

F10 Entertainment and Communication



BMW Service

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General information

Symbols used

The following symbol / sign is used in this document to facilitate better comprehension and to draw attention to particularly important information:



Contains important safety guidance and information that is necessary for proper system functioning and which it is imperative to follow.

Information status and national-market versions

The BMW Group produces vehicles to meet the very highest standards of safety and quality. Changes in terms of environmental protection, customer benefits and design make it necessary to develop systems and components on a continuous basis. Consequently, this may result in differences between the content of this document and the vehicles available in the training course.

As a general principle, this document describes left-hand drive vehicles in the European version. Some controls or components are arranged differently in right-hand drive vehicles than those shown on the graphics in this document. Further discrepancies may arise from market-specific or country-specific equipment specifications.

Additional sources of information

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

- in the Owner's Handbook
- in the integrated service technical application

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The information in the document is part of the BMW Group technical training course and is intended for its trainers and participants. Refer to the latest relevant BMW Group information systems for any changes/supplements to the technical data.

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F10 Entertainment and Communication

1. Introduction

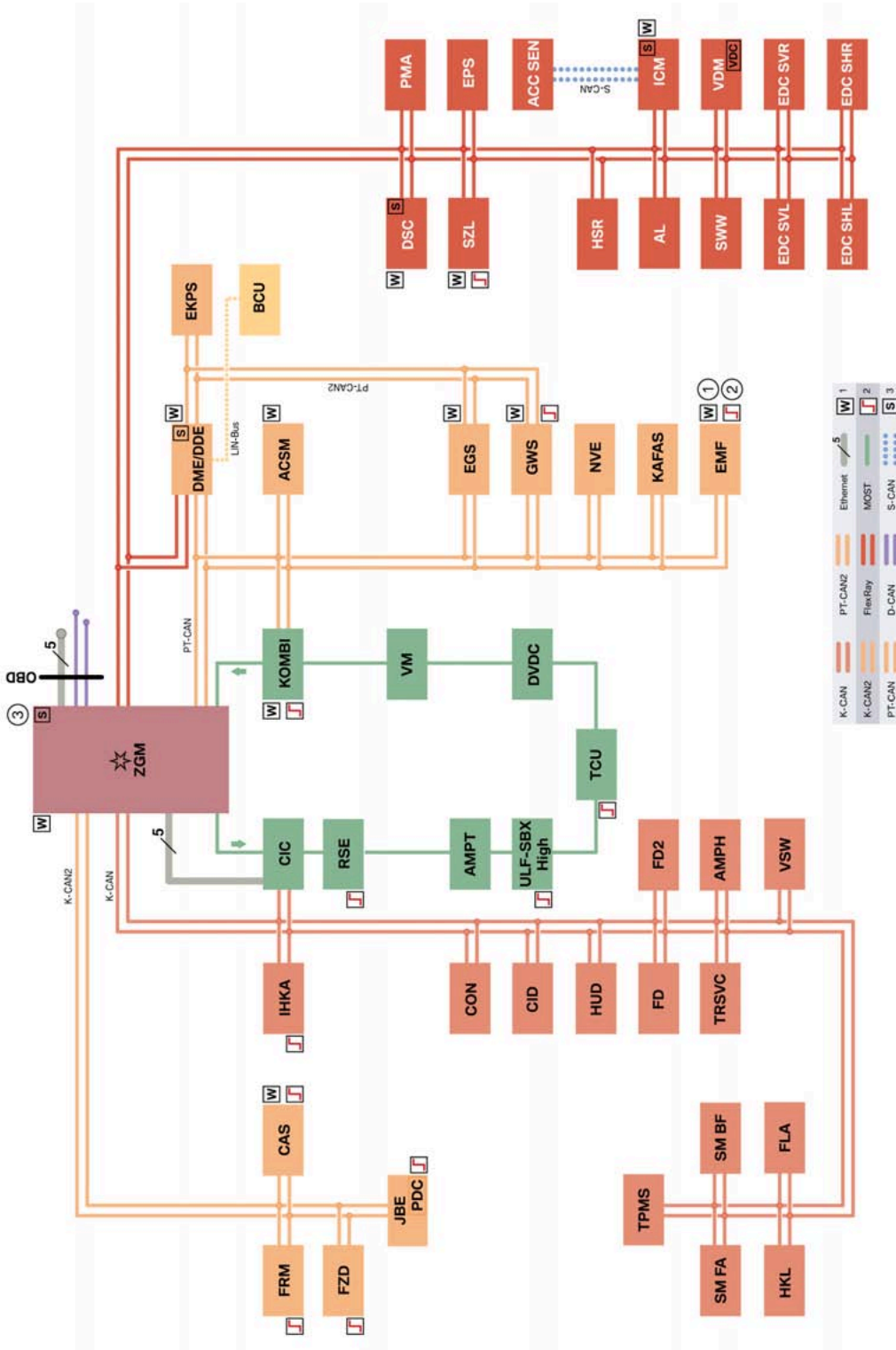
The information and communication system plays a highly important role in the F10. It builds on the very progressive technology from the F01. Thus the driver is offered a very wide range of infotainment systems from which to choose.

This information bulletin is intended to provide an overview of the systems being used.

