dvbLOGiC DVB-T Tuner

DVB-MK-CD

Compatible with BMW Professional navigation systems without iDrive (MK2-MK4)

Product features

- full plug and play vehicle-specific dual DVB-T Tuner
- with two active DVB-T glass-mount antennas
- integrated into and controllable by vehicle infotainment
- AV-input with IR-control channel (optionally USB-AV-port DVBU-XXX instead AV-input)
- control of after-market devices by OEM buttons, e.g. DVD-player, USB/iPod devices, …
- after-market rear-view camera input
- automatic switching to rear-view camera input
- rear-view camera power (+12V max. 1A)
- rear-seat-entertainment AV-output for AV-sources connected to the dvbLOGiC
- optional remote control for full DVB-tuner functions/rear-seat-entertainment
- power on remote out trigger signal (+12V max. 1A) to switch on connected devices

• **video-in-motion**

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. This product should only be used while standing or to display fixed menus or rear-view-camera video when the vehicle is moving, for example the MP3 menu for DVD upgrades.

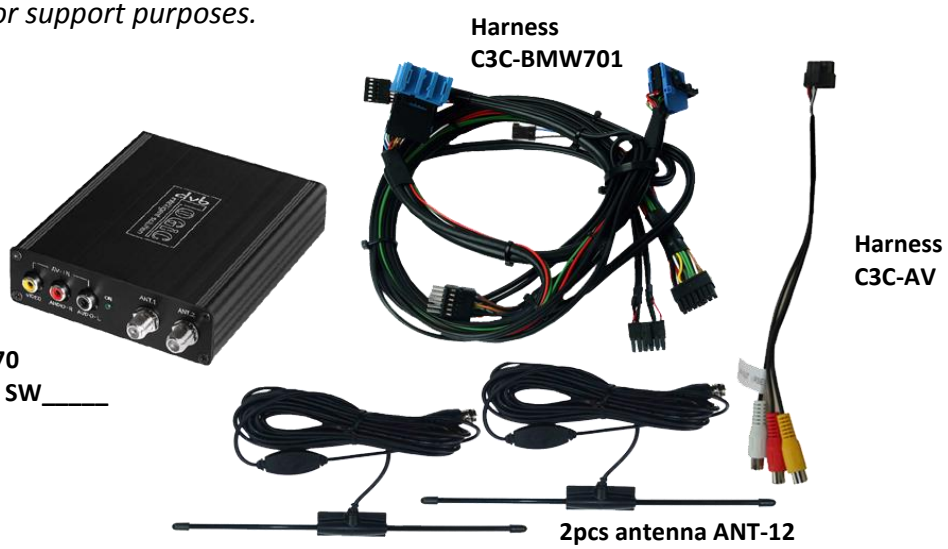
Changes/updates of the vehicle's software can cause malfunctions of the interface. We offer free software-updates for our interfaces for one year after purchase. To receive a free update, the interface must be sent in at own cost. Labor cost for and other expenses involved with the software-updates will not be refunded.

1. Prior to installation

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

1.1. Delivery contents

Take down the SW-version and HW-version of the interface boxes, and store this manual for support purposes.



If remote function for a peripheral device shall be used, additional an IR-Remote cable and Y-adapter are needed, see chapter *AV-source* .

