Right**, **V3-Front or HDMI**-input* (e.g., iOS/Android devices, laptop, streaming stick, DVB-T2 tuner), or as power supply for the **after-market cameras** connected to the **V1-Left**, **V2-Right**, **V3-Front**, **V4-Reverse** or **HDMI**-input* (e.g., rear-view, front and side-cameras).



1. **External video-sources** (no cameras) can be supplied with power via the red power supply cable **ACC out 12V (max 3A)** of the **20pin interface cable**. The cable carries +12V ACC trigger out power **permanently** while interface is powered *(see following chapters for connection)*.
2. The power supply for **after-market cameras** (e.g., rear-view, side and/or front camera) can be supplied by the green power supply cable **CAM power 12V (max 3A)** of the **20pin interface cable**. The cable carries **+12V trigger out power** exclusively as long as any of the camera inputs is shown, regardless of whether the switching is by vehicle CAN-bus or by trigger wires *(see following chapters for connection)*.

*** HDMI-input only available on HDV-SY4**

2.5.1 Connection and power-supply - video-sources rear-view camera, front camera and 2 side-cameras

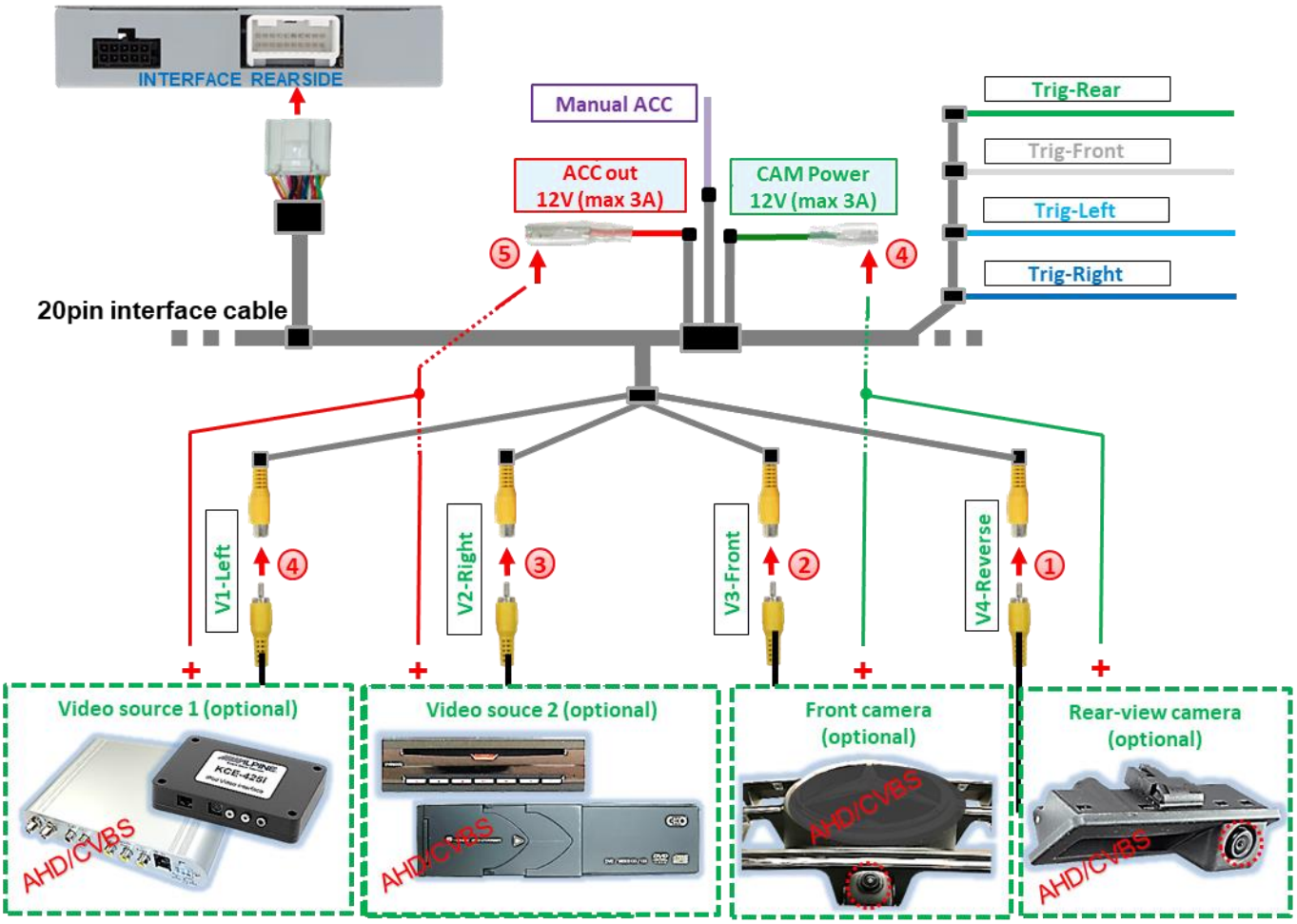


1. Connect male RCA connector of rear-view camera to female RCA connector **V4-Reverse** of **20pin interface cable**.
2. Connect male RCA connector of front camera to female RCA connector **V3-Front** of **20pin interface cable**.
3. Connect male RCA connector of left side-camera to female RCA connector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

Note: The type of camera switching (by CAN-bus or trigger cables) can be preset in the OSD-menu settings individually for each input.

Attention!
Video signal type of each video-source must be preset in OSD-menu of corresponding video-input.

2.5.2 Connection and power-supply - video-sources rear-view camera, front camera and 2 video-sources



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

Note: The type of camera switching (by CAN-bus or trigger cables) can be preset in the OSD-menu settings **individually** for each input.

Attention!
Video signal type of each video-source must be preset in OSD-menu of corresponding video-input.