F10 Entertainment and Communication

1. Introduction

1.1. F10 Bus diagram



F10 Bus diagram

F10 Entertainment and Communication

1. Introduction

Index	Explanation
1	Wakeable control units
2	Control units authorized to wake up the vehicle
3	Startup node control units, for starting up and synchronizing the FlexRay bus system
ACC-SEN	Active Cruise Control Sensor
ACSM	Advanced Crash Safety Module
AL	Active steering
AMPH	Amplifier High (high fidelity amplifier)
AMPT	Amplifier Top (top high fidelity amplifier)
BSD	Bit-serial data interface
BCU	Battery Charge Unit (for auxiliary battery)
CAS	Car Access System
CIC	Car Information Computer
CIC Basic	Car Information Computer Basic
CID	Central Information Display
CON	Controller
D-CAN	Diagnosis on Controller Area Network
DDE	Digital Diesel Electronics (Not for US)
DME	Digital Motor Electronics
DSC	Dynamic Stability Control
DVD	DVD changer
EDC SHL	Electronic Damper Control, rear left satellite unit
EDC SHR	Electronic Damper Control, rear right satellite unit
EDC SVL	Electronic Damper Control, front left satellite unit
EDC SVR	Electronic Damper Control, front right satellite unit
EGS	Electronic transmission control
EKPS	Electronic fuel pump control
EMF	Electromechanical parking brake
EPS	Electronic Power Steering
Ethernet	Cabled data network technology for local data networks
FD	Rear display
FD2	Rear display 2
FLA	High-beam assistant
FlexRay	Fast, preset and fault-tolerant bus system for use in automotive applications
FRM	Footwell module

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1. Introduction

Index	Explanation
FZD	Roof function center
GWS	Gear selector switch
HKL	Luggage compartment lid lift
HSR	Rear suspension slip angle control
HUD	Head-Up Display
ICM	Integrated Chassis Management
IHKA	Integrated automatic heating / air conditioning
JBE	Junction box electronics
KAFAS	Camera-based driver assistance system
K-Bus	Body bus
K-CAN.	Body controller area network
K-CAN2	Body controller area network 2 (500 kBit/s)
KOMBI	Instrument cluster
LIN-Bus	Local Interconnect Network bus
Local-CAN	Local Controller Area Network
MOST	Media Oriented System Transport
MOST port	Media Oriented System Transport port
NVE	Night Vision electronics
PDC	Park Distance Control
PMA	Parking Maneuvering Assistant Control Unit
PT-CAN	Powertrain CAN
PT-CAN2	Powertrain controller area network 2
OBD	Diagnosis socket
RSE	Rear seat entertainment system
SDARS	Satellite tuner
SMBF	Front passenger seat module
SMFA	Seat module, driver
SWW	Blind Spot Detection
SZL	Steering column switch cluster
TCU	Telematics Control Unit
TPMS	Tire Pressure Monitoring System
TR SVC	Control unit for reversing camera and side view
ULF-SBX	Universal interface box

F10 Entertainment and Communication

1. Introduction

Index	Explanation
VDM	Vertical Dynamics Management
VM	Video Module
VSW	Video switch
ZGM	Central Gateway Module

F10 Entertainment and Communication

2. Head Units

2.1. Car Information Computer



F10 Car Information Computer

The CIC head unit was installed for the first time on BMW 1 Series and 3 Series vehicles with the navigation system (option 609). This further development of the Car Communication Computer CCC is now also being used in the F10.

By storing data on a 80 gigabyte hard disk, the new head unit provides many new functions and options.

The audio systems with CIC added a music collection function. Music files can be converted (ripped) or copied for the music collection on the hard disc. Fast access to these music files, stored on the CIC-dedicated hard disc, is ensured at all times. A selection of up to 3700 music files (12 gigabytes) is possible.

The tuners/decoders of the digital radio systems, (IBOC) digital tuner and satellite tuner (SDARS) are now integrated into the CIC.

A modified base plate adapter extends the connectivity of the music player (option 6NF). This makes it possible to connect to and play back music tracks in the mobile phone.

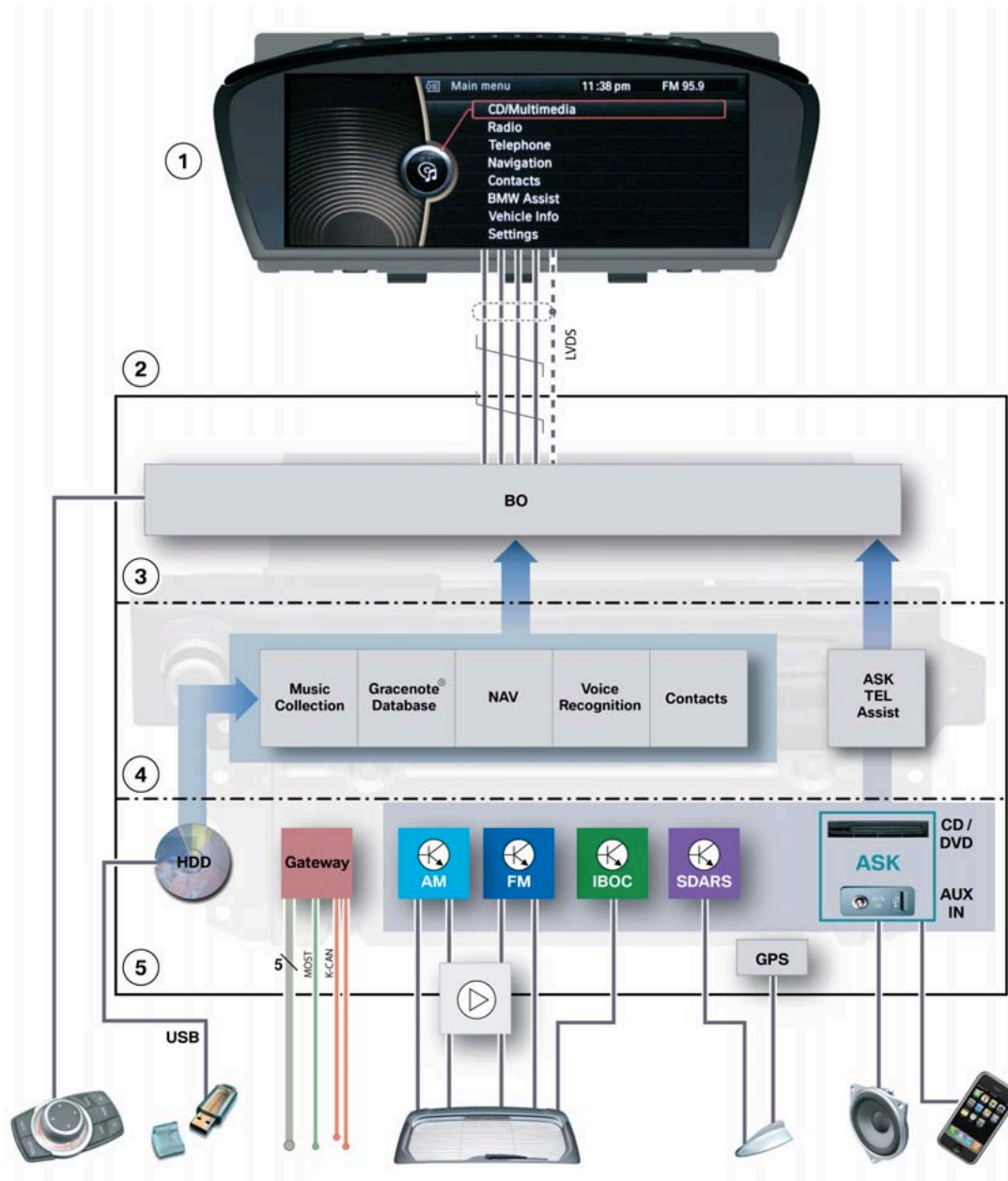
Simple menu navigation and playback of these music tracks can now be controlled via the iDrive.

