Audi
Second-generation Modular Infotain-ment System

Second-generation Modular Infotainment System

For years now, infotainment has been driving technological development forwards and presenting ever new challenges to the manufacturers of automobiles with their relatively long product life cycles. Owners expect their car to feature the latest innovations in mobile or home entertainment and communications, so it is important to embrace the advances in the consumer electronics sector. Audi identified this development early on and responded by developing the Modular Infotainment System (*MIB* ↗).

The second generation of the Modular Infotainment System opens up new possibilities with features including the Audi tablet as a new mobile Rear Seat Entertainment system, 3D sound for a concert hall atmosphere in the car, the Audi phone box with wireless charging, and the Audi smartphone interface for seamless in-car integration of Google Android Auto and Apple CarPlay.

648_001

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This Self Study Programme teaches a basic understanding of the design and mode of operation of new models, new automotive components or new technologies.
It is not a Repair Manual! Figures are given for explanatory purposes only and refer to the data valid at the time of preparation of the SSP.
This content is not updated.
For further information about maintenance and repair work, always refer to the current technical literature.
In the glossary at the end of this self study programme you will find an explanation of all terms which are shown in italics and indicated by an arrow ↗.

! **Note**

Reference

Introduction

Second-generation Modular Infotainment System

The Audi TT (type FV) is the first Audi to feature the second-generation the Modular Infotainment System. The product designation is often abbreviated to second-generation MIB.

The following modifications have been implemented compared with the first generation:

- Double the processing power (8000 MIPS[1])
- Double the RAM (2 GB)
- Faster *WiFi* ↗ (up to 150 Mbit/s)
- Additional screen formats with 1440 x 540 and 1024 x 480 pixel resolution

648_002

The most obvious new feature from a customer standpoint is the new operating concept, which makes for even more intuitive operation. Thanks to a fully restructured menu, each individual function can be accessed with no more than three clicks.

3 versions of the second-generation MIB are currently used in Audi models:

- MIB Standard
- MIB Scale
- MIB High

[1] MIPS = Million instructions per second

MIB2 versions

MIB2 Standard

MMI Radio plus

The second-generation MIB Standard was first launched in the Audi Q7 (type 4M). In this model it bears the customer designation MMI Radio plus.

The MIB2 Standard has the following features:

▸ AUX-In connection and one 5V charging port in *USB format* ↗
▸ Radio with phase diversity, FM dual tuner (very high frequency) and AM tuner (medium wave)
▸ Single-CD drive for audio playback (mp3, *wma* ↗, *aac* ↗)
▸ One *SDXC card reader* ↗ for audio playback (mp3, wma, aac)
▸ Internal audio amplifier
▸ MMI display
▸ Remote control panel in the centre console
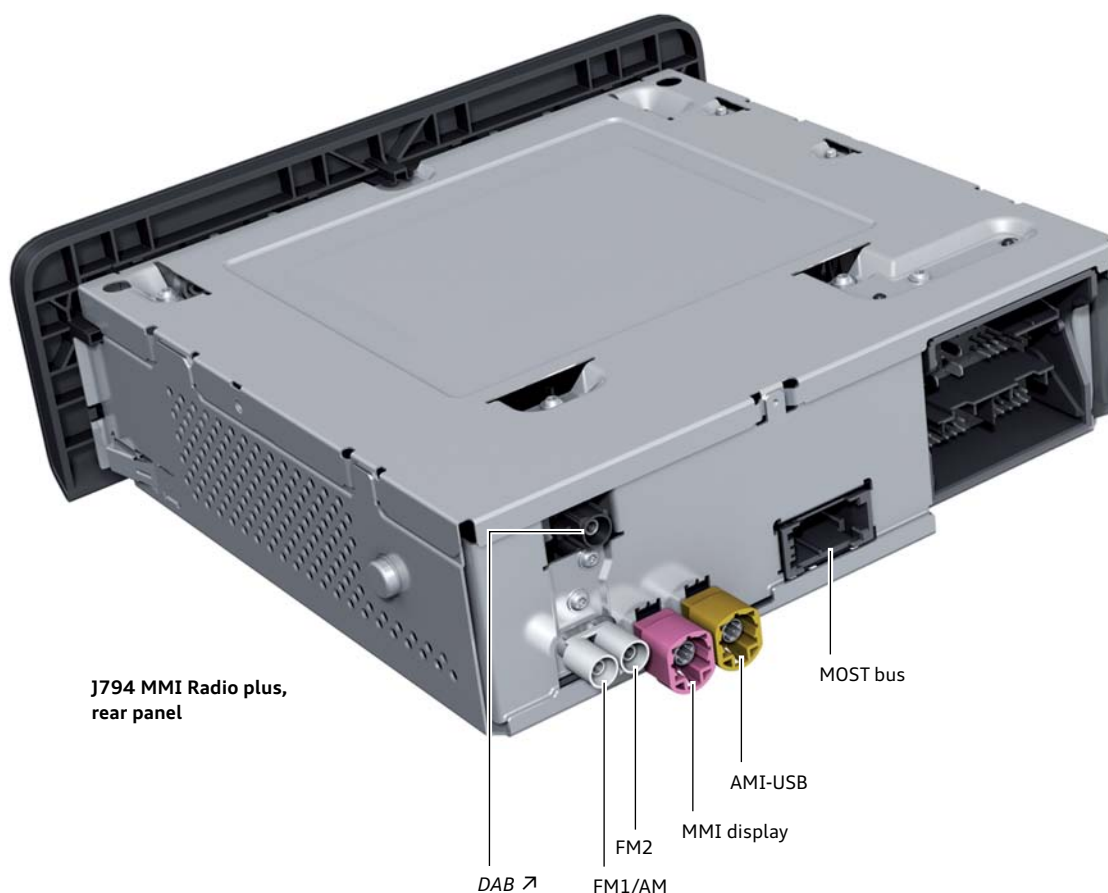

Main Wizard display   *648_003*

Depending on model, it may also have the following optional features:

▸ Audi music interface with 2 fully functional USB data ports and AUX-In connection
▸ Speech dialogue system
▸ DAB tuner (digital radio)
▸ External audio amplifier
▸ Audi phone box
▸ Bluetooth interface for *HFP* ↗ and *A2DP* ↗

J794 MMI Radio plus   *648_004*

648_005

J794 MMI Radio plus, rear panel

MOST bus

AMI-USB

MMI display

FM2

DAB ↗   FM1/AM

MIB2 Scale

MMI Radio Plus with Connectivity Package

If customers cannot decide whether or not they want a navigation system when ordering a new vehicle, they have the option of selecting the MMI Radio plus with Connectivity Package in the Audi A4 (type 8W) for instance. The installed hardware is, technically speaking, the MIB2 Scale with navigation pre-wiring.
In this case, the information electronics control unit 1 J794 already has the requisite navigation hardware and the vehicle has a navigation aerial.

The MIB2 Scale with navigation pre-wiring has the following features:

- Audi smartphone interface including Audi music interface with 2 fully functional USB data ports and AUX-In connection
- Radio with phase diversity, FM dual tuner (very high frequency) and AM tuner (medium wave)
- Single CD drive for audio playback (mp3, wma, aacetc.)
- Two SDXC card readers for audio playback (mp3, wma, aac etc.)
- Internal audio amplifier
- MMI display
- Remote control panel in the centre console
- Bluetooth interface for HFP and A2DP
- Navigation pre-wiring

It may also have the following options:

- Speech dialogue system
- DAB tuner (digital radio)
- External audio amplifier
- Audi phone box

The procedure for activating the navigation system is the same as for the previous systems with Connectivity Package. Once the navigation system has been activated, it has the same features as the MMI Navigation system but no data module.
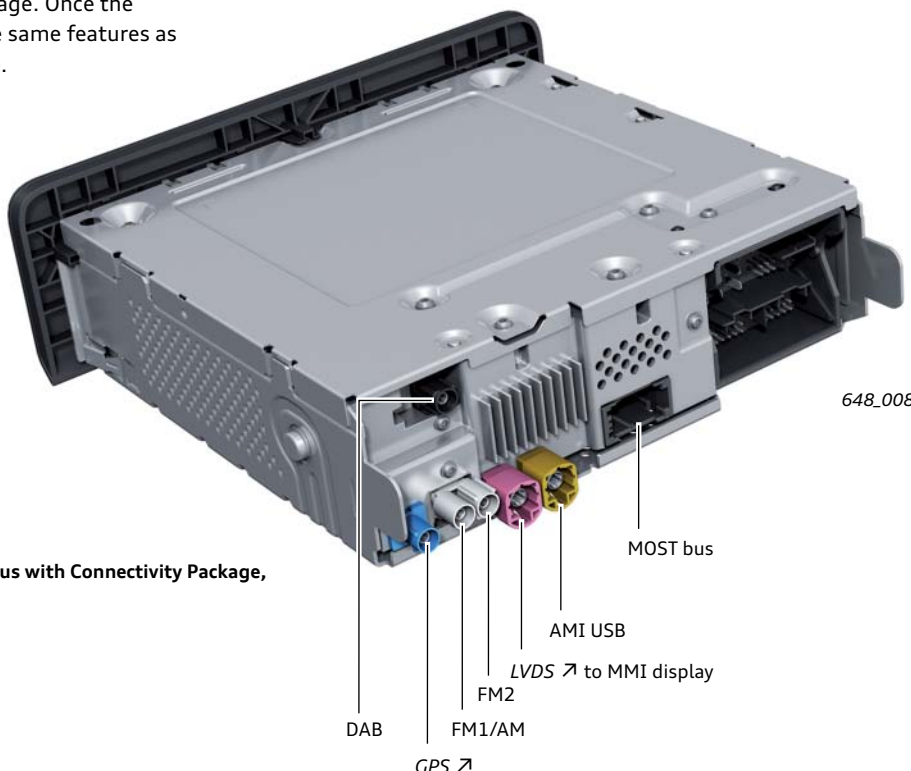

Main Wizard display *648_006*

J794 MMI Radio plus with Connectivity Package *648_007*

648_008

J794 MMI Radio plus with Connectivity Package, rear panel

MOST bus

AMI USB

LVDS ↗ to MMI display

FM2

FM1/AM

DAB

GPS ↗

! **Note**
The MIB2 Scale is featured in the Audi A4 (type 8W) for the first time.