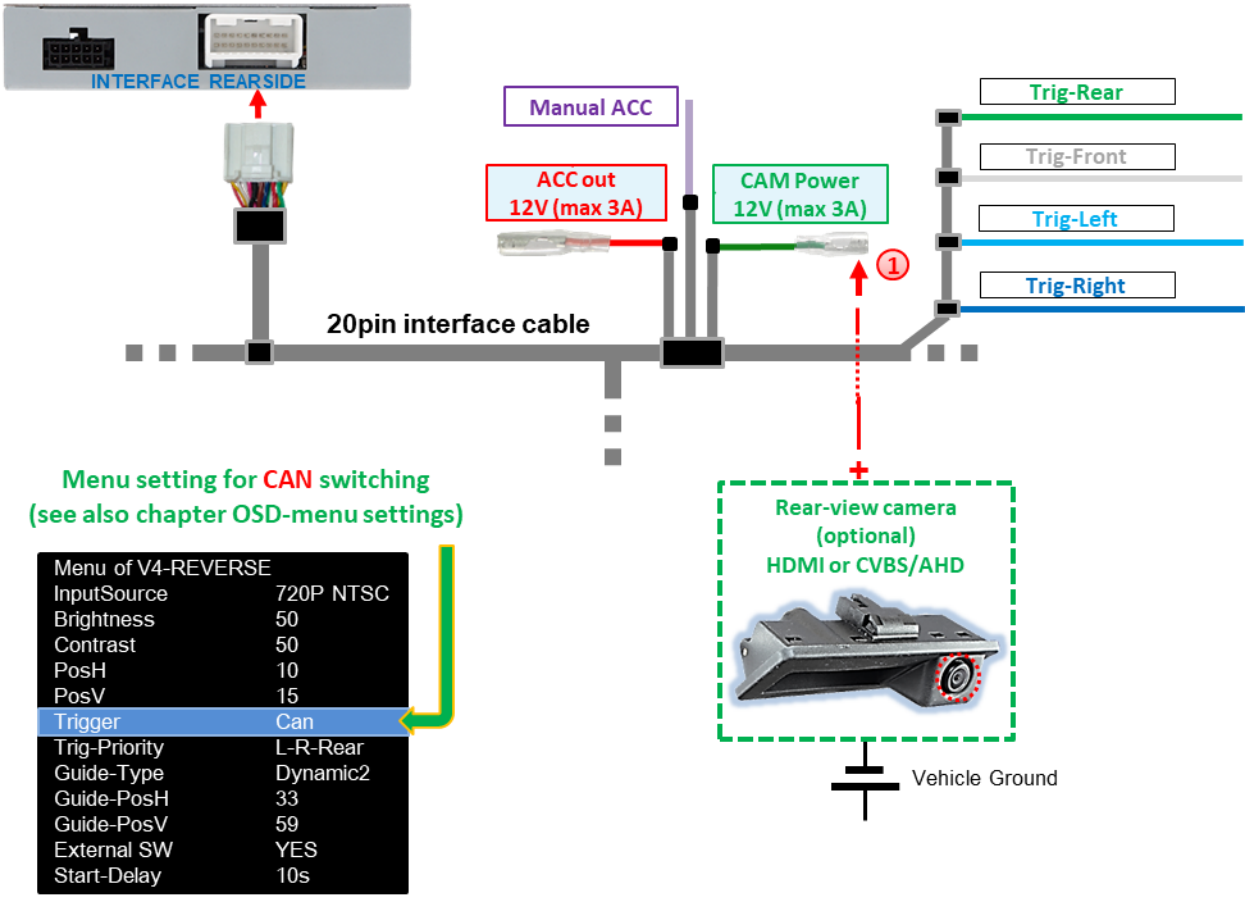
2.6 After-market rear-view camera

Automatic switching to rear-view camera is possible by CAN-bus or by analogue reverse signal.

2.6.1 Case 1: Reverse signal by CAN-bus

Basic requirement is that the interface is connected to CAN-bus. Furthermore, vehicle CAN-bus reverse signal and its detection by the interface must be compatible. If so, interface supplies +12V on **green wire CAM power 12V (max 3A)** of **20pin interface cable** while reverse gear is engaged and interface automatically switches to rear-view camera input **V4-Reverse** or **HDMI**-input*.

See also chapter 1.5 Settings - 8dip switch bench (interface functions).



1 The +12V (max. 3A) power supply for the rear-view camera can be taken from the **green wire CAM power 12V (max 3A)** of the **20pin interface cable**, as it carries voltage only for the time of camera input activation (some cameras are not continuously current-stable).