For additional information about the Car Information Computer, refer to the "Car Information Computer CIC" and "F01/F02 Audio System" training material available on TIS and ICP.

F10 Entertainment and Communication

2. Head Units

2.1.1. Block diagram



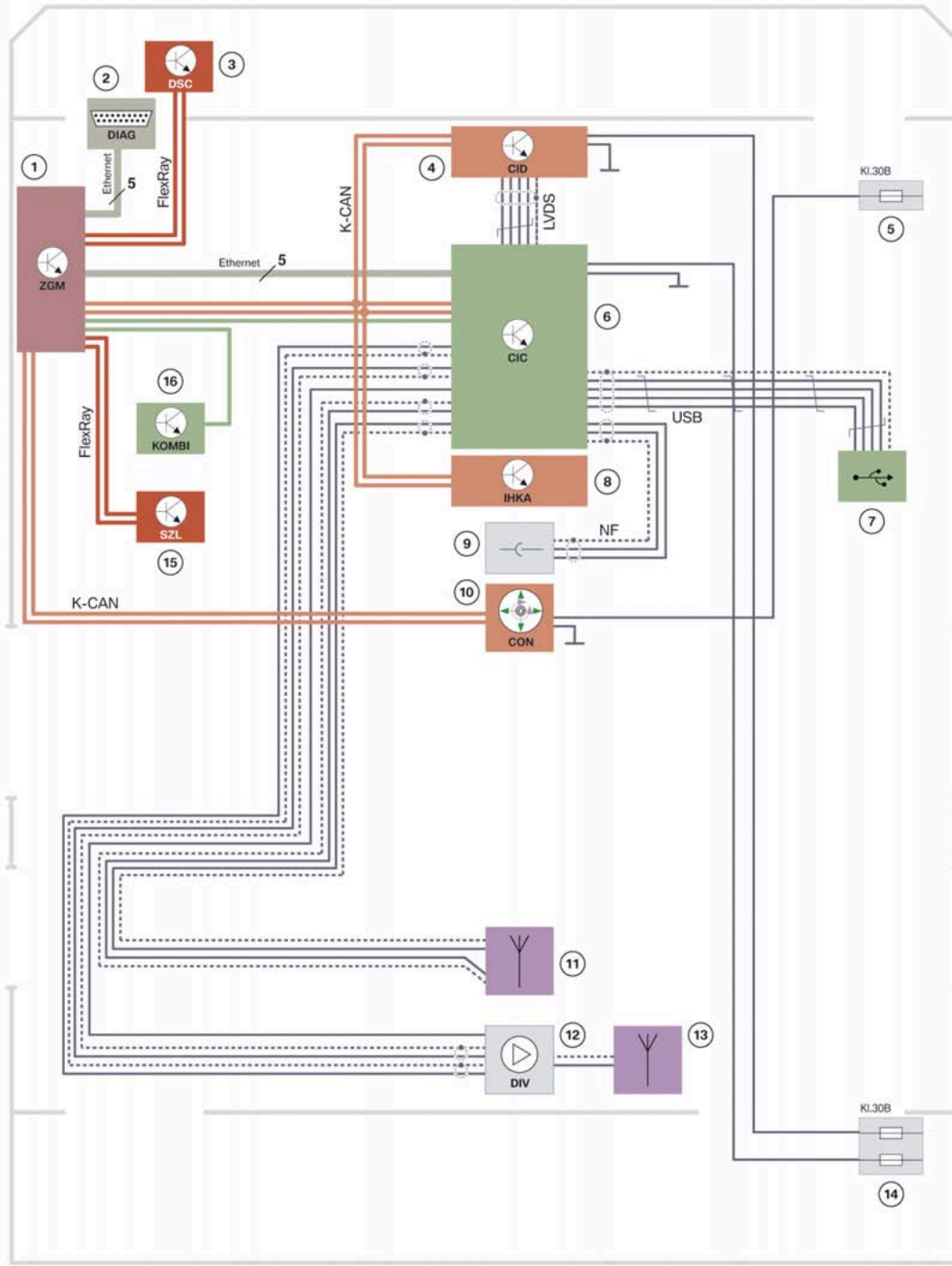
F10 Block diagram of CIC

Index	Explanation
1	Central Information Display
2	Car Information Computer
3	User interface
4	Application software
5	Hardware and interfaces

F10 Entertainment and Communication

2. Head Units

2.1.2. System wiring diagram



TE09-1634

F10 System wiring diagram of CIC

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2. Head Units

Index	Explanation
1	Central Gateway Module
2	Diagnosis interface
3	Dynamic Stability Control
4	Central Information Display
5	Front power distribution box
6	Car Information Computer
7	USB connection in glove box
8	Integrated automatic heating / air conditioning
9	Jack plug audio frequency input in the center console for playing back audio files
10	Controller
11	Roof-mounted antenna (GPS, SDARS)
12	antenna diversity module with integrated antenna amplifier
13	Rear window antenna (FM, AM)
14	Rear power distribution box
15	Steering column switch cluster
16	Instrument cluster

iDrive control screen comes in two versions: with a 7.0" diagonal 800 x 480-pixel resolution as standard equipment, or with the optional Navigation system, in a dazzling 10.2", 1280 x 480-pixel version with a wider range of features and functions as in the new BMW 7 Series.

