

Technical training.
Product information.

F48 Information and Communication



BMW Service

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General information

Symbols used

The following symbol is used in this document to facilitate better comprehension or to draw attention to very important information:



Contains important safety information and information that needs to be observed strictly in order to guarantee the smooth operation of the system.

Information status and national-market versions

BMW Group vehicles meet the requirements of the highest safety and quality standards. Changes in requirements for environmental protection, customer benefits and design render necessary continuous development of systems and components. Consequently, there may be discrepancies between the contents of this document and the vehicles available in the training course.

This document basically relates to the European version of left-hand drive vehicles. Some operating elements or components are arranged differently in right-hand drive vehicles than shown in the graphics in this document. Further differences may arise as a result of the equipment specification in specific markets or countries.

Additional sources of information

Further information on the individual topics can be found in the following:

- Owner's Handbook
- Integrated Service Technical Application.

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The information contained in this document forms an integral part of the technical training of the BMW Group and is intended for the trainer and participants in the seminar. Refer to the latest relevant information systems of the BMW Group for any changes/additions to the technical data.

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F48 Information and Communication

1. Introduction

This section is intended to provide an overview of the information and communication systems used in the F48.

With the new Headunit, the F48 reaches another milestone in the area of multimedia technology.

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2. Headunits

2.1. Overview of headunits

The equipment of the different headunits can be found in the following table:

Optional equipment	Headunit	CID	Controller	Navigation
Media system (standard equipment)	Headunit	6.5"	5-button	No
Navigation Business (SA 6UN)	Headunit with navigation	6.5"	7-button	Yes
Navigation Plus (SA 6UP)	Headunit with navigation	8.8"	7-buttons with touch pad	Yes

The F48 does not have a DVD changer. The USB interface is already included in the basic equipment independent of the headunit.

2.2. Media System

The F48 receives a completely redeveloped headunit. The manufacturer of this headunit is Magneti-Marelli.

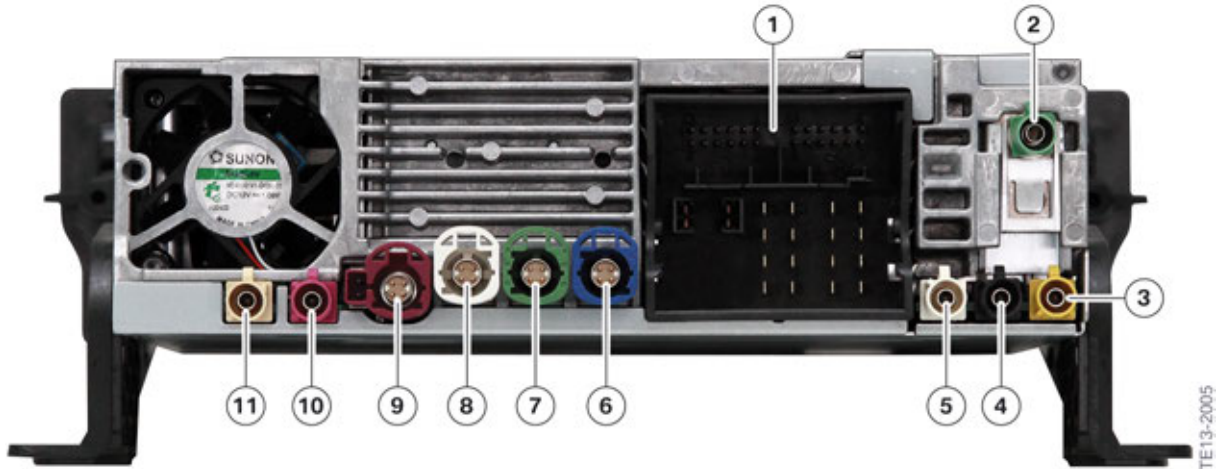
The Media System receives a CD drive as standard equipment (SA 650).

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2. Headunits

2.2.1. Media system

With the Media System, the F48 receives a controller with five function keys and a 6.5" central information display, in addition to a radio.



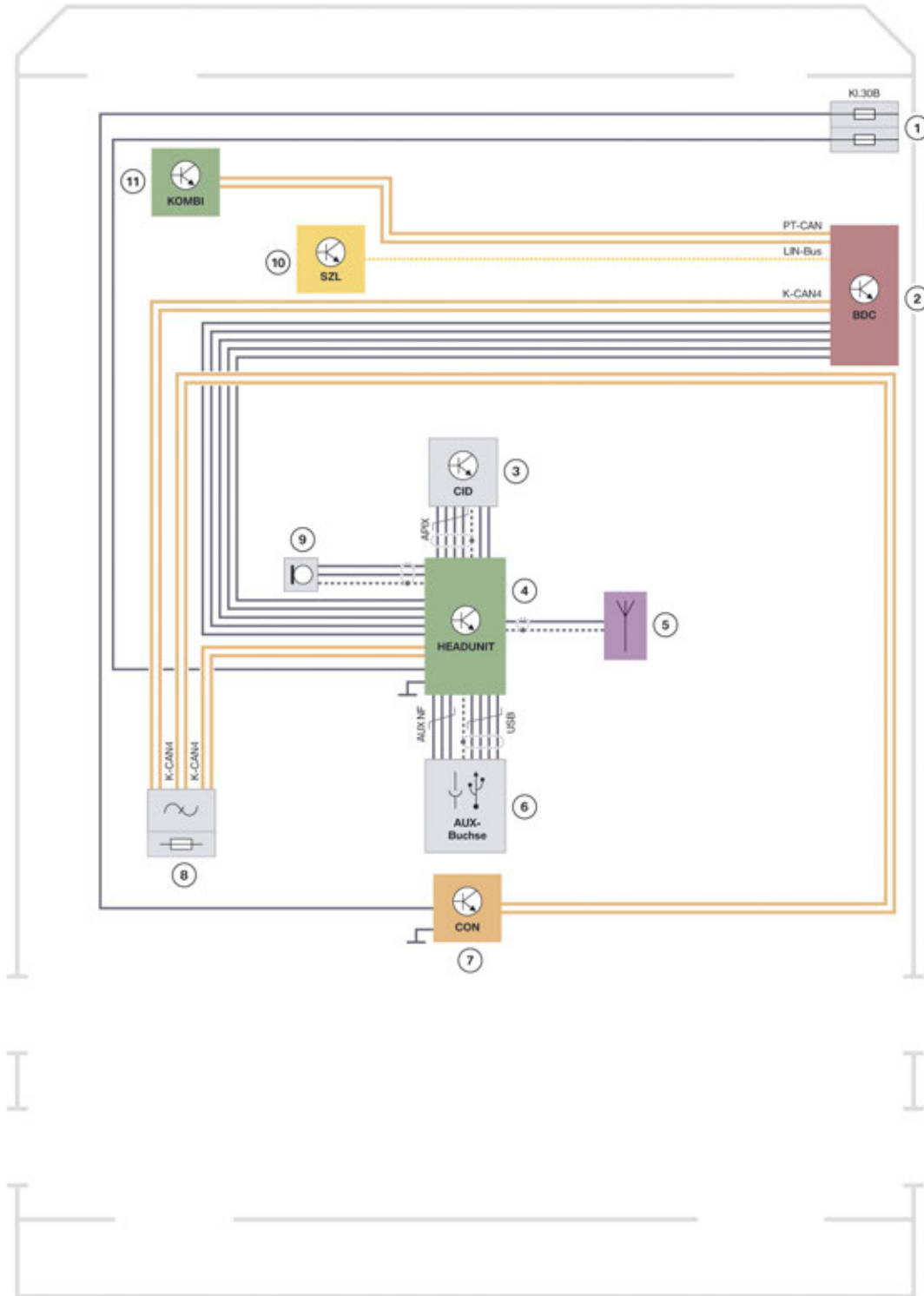
Rear view of Headunit without navigation