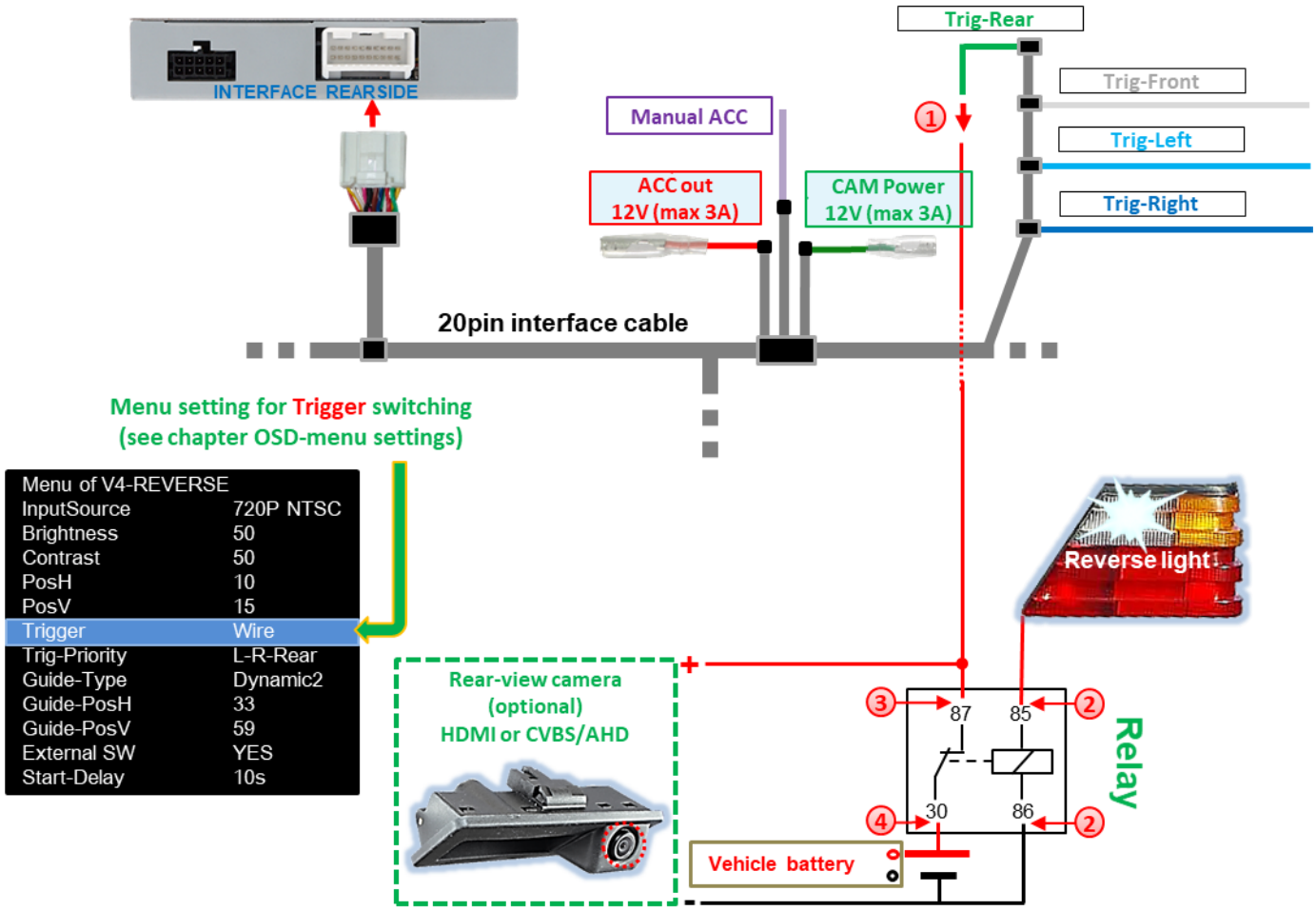
Notes

- If **HDMI**-input* is defined as rear-view camera input by dip 5, **V4-Reverse** input remains without function!
- If reverse gear detection of interface by CAN-bus does not work, reverse gear signal has to be connected analogue.

*** HDMI-input only available on HDV-SY4**

2.6.2 Case 2: Reverse signal from analogue signal

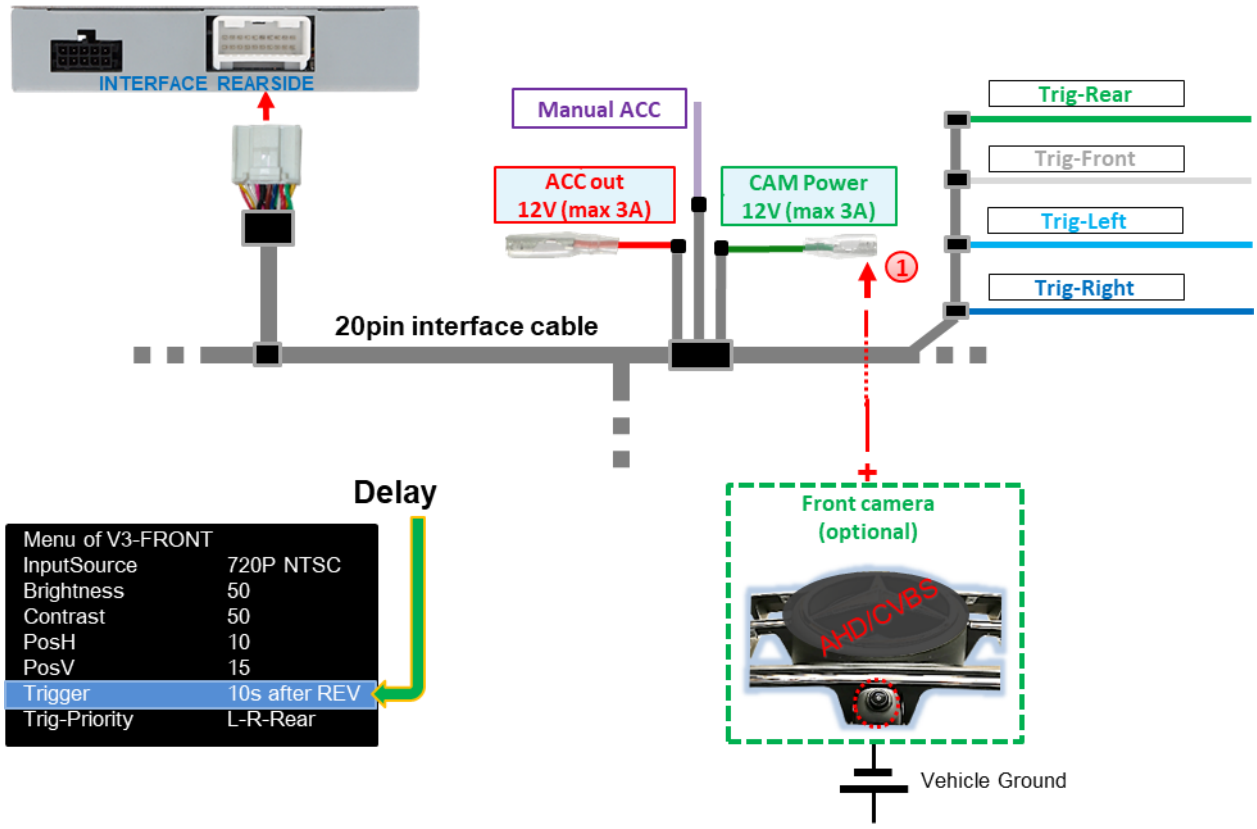
When connected the interface without CAN bus or when connected with CAN bus, if reverse gear is engaged and the interface does not provide +12V on the **green wire CAM Power 12V (max 3A)** of the **20pin interface cable** (not all vehicles are compatible), an external switching signal from reverse gear light is required. As the power supply of reverse gear light is not voltage-stabile all the time, a normally open relay (e.g., AC-MR-312 or AC-MR-201) or filter (e.g., AC-PNF-RVC) is required. The diagram below shows the connection with relay.



1. Connect **green wire Trig-Rear** to output connector (87) of relay.
2. Connect the power cable of vehicle reverse light to relay coil (85) and vehicle ground to relay coil (86).
3. Connect output connector (87) of relay to power cable of rear-view camera, additionally to **green wire Trig-Rear**.
4. Connect stabile and permanent +12V to input connector (30) of relay.