1.2. Check compatibility of vehicle and accessories

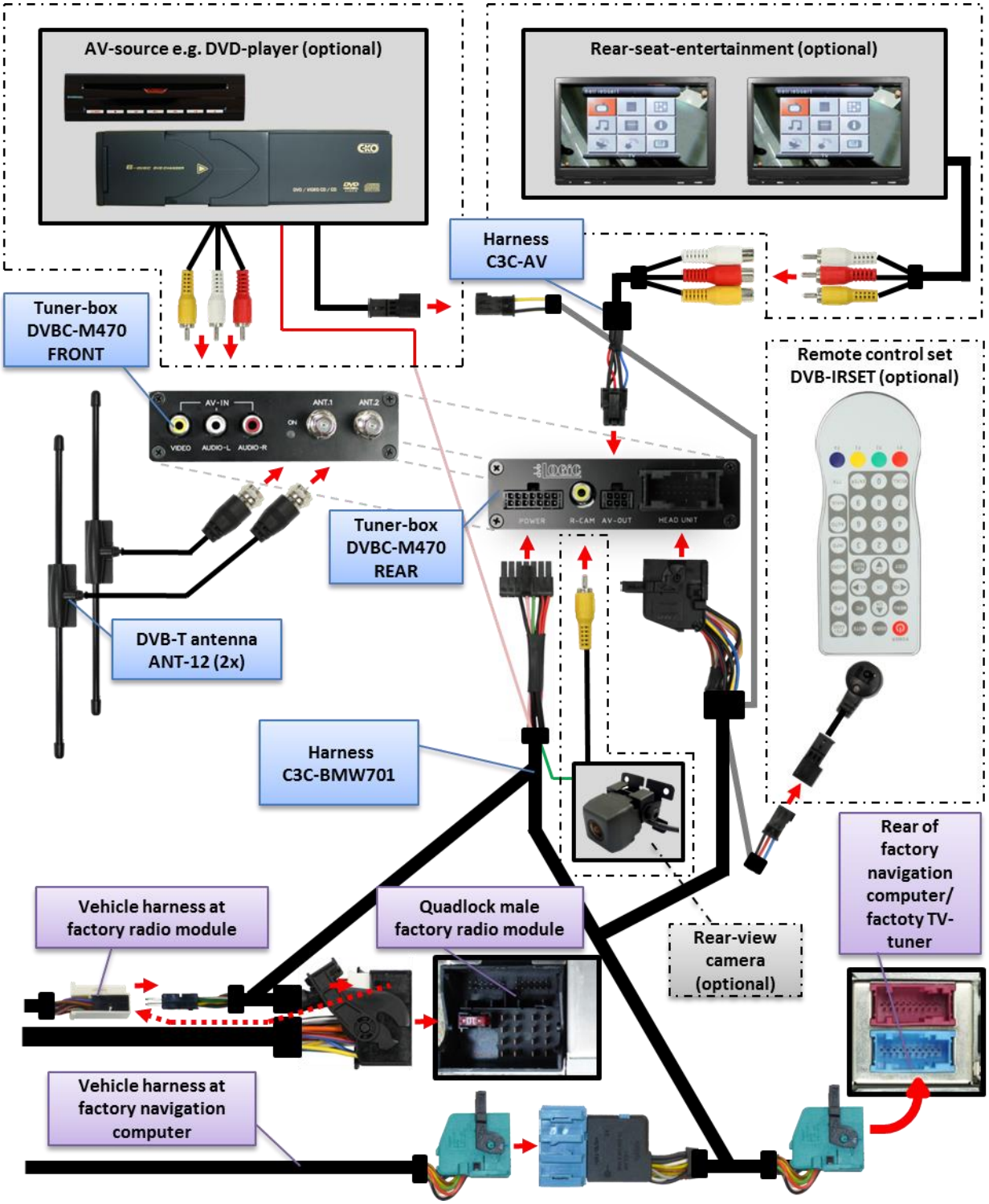
Requirements

Vehicle	3series (E46), 5series (E39), 7series (E38), X5 (E53), X3 (E83), Z4 (E85/86) **without AUX-input at the radio module (till approx 09/2002),** Land Rover Range Rover (Vogue) L322 model years 2002-2005
Navigation	Navigation system Professional without iDrive (MK2-MK4) Navigation system Professional MK3 in Land Rover

Limitations

Factory DSP amplifier	**With an existing factory DSP amplifier see chapter 3.3.1. before beginning the installation!**
Teletext	Teletext of the dvbLOGiC can only be used with the optionally available DVB-IRSET remote control set.
After-market rear-view camera	BMW vehicles compatible with NTSC-cameras only.

2. Connection schema



3. Installation

Switch off ignition and disconnect the vehicle's battery! If according to factory rules disconnecting the battery has to be avoided, it is usually sufficient to put the vehicle in sleep-mode. In case the sleep-mode does not show success, disconnect the battery with a resistor lead.

Place of installation is at the navigation computer or the factory TV-tuner (if existing and not removed) and at the radio module.

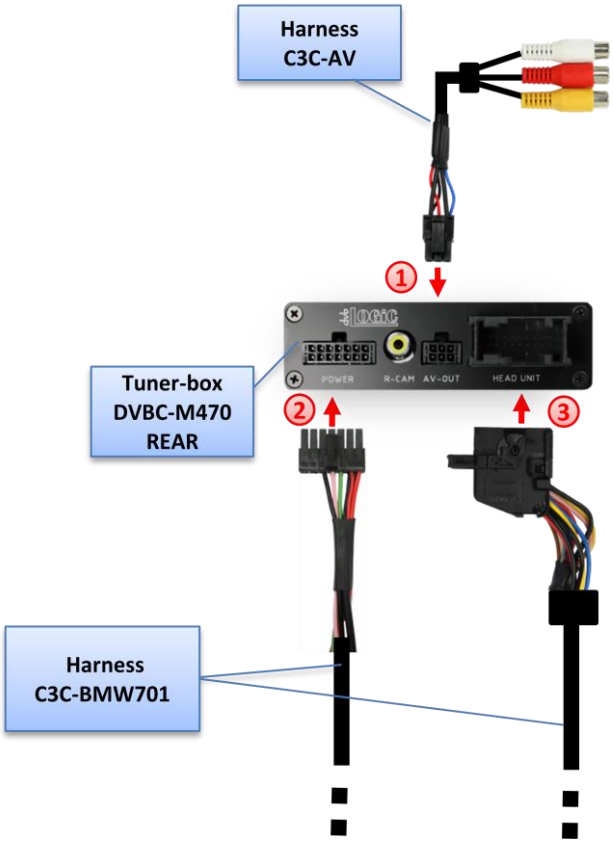
If there is a factory TV-tuner inside the car, you have to connect the harness C3C-BMW701 to the TV-tuner and not to the navigation computer!