MIB2 Scale

MMI Navigation with Audi connect

The MIB2 Scale MMI Navigation with Audi connect is also referred to as "MMI Navigation" in the Audi A4 (type 8W).

It has the following features:

▸ AUX-In connection and one 5V charging port in USB format
▸ Radio with phase diversity, FM dual tuner (very high frequency) and AM tuner (medium wave)
▸ Single CD drive for audio playback (mp3, wma, aac, etc.)
▸ Two *SDXC* card readers for audio playback (mp3, wma, aac, etc.)
▸ Internal audio amplifier
▸ MMI display
▸ Remote control panel in the centre console
▸ Speech dialogue system
▸ Bluetooth interface for HFP and A2DP
▸ 3D navigation with map data on *SD card* ↗
▸ Wireless data module (*UMTS* ↗/*LTE* ↗) including WLAN module (up to 150 Mbit/s) with 3-month test phase for Audi connect services (e.g. Europe)

Main Wizard display *648_009*

It may also have the following options:

▸ Audi smartphone interface including Audi music interface with 2 fully functional USB data ports and AUX-In connection
▸ DAB tuner (digital radio)
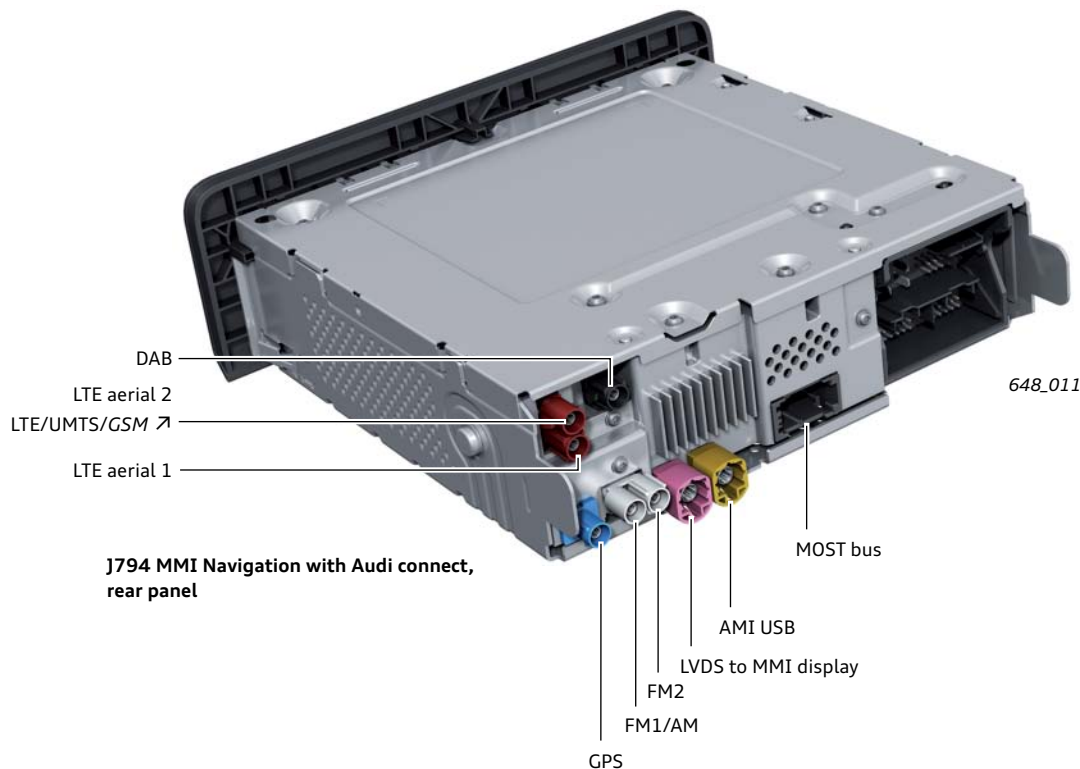▸ External audio amplifier
▸ Audi phone box
▸ Audi connect

J794 MMI Navigation with Audi connect *648_010*

648_011

- DAB
- LTE aerial 2
- LTE/UMTS/*GSM* ↗
- LTE aerial 1

J794 MMI Navigation with Audi connect, rear panel

- GPS
- FM1/AM
- FM2
- LVDS to MMI display
- AMI USB
- MOST bus

! **Note**
Navigation is not possible after the SD card with the navigation data is removed from the SD card reader.

MIB2 High

MMI Navigation plus

If customers request the high-end version by Audi in their vehicle, then MIB2 High is installed. This system variant was featured for the first time in the Audi TT (type FV).
In all model series it bears the designation "MMI Navigation plus".

In connection with the product upgrade, both the Audi A6 and the Audi A7 now come with the second-generation Modular Infotainment System in conjunction with MMI Navigation Plus. The Quattrologic has been retained as the controller logic in the Audi A6 and A7. Menu navigation is the same as for the MIB1 High used in the Audi A3 (type 8V).

Main Wizard display   *648_012*

MIB2 has at least the following features:

▸ AUX-In connection and one 5V charging port in USB format
▸ Radio with phase diversity and *FM dual tuner* ↗ (very high frequency) as well as AM tuner (medium wave) and background tuner
▸ Single DVD drive for audio and video files
▸ Two SDXC card readers for audio and video files
▸ Internal audio amplifier
▸ MMI touch
▸ Premium interactive speech dialogue system
▸ Bluetooth interface for HFP and A2DP
▸ 3D navigation with navigation data on solid-state drive including 3D building view
▸ *SSD drive* ↗ (approx. 64 GB)
▸ Jukebox (10 GB)

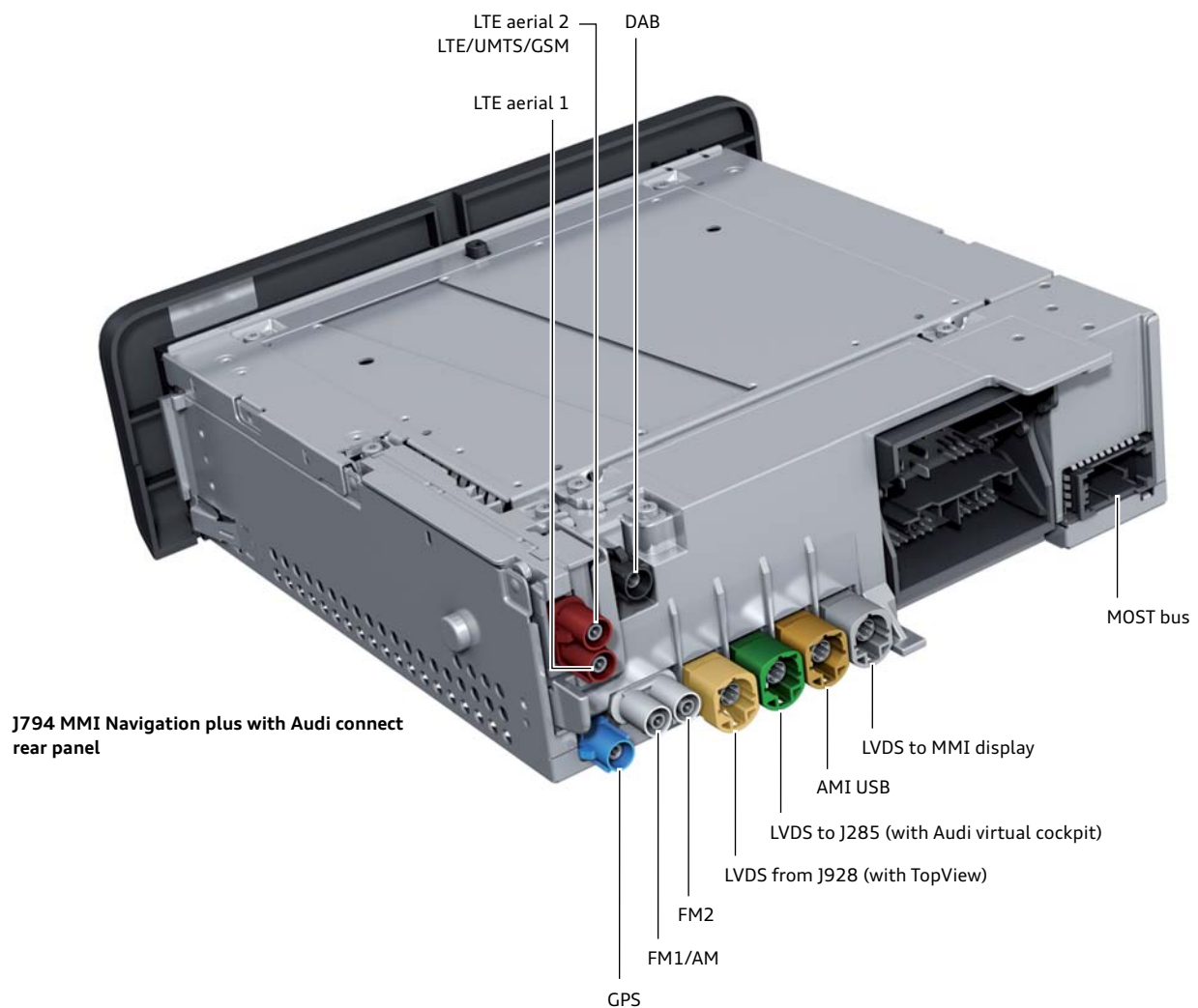**J794 MMI Navigation plus**   *648_013*

The MIB2 High can have the following additional features:

▸ Audi smartphone interface including Audi music interface with 2 fully functional USB data ports and AUX-In connection
▸ DAB tuner (digital radio)
▸ External audio amplifier
▸ Audi phone box
▸ Audi connect
▸ Wireless data module (UMTS/LTE) including WLAN module (up to 150 Mbit/s)
▸ Map update online [1]
▸ *SDARS tuner* ↗ (digital radio for NAR)
▸ TV tuner

J794 MMI Navigation plus with Audi connect   *648_014*

LTE aerial 2 — DAB
LTE/UMTS/GSM

LTE aerial 1

648_015

MOST bus

**J794 MMI Navigation plus with Audi connect
rear panel**

LVDS to MMI display

AMI USB

LVDS to J285 (with Audi virtual cockpit)

LVDS from J928 (with TopView)

FM2

FM1/AM

GPS

[1] For the first 5 six-monthly map updates (country dependent).

Variants (country dependent)

Overview

	Audi TT (FV)	Audi A4 (8W)
MIB2 Standard	✗	✓
MIB2 Scale	✗	⊕
MIB2 High	✓	⊕
MMI Radio	✓	✗
MMI Radio plus	✗	✓
MMI Navigation	✗	⊕
MMI Navigation Plus	⊕	⊕
8.3" TFT colour screen with 1024 x 480 pixels	✗	⊕
8" TFT colour screen with 800 x 480 pixels	✗	✗
7.0" TFT colour screen with 800 x 480 pixels	✗	⊕
12.3" with 1440 x 540 pixels for Audi virtual cockpit	✓	⊕
7" display in instrument cluster	✗	⊕
5" monochrome display in instrument cluster	✗	✓
3D hard drive navigation system	⊕	⊕
3D SD navigation	✗	⊕
Navigation pre-wiring	✗ 🗁 ①	⊕
Audi music interface	⊕	⊕
Audi music interface and Audi smartphone interface	✗ 🗎 ①	⊕
AUX-In connection and 5V USB charging port (UE3)	✓	✓
Connectivity Package	⊕	⊕
Jukebox (10 GB)	⊕	⊕
AM/FM radio	✓	✓
Satellite radio for North America (Sirius) (QV3)	✓	✓
DAB digital radio (QV3)	⊕	⊕
TV tuner (QV1)	⊕	⊕

	Audi A6/Audi A7 (C7PA)	Audi Q7 (4M)	Audi R8 (4S)
	✖	✔	✖
	✖	✖	✖
	⊕	⊕	✔
	✔	✖	✖
	⊕	✔	✖
	⊕	✖	✖
	⊕	⊕	✔
	✖	⊕	✖
	⊕	✖	✖
	✖	✔	✖
	✖	⊕	✔
	⊕	✔	✖
	✔	✖	✖
	⊕	⊕	✔
	✖	✖	✖
	✖	✖	✖
	⊕	✔	✔
	✖ [1] [2]	⊕	✖ [1] [2]
	✔	✖	✖
	✖	✖	✖
	⊕	⊕	✔
	✔	✔	✔
	✔	✔	✔
	⊕	⊕	⊕
	⊕	⊕	⊕

Key:

✔ Standard

✖ not available

⊕ Option

[1] available from summer 2016

[2] available from week 22/16

Variants (country dependent)

Overview

	Audi TT (FV)	Audi A4 (8W)
DVD drive (audio/video)	⊕	⊕
DVD changer	✖	✖
CD drive (MP3, WMA, AAC)	✓	✓
2 SDXC card readers	✓	⊕
1 SDXC card readers	✖	✓
Bang & Olufsen Advanced Sound System with 3D sound	✖	✖
Bang & Olufsen Sound System with 3D sound	✖	⊕
Bang & Olufsen Advanced Sound system	✖	✖
Bang & Olufsen Sound System	⊕	✖
BOSE sound system with 3D sound	✖	✖
Audi sound system	⊕	⊕
Basic Plus Sound System	⊕	✓
Basic sound system	✓	✖
Audi connect	⊕	⊕
UMTS/LTE data module	⊕	⊕
Bluetooth interface	⊕	✓
Audi phone box for 2x HFP including wireless charging	✖	⊕
Audi phone box including wireless charging	✖	⊕
Audi phone box light (for wireless charging only)	✖	⊕
Audi phone box	⊕	✖
Audi connect vehicle-specific services	✖	⊕
1 Audi tablet	✖	⊕
2 Audi tablet	✖	⊕
Provision for Rear Seat Entertainment	✖	⊕

Audi A6/Audi A7 (C7PA)	Audi Q7 (4M)	Audi R8 (4S)
⊕	⊕	✓
⊕	⊕	✗
✓	✓	✗
⊕	⊕	✓
✗	✓	✗
✗	⊕	✗
✗	⊕	✗
⊕	✗	✗
✗	✗	⊕
✗	⊕	✗
⊕	✓	✓
✓	⊕	✗
✗	✗	✗
⊕	⊕	⊕
⊕	⊕	⊕
⊕	✓	✓
✗	⊕	✗
✗	⊕	✗
✗	⊕	✗
⊕	✗	⊕
✗	⊕	✗
✗	⊕	✗
✗	⊕	✗
⊕	⊕	✗

Key:

✓ Standard

✗ not available

⊕ Option

13

E380 Operating units

Overview

	Audi TT (FV)	Audi A4 (8W) automatic	Audi A4 (8W) manual geaerbox
Control panels high	 **Operating unit with MMI touch**	 **"MMI touch" control panel with automatic gearbox**	 **Operator control module for multimedia system E817** **"high" control panel with manual gearbox**
Control panels MID	n/a	 **"MID" control panel with automatic gearbox**	 **Operator control module for multimedia system E817** **"MID" control panel with manual gearbox**
Control panels low	 **Control unit, basic version**	 **"Basic" control panel with automatic gearbox**	 **Operator control module for multimedia system E817** **"Basic" control panel with manual gearbox**
Volume control	 **Driver side volume control E67**	 **Driver side volume control E67**	 **Driver side volume control E67**

Audi A6/Audi A7 (C7PA)	Audi Q7 (4M)	Audi R8 (4S)
Operating unit with MMI touch (Quattrologic)	**Operating unit with MMI touch**	**Operating unit with MMI touch**
n/a	n/a	n/a
n/a	**"Standard" control unit**	n/a
Integrated in the control unit	**Driver side volume control E67**	**Driver side volume control E67**

Button combinations for service personnel

Overview

	Audi TT (FV)	Audi A4 (8W) automatic	Audi A4 (8W) manual geaerbox
System reset	 **Button combination for system reset**	 **Button combination for system reset**	 **Button combination for system reset**
Screenshot	 **Button combination for screenshot**	 **Button combination for screenshot**	 **Button combination for screenshot**
Engineering menu	 **Button combination for Engineering menu**	 **Button combination for Engineering menu**	 **Button combination for Engineering menu**

Reference
For further information about button combinations, refer to Self Study Programmes 629, 637 and 647.

Audi A6/Audi A7 (C7PA)	Audi Q7 (4M)	Audi R8 (4S)

Button combination for system reset	Button combination for system reset	Button combination for system reset

Button combination for screenshot	Button combination for screenshot	Button combination for screenshot

Button combination for Engineering menu	Button combination for Engineering menu	Button combination for Engineering menu

Audi phone box

Audi phone box

Models with MIB2 can be equipped with the Audi phone box as an option. If the optional Audi phone box is not fitted, the existing cradle is designated as the infotainment box.

The infotainment box is always equipped with an AUX-In connection and a 5V USB port. The AUX-In connection is used for analogue audio transmission. The 5V USB port is for charging mobile end user devices only.

If the optional Audi phone box is fitted, a coupling aerial is located below the cradle. If a mobile phone is docked in the cradle, the mobile radio signal received from the exterior aerial is transmitted contactlessly. Depending on model (see Version overview), a module for wireless charging of the mobile phone is also located below the cradle.
For more information about wireless charging, refer to page 20.

Audi phone box

648_016

📖 **Reference**
For more information about the coupling aerial, please refer to Self Study Programme 609 "Audi A3 '13".

Connection of 2 mobile phones

When the Audi A4 (type 8W) is launched it will be possible to simultaneously connect 2 mobile telephones to the MMI via HFP (Hands Free Profile). This makes possible the simultaneous use of two mobile phones via the MMI.