*** HDMI-input only available on HDV-SY4**

2.7 After-market front camera



1 The **green wire CAM power 12V (max 3A)** can be used to supply power to front camera (and all other cameras connected to the video inputs), as it only carries current for the duration of any camera activation (some cameras are not continuously current-stable). Requirement is dip 3 = **ON** (black 8dip switch bench). Then **green wire** carries +12V (max 3A) as power supply for the front camera as long as the front camera input is displayed.
The time of display delay can be selected individually for **5**, **10**, **15** or **20** seconds in the front camera OSD-menu settings.

Switching to front camera after disengaging reverse gear for the time set in the OSD-menu, takes place both, with connection by vehicle CAN-bus and with analogue connection of the rear camera.

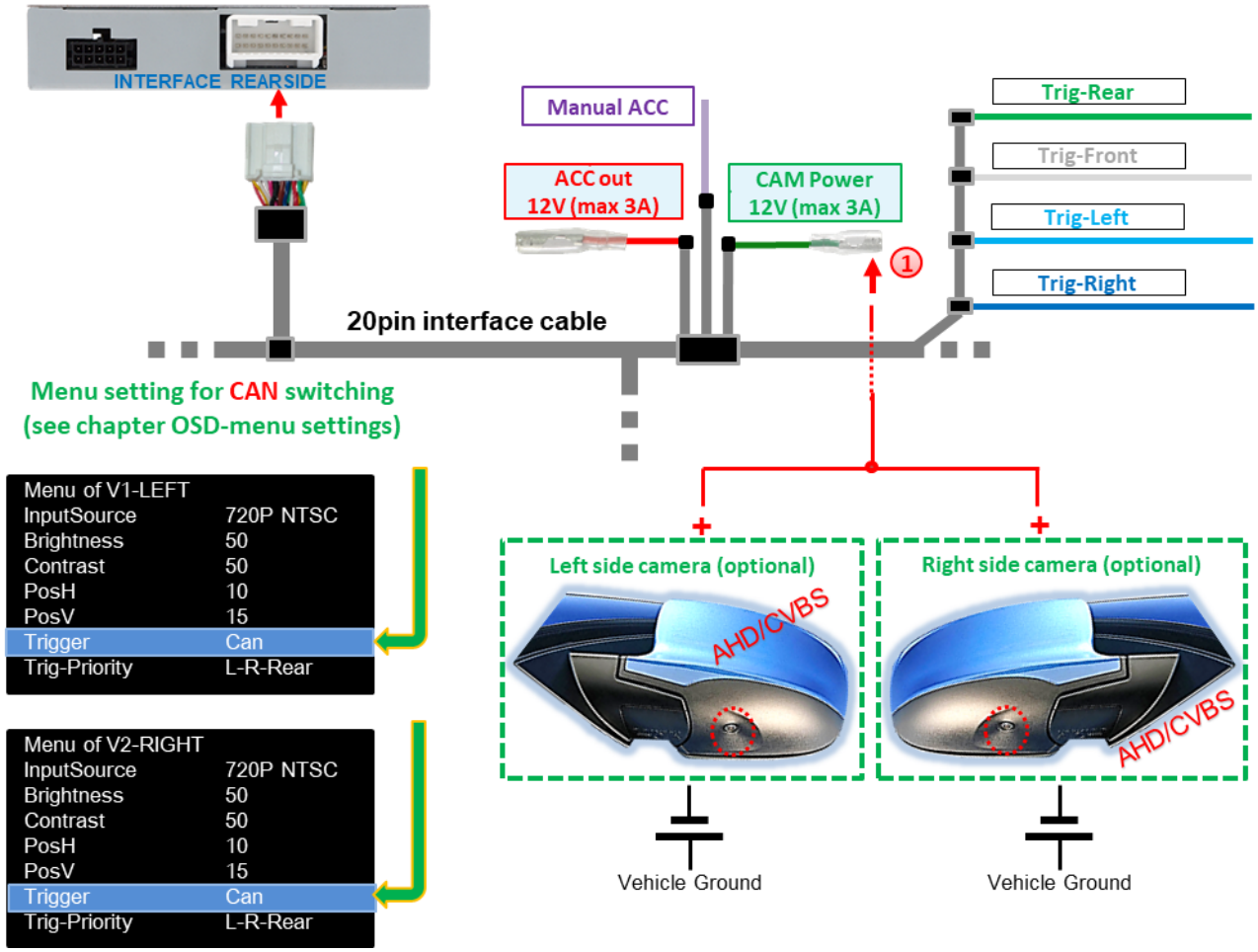
Note: In addition, manual switching to front camera input (short press) is possible by external button from any image mode *(see chapter 3 Interface operation).*

2.8 After-market side-cameras

Side-cameras can be connected with switching by CAN-bus or analogue signbals.

2.8.1 Case 1: Turn signal from CAN-bus

Basic requirement is that the connection is made with CAN-bus. Furthermore, vehicle CAN-bus reverse signal and its detection must be compatible with the interface. If so, interface supplies +12V on **green wire CAM power 12V (max 3A)** of **20pin interface cable** for the duration of turn signal operations.