The radio module and navigation computer are located at the rear end for the **3series (E46)**, **5series (E39)** and **7series (E38)** on the left hand side the radio module of the 7series is located behind lining in the car wing).

The **X5 (E53)** radio module is located underneath the boot lining, next to the battery.

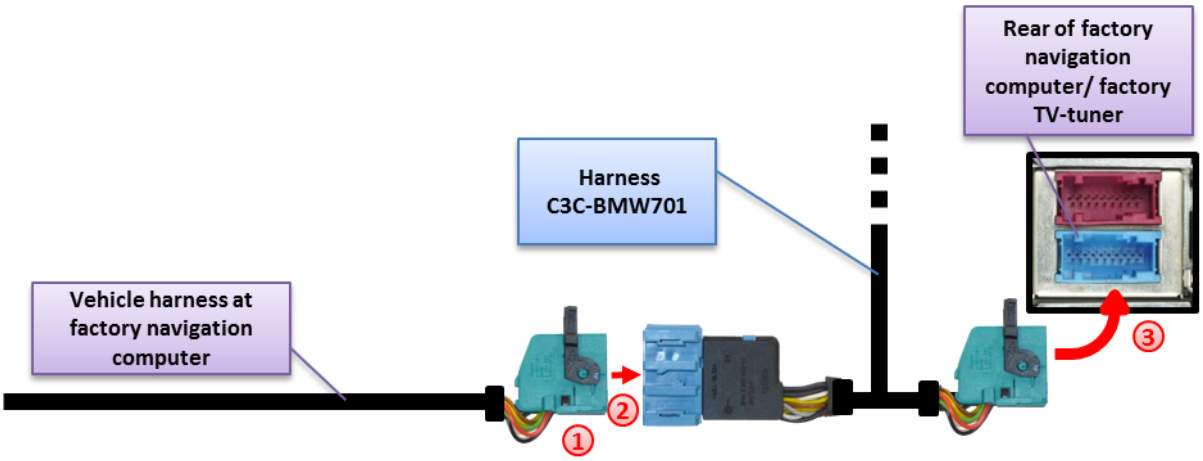
The navigation computer is located on the left hand side behind the boot lining.

3.1. Interconnecting tuner-box and harnesses



1. Plug harness C3C-AV into 6pin Molex of tuner-box DVBC-M470.
2. Plug harness C3C-BMW701 into 14pin of tuner-box DVBC-M470.
3. Plug female 18pin AMP connector of C3C-BMW701 into male 18pin AMP connector of tuner-box DVBC-M470.

3.2. Connections to the navigation computer or – if existing – to the TV-tuner



If there is a factory TV-tuner inside the car, you have to connect the harness C3C-BMW701 to the TV-tuner and not to the navigation computer!

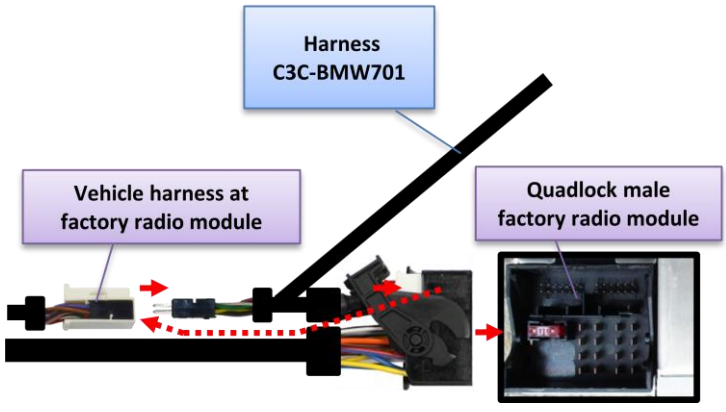
1. Disconnect blue female 18pin connector of vehicle harness from the back of the navigation computer or the factory TV-tuner (if existing and not removed).

2. Plug blue male 18pin AMP connector of harness C3C-BMW701 into blue female 18pin AMP connector of vehicle harness.

3. Plug blue female 18pin AMP connector of harness C3C-BMW701 into blue male 18pin AMP connector of navigation computer or of the factory TV-tuner (if existing and not removed).

Note: If an existing factory TV-tuner will be removed the optionally available harness CAB-BMW200 is necessary!