If the vehicle is equipped with Audi connect, a *SIM card* ↗ in J794 can be used for data connectivity at the same time as the two mobile phones connected via HFP. If no SIM card is inserted into J794, either of the two mobile phones can be connected via *SAP* ↗ (SIM Access Profile) instead of via HFP.

Connection manager menu   *648_017*

If 2 mobile phones are connected, the directory of the first phone (main phone) is always displayed. Speech operation available is for the main phone. It is easy to toggle between the first telephone (main telephone) and the second telephone (additional telephone) via the options menu.

Phone options menu with option for switching main phone   *648_018*

When one of the coupled mobile phones receives a call, this call is routed through the hands-free microphone. If the second coupled mobile phone receives a call at the same time, this is indicated on the MMI display (refer to Fig. 648_019, Display for second call). If, say, the call is answered by second mobile phone, the first call will be terminated.
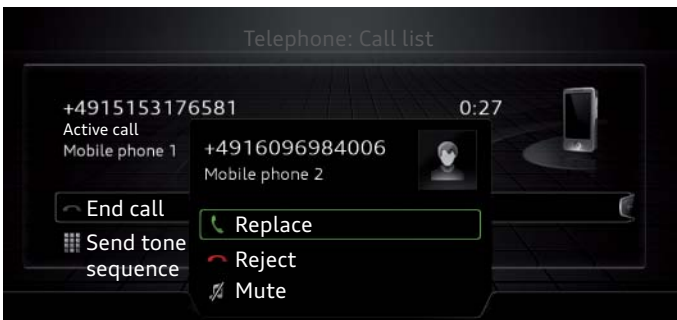
Display for second call   *648_019*

If the connected mobile phones support a messaging service (*text* ↗ or email), this can be used simultaneously by both mobile phones and an inserted SIM card.

Display for text messaging services   *648_020*

> **!** **Note**
> Two mobile phones can only be coupled simultaneously to the MMI if the optional Audi phone box is installed. If only the Bluetooth interface is installed, then, as before, only one telephone will be supported for the hands-free set.

Wireless charging

Wireless charging is the use of induction in order to charge a mobile phone. AC voltage is applied to a coil integrated in the charger (transmitter). This produces a constantly changing magnetic field. The receiver (mobile phone) also has a coil in which a voltage is induced by the changing magnetic field. The electronics in the receiver then supply charging voltage to the mobile phone.

Audi uses the *Qi standard* ↗ developed by the Wireless Power Consortium for this purpose. The Qi standard facilitates communication between the charger and the mobile phone during the charging phase.

Maximum power is 5 watts [1]. As smartphones have a working voltage of 5 volts, the maximum current is 1 ampere.

The wireless charging adaptor is integrated in the Audi phone box. The adaptor consists of charging electronics and 4 separate coils. In this case the aerial required for mobile phone reception is wound around the coils.
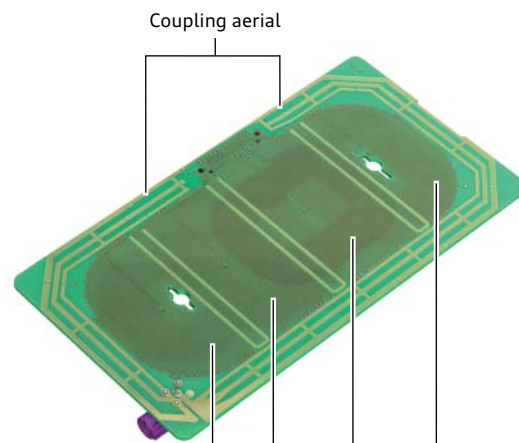
If the MMI is active (NO contact on), the charging electronics are activated by the phone-on signal. The charging electronics use sensors (inductive and capacitive) to check if there is an object in the Audi phone box. When a mobile phone which supports wireless charging is detected, the system starts the charging cycle by increasing the electrical current. This minimises power consumption in case no charging is required. In the telephone menu, a charging cycle is represented by a charging icon in the MMI display at the bottom right.

Only one coil is used per charging cycle. The charging electronics ensure that the best coil is always used. In this case, the coil which transfers the highest electrical current to the mobile phone is the best. To continuously use the optimal coil, the mobile phone sends information to the charging electronics. In very simple terms, the mobile phone indicates when the received power level is too low. The charging electronics then increase the power output or switch over to another coil. If the mobile phone is receiving enough power again, this coil is used until the next time the mobile phone indicates that it needs charging. Some mobile phones can also indicate that the battery is fully charged. The charging cycle stops when the charging electronics receive this information.

[1] The actual possible power consumption depends on the receiver.

Audi phone box   *648_021*

Coupling aerial

648_022

PCB with coupling aerial and magnetic coils   Magnetic coils

648_023

Audi phone box from below

Telephone
Navigation
Map
Audi connect
The mobile device is being charged in the charging cradle

Display at starting of charging   *648_024*

! **Note**
Only mobile phones with suitable hardware are charged
The term Qi is of Chinese origin and means "vital energy".

20

System limitations

To minimise electromagnetic interference with other in-car systems, the range of the mobile phone is limited. For this reason, the mobile phone must be docked in the charging cradle in order to ensure optimal charging. If there are thick or metallic objects between the mobile phone and the charging cradle, charging will not be possible.

In certain cases (e.g. with coins), a message text will be displayed in the MMI (refer to Fig. 648_025 Display when charging is not possible).

Note

The device cannot be charged as there is another object in the charging cradle.

OK

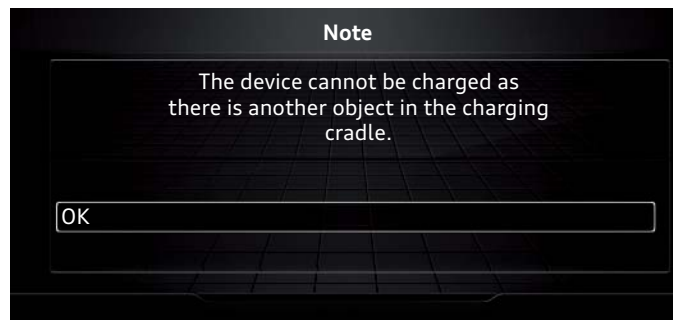**Display when charging is not possible**   *648_025*

If a mobile phone is detected in the charging cradle after switching off terminal S and opening the driver's door, a warning text is displayed and a warning tone is generated depending on the setting. If the driver's door is opened very quickly (up to 3 seconds after terminal S off), the warning may be given even if the mobile phone is removed from the cradle.

Heat is generated during inductive charging. Temperatures of up to 55 °C can be regarded as normal. The owner's manual also contains a warning to this effect.
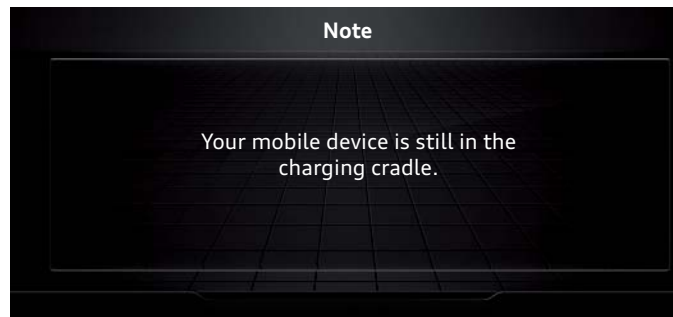
Note

Your mobile device is still in the charging cradle.

Message displayed when no mobile device is docked in charging cradle   *648_026*

Settings

The following settings can be used for wireless charging:

▸ on/off reminder signal
▸ sound (volume)
▸ spoken On / Off

MMI settings ⤺ **Wireless Charging**
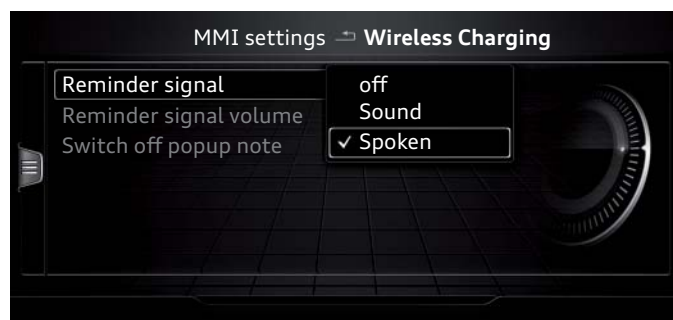
Reminder signal	off
Reminder signal volume	Sound
Switch off popup note	✓ Spoken

Displayed settings menu for wireless charging   *648_027*

! **Note**
In some countries where the Audi phone box with coupling aerial is not available, the Audi phone box can only be used for wireless charging - what is known as Audi phone box light.

Networking

The information electronics control unit 1 J794 is connected to the data bus diagnostic interface J533 via the infotainment CAN bus in all infotainment versions. The infotainment CAN bus is a high-speed bus with a max. data transfer rate of 500 kbit/s.

The following control units may also be connected to the infotainment CAN depending on trim level and model:

▸ Information electronics control unit J794
▸ Control unit in dash panel insert J285
▸ Control unit for windscreen projection (head-up display) J898
▸ Selector lever sensors control unit J587

The MMI display J685 and the operating unit E380 are connected to the information electronics control unit 1 J794 via the Modular Infotainment System (MIB) CAN bus. In addition, the control units for rear left/right information display and operating unit J648/J649 are users of this bus system. This MIB-CAN is a high-speed bus with a bandwidth of 500 kbit/s.