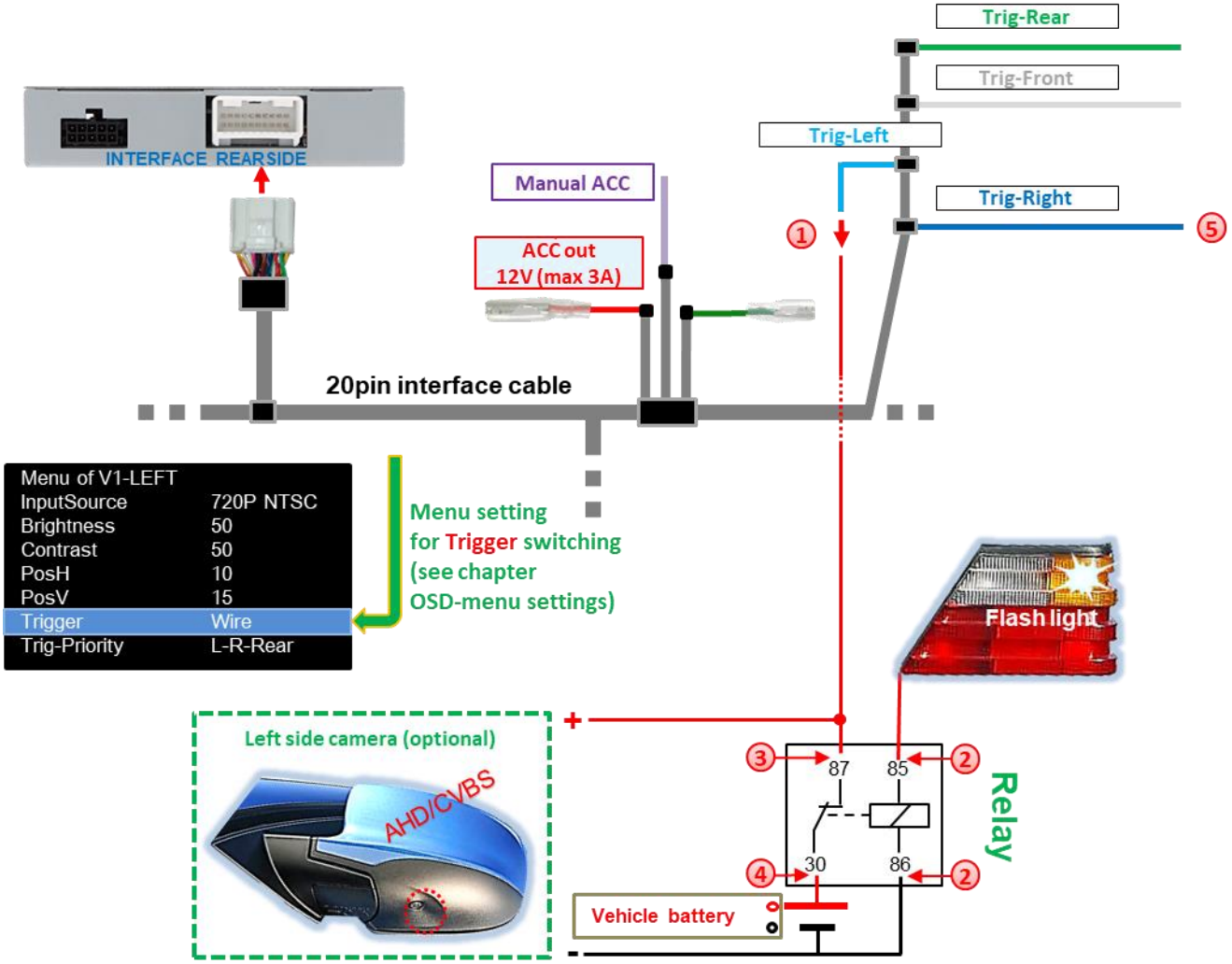


1 Power supply for side-cameras should be connected to **green wire CAM power 12V (max 3A)** of **20pin interface cable**, as this cable is only powered during camera activation (some cameras are not continuously current stable).

Note: If turn signal detection of interface is not compatible with the vehicle CAN-bus, the turn signals must be connected analogue.

2.8.2 Case 2: Turn signal from analogue signal

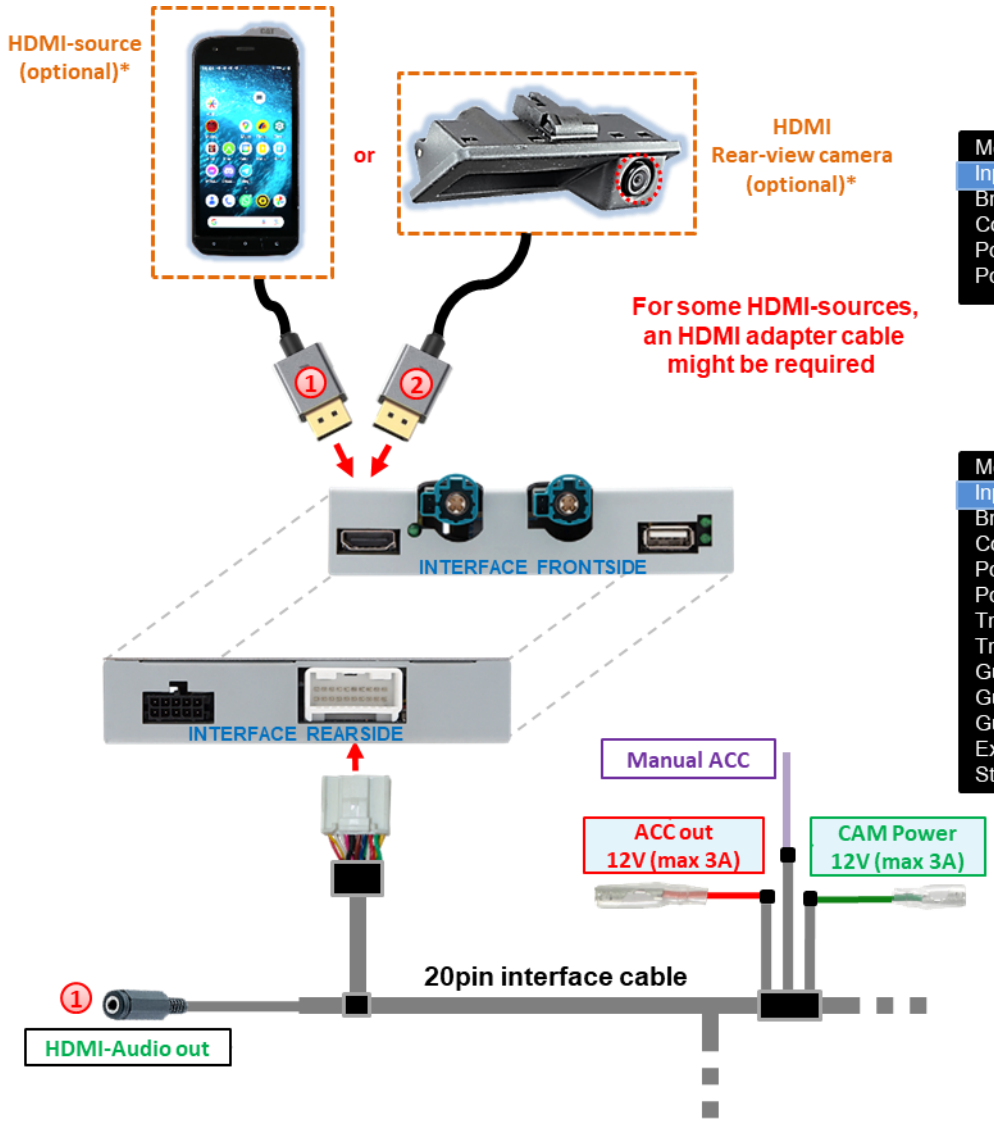
When the interface is connected without CAN bus or when the interface is connected with CAN bus and the turn signals from the vehicle CAN bus are not recognised, the analogue switching is possible the two +12V trigger input wires **Trig-Left** and **Trig-Right**.
For switching to the side-camera inputs, an external switching signal from the turn signal bulb is required. Since the turn signal may contain electronic interference, for each input, a normally open relay (e.g., AC-RW-1230 with wiring AC-RS5) or a noise filter (e.g., AC-PNF-RVC) is required.
The diagram below shows the connection of a normally open relay.