3.3. Connections to radio module



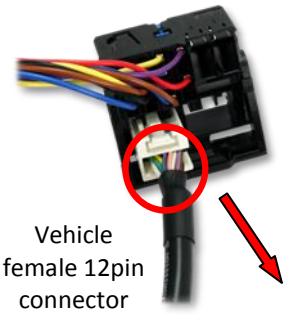
Picture exemplary for vehicles with Quadlock connector at factory radio module.

3.3.1. Exceptional case – Vehicles with factory DSP amplifier

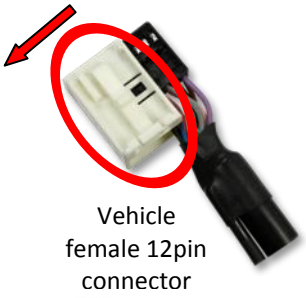
If the vehicle is with factory DSP amplifier, it is possible, that the CD-changer sound is not connected to the analogue input of the radio module, but to the digital input (44.1khz) of the factory DSP amplifier. In this case an analogue-digital converter or a digital output (44.1khz) of the source(s) is required and this part of the manual (connection at the radio module) can be skipped.
If the factory CD-changer is installed, it is possible to check prior to installation of the interface whether it is connected to the factory DSP amplifier with a digital coax cable. If no factory CD-changer is installed, it is possible to check whether the factory DSP amplifier has a digital connector (SMB). If so, it is only possible to check whether the system is coded to analogue or digital by try-and-error.

3.3.2. Radio module with Quadlock connector WITH factory CD-changer

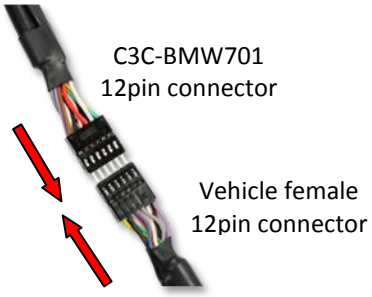
Loosen the female Quadlock connector to the radio module.
Loosen the white female 12pin connector from chamber A of the female Quadlock connector.



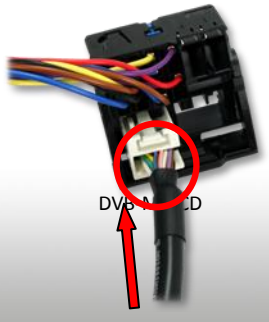
Push the insert from female 12pin connector's plastic cap from the side.



Connect the female 12pin connector of the vehicle harness to the male 12pin connector of harness C3C-BMW701. Make sure that the arrows on both black plastics are on the same side and pointing in opposite directions.



Insert the female 12pin connector of harnessC3C-BMW701 into the white cap and connect it back into the female Quadlock connector.



Connect the female Quadlock connector back into the radio module.

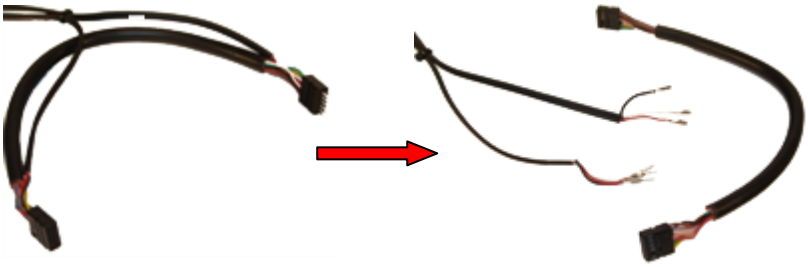
C3C-BMW701
female 12pin
connector

3.3.3. Radio module with Quadlock connector WITHOUT factory CD-changer

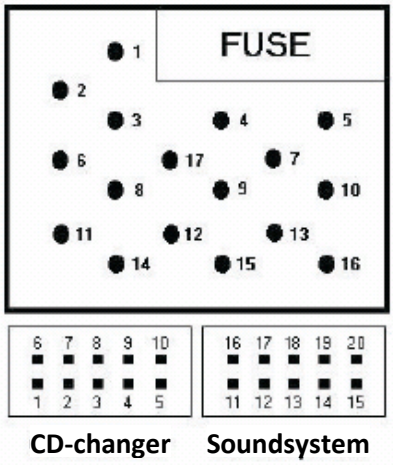
Installation is analogue to system with factory CD-changer. Only there is no female 12pin connector on the vehicle harness. The male 12pin connector of harness C3C-BMW701 is not used and should be isolated.

3.3.4. Radio module with round-pin connector WITH factory CD-changer

Disconnect the audio cable from harness C3C-BMW701 and remove pins from female and male 12pin connector.



Loosen the female round-pin connector from the radio module. Loosen the female 10pin CD-changer connector of vehicle harness of the female round-pin connector.