If the vehicle is fitted with an additional infotainment control unit (e.g. ampifier for sigital sound package, TV tuner, DVD changer), the infotainment system is also equipped with a MOST bus. This is also the case if the vehicle is equipped with a "Top" instrument cluster and Audi virtual cockpit. The MOST bus is a MOST 150 with a data transfer rate of 150 Mbit/s. The information electronics control unit 1 J794 acts both as the system master and diagnostics master for the MOST bus.

The following control units may also be connected to the MOST bus depending on model and trim level:

▸ Information electronics control unit J794
▸ Digital sound package control unit J525
▸ TV tuner R78
▸ Control unit in dash panel insert J285
▸ DVD changer R161

Image transfer

The displays for the control unit in dash panel insert J285 are transferred from the information electronics control unit 1 J794 as follows:

1. Audi virtual cockpit:

   ▸ LVDS: The large navigation map and the detailed intersection maps use the LVDS connection as a transmission pathway.
   ▸ MOST bus: All other content, such as list menus or covers and software updates of dash panel insert J285, is received via the MOST bus.
   ▸ Infotainment CAN: All other content is communicated via the infotainment CAN.

2. "Top" instrument cluster:

   ▸ MOST bus: the navigation data (incl. map) and software updates for J285 are transmitted via the MOST bus.
   ▸ Infotainment CAN: All other content is communicated via the infotainment CAN.
   ▸ The "Top" instrument cluster does not have an LVDS interface.

3. "Medium" instrument cluster:

   ▸ All other messages are communicated via the infotainment CAN.
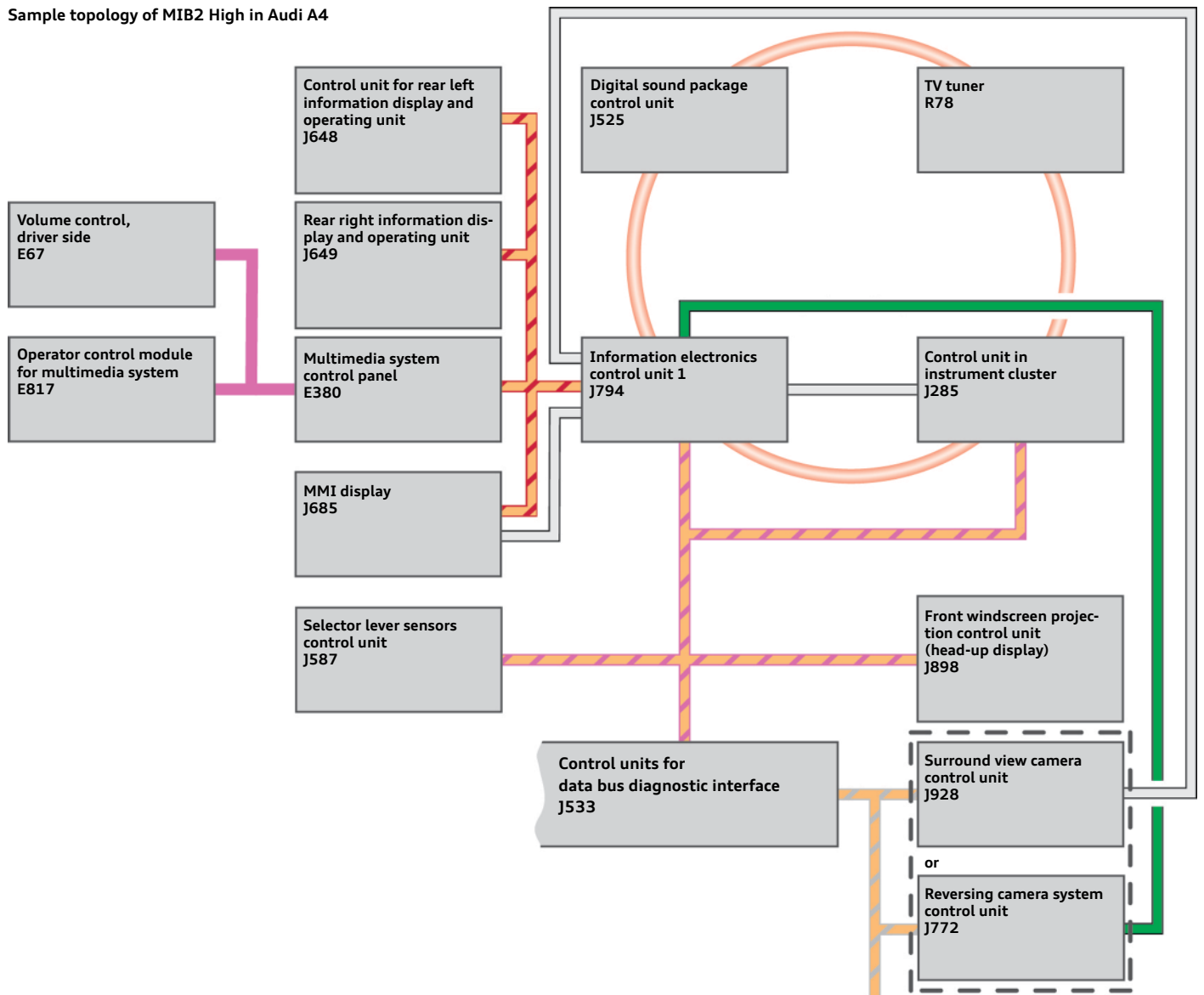   ▸ The "Medium" instrument cluster does not have an LVDS interface or a MOST bus interface.

! **Note**
A special networking case is the equipment variant MMI Radio plus (i8E) in combination with the "Top" instrument cluster with 7" colour display (9S7). In this case, the instrument cluster does not have an interface to the MOST bus.

Topology

Sample topology of MIB2 High in Audi A4

648_028

Key:

Modular Infotainment System (MIB-CAN)	
LIN bus	
Extended CAN	
Infotainment CAN	
MOST bus	
LVDS	
CVBS↗	
"OR" configuration	

Blocks shown in the diagram:

- Volume control, driver side — E67
- Operator control module for multimedia system — E817
- Control unit for rear left information display and operating unit — J648
- Rear right information display and operating unit — J649
- Multimedia system control panel — E380
- MMI display — J685
- Selector lever sensors control unit — J587
- Digital sound package control unit — J525
- TV tuner — R78
- Information electronics control unit 1 — J794
- Control unit in instrument cluster — J285
- Front windscreen projection control unit (head-up display) — J898
- Control units for data bus diagnostic interface — J533
- Surround view camera control unit — J928
- or
- Reversing camera system control unit — J772

Audi smartphone interface

The Audi smartphone interface represents a milestone in terms of in-car smartphone integration. Selected applications of the smartphone can be used and controlled via the in-car Audi smartphone interface in the usual way.

Thus, the Audi smartphone interface offers an unprecedented level of convenience and functionality in the area of integration. All of this is done conveniently and, above all, safely, since the driver's hands stay where they should be - on the steering wheel!

Functional overview of the Audi smartphone interface

With the Audi smartphone interface, it is possible to utilise different applications of the smartphone in the vehicle. These are designed to meet the key needs of the vehicle occupants during the trip.

‣ Navigation
‣ Communication
‣ Entertainment

This is done by using the navigation software installed on the smartphone, the installed messenger services (text/MMS) and various media apps, provided they are designed for use in the vehicle.

The advantage of this form of smartphone integration into the vehicle environment is that applications used by the customer can also be integrated.

Example showing possible applications   *648_029*

Technical requirements for smartphones

Software:

The Audi smartphone interface is compatible with 2 operating systems:

‣ Android
‣ iOS

To be able to connect a smartphone to the vehicle using the Audi smartphone interface, the relevant software must be installed on the smartphone.
The software for Android user devices is **Android Auto** and the software for Apple user devices is **Apple CarPlay**.

In the case of Android devices, the Android Auto application must be downloaded from the Google Play Store and installed.

This is not necessary in the case of Apple devices as Apple CarPlay is already preinstalled in the iOS operating system.

Hardware:

In addition to the software requirements, there are also corresponding hardware requirements which have to be met in order to use the Audi smartphone interface.

In the case of Android devices, the Android Auto application can be installed on user devices running the Android 5.0 (Lollipop) operating system or higher. This applies to smartphones and also, for example, to tablets.

If an Apple device is used, it is important to ensure it is at least a fifth-generation iPhone or later model running iOS 7.1 or higher. Apple CarPlay is preinstalled on these devices only. Other Apple user devices, such as iPads, cannot at present be used in combination with the Audi smartphone interface.

The availability of Android Auto and Apple CarPlay is country-dependent and must be checked on a case by case basis.

Technical requirements for vehicle

It is important to ensure that the vehicle is equipped with the Audi smartphone interface.
The Audi Q7 (type 4M) and the Audi A4 (type 8W) were the first models to feature this equipment option. The Audi smartphone interface can be ordered separate from Audi connect packages.