1. Connect **light blue wire Trig-Left** to output connector (87) of relay.
2. Connect power-cable of left turn signal to coil (85) of relay and coil (86) of relay to vehicle ground.
3. Connect output connector (87) of relay to power cable of rear-view camera, additionally to **light blue wire Trig-Left**.
4. Connect stabile and permanent +12V to input connector (30) of relay.
5. Same connection applies to right side-camera just the **dark blue wire Trig-Right**.

2.9 HDMI rear-view camera or other HDMI-source (only HDV-SY4)

The HDMI-input* of the interface can generally be used for any video-source with HDMI-output, connected to it, e.g., rear-view camera, 360° camera-system or other video-source such as smartphones, laptop, streaming stick, DVB-T2 tuner, etc.



Picture settings of HDMI-menu

Menu of HDMI	
InputSource	AutoDetect
Brightness	50
Contrast	50
PosH	35
PosV	00

Picture settings of HDMI-menu for rear-view camera

Menu of HDMI-REV	
InputSource	AutoDetect
Brightness	50
Contrast	50
PosH	35
PosV	00
Trigger	Can
Trig-Priority	L-R-Rear
Guide-Type	Dynamic2
Guide-PosH	20
Guide-PosV	46
External SW	YES
Start-Delay	10s

1. If an optional HDMI video-source (e.g., smartphone, laptop, etc.) is connected to the HDMI-input*, the video shown on the display of the HDMI-source will be mirrored on the vehicle monitor. The video-signal from display-free sources (e.g., streaming stick, DVD-Player, DVB-T2 Tuner, etc.) will be displayed on the vehicle monitor. The power supply for the video-source can be taken from **red wire ACC out 12V (max 3A)**.
Received audio signals will only be supplied by the female 3.5 mm jack connector **HDMI-Audio out*** of the 20pin interface cable. *(See following chapter 2.10 Audio-insertion.)*

2. If a rear-view camera or 360° camera-system is connected to the HDMI-input* (switched to by CAN-bus or analogue), the image displayed while reverse gear is engaged, and the image of a front camera connected to **V3-Front** is also displayed for the preset time when reverse gear is disengaged. Power supply can be taken from **green wire CAM power 12V (max3A)**.