Index	Explanation
1	Main connector
2	Not for US
3	Not for US
4	AM/FM1 antenna
5	FM2 antenna
6	USB2 connection; connection for customer smartphone via the telephone base plate
7	USB3 connection; connection for Telematic Communication Box (TCB)
8	USB1 connection; customer access at the Aux-IN USB port (also for data import/export)
9	Automotive Pixel Link connection and voltage supply of central information display
10	Preparation of WLAN antenna
11	Connection for Bluetooth antenna

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2. Headunits

System wiring diagram



TE13-2658

F48 system wiring diagram for media system

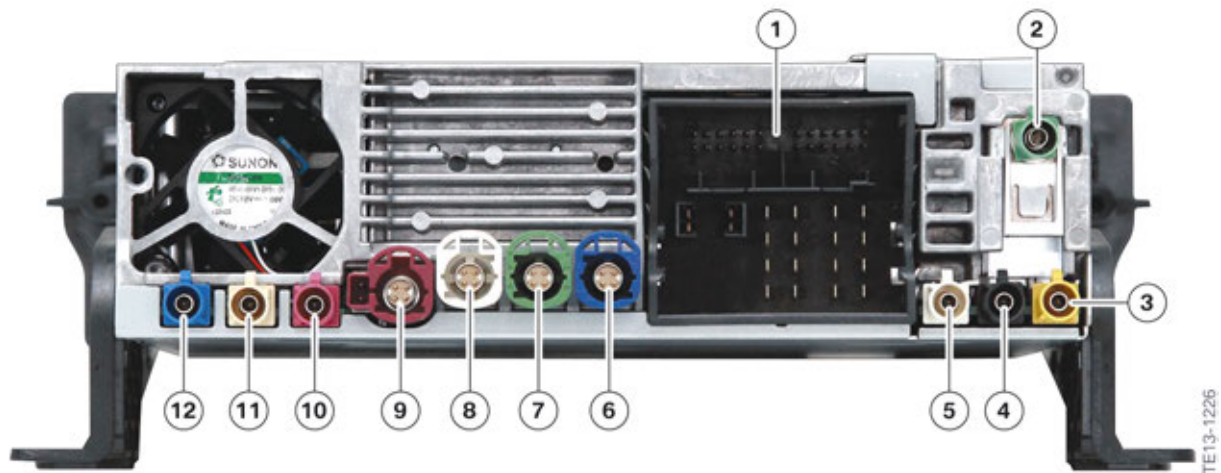
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2. Headunits

Index	Explanation
1	Fuses in the power distribution box in the passenger compartment
2	Body Domain Controller (BDC)
3	Central information display (CID)
4	Headunit
5	Bluetooth antenna
6	USB audio interface
7	Controller (CON)
8	K-CAN terminator
9	Microphone, driver's side
10	Steering column switch cluster (SZL)
11	Instrument cluster (KOMBI)

2.2.2. Navigation systems

The customer has the option of ordering two navigation systems. The optional equipment Navigation (SA 6UN) and the optional equipment Navigation Plus (SA 6UP). The headunit is identical for the two equipment specifications. With the optional equipment Navigation Plus (SA 6UP), the F48 receives additional equipment, for example a touch controller and 8.8" central information display, as well as a Head-Up Display.



Rear view, Headunit with navigation

Index	Explanation
1	Main connector
2	Not for US
3	Not for US
4	AM/FM1 antenna
5	FM2 antenna

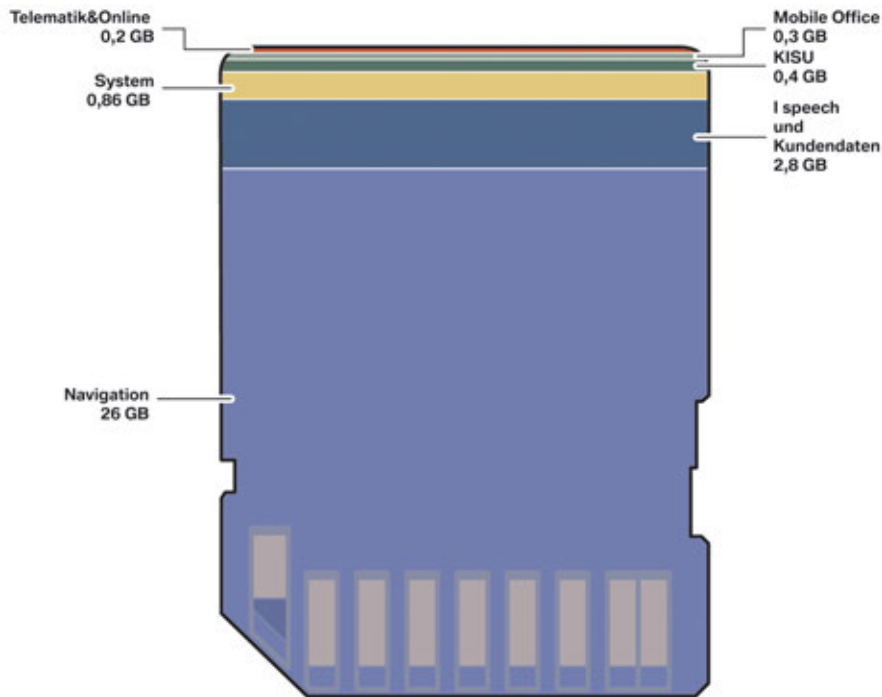
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2. Headunits

Index	Explanation
6	USB2 connection; connection for customer smartphone via the telephone base plate
7	USB3 connection; connection for Telematic Communication Box (TCB)
8	USB1 connection; customer access at the Aux-IN USB port (also for data import/export)
9	Automotive Pixel Link connection and voltage supply of central information display
10	Preparation of WLAN antenna
11	Connection for Bluetooth antenna
12	GPS antenna

The basic structure of the hardware of both Headunit devices is the same. In contrast to the media system, the navigation systems are equipped with an antenna connection for the navigation antenna. All components for navigation are also located therein. With the exception of the yaw sensor, which in the F48 is housed in the Advanced Crash Safety Module (ACSM) and transfers the data to the headunit via a bus signal.