The PR numbers for the Audi smartphone interface in the Audi Q7 are as follows:

▸ 7A7 (without DVD changer, with Audi smartphone interface)
▸ 7D3 (DVD changer, with Audi smartphone interface)

In the Audi A4, the accompanying PR number is as follows:

▸ UI2 (electrical interface for external use, *AUX-IN* ↗ and 2 x USB)

Connecting to the vehicle

The smartphone can be connected to the vehicle using only a USB adaptor cable.
To do this, connect the smartphone to the appropriate cable interface (e.g. micro USB/Lightning Connector) and the Audi music interface via the USB port.
Both USB ports on the Audi music interface can be used for this purpose.
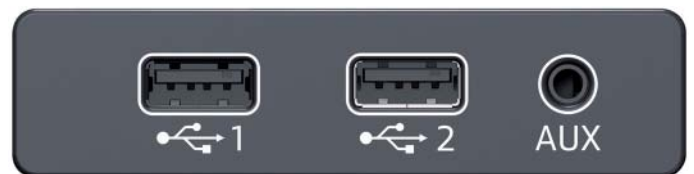
Audi music interface   *648_030*

Mobile phone connected to Audi USB adaptor cable   *648_031*

In the Audi MMI it is clear at first glance whether or not a vehicle is equipped with the Audi smartphone interface.
The menu option "Audi smartphone interface" is displayed on the MMI screen if no smartphone is connected to the vehicle via the Audi smartphone interface.
When a smartphone equipped with Android Auto or Apple CarPlay is connected via the Audi music interface, the relevant icon is displayed is displayed here. When the smartphone is connected to a vehicle for the first time, the usage and safety instructions displayed on the MMI screen and on the smartphone must be followed and accepted, where applicable.

Audi smartphone interface display in MMI Wizard   *648_058*

> **!** **Note**
> For safety reasons, the vehicle must be stationary when Android Auto is initialised for the first time. This has to do with the fact that Android Auto, unlike Apple CarPlay, is not integrated in the smartphone operating system and therefore requires additional work when connecting to the vehicle for the first time.

Use of the Android Auto operating system

The user can easily navigate through the menus of the Audi smart-phone interface using the rotary pushbutton. The speech dialogue system integrated in the smartphone can be used for a number of functions. A description of several basic functions and their operation is given below.

The Android Auto home screen provides at-a-glance information based on "Google Now Maps". The so-called "*Activity Bar* ↗ " is also displayed at the bottom edge of the screen.

Home screen

The *icons* ↗ for the relevant categories are displayed on the "Activity Bar" (from left to right):

- Navigation (in-phone navigation)
- Telephone calls (in-phone telephone function)
- Home button (return to Android Auto home screen)
- Media (various media apps)
- Back to Audi (return to MMI Main Wizard)

To access the "Activity Bar", the rotary pushbutton of the MMI must be moved downwards using the joystick function.
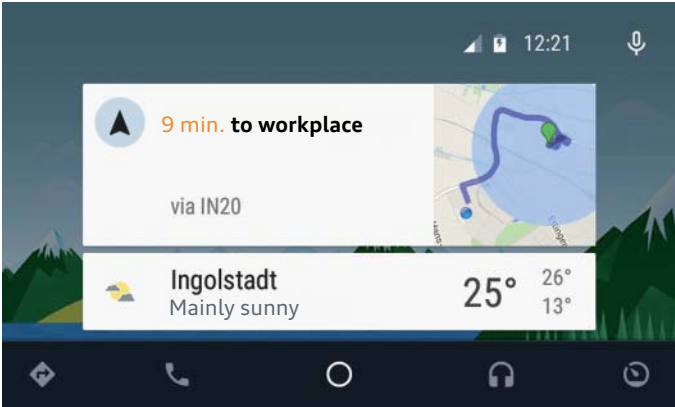
Navigation

Android Auto uses Google Maps for navigation purposes. The figure shows the map. Map settings can be changed using the menu on the right-hand side, e.g. zoom in/out of map.
To access the navigation settings, the rotary pushbutton of the MMI must be moved to the left using the joystick function. Additional destination entry options, such as "Last destinations" or Categories, can be used here. The menu option "Show Traffic" shows the live traffic situation on the map using coloured markings.
To access the manual destination entry function, the rotary push-button must be moved upwards in the map menu. The destination can now be entered using the "Speller" or via the MMI touch pad. Alternatively, a destination can be entered using the speech dialogue function regardless of which active menu is active. This can be done, for example, by moving the joystick function to the right (microphone icon) using the rotary pushbutton.

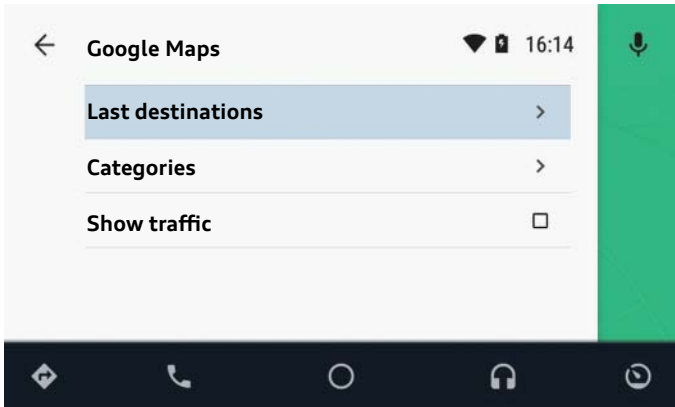To activate the speech dialogue function supported by the smart-phone, the speech dialogue control button on the multifunction steering wheel must be activated with a long push of the pushbutton.

Display Android Auto home screen   *648_032*
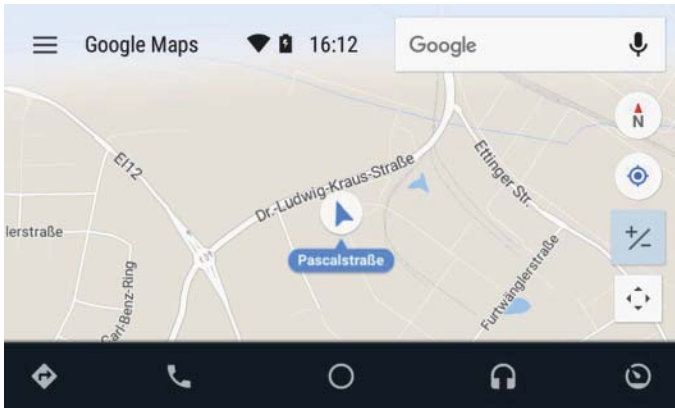
Display Android Auto navigation   *648_033*


Display Android Auto navigation settings   *648_034*

Telephone calls

The first layer of the Telephone menu displays shortcut buttons which simplify the selection of, say, favourites or frequently dialed phone numbers, provided these are stored in the smartphone. Missed phone calls can also be displayed here.
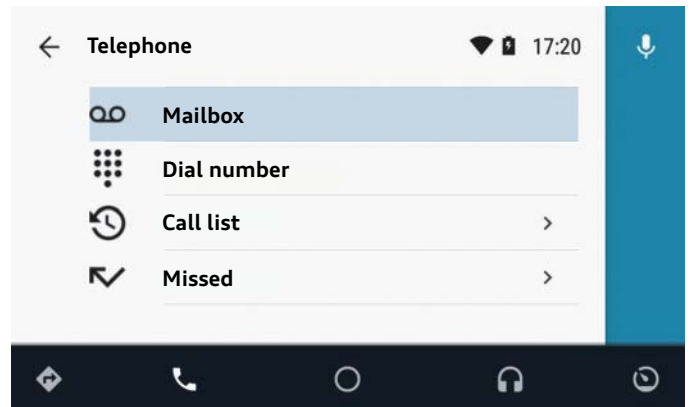The Telephone menu is opened by moving the rotary pushbutton to the left.

The following options are displayed here:

▸ Mailbox (direct dial mailbox)
▸ Dial number (manual number entry)
▸ Call list (call history)
▸ Missed (missed calls)
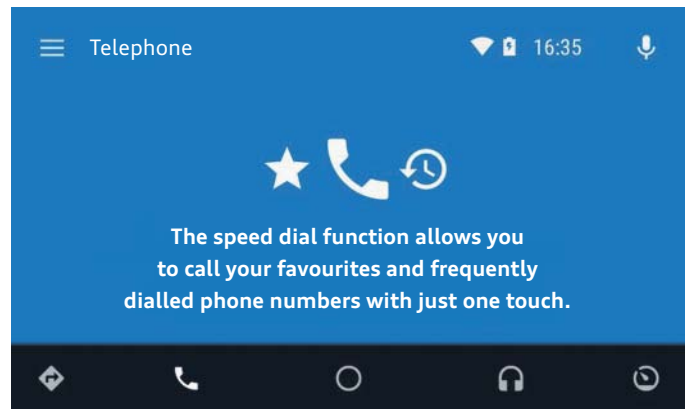
Display Android Auto telephone calls   *648_035*
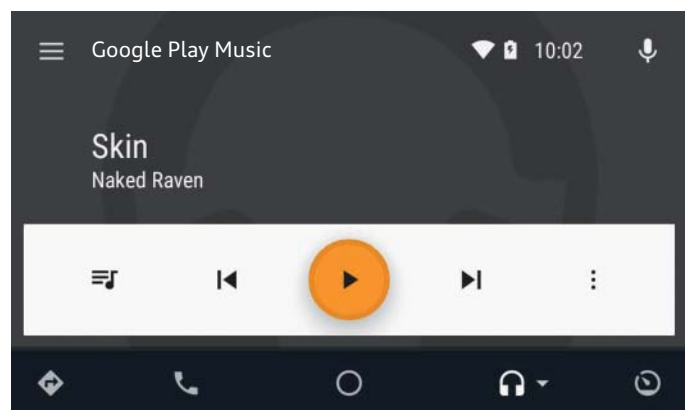

Display Android Auto telephone menu   *648_036*

Media

Clicking on the media icon in the "Activity Bar" always opens the last media app used. The figure shows the Google Play Music music service. To access the Media area in the options menu, the rotary pushbutton must be moved to the left.