All F10 come with the 7" CID combined with CIC Basic (without Navigation system) as standard equipment.

The system uses the same iDrive controller as the CIC with Navigation but includes less features like Music Collection or Voice Activation.



F10 CIC (with Navigation) and 10.2" diagonal CID.

F10 Entertainment and Communication

2. Head Units



F10 CIC Basic (non Navigation) and 7" diagonal CID.

CIC Basic comes standard equipped with HD Radio as the IBOC decoder is integrated into the CIC hardware.

SDARS (Satellite radio) however is available as an optional extra (option 655)

F10 Entertainment and Communication

3. Speaker Systems

3.1. Overview



F10 Speakers

The speaker systems in the F10 are offered in two levels:

- HiFi system = HiFi loudspeaker system (standard equipment)
- Top HiFi system = HiFi system Professional (option 677).

The HiFi system standard equipment on all F10 models.

The HiFi system is equipped with an eight-channel amplifier with digital equalizer. However, only seven of the eight channels are used in the HiFi system.

The bass speakers are located under the front seats. They are coupled to the side sills to increase the resonance volume necessary for bass reproduction.

The head-units CIC and Champ 2 can be combined with any of the amplifier/speaker systems available.

The HiFi system and Top-HiFi systems feature separate speakers for the treble and mid-range frequencies.

Even though the diameters of the speakers in the HiFi and Top HiFi System Professional are the same, there are differences in the performance of the speakers. This is achieved by the use of different materials for the diaphragms, coils and magnets.

The Top HiFi system supports playback of multichannel formats. Multichannel audio formats can be played back with the player in the CIC or with the 6x DVD changer.

The HiFi system has twelve speakers while the Top-HiFi system has 16 speakers each with different auxiliary amplifiers.

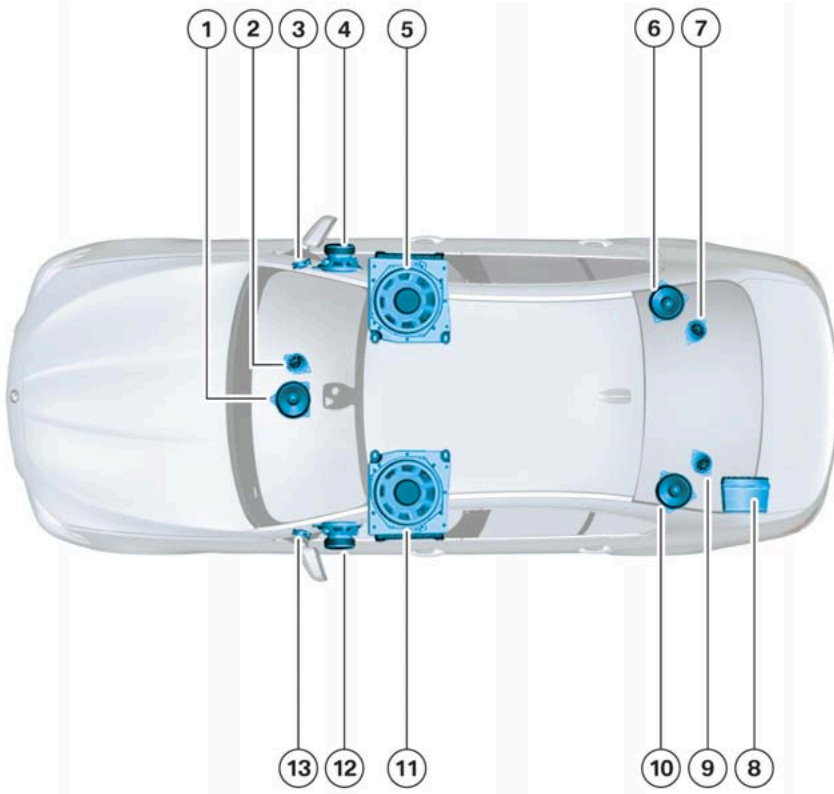
3.2. Components

3.2.1. HiFi system

The following graphic shows the speakers and the amplifier of the HiFi system. The speakers are powered with 5 x 25 watts for the midrange speakers and tweeters and 2 x 40 watts for the bass speakers.

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3. Speaker Systems



TE09-2385

F10 HiFi system

Index	Explanation
1	Tweeter, front center
2	Mid-range speaker, front center
3	Tweeter, front right door
4	Mid-range speaker, front right door
5	Woofer, under right front seat
6	Mid-range speaker, rear window shelf, right
7	Tweeter, rear window shelf, right
8	HiFi amplifier
9	Tweeter, rear window shelf, left
10	Mid-range speaker, rear window shelf, left
11	Woofer, under left front seat
12	Mid-range speaker, front left door
13	Tweeter, front left door