A larger flash memory with 32 GB, instead of the 4 GB with the media system, is installed for the navigation systems. The permanent storage of the map data is a reason for this.



Schematic diagram with symbols for the flash memory in the Headunit with navigation

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2. Headunits

2.2.3. Comparison

In the following table you see the different features of the optional equipment Navigation (SA 6UN) and the optional equipment Navigation Plus (SA 6UP):

Function	Navigation (SA 6UN)	Navigation Plus (SA 6UP)
Satellite map	No	No
Weather on map (in conjunction with BMW Online)	Yes	Yes
Elevation models with "perspective" map	No	No
3D models	Only attractions	Only attractions
Assistance window (split screen)	No	Yes
Arrow on map	Yes	No
Map preview for destination input	No	Yes
Different map view in main window and split screen	No	No
Favorite special destinations	Yes	Yes
Quick Access menus (list selection for the customer in the different menus)	Yes	Yes
Journey with stage finishes	Yes	Yes
Route overview after start of route guidance	Yes	Yes
Lane guiding (exit recommendation)	No	No
Import of routes	No	No

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2. Headunits



Map view of Different Navigation Systems

Index	Explanation
1	Assistance window with the 8.8" screen version of the central information display
2	"Arrow on map" schematic diagram with 6.5" screen version of the central information display

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3. Speaker Systems

3.1. Overview

The speaker systems in the F48 are available in three specification levels:

- Hi-fi system (SA 676)
- Harman Kardon® hi-fi system (SA 674)

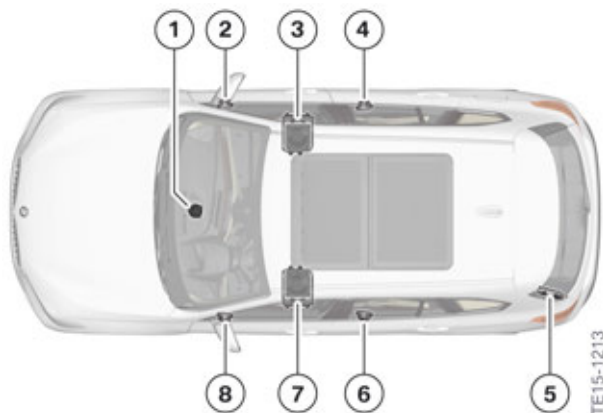
3.2. Components

3.2.1. Hi-fi system

The hi-fi system in the F48 is standard equipment (SA 676). The hi-fi system comprises 7 speakers, with an overall power of 205 Watt.

The amplifier of the hi-fi system is not connected to any bus system.

Components



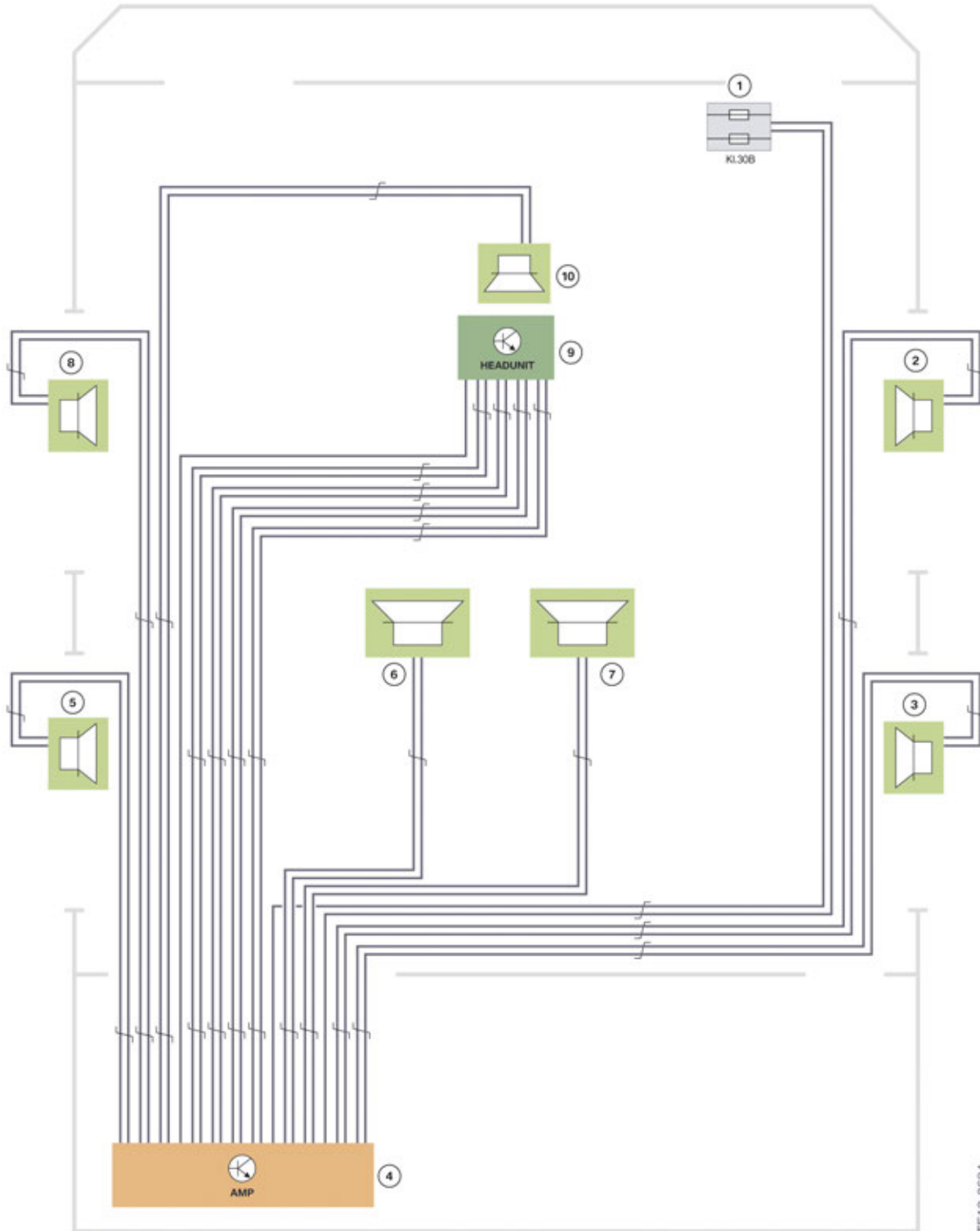
F48 system components of hi-fi system

Index	Explanation
1	Mid-range speaker, front center
2	Mid-range speaker, front right
3	Bass speaker, right
4	Mid-range speaker, rear right
5	Amplifier (AMP)
6	Mid-range speaker, rear left
7	Bass speaker, left
8	Mid-range speaker, front left