To obtain an overview of the Android Auto compatible applications installed on the smartphone, the rotary pushbutton must be moved downwards in the upper layer of the media display. This brings the user back to the
"Activity Bar", in which the headphones icon must again be selected. The small arrow on the right adjacent to the icon symbolises a drop-down menu. The figure shows an example of how a selection of applications may look in this menu.

Display Android Auto Google Play Music   *648_037*
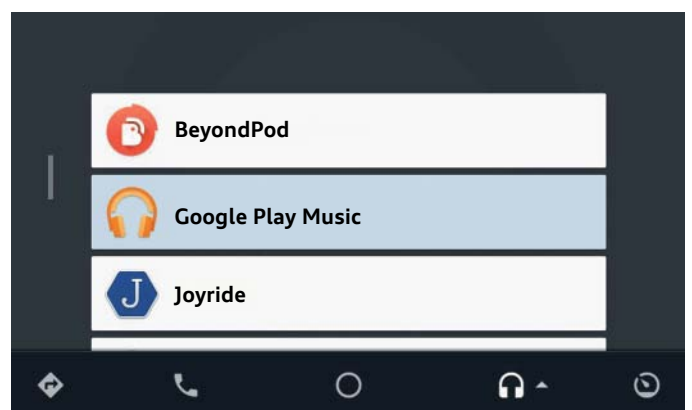
Display Android Auto media options menu   *648_038*

Use of the Apple CarPlay operating system

Operation of Apple CarPlay is intuitive. This software can also be operated using the rotary pushbutton or using the speech dialogue system integrated in the smartphone.

The user can navigate through the menus by turning the rotary pushbutton or using the joystick function.

Home screen

The home screen of Apple CarPlay is in typical Apple design and is very similar to that of an iPhone. This provides Apple users with a familiar environment for the use of applications. The home screen shows the apps which are available on the smartphone and compatible with Apple CarPlay. The 2 dots at the bottom edge of the screen indicate that a second page of applications is available.

Display of Apple CarPlay home screen   *648_039*

Telephone calls

If the Telephone menu is selected, the speech dialogue system of the smartphone starts automatically (Apple calls this function Siri). To make a telephone call, the user can now name a contact stored on the smartphone.
If this is not required, the user can switch to the Telephone menu using the "Show contacts" button (displayed at the top right on the screen).
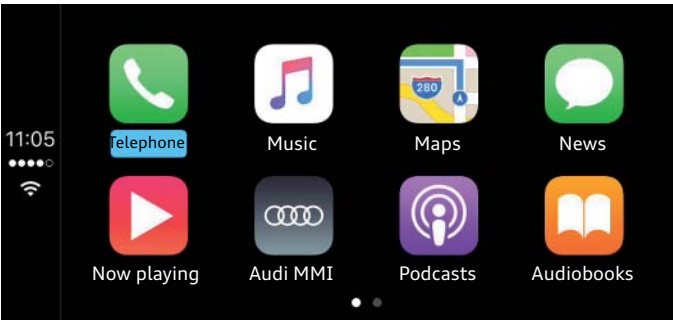
The following options are available:

▸ Favourites
▸ Call list
▸ Contacts
▸ Number pad
▸ Voice mail

A special feature is that the user can navigate through the options menu more quickly, e.g. the contacts list, using the joystick function or by quickly turning the rotary pushbutton.

Display of Apple CarPlay telephone activation   *648_040*
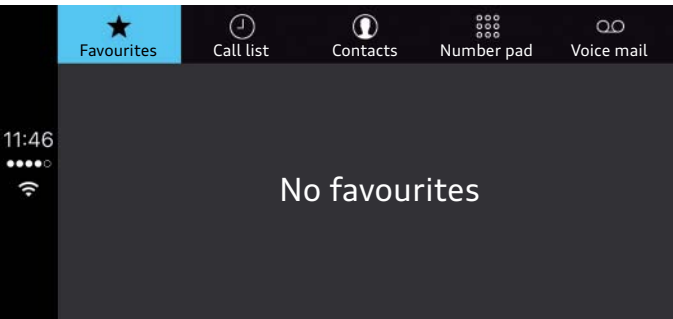
Display of Apple CarPlay telephone menu   *648_041*

Music

The music stored on the smartphone can be played back via the music icon. This music is sorted into various categories and can, for example, be selected via playlists. It goes without saying that music streams can also be played back here. Track currently playing and the name of the artist can be displayed by selecting the "Now playing" button. In this menu, the track which is currently playing can be paused and replayed by pushing the rotary pushbutton.

Display of Apple CarPlay music   *648_042*

Navigation

The navigation function can be started in Apple CarPlay by selecting the maps app.
The figure shows the navigation map which can be changed using the menu at the top edge of the screen.

It is possible to display a list of last destinations by selecting the "Destinations" option.
To enter destinations manually, the magnifying glasses icon must be selected. When this function is selected, the destination query is automatically activated via the speech dialogue system.

If this is not required, the user must select the keyboard icon using the rotary pushbutton. The desired destination can now be entered. Either the speller or the MMI touch control can be used for this purpose. As is the case with the Android system, destinations can be entered by speech dialogue, at any time and in any menu.
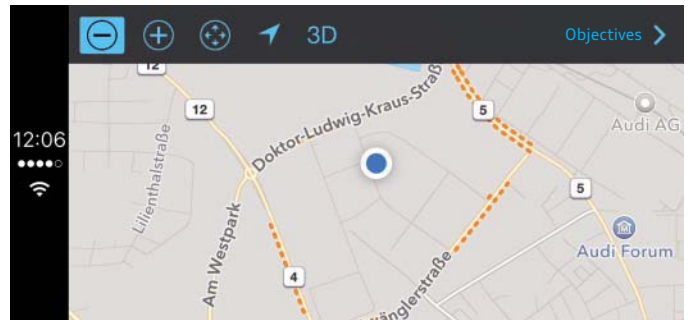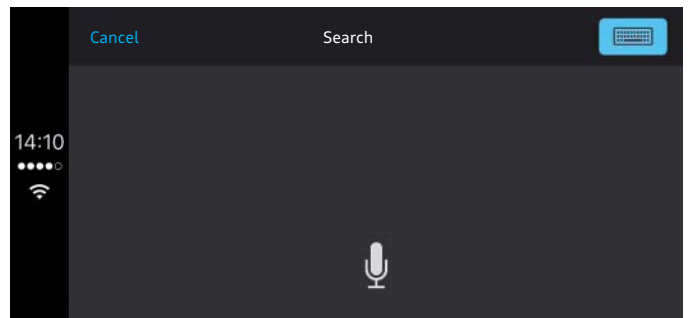
Display of Apple CarPlay navigation 648_043

Display of Apple CarPlay destination entry activation 648_044
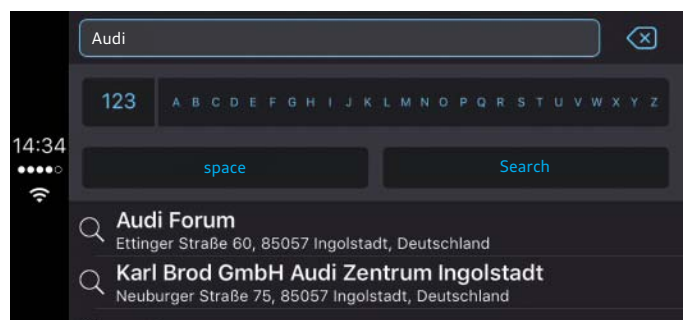
Display of Apple CarPlay manual destination entry 648_045

News

Apple CarPlay allows use of the messenger service installed on the smartphone (iMessage). When the user clicks on the news icon, iMessage automatically initiates a query via the speech dialogue system to determine whether the user wishes to view unread messages or compose a new message. If these functions are not relevant at this point in time, it is possible to view messages which have already been received and read by selecting "Display messages".
However, it is not possible to display the content of a message on the MMI display. The content can be reproduced by speech output only.

Display of Apple CarPlay messages 648_046

The previously described applications are system-integrated Android and iOS applications. So-called
Third Party Apps ↗ are not described in any further detail here, on account of the frequent updates and new releases. However, the Third Party Apps can be controlled using the same operating philosophy.

Reference
For more information about available Third Party Apps, please refer to the official homepages of Google and Apple.

Technical implementation and data exchange

All processing operations which relate to the applications and the execution thereof are performed by the smartphone itself.

Inside the vehicle:

▸ the MMI screen is used to display the content of the smart-phone.
▸ the MMI control panel is used to control the Audi smartphone interface.
▸ the hardware of the in-car speech dialogue system is used (e.g. microphones).

▸ the hardware of the sound system installed in the vehicle is used for sound output.
▸ the Audi music interface is used to connect the smartphone to be vehicle via USB cable.

The information electronics control unit 1 J794 is not responsible for calculating application content. This information must be taken into consideration when dealing with customer complaints relating to the functionality of individual applications.