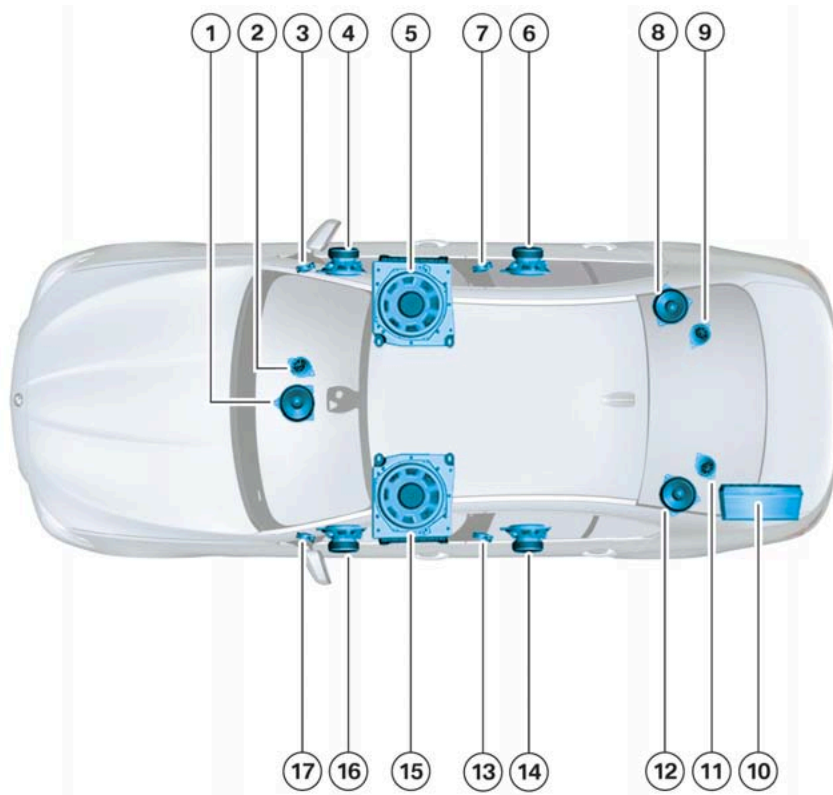
F10 Entertainment and Communication

3. Speaker Systems

3.2.2. Top HiFi system

The following graphic shows the speakers and the amplifier of the HiFi System. The speakers are powered with 7 x 50 watts for the midrange speakers and tweeters and 2 x 125 watts for the bass speakers.

In the F10, the amplifier in the HiFi System is equipped with what is known as a load-logic separation. Here, the electronics of the amplifier are supplied and connected via a separate voltage line. The line is specially protected against short-term voltage dips and thus prevents failure of the electronics in the event of a short-term voltage dip.



TE09-2386

F10 Top HiFi system

Index	Explanation
1	Tweeter, front center
2	Mid-range speaker, front center
3	Tweeter, front right door
4	Mid-range speaker, front right door
5	Woofer, under right front seat
6	Mid-range speaker, rear right door
7	Tweeter, rear right door
8	Mid-range speaker, rear window shelf, right
9	Tweeter, rear window shelf, right

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3. Speaker Systems

Index	Explanation
10	Top-HiFi amplifier
11	Tweeter, rear window shelf, left
12	Mid-range speaker, rear window shelf, left
13	Tweeter, rear left door
14	Mid-range speaker, rear left door
15	Woofers, under left front seat
16	Mid-range speaker, front left door
17	Tweeter, front left door

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4. Telephone Systems

4.1. Overview



F10 Telephone system

The Telematic Control Unit (TCU) familiar from the E70 (option 639) is installed.

BMW ASSIST is standard equipment in combination with the TCU.

The pairing assistant has also been integrated into the F10 to assist the customer in pairing the mobile phone.

For additional information about the telephone systems and their function, refer to the "Telephone systems F01/F02" and "Car Information Computer" training information available on TIS and ICP.



The specified range of functions will only be achieved with Bluetooth-enabled mobile phones recommended by BMW. A list of currently recommended Bluetooth-enabled mobile phones is posted on the Aftersales Assistance Portal (ASAP) and at <http://www.bmw.com/bluetooth/>

4.2. General description

The following control units act as the interface between the mobile phone and the vehicle:

- Telematic Control Unit (TCU)

The preconditions under which TCU or TCU and interface box together are installed are listed below:

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4. Telephone Systems

Optional extra	Installed control units
Complete basic fittings for mobile phone (option 639)	TCU
Complete basic fittings for mobile phone (option 639) + USB audio interface (optional 6FL)	TCU ULF-SBX High
Complete basic fittings for mobile phone (option 639) + Smartphone Integration (option 6NF) + USB audio interface (option 6FL)	TCU ULF-SBX High (Base plate and cradle for Smartphone integration)

Note: The ULF-SBX High is only used for the USB Audio Interface (option 6FL), the TCU is used for all other telephone and BMW Assist functions.

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5. Rear Seat Entertainment

5.1. Overview

It is possible to watch video from Digital Versatile Disc DVD on the Central Information Display CID in the F10. The picture in the CID is deactivated and replaced with an information text for safety reasons when the vehicle is in motion. If the car is fitted with a rear-seat entertainment system, rear-seat passengers can watch videos while the car is on the move.

The following optional extras are offered:

- DVD changer for 6 DVDs (option 696)
- Rear seat entertainment (optional extra 6FG)



F10 Rear seat entertainment system

The systems can be used for other purposes besides watching films, for example viewing interactive media such as tour guides, databases, catalogues, and so on. In conjunction with the Top HiFi amplifier (rear-seat entertainment professional), multichannel audio formats are supported.

The video module of the F10 does not incorporate a video switch. This continues to be a separate component.