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3. Speaker Systems

System wiring diagram



TE13-2684

F48 system wiring diagram of hi-fi system

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3. Speaker Systems

Index	Explanation
1	Fuses in the power distribution box in the passenger compartment
2	Mid-range speaker, front right
3	Mid-range speaker, rear right
4	Amplifier (AMP)
5	Mid-range speaker, rear left
6	Bass speaker, left
7	Bass speaker, right
8	Mid-range speaker, front left
9	Headunit
10	Mid-range speaker, front center

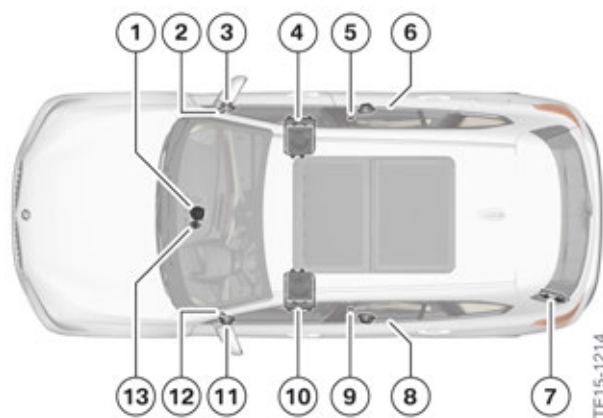
3.2.2. Hi-fi system Harman Kardon®

The Harman Kardon® hi-fi system (SA 674) consists of twelve speakers. Separate speakers are installed in the Harman Kardon® hi-fi system for the tweeter and mid-tone ranges. A seven-channel amplifier with a digital equalizer is integrated in the Harman Kardon® hi-fi system. The amplifier is a bus slave in the K-CAN4.

The mid-range speakers and tweeters of the Harman Kardon® hi-fi system have high-quality aluminium membranes for a clearly differentiated sound pattern. Thanks to the additional use of hexagonally structured metal covers, the damping and resonances of the covers are minimized.

The speakers and the amplifier of the Harman Kardon® hi-fi system are illustrated in the following graphic. The speakers have an overall power of 360 Watt.

Components



F48 system components of Harman Kardon® hi-fi system

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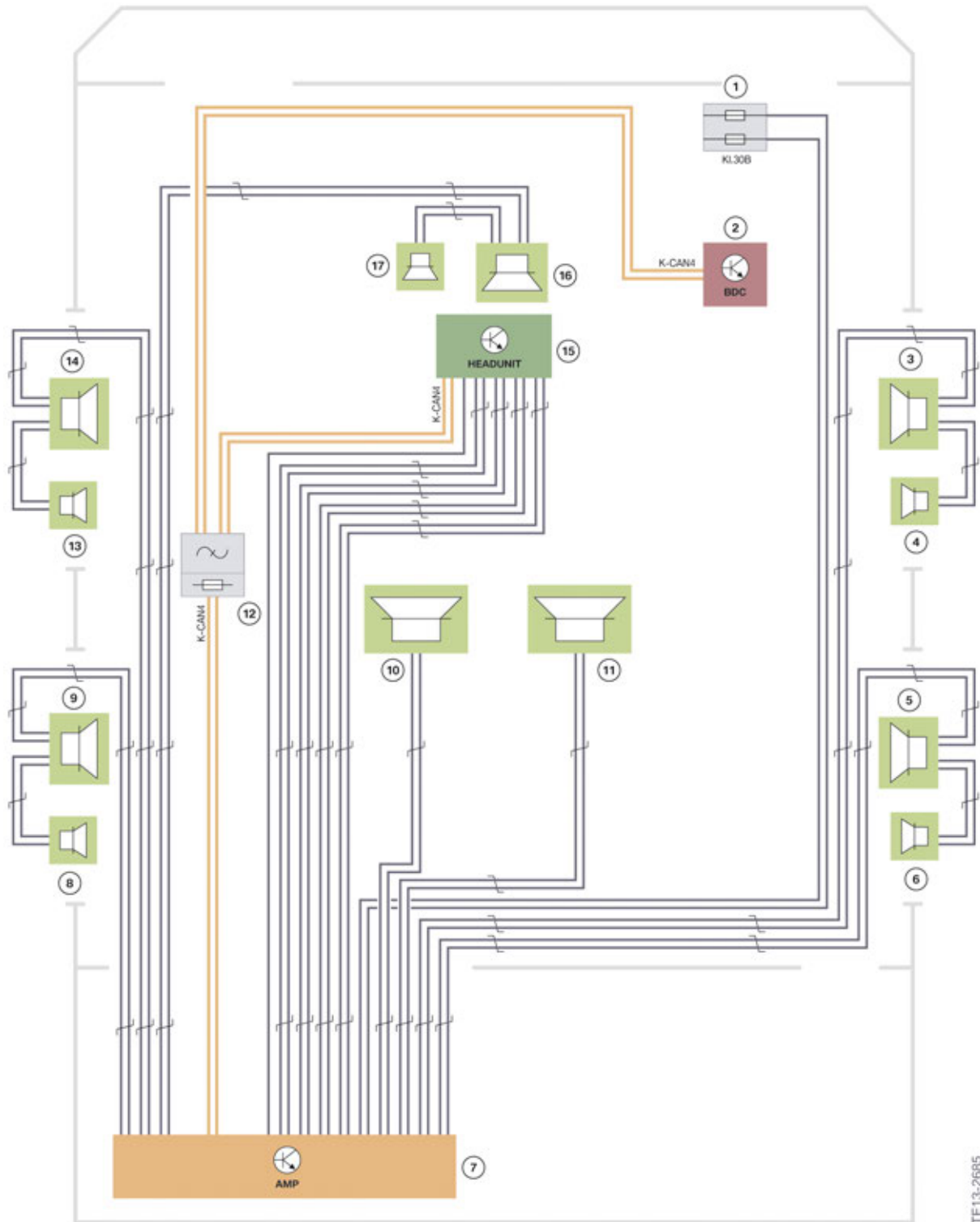
3. Speaker Systems