Pin the female pins of the audio cable of harness C3C-BMW701into the female 10pin CD-changer connector and connect the corresponding female pins of the vehicle harness to the male pins of the audio cable of harness C3C-BMW701. Make sure to isolate all connections.
Use following assignments:

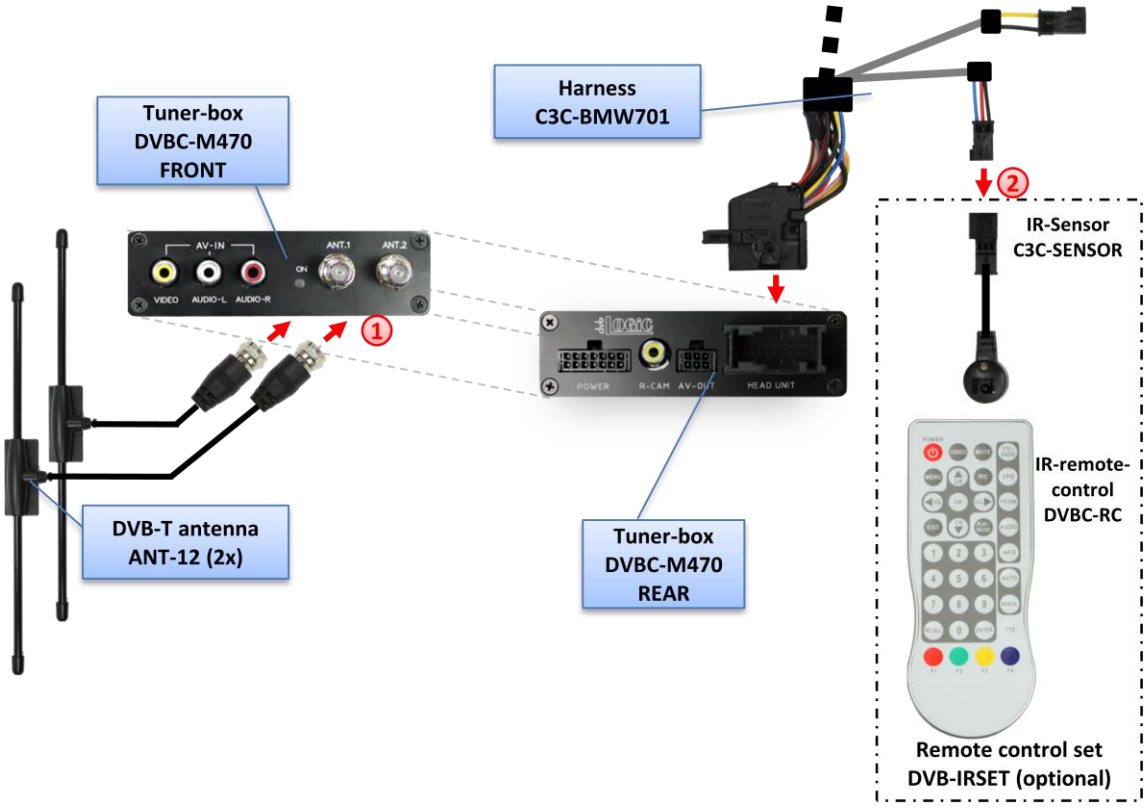
Interface Audio-cable 10pinconnector	***Pin to female***
Red	Pin 2
White	Pin 1
Black	Pin 6

Connect female 10pin CD-changer connector into female round-pin connector and female round-pin connector back to the radio module.

3.3.5. Radio module with round-pin connector WITHOUT factory CD-changer

Installation is analogue to system with factory CD-changer installed. Only there is no female 10pin connector on the vehicles harness. Shorten the female 12pin connector for two chambers (after expelling all the pins). Obeying the above pin-configuration, pin the female pins of the audio cable of harness C3C-BMW701 into the 10pin shortened female connector. The male pins of the audio cable of harness C3C-BMW701 are not used and should be isolated. Connect female round-pin connector to radio module. Connect the shortened female10pin connector of harness C3C-BMW701 to the CD-changer port of the radio module while making sure that the correct pins are used. Fasten the female 10pin connector in the round-pin connector to avoid later disengagement.

3.4. Antennas and optional IR-remote control set



① Mount antennas ANT-12 and connect them to the female f-plug connectors on front of tuner-box DVBC-M470.
We strongly recommend to first test the reception quality of the chosen mounting position of the antennas before final installation! See "Appendix C – Antenna positioning" for additional information.

② The DVB-IRSET consists of the external C3C-SENSOR IR-sensor and the DVBC-RC IR-remote control and can be used to control the dvbLOGiC's internal DVB-T tuner functions additionally to the control through the navigations buttons. Connect the C3C-SENSOR to the female black/red/blue 3pin AMP connector of harness C3C-BMW701 and locate the sensor in an accessible place.

Note: To use the teletext function of the dvbLOGiC's internal DVB-T tuner, the DVB-IRSET is necessary to enter the page numbers.