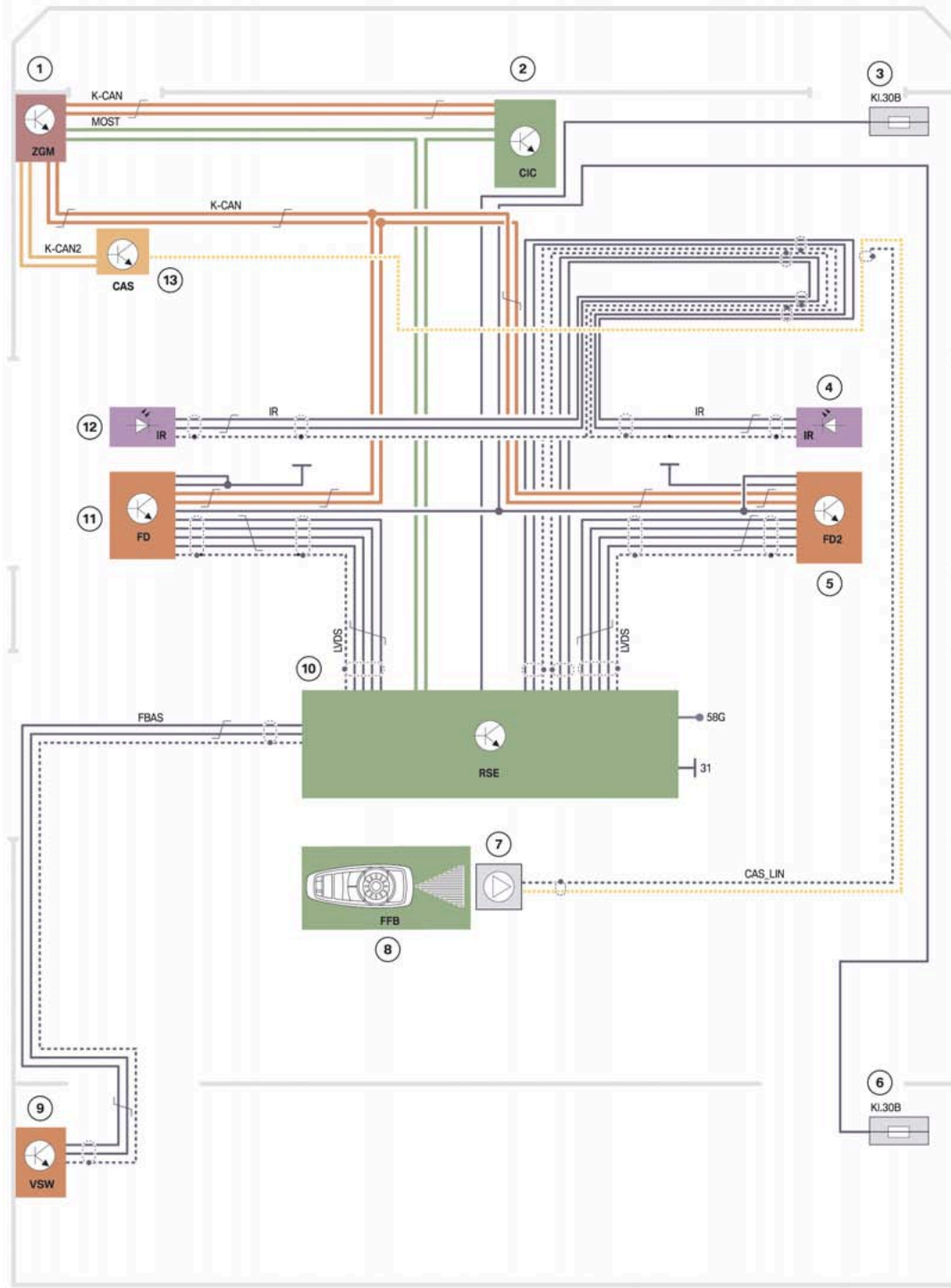
5.2. Rear seat entertainment (optional extra 6FG)

The F10 uses the rear seat entertainment system (option 6FG), which was introduced with the F01.