Index	Explanation
1	Mid-range speaker, front center
2	Tweeter, front right
3	Mid-range speaker, front right
4	Bass speaker, right
5	Tweeter, rear right
6	Mid-range speaker, rear right
7	Amplifier (AMP), Harman Kardon®
8	Mid-range speaker, rear left
9	Tweeter, rear left
10	Bass speaker, left
11	Mid-range speaker, front left
12	Tweeter, front left
13	Tweeter, front center

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3. Speaker Systems

System wiring diagram



F48 system wiring diagram for Harman Kardon® hi-fi system

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3. Speaker Systems

Index	Explanation
1	Fuses in the power distribution box in the passenger compartment
2	Body Domain Controller (BDC)
3	Mid-range speaker, front right
4	Tweeter, front right
5	Mid-range speaker, rear right
6	Tweeter, rear right
7	Amplifier (AMP), Harman Kardon®
8	Tweeter, rear left
9	Mid-range speaker, rear left
10	Bass speaker, left
11	Bass speaker, right
12	K-CAN terminator
13	Tweeter, front left
14	Mid-range speaker, front left
15	Headunit
16	Mid-range speaker, front center
17	Tweeter, front center

F48 Information and Communication

4. Telephone Systems

4.1. Overview

Two different items of optional equipment are available for the F48 telephone systems:

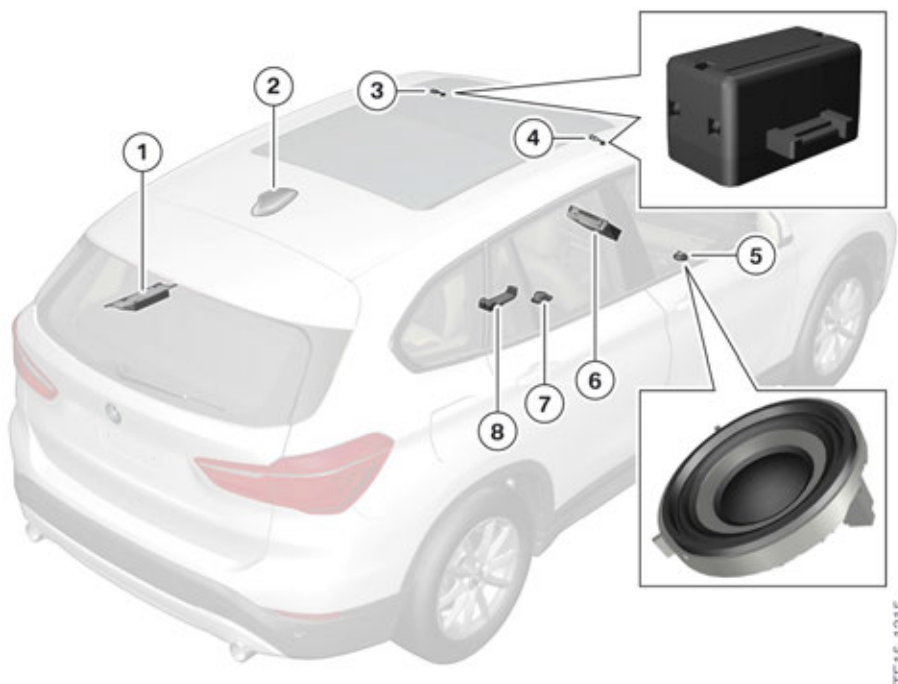
- Hands-free system (already included in the standard equipment)
- Convenient telephone system with extended smartphone connection (SA 6NS)

These two equipment specifications are fully supported by the headunit, i.e. the Bluetooth module is already integrated in the headunit. In the F48, a Combox is no longer required as an interface box.

A Telematic Communication Box (TCB) is installed for the emergency call or the ConnectedDrive services. Further information on the ConnectedDrive services can be found in the product information bulletin "Information and Communication System News I/2014".



The specified range of functions is only available with BMW-recommended Bluetooth-capable mobile phones. For details, please visit: www.bmw.com/bluetooth



F48 Components of telephone system

Index	Explanation
1	Telematic Communication Box (TCB)
2	Roof antenna
3	Microphone, driver's side
4	Microphone, passenger's side (SA 6NS)

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4. Telephone Systems

Index	Explanation
5	Emergency loudspeaker (only with installation of Telematic Communication Box)
6	Headunit
7	Controller (CON)
8	Base plate (SA 6NS)

4.2. Hands-free system

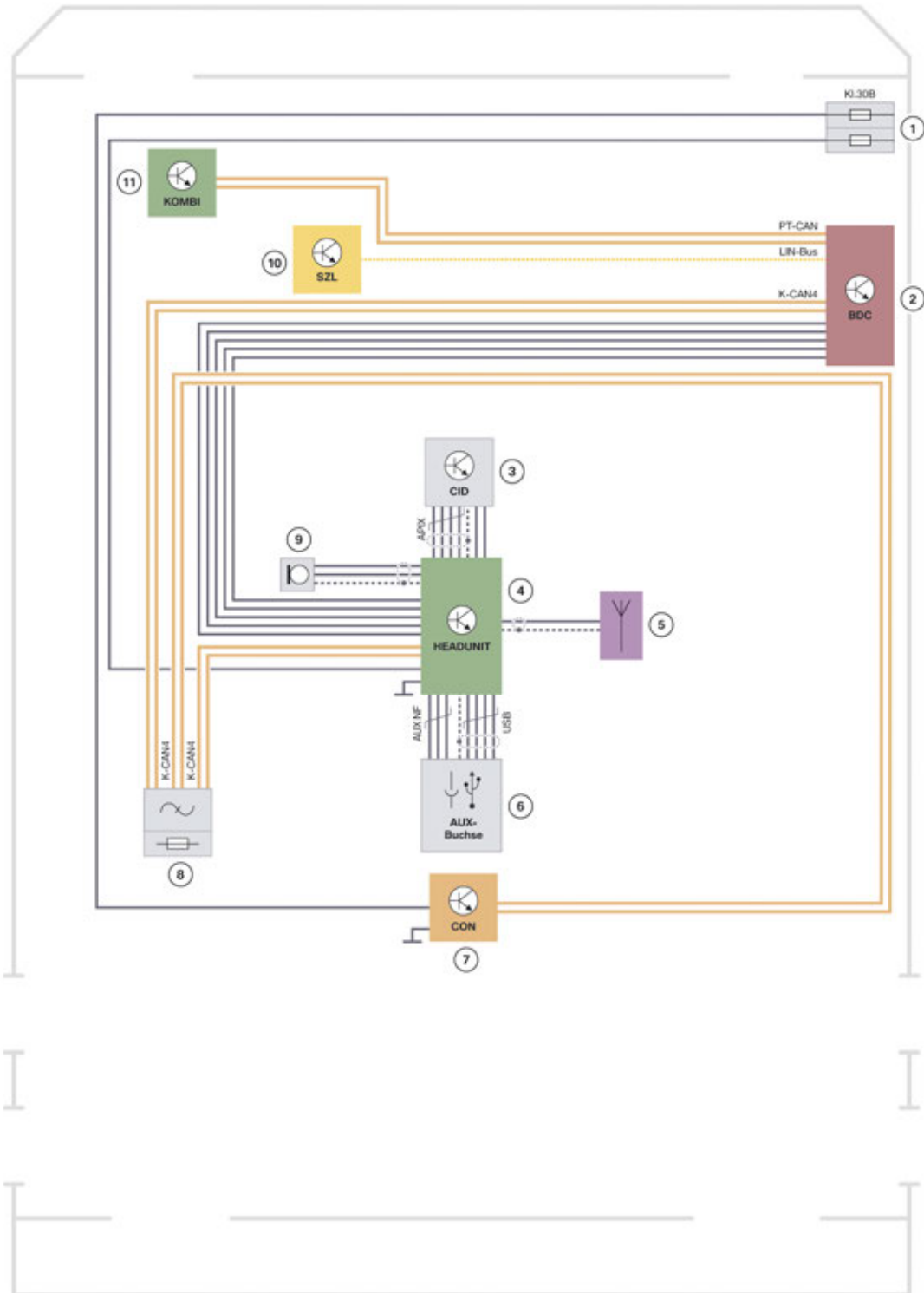
The headunit-supported hands-free system, including the Bluetooth audio streaming function, is already included in the standard equipment.