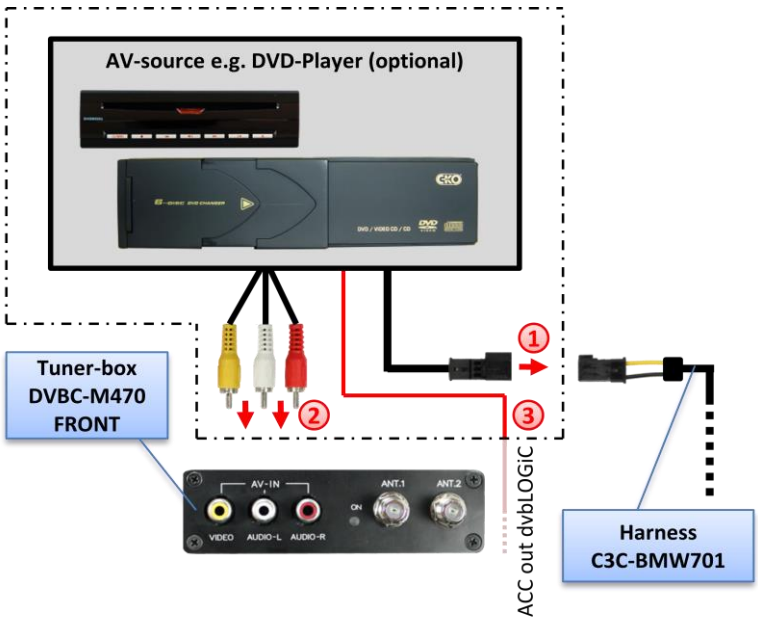
3.5. Connecting peripheral devices

It is possible to connect an after-market AV-source, after-market rear-view camera and rear-seat-entertainment to the dvbLOGiC Tuner.

Before final installation of the peripheral devices, we recommend to test-run the dvbLOGiC functions to detect incompatibility of vehicle, navigation, factory accessories or peripheral devices as soon as possible.

3.5.1. AV-source

The dvbLOGiC has the possibility to connect and remotely control by navigation buttons a pre-programmed device. The device list in the device control table shows the pre-programmed remote channels and the related IR-remote cables STA-xxx which must be ordered separately for the control of the device.



1. Using the respective STA-xxx IR-control cable, interconnect the yellow female 3pin AMP connector of harness C3C-BMW701 and the IR-port of the AV-source.

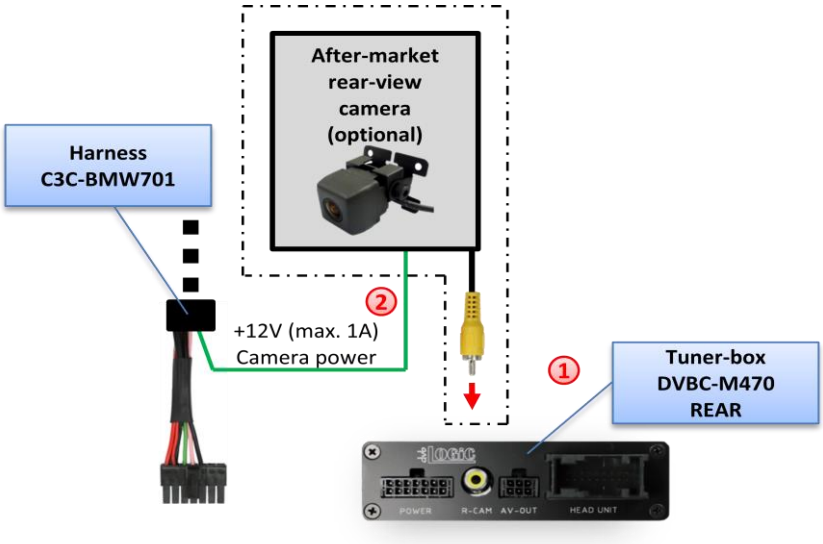
2. Using an RCA-cable, interconnect the female RCA-port AV1 of the tuner-box DVBC-M470 with the AV-output of the AV-source.

3. The pink ACC-output wire (+12V max. 1A) of harness C3C-BMW0x can be connected to the ACC-input wires of the connected device to switch it on. It carries +12V when the navigation computer is running.

3.5.2. Installing AV-source's IR-sensor additionally

Additionally to the control via OEM navigation, it is possible to install the original IR-sensor of a connected device. By using the respective Y-adapter (e.g. STA-Y35MM or STA-RJ12) for the IR-Port of the connected device, the controls of navigation AND device's IR-sensor can be connected and used simultaneously. Installation of the IR-sensor is recommended as the controls via navigation are limited, and not all functions may be covered.