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5. Rear Seat Entertainment

5.2.1. System wiring diagram



TE09-1630

F10 Circuit diagram, rear-seat entertainment

F10 Entertainment and Communication

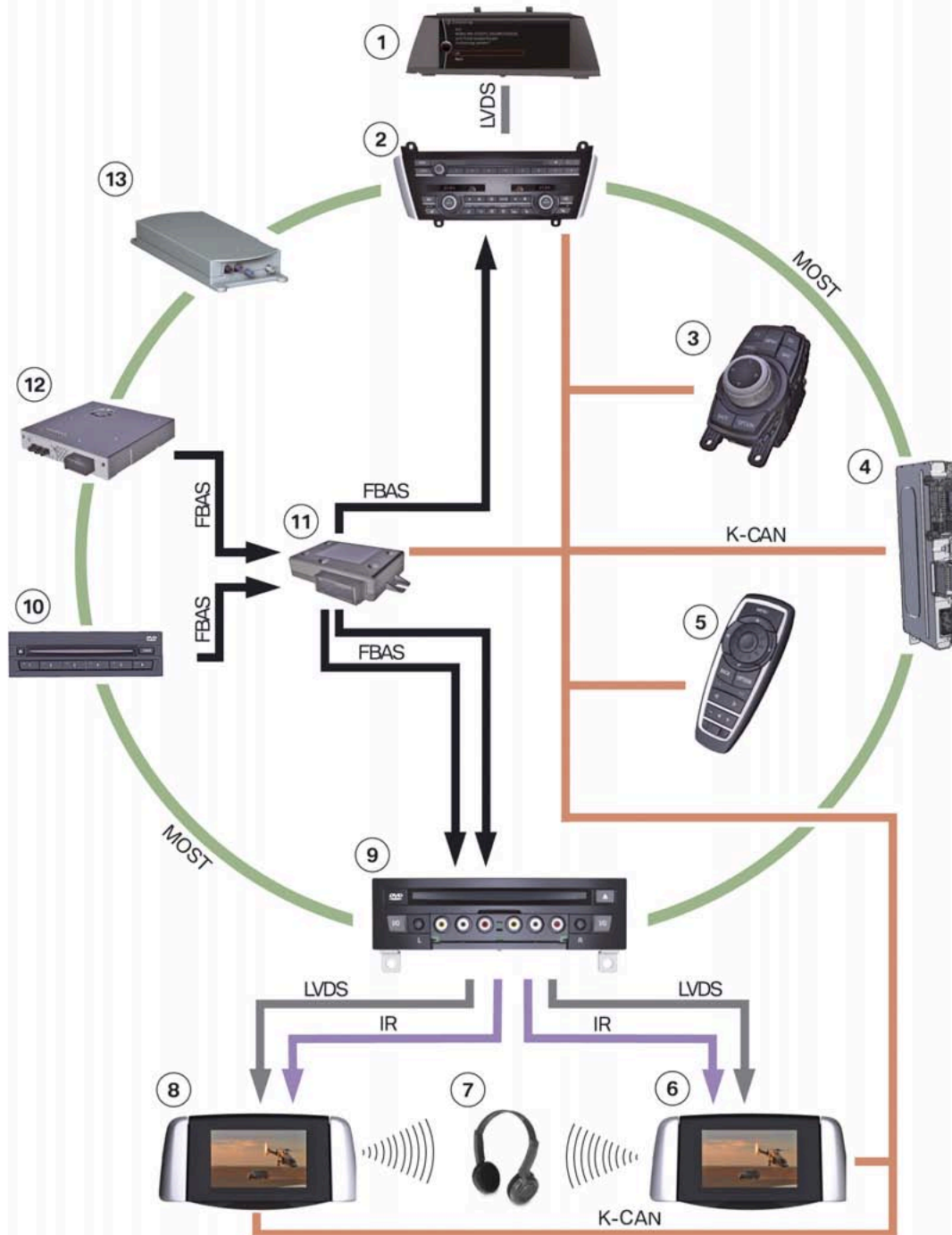
5. Rear Seat Entertainment

Index	Explanation
1	Central Gateway Module
2	Car Information Computer or Car Information Computer Basic
3	Front distribution box
4	Infrared transmitter, right
5	Rear-seat display FD2
6	Rear power distribution box
7	antenna diversity module with antenna amplifier
8	Operation of the remote control system
9	Video switch
10	Rear Seat Entertainment RSE Mid
11	Rear-seat display FD
12	Infrared transmitter, left
13	Car Access System

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5. Rear Seat Entertainment

5.2.2. Function diagram



TE09-1642

F10 Function diagram, rear-seat entertainment

F10 Entertainment and Communication

5. Rear Seat Entertainment

Index	Explanation
1	Central Information Display, CID
2	Car Information Computer, CIC
3	Controller
4	Central Gateway Module, ZGM
5	Operation of the remote control system
6	Rear-seat display FD2 with infrared transmitter
7	Infrared headphones
8	Rear-seat display FD with infrared transmitter
9	Rear Seat Entertainment RSE-Mid
10	DVD changer for 6 DVDs, in glove box
11	Video switch VSW
12	Video module VM
13	Telematic Control Unit TCU

Sound output takes place either through the vehicle's speakers or via headphones. The volume of the speakers can be adjusted via the multifunction steering wheel, the head unit or with the radio remote control. The volume is controlled speed-dependent during playback through the speakers. The driving speed is registered by the wheel speed sensors.

The tone settings can be adjusted on the Car Information Computer or Car Information Computer Basic or using the radio remote control.

If the sound is output via the headphones, the volume can be adjusted either on the headphones (infrared headphones) or using the radio remote control (hard-wired headphones). The infrared headphones receive their signals from the infrared transmitter.

External devices can be connected via the two AV inputs directly to the RSE control unit or via the AUX-In connection or the USB audio interface (option 6FL) in the center console. The USB audio interface provides an additional jack and a USB connection for a type A USB connector.

Video cannot be transmitted to the rear seat entertainment system when a DVD is played back via the Car Information Computer. Similarly, video is not transmitted to the Car Information Computer when a DVD is played back in the rear seat entertainment control unit. Sound output, however, is possible in both cases. Picture and sound are transmitted to the CIC and the rear seat entertainment system during playback via the DVD changer. For safety reasons, no picture is shown in the Central Information Display while the vehicle is being driven. Sound output continues even when the car is not at a standstill.

An external device (e.g. game console) can be additionally connected via the AV inputs. The corresponding video signal is output on the display of the connected source. The selected DVD can still be viewed on the other display. Prerequisite: see Functions, Connection to external equipment via AV input.

The RSE MID control unit has a FBAS/CVBS (composite video baseband signal) input for the screen of the DVD changer or video module.

The video switch is installed corresponding to the equipment configuration.

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5. Rear Seat Entertainment

Note: (FBAS) Farb-Bild-Austast-Synchron is CVBS (Composite Video Baseband Signal) in which just the video signal is transmitted through a single wire with the audio signal handled separately.

5.2.3. Components, installation locations and functions



F10 System overview (option 6FG)

Index	Explanation
1	Rear-seat display FD
2	Central Information Display
3	Rear-seat display FD2
4	Car Information Computer or Car Information Computer Basic
5	Rear Seat Entertainment RSE-Mid
6	Operation of the remote control system

The rear seat entertainment system (option 6FG) offers the following equipment:

F10 Entertainment and Communication

5. Rear Seat Entertainment

- Radio tuner with RDS
- Sound output via: infrared headphones, wired headphones and audio speakers of the vehicle
- AUX-In connection in center console (analog jack)
- Connection to external equipment via AV input, e.g. video camera, games console or portable playback equipment
- Operation via remote control.

Optional extras:

- DVD changer (option code 696)
- USB/audio interface in center console (option 6FL) for connecting media players (e.g. USB stick and Apple iPod®)
- In Band On Channel (IBOC) HD Radio is standard equipment and Satellite Digital Audio Radio Services (SDARS) is available as an option (SA655).

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5. Rear Seat Entertainment

5.2.4. Operation of the remote control system



TE09-1647

F10 Radio remote control for rear seat entertainment

Index	Explanation
1	Menu
2	Knurled wheel
3	Confirmation button
4	Option
5	Battery symbol
6	Selector slide, left/right
7	Volume
8	Track search/track skip
9	Wireless symbol
10	Back
11	Four-way directional controller (four buttons)

F10 Entertainment and Communication

5. Rear Seat Entertainment

The remote control features two LED for checking operation and battery voltage. Transmission of a wireless signal is acknowledged by the green send signal lighting. The radio remote control signals are only sent if the rear seat entertainment system is switched on.