In the standard equipment "hands-free system", the vehicle does **not** have a base plate, i.e. the mobile phone does not have a connection for the vehicle telephone antenna and cannot be charged via a snap-in adapter.

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4. Telephone Systems

4.2.1. System wiring diagram



F48 system wiring diagram for hands-free system

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4. Telephone Systems

Index	Explanation
1	Fuses in the power distribution box in the passenger compartment
2	Body Domain Controller (BDC)
3	Central information display (CID)
4	Headunit
5	Bluetooth antenna
6	USB audio interface
7	Controller (CON)
8	K-CAN terminator
9	Microphone, driver's side
10	Steering column switch cluster (SZL)
11	Instrument cluster (KOMBI)

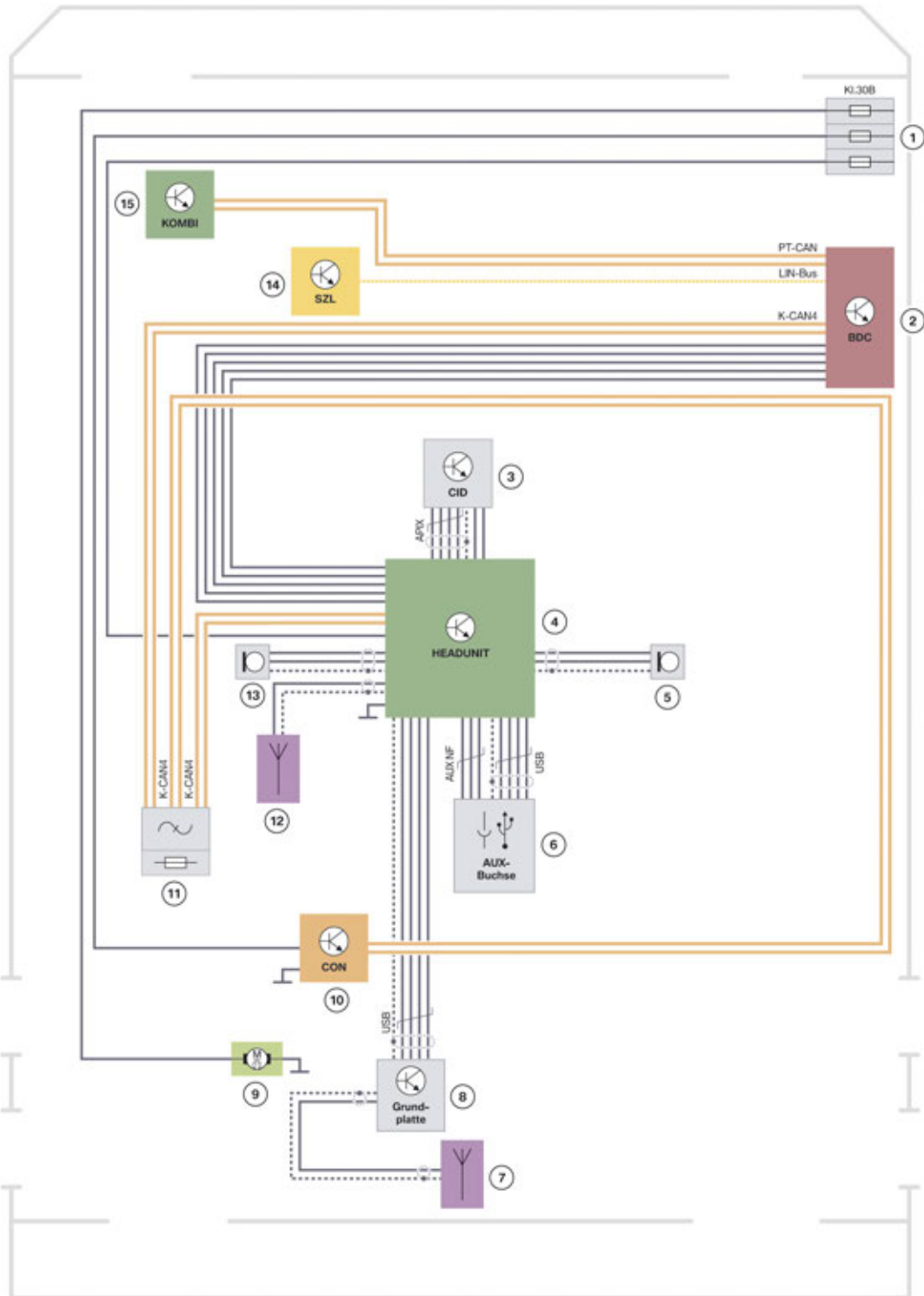
4.3. Enhanced USB and Bluetooth with Smartphone Integration

With the variant hands-free system, Enhanced USB and Bluetooth with Smartphone Integration (SA 6NS) can be added afterwards upon customer request. The customer receives all functions and interfaces of the CBX-MEDIA, the hands-free mode via Bluetooth, the smartphone connection via the base plate and snap-in adapter and all additional functions such as Office, Cover Art and voice input. The features "Bluetooth audio streaming" and customer-initiated software update (KISU) are already available from the Bluetooth hands-free system.