*** HDMI-input only available on HDV-SY4**

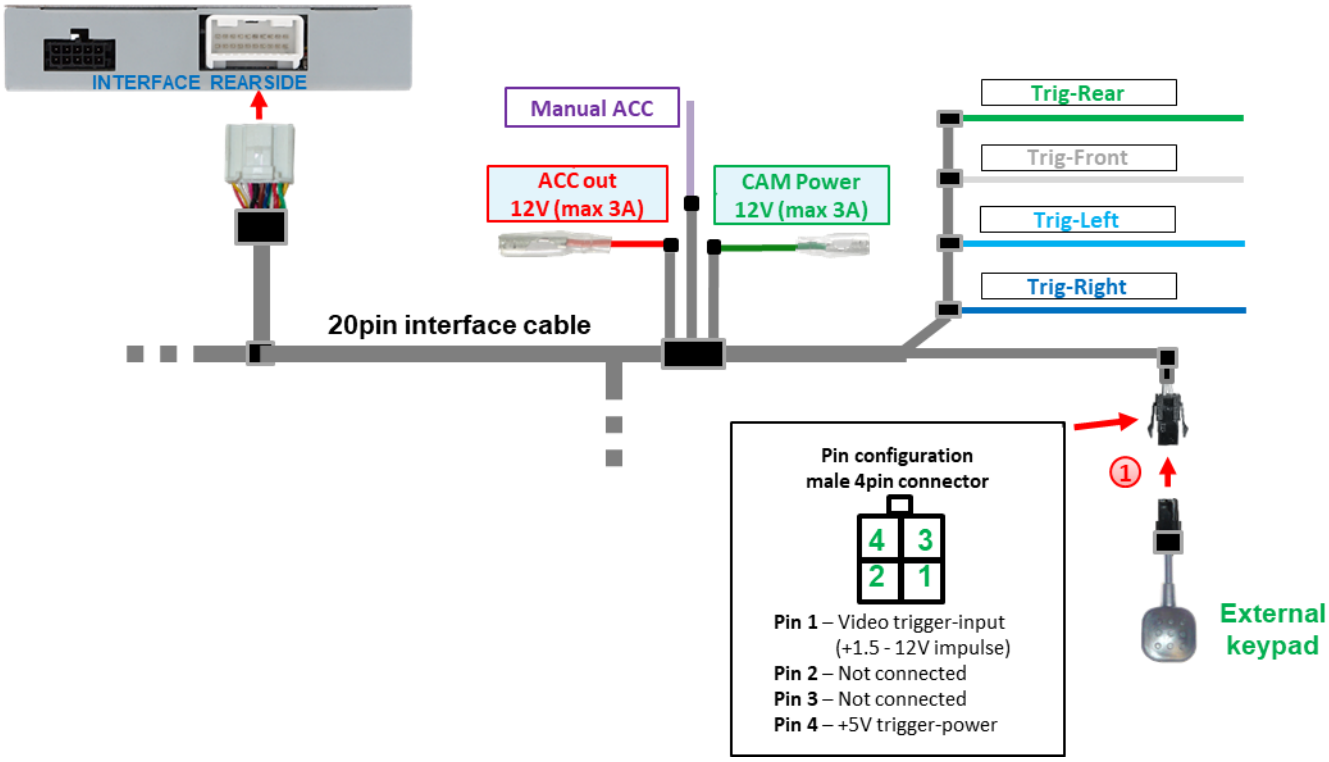
2.10 Audio-insertion

The interface can only insert video-signals into the factory infotainment.
Audio signals of the **HDMI**-input* are supplied through the 3.5 mm female jack connector **HDMI-Audio out*** of the interface. For all AV-sources connected to the interface, their audio output must be connected factory AUX input or an optional audio-inserter (e.g. FM modulator). If several AV-sources are connected to the infotainment, an audio-switch might be required additionally.

Inserted video-signal can be switched to simultaneously to any audio mode of the factory infotainment.

*** HDMI-input only available on HDV-SY4**

2.11 Connection - Interface and external keypad



1 Connect female 4pin connector of keypad to male 4pin connector of 20pin interface cable.

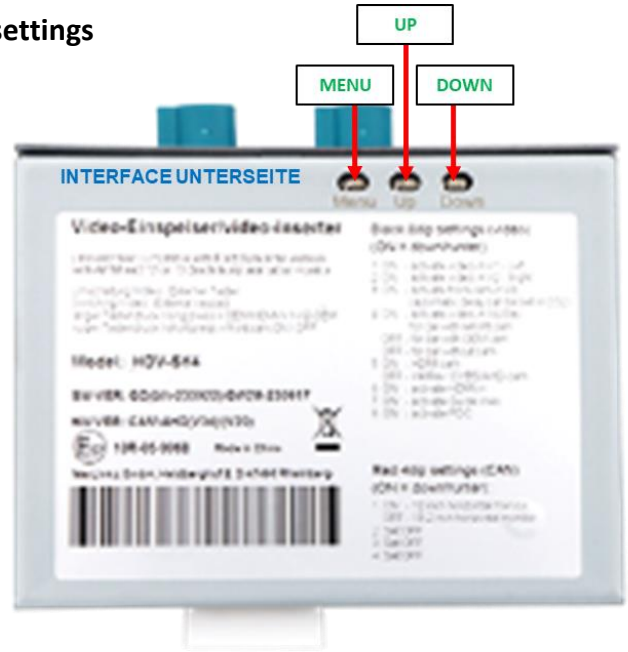
Note: We recommend to install the external keypad for possible support reasons even if not required for customer needs. Make sure the external keypad is not installed “pressed” then.

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

Remote control ‘HDA-RC’
optionally available

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

2.12 OSD-menu settings



Attention!
Video signal type of each video-source must be preset in OSD-menu of corresponding video-input.

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

The individual OSD-menu of every video input is only accessible when this input is displayed, regardless of whether a video-source is connected.

The following setting options are available in the individual OSD-menus of the 5 video inputs:

Menu of V1-Left (V2-Right)

8dip switch bench 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-signal type for video-source(s) connected to **V1-Left (V2-Right)**.
This setting **must** be preset for correct video playback.
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 picture position

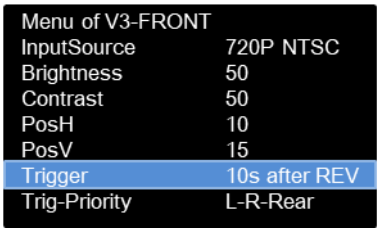
Pos. V Vertical picture position

Trigger Switching type of video input **V1-Left (V2-Right)**.
"CAN"-function for side-cameras. Switching to video input **V1-Left (V2-Right)** when left (right) turn signal of vehicle is activated. Requirement is, that the turn signal is recognised by the interface from vehicle CAN-bus. Manual switching to this input by external button does not work with this setting.
"Wire"-function for side-cameras or other video-sources without CAN-bus.
The video input **V1-Left (V2-Right)** is switched to exclusively by **light blue** (**dark blue**) wire **Trig-Left** (**Trig-Right**) or manually by the external keypad.

Trig-Priority Switching priority when switching signals are present for multiple 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 of V3-Front

8dip switch bench dip 3 = ON



Input Source Video-signal type for video-source(s) connected to **V3-Front**.
This setting **must** be preset for correct video playback.
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 picture position

Pos. V Vertical picture position

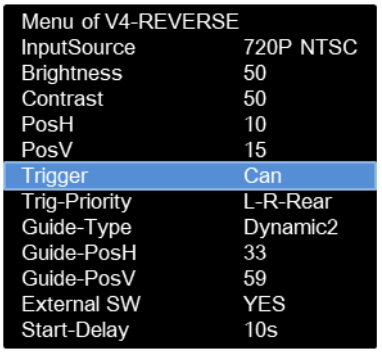
Trigger Switching type and front camera duration settings for video input **V3-Front**.
"Delay"-function for front camera. The **"delay"** setting determines the automatic switching to front camera input after reverse gear is disengaged, as well as its display duration on the display. Adjustable values are 5s after REV, 10s after REV, 15s after REV, 20s after REV.
"Wire"-function for other video-sources. If another video-source, instead of a front camera, is connected to **V3-Front** input select **"Wire"**. This shuts off the **"delay"**-function and the input can be switched to merely by white wire Trig-Front or manually by external keypad.

Trig-Priority Switching priority when switching signals are present for multiple 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 of V4-Reverse

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

Input **V4-Reverse** is without function when **HDMI**-input* is defined as rear-view camera input (dip 5 = ON).



Input Source Video-signal type for video-source(s) connected to **V4-Reverse**.This setting **must** be preset for correct video playback.
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 picture position

Pos. V Vertical picture position

Trigger Switching type of video input defined as rear-view camera input.
„CAN"-function with CAN-bus connection. With **„CAN"** setting, on engagement of reverse gear, the interface switches automatically to **V4-Reverse/HDMI*** for a CVBS/AHD rear-view camera. Requirement is, that the reverse gear signal is recognised by the interface from vehicle CAN-bus.
„Wire"-function with analogue connection. It is always possible to switch by **green Trig-Left wire** to rear-view camera connected to **V4-Reverse/HDMI***, no matter whether set to **„Wire"** or **„CAN"**. If (reverse gear) connection is supposed to be analogue, it is recommended to set this function to **„Wire"**.