If the battery voltage reaches a critical level, the red battery symbol will light instead of the green send symbol each time a button is pressed. The battery in the radio remote control must be replaced to ensure continued operation.

The thumbwheel, the confirmation button and the four-way directional controller make up the iDrive controller functions. Turning the thumbwheel corresponds to turning the iDrive controller. Sliding the iDrive controller to the left, right, forwards or back is replaced by pressing the corresponding button on the four-way directional controller. Pressing the iDrive controller corresponds to pressing the confirmation button.

The entire radio remote control changes over to the selected side by operating the selector slide.

The signals of the radio remote control are received by the antenna for radio remote control services in the rear window.

F10 Entertainment and Communication

6. Antenna Systems

Depending on optional equipment, the F10 is equipped with different antenna systems:

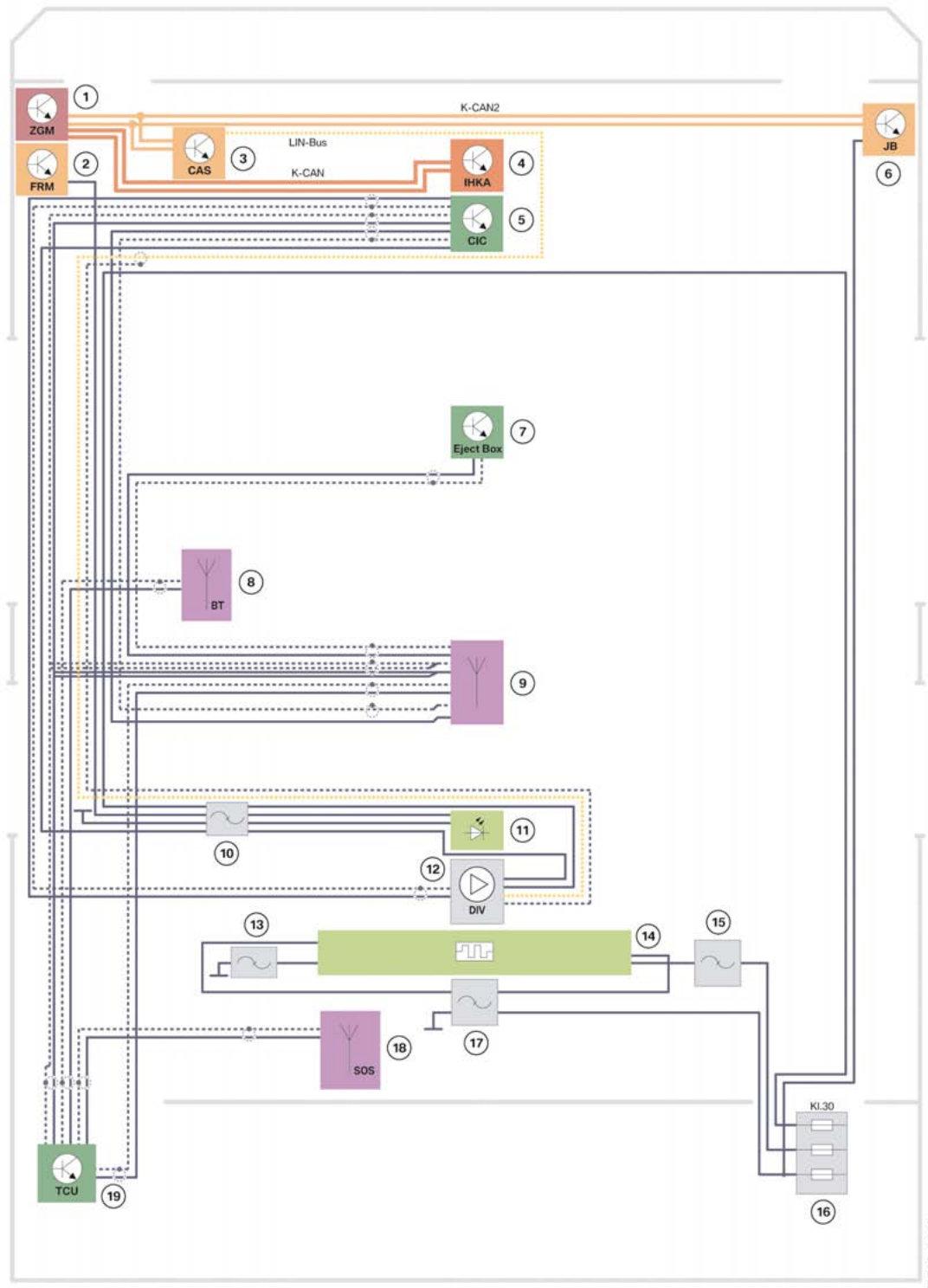
Antenna	System	Location
FM/AM antenna	Radio	Rear window
SDARS antenna	Radio	Roof
Navigation antenna	Navigation system	Roof
Remote control service antenna	CAS (remote control services)	Rear window
Telephone antenna	Telephone.	Roof
Bluetooth antenna	Telephone.	Slide/tilt sunroof area
Emergency GSM antenna	Telematics services	Rear right interior

F10 Entertainment and Communication

6. Antenna Systems

6.1. Antenna systems

6.1.1. System wiring diagram



F10 System wiring diagram for antenna systems

F10 Entertainment and Communication

6. Antenna Systems

Index	Explanation
1	Central Gateway Module
2	Footwell module
3	Car Access System
4	Integrated automatic heating / air conditioning
5	Car Information Computer
6	Junction box electronics
7	Base plate of universal charging and hands-free facility
8	Bluetooth antenna
9	Roof-mounted antenna (telephone, SDARS and GPS)
10	Brake light interference suppression filter
11	Rear brake light
12	antenna diversity module with antenna amplifier
13	Rejector circuit, rear window_1
14	Rear window antennas (FM, AM, remote control services FBD)
15	Rejector circuit, rear window_2
16	Rear power distribution box
17	Rejector circuit, rear window defogger for AM range
18	Emergency call antenna (backup)
19	Telematics Control Unit



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