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4. Telephone Systems

4.3.1. System wiring diagram



F48 System wiring diagram for convenient telephony with extended smartphone connection

TE13-2659

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4. Telephone Systems

Index	Explanation
1	Fuses in the power distribution box in the passenger compartment
2	Body Domain Controller (BDC)
3	Central information display (CID)
4	Headunit
5	Microphone, right
6	USB audio interface
7	Telephone antenna, roof
8	Base plate
9	Fan in the center armrest
10	Controller (CON)
11	K-CAN terminator
12	Bluetooth antenna
13	Microphone, left
14	Steering column switch cluster (SZL)
15	Instrument cluster (KOMBI)

4.4. Bluetooth antenna

The Bluetooth antenna is designed as a simple cable antenna. The installation location is near the headunit.



F48 installation location of Bluetooth antenna

Index	Explanation
1	Bluetooth antenna

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5. Antenna Systems

5.1. Overview

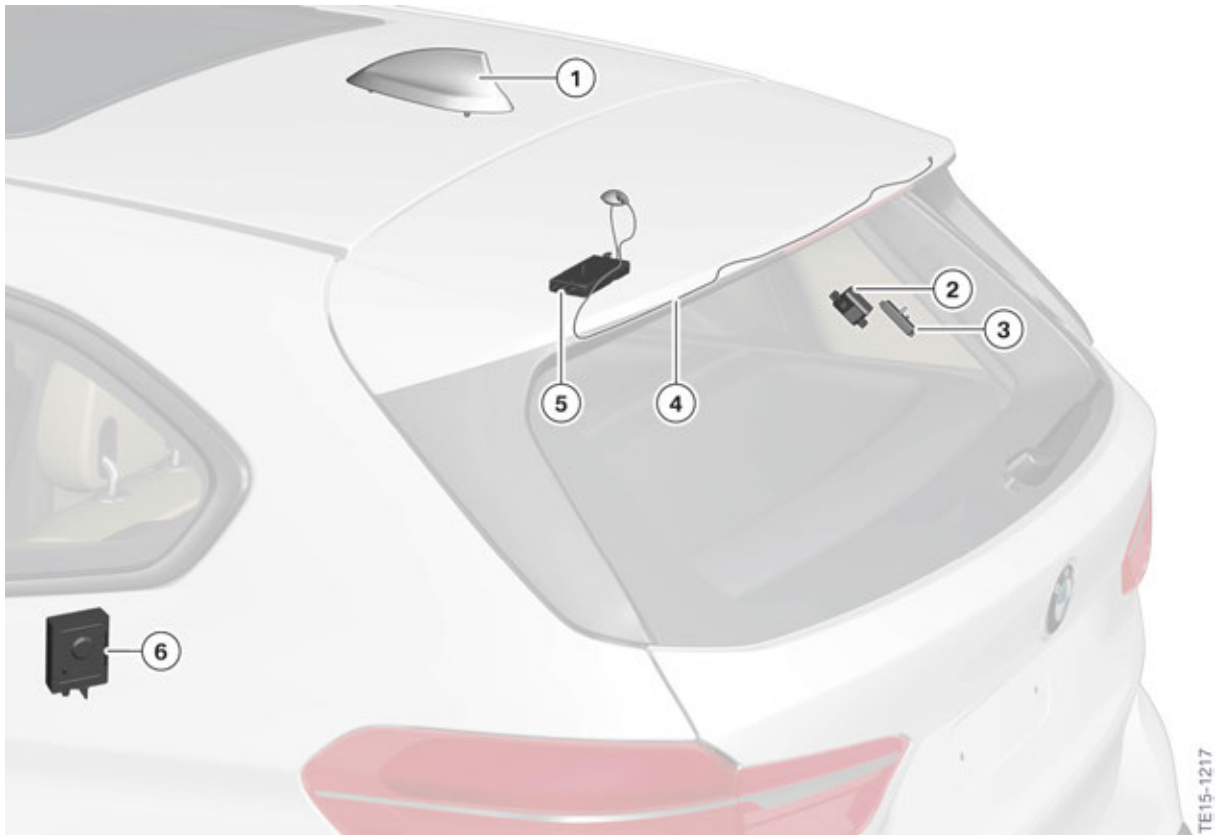
The F48 has different antenna systems, depending on the national-market version and optional equipment used:

Antenna	System	Installation location
FM antenna	Radio	FM1 and FM2 in the rear window
AM antenna	Radio	AM antenna sensor in the roof spoiler
SDARS antenna	Radio	Roof antenna
GPS antenna	Navigation system	Roof antenna
Remote control services antenna	Body Domain Controller (remote control service)	Luggage compartment, right
Telephone antenna	Telephone	Roof antenna
Bluetooth antenna	Telephone	Integrated in the wiring harness
Emergency call antenna (back-up antenna)	Telematics services	In the luggage compartment, left