3.5.3. After-market rear-view camera

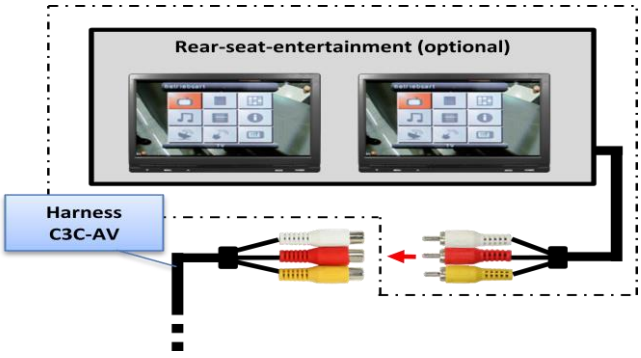


① Connect the video RCA of the after-market rear-view camera to the female RCA connector R-CAM IN of tuner-box DVBC-M470.

② Connect the green wire of C3C-BMW701 to the camera power supply (+12V max. 1A) The green wire is high (+12V) when reverse gear is engaged.

Note: BMW vehicles compatible with NTSC cameras only.

3.5.4. After-Market rear-seat-entertainment



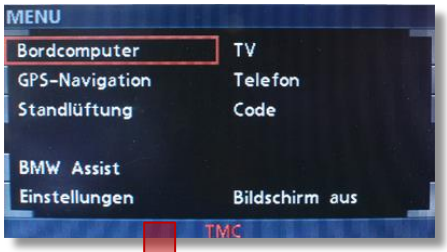
① Using RCA-cables, connect the rear-seat-entertainment to the female RCA-connector VIDEO OUT of tuner-box DVBC-M470.

Note: As the output is a full output, not shared with the video signal for the navigation system, splitting the video with an RCA Y-cable might give a good enough

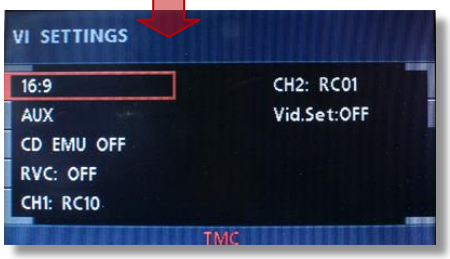
picture for two rear-seat-entertainment monitors. If not, or if connecting more than two monitors, use a video splitter.

3.6. System settings/VI SETTINGS

You must make some settings in the “VI SETTINGS“ menu to enable the dvbLOGiC’s functions.



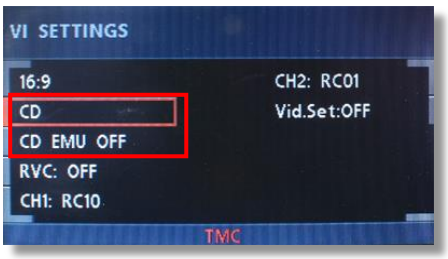
Press 3x the “MENU“ key to access the “VI SETTINGS“ menu of the dvbLOGiC.
Use the right knob to make changes within the “VI SETTINGS“ menu.
Press 1x the “MENU“ key to exit the “VI SETTINGS“ menu.



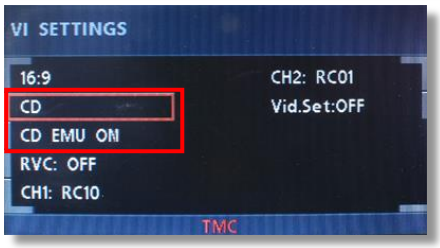
3.6.1. Audio settings

It is necessary to set some audio settings to use the dvbLOGiC.

<u>On vehicles WITH factory CD-changer</u>
set the audio setting to "**CD**" and "**CD EMU OFF**“.



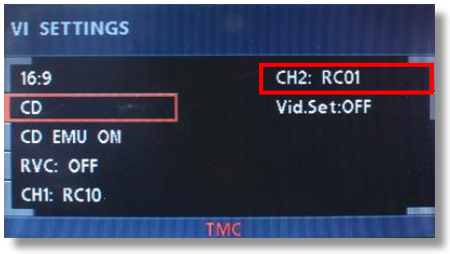
<u>On vehicles WITHOUT factory CD-changer</u>
set the audio setting to "**CD**" and "**CD EMU ON**".



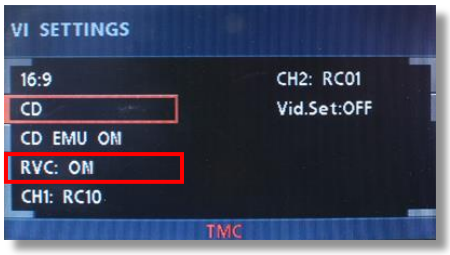
3.6.2. Assigning device control for connected AV-source

Select control levels setup “CH2: RCxx” in the “VI SETTINGS“ menu and assign related IR-code as described in device control table by turning the right knob.

Note: The IR-control channel is preset to RC-Code 09 for the optional USB-AV-port (DVBU).