Trig-Priority Switching priority when switching signals are present for multiple 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
Movable guide lines **Dynamic 1-2**
Fixed guide lines **Fixed 1-2**
No guide lines **OFF**

Guide-PosH Horizontal position of the guide lines **00-40**

Guide-PosV Vertical position of the guide lines **00-50**

External SW Selectable via external keypad **V4 Reverse**
YES: *Factory video* → ***HDMI**** → ***V1-Left*** → ***V2-Right*** → ***V4-Reverse*** → *Factory video*
NO: *Factory video* → ***HDMI**** → ***V1-Left*** → ***V2-Right*** → *Factory video*

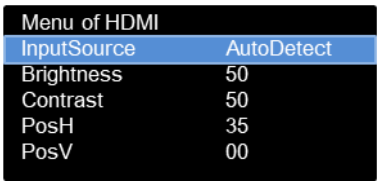
Start-Delay Switch delay of the interface at start-up. This function is technically necessary in some vehicles, as otherwise the factory system may malfunction (e.g. black screen, touch problems). The following options are available (in seconds):
5s/6s/7s/8s/9s/10s/12s/15s/20s
Changing the default settings may cause malfunctions!

*** HDMI-input only available on HDV-SY4**

Menu of HDMI*

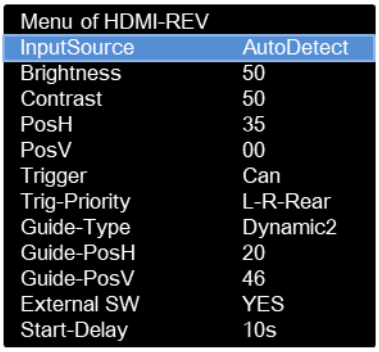
8dip switch bench (dip 4 = ON, dip 5 = **ON/OFF**, dip 6 = ON)

HDMI AV input (Dip 5 = OFF)



InputSource	The picture resolution of connected HDMI sources is detected automatically.
Brightness	Brightness
Contrast	Contrast
Pos. H	Horizontal picture position
Pos. V	Vertical picture position

HDMI rear-view camera input (Dip 5 = ON)



InputSource The picture resolution of connected HDMI sources is detected automatically.

Brightness Brightness

Contrast Contrast

Pos. H Horizontal picture position

Pos. V Vertical picture position

Trigger Switching type of video input defined as rear-view camera input (HDMI-REV*).
„CAN"-function with CAN-bus connection.
With **„CAN"** setting, on engagement of reverse gear, the interface switches automatically to HDMI* for a CVBS/AHD rear-view camera. Requirement is, that the reverse gear signal is recognised by the interface from vehicle CAN-bus.
„Wire"-function with analogue connection. It is always possible to switch by **green Trig-Left wire** to rear-view camera connected to **HDMI***, no matter whether set to **„Wire"** or **„CAN"**. If (reverse gear) connection is supposed to be analogue, it is recommended to set this function to **„Wire"**.

Trig-Priority Switching priority when switching signals are present for multiple 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

Movable guide lines	**Dynamic 1-2**
Fixed guide lines	**Fixed 1-2**
No guide lines	**OFF**

Guide-PosH Horizontal position of the guide lines **00-40**

Guide-PosV Vertical position of the guide lines **00-50**

External SW Selectable via external keypad **V4 Reverse**
YES: *Factory video* → ***HDMI**** → ***V1-Left*** → ***V2-Right*** → ***V4-Reverse*** → *Factory video*
NO: *Factory video* → ***HDMI**** → ***V1-Left*** → ***V2-Right*** → *Factory video*

Start-Delay Switch delay of the interface at start-up. This function is technically necessary in some vehicles, as otherwise the factory system may malfunction (e.g. black screen, touch problems). The following options are available (in seconds):
5s/6s/7s/8s/9s/10s/12s/15s/20s
Changing the default settings may cause malfunctions!

Notes: Input **V4-Reverse** is without function when **HDMI**-input* is defined as rear-view camera input (dip 5 = ON).

*** HDMI-input only available on HDV-SY4**

3 Interface operation

The external keypad of the can be used to switch all enabled inputs.

- Long press of keypad (2-3 seconds)

Long press of external keypad (2-3 seconds), switches from factory video to inserted first enabled interface video-input. Any additional long press switches to the next enabled interface video-input and after last back to factory video. Disabled inputs are skipped.
If all inputs are enabled by the corresponding dip-switches, the order is as follows:

- *Factory video → **HDMI*** → **V1-Left** → **V2-Right** → **V4-Reverse**** → *Factory video*

*** HDMI-input only available on HDV-SY4**

***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 keypad (only if dip 3 is set to ON)

Short press of external keypad, switches from any video mode to front camera input **V3-Front** and next short press switches back to the previous video mode.

Note: We recommend to install the external keypad for possible support reasons even if not required for customer needs. Make sure the external keypad is not installed “pressed” then.

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

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 changing of settings in the respective OSD menus.

Remote control ‘HDA-RC’ optionally available

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

4 Specifications

BATT/ACC range	9V - 16V
Stand-by power drain	2mA
Power consumption	440mA @12V
Video input	0.7V - 1V
Video input signal types	CVBS/AHD/**HDMI (HDV-version only)**
Signal standards CVBS/AHD	NTSC/PAL
Temperature range	-40°C to +85°C
Dimensions video-box	117 x 25 x 108 mm (W x H x D)

5 FAQ - Troubleshooting interface functions - product-specific

Problem	Possible reasons	Solution
Distorted or no inserted video	Video-signal type of video-source not defined in OSD-menu of the corresponding video input	See chapter *2.12 OSD-menu settings* - menu of corresponding input

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.

7 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.

For any support requests make sure to at least prepare:

- Product code and serial number of all involved products
- Vehicle data such brand, model, year of production, VIN, infotainment model

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