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5. Antenna Systems

5.2. Components



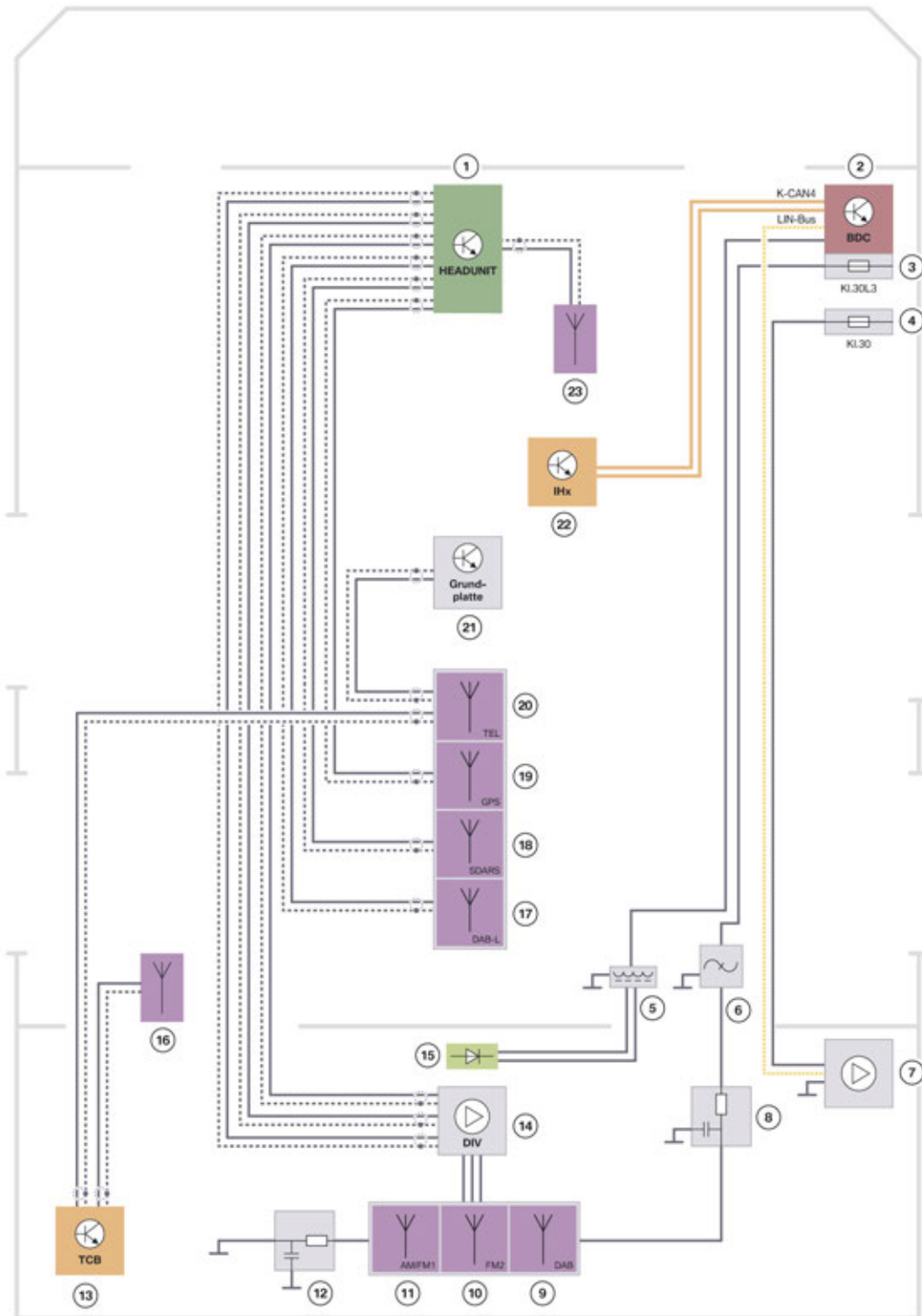
F48 components of the antenna system

Index	Explanation
1	Roof antenna
2	Wave trap
3	Interference suppression filter
4	AM antenna sensor
5	Antenna amplifier
6	Emergency call antenna

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5. Antenna Systems

5.3. System wiring diagram



F48 system wiring diagram for aerials

TE13-2663

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5. Antenna Systems

Index	Explanation
1	Headunit
2	Body Domain Controller (BDC)
3	Fuse in the power distribution box (BDC)
4	Fuse in the power distribution box in the passenger compartment
5	Interference suppression filter
6	Wave trap
7	Remote control receiver
8	Wave trap
9	Not for US
10	FM2 antenna
11	AM/FM1 antenna
12	Wave trap
13	Telematic Communication Box (TCB)
14	Antenna diversity module
15	Additional brake light
16	Emergency call antenna
17	Not for US
18	SDARS antenna (US version)
19	GPS antenna
20	Telephone antenna
21	Base plate
22	Standard heating and air conditioning (IHx)
23	Bluetooth antenna

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6. Android Devices

6.1. Introduction

Customers with Android smartphones and the Android operating system "Jelly Bean" 4.2.x. can download the BMW Connected app free of charge in the Google Play Store, depending on their mobile phone manufacturer.



Android operating system "Jelly Bean" 4.2.2

At present, not all Android smartphones are supported.

Compatible smartphones can be found here: www.bmw.com/bluetooth.

For Android telephones the selection of apps is not as extensive as for Apple telephones. The number of available apps is being increased continuously. With the software updates of the BMW Connected app, the customer receives new functions.

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6. Android Devices

The following functions are possible at the moment:

- Facebook
- Twitter
- Wiki Local
- News
- ECO PRO Analyzer
- Last Mile Navigation



BMW Connected app for Android

F48 Information and Communication

6. Android Devices

6.2. Comparison of Android and iOS



iOS



1 iOS



1 Android



2 iOS



2 Android



3 iOS



3 Android



4 iOS



4 Android



5 Android

iOS vs. Android

TE13-2591

F48 Information and Communication

6. Android Devices

Index	Explanation
1	Connection manager
2	Wiki Local
3	Web radio
4	Audio player in USB mode
5	Android smartphone as audio player in Accessory mode

6.3. Function

With an Android telephone there are two different options to play media in the vehicle:

- USB mode
- Accessory mode

6.3.1. USB mode

USB mode is comparable to the function of a mass storage device. If the Android smartphone is connected to the vehicle with a USB cable, then one can find the telephone under the "Multimedia" main menu under "External devices", similar to the connection of a mass storage device. A search can be performed for artists or genres. The headunit is the audio player in USB mode. The end device only supplies the audio data to the headunit.

In the following table you see the most frequent transmission types of the various end devices.

End device	Transmission
USB mass storage device	MSC (Mass Storage Class)
Mobile phones	MTP (Media Transfer Protocol)



Music search in USB mode

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6. Android Devices

6.3.2. Accessory mode

If Accessory mode is activated, the mobile phone now becomes the source of audio. The BMW Connected app also has an audio player, in addition to apps such as Facebook, News, etc. This is visible in Accessory mode under CD/Multimedia and can play music data stored on the mobile phone (not music data stored on the additional memory card). The mobile phone of the customer is now the audio player, in contrast to the headunit (USB mode). This is necessary so that the customer does not always have to change to USB mode when he is working with the apps in order to listen to music on his smartphone.



Audio player Accessory mode

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6. Android Devices

6.3.3. Accessory mode activation



TE13-2599

Accessory mode

Index	Explanation
1	"Start" main menu (USB mode)
2	Connection assistant in the ConnectedDrive menu after connection
3	"Audio player" Accessory mode
4	Accessory mode (not possible to play videos)
5	Change from Accessory mode to USB mode
6	Activate USB mode
7	USB mode
8	Not for US

Android smartphones are either connected to the vehicle via the snap-in adapter or a USB cable.

A new snap-in adapter is available for many Android smartphones. The "Snap-in Adapter Connected Universal" is suitable for different mobile phones. The antenna is connected inductively via a coupling antenna without any contact. Further information on the snap-in adapter can be found in the product information bulletin "Information and Communication System News I/2014".



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