3.6.3. Rear-view camera function



Set the rear-view camera setting to “RVC: ON“ to use the rear-view camera input of the dvbLOGiC. After the setting the automatic switching to rear-view camera input is activated when reverse gear is engaged.

Note: After the reverse gear is disengaged, the monitor stays on camera video until the vehicle reaches a speed of 10 km/h. To leave the camera video press the right knob.

4. Operation

4.1. Activation of the video-in-motion function

The video-in-motion function is permanently active without disturbing the navigation performance.

4.2. Selecting the dvbLOGiC as current AV-source

MODE - button

picture switch button

Selecting the dvbLOGiC as current AV-source is activated by pressing the “MODE”-button (depending on the current mode of the system, it has to be pressed several times). After the first activation the system will switch the picture after a few seconds from dvbLOGiC-video to factory-video by itself, the audio will still sty on dvbLOGiC-audio. Use the picture switch button to select between factory-video and dvbLOGiC-video. You can leave the dvbLOGiC mode by pressing the “FM” or the “MODE” button.

4.3. Switching to dvbLOGiC and factory CD-changer

The dvbLOGiC and the factory CD-changer share a common address. The factory CD-changer can be used only when the dvbLOGiC is switched off. To switch the dvbLOGiC off or on longpress station button “**4**”.

4.4. Switching to internal DVB-T and AV-source

In dvbLOGiC mode longpress station button „**1**” to switch to the internal DVB-T tuner or longpress station button “**2**” to switch to the AV-input mode.

4.5. Picture settings

The dvbLOGiC has its own picture setting mode. In order to enter this mode, set to **“Video Set:ON“** in the “VI SETTINGS“ menu. After switching to the Video/Audio level the keys **"1 <> 4"** , "**2 <> 5"** , "**3 <> 6"** can be used for picture settings. (each with short keypress).

You can deactivate the picture setting mode in the “VI SETTINGS“ or by turning off ignition.

4.6. Button assignment table

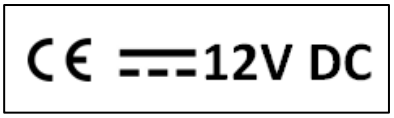
The button assignment table shows which functions of dvbLOGiC and additionally connected devices can be executed by station buttons. Once DVB-T or AV-input mode is activated, the navigation button in the left column will execute the function described in the corresponding device column. The function description equals the remote control buttons of the optional dvbLOGiC remote control or the additional device. On the additional device the writing may vary (e.g. AV instead of Source).

Button assignment table dvbLOGiC DVB-MK-CD						
Station button	**Internal DVB-T**	**DVBU optional USB-port**	**DVD-player**	**DVD-changer**	**iPod®-control**	**Analog-tuner**
1		SOURCE	AV	AV	AV	Display
1 long	Selection TV/ image format	Selection TV/ image format	Selection TV/ image format	Selection TV/ image format	Selection TV/ image format	Selection TV/ image format
2		OK / PLAY	PLAY	PLAY	PLAY	SCAN
2 long	Selection AV2/ Image format	Selection AV2/ Image format	Selection AV2/ Image format	Selection AV2/ Image format	Selection AV2/ Image format	Selection AV2/ Image format
3	←	←	←	←	←	CH -
3 long	TEXT	EXIT	ZOOM	ZOOM		
4		POWER	POWER	POWER	POWER	POWER
4 long	Interface On/Off	Interface On/Off	Interface On/Off	Interface On/Off	Interface On/Off	Interface On/Off
5	EXIT	MEDIA	>>	>>	>>	MUTE
5 long	SCAN	VOL +	PBC	PBC		
6	→	→	→	→	→	CH +
6 long	EPG	VOL -	STOP	STOP		
7	↑	↑	↑	↑	↑	VOL +
8	OK	OK / PLAY	PLAY	PLAY	PLAY/ENTER	SCAN
8 long	MENU	SETUP	SETUP	SETUP	LAMP	ADJUST
9	↓	↓	↓	↓	↓	VOL -
10	CH -	TRACK -	TRACK -	TRACK -	TRACK -	CH -
10 long				DISC		
11	CH +	TRACK +	TRACK +	TRACK +	TRACK +	CH +
11 long				DISC		
12			TITLE	TITLE		
12 long			SUBTITLE	SUBTITLE		
13	INFO		DISPLAY	DISPLAY		
13 long	DTV/RADIO		AUDIO	AUDIO		

Note: On vehicles with factory CD-changer the control by number keys 1-6 is only possible if the CD-changer magazine is equipped with 6 discs!

5. Specifications

Operation voltage	10.5 – 14.8V DC
Stand-by power drain	<1mA
Operation power drain	~520mA
Power consumption	~7W
Temperature range	-30°C to +80°C
Weight	328g
Measurements (box only) B x H x T	140 x 30 x 105 mm



6. Technical Support

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