Data exchange

To ensure reliable operation, several items of vehicle-specific information are exchanged between the vehicle and the connected user device. The user must expressly agree to this exchange of information before Android Auto or Apple CarPlay can be started. The user must agree to this data notice when the user device is connected to the vehicle for the first time. This prompt is not displayed in the case of devices which the vehicle recognises.
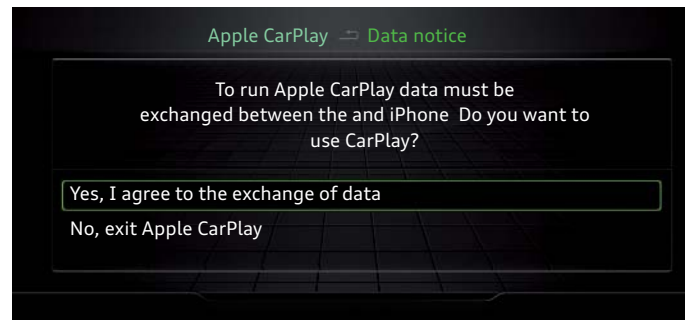
Display of MMI Apple CarPlay data notice   *648_047*

The following data is exchanged.

Apple CarPlay:

▸ Current vehicle speed
▸ Current GPS position incl. *dead reckoning* ↗
▸ Status of day/night mode
▸ Vehicle manufacturer
▸ Audi MMI version

Android Auto:

▸ Current vehicle speed
▸ Current GPS position incl. map matching information
▸ Status of day/night mode
▸ Gear selected
▸ Kilometres travelled (since last engine start)
▸ Compass information
▸ Vehicle manufacturer
▸ Audi MMI version

The purpose of this data exchange is, firstly, to provide added comfort and, secondly, to enhance safety. The speed signal, the GPS position, the compass information and the distance travelled improve the navigation function regardless of where the smart-phone is located inside the vehicle. The manufacturer information and the information on MMI version allow the device to be imme-diately reconnected to the vehicle. This is comparable to a Blue-tooth connection.

The information relating to day/night mode allows the smartphone to adapt the brightness level of the display according to require-ments. The gearshift display is needed as the vehicle must be stationary when Android devices are connected for the first time.

Limitations

The connectivity of other user devices to the vehicle via Bluetooth is greatly limited when the Audi smartphone interface is active. This can easily be checked in the connection manager. Apart from MMI connect app, all connectivity is deactivated (greyed out). The functions will again be fully available when the call is disconnected again via Android Auto or Apple CarPlay.

Audi phone box

If a vehicle is equipped with the Audi phone box and a smartphone is used via the Audi smartphone interface, the data required by the telephone is transferred via the vehicle's external aerial.
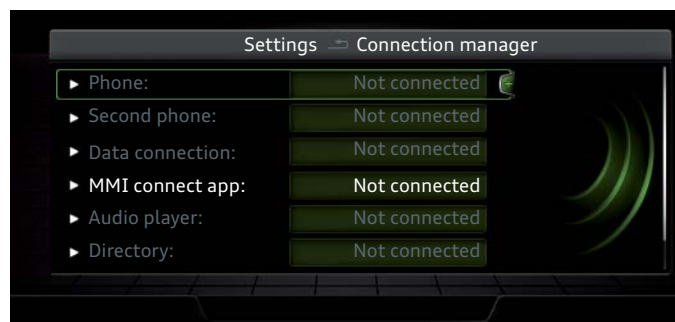
648_048
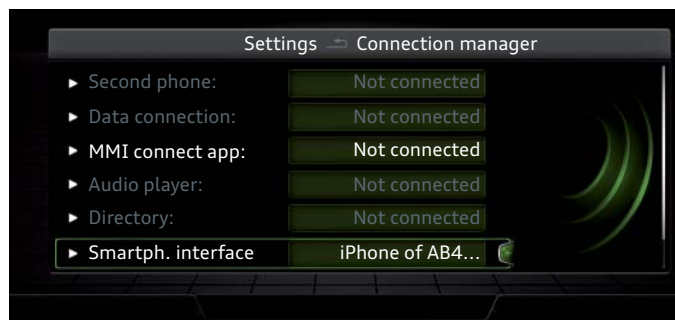
Display of MMI connection manager

648_049

Rear Seat Entertainment

The new Audi Rear Seat Entertainment system marks the arrival of the next generation of entertainment systems in Audi vehicles. Audio streaming, radio streaming, display of vehicle data and navigation are just a few of the functions available to the customer.

The newly developed Audi tablet serves as a display. It is a 10.1 inch tablet with an Android operating system.

Y32 Display unit 1 for multimedia system

648_050

Hardware

The Rear Seat Entertainment system consists of the following components:

- Audi tablet
    - Y32 Display unit 1 for multimedia system
- R316 Bracket for multimedia system display unit 4
- R315 Bracket for multimedia system display unit 3
- Control units
    - Rear left information display and operating unit J648
    - Rear right information display and operating unit J649

Components of the Rear Seat Entertainment system

Y32 Left multimedia
system display unit 4

R315 Bracket for multimedia
system display unit 3

R316 Bracket for multimedia system
display unit 4

648_051

J648 Rear left information display
and operating unit
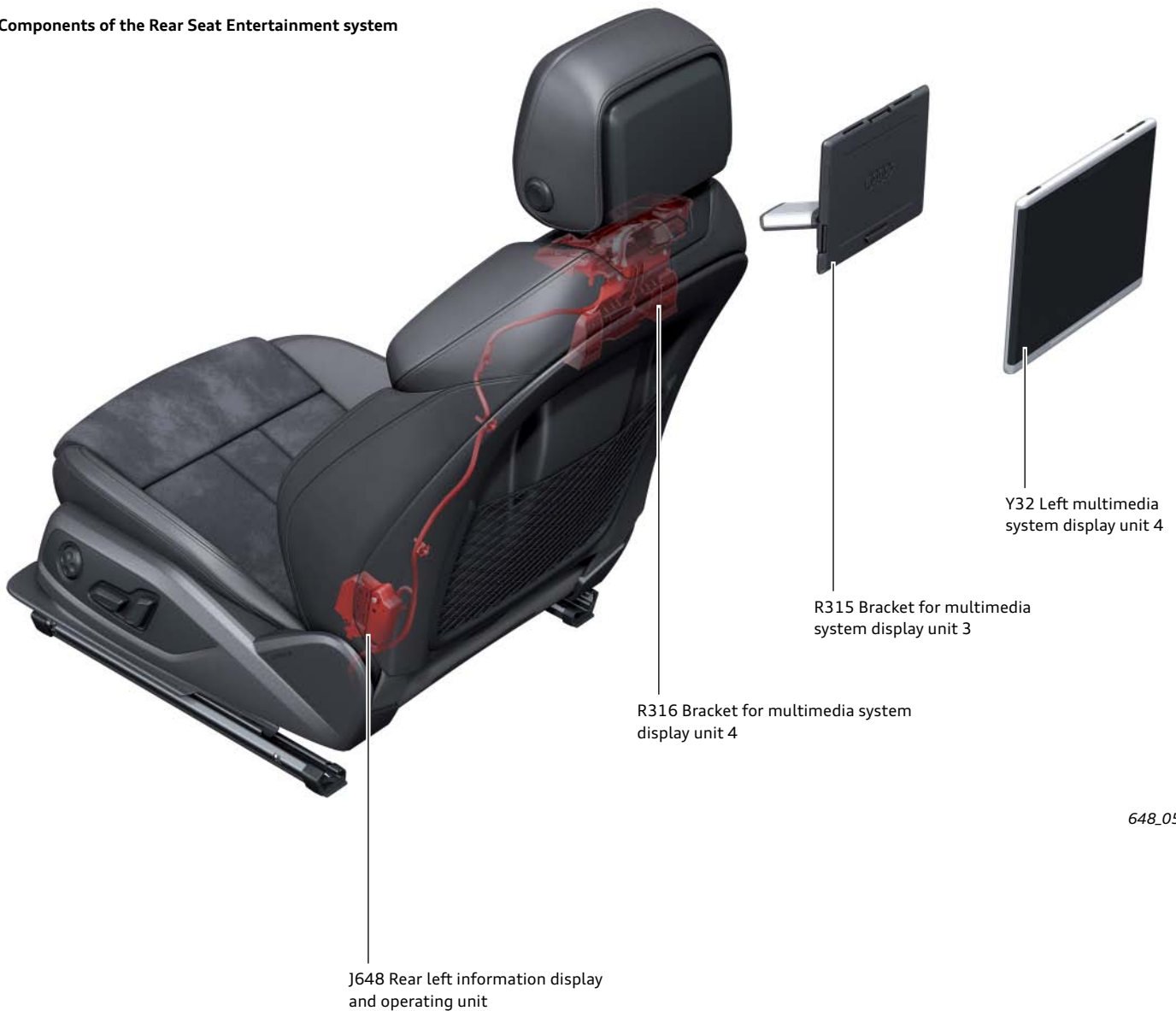
The monitor arm of the Audi tablet is not used for mounting the Audi tablet. It houses the lines running from the control unit in the seat to the Audi tablet. There are 5 lines on the seat side.

There are 8 lines on the side on which the Audi tablet is mounted. The recognition line identifies the seat to which an Audi tablet is mounted.

Pin assignments of monitor arm on seat side (shown without Audi tablet)

Power
Recognition
Transmit line
Receive line
Earth and shield

648_052

Pin assignments of monitor arm on tablet side (shown without Audi tablet)

648_053

Not assigned
Not assigned
Shielding
Ground
Receive line
Transmit line
Recognition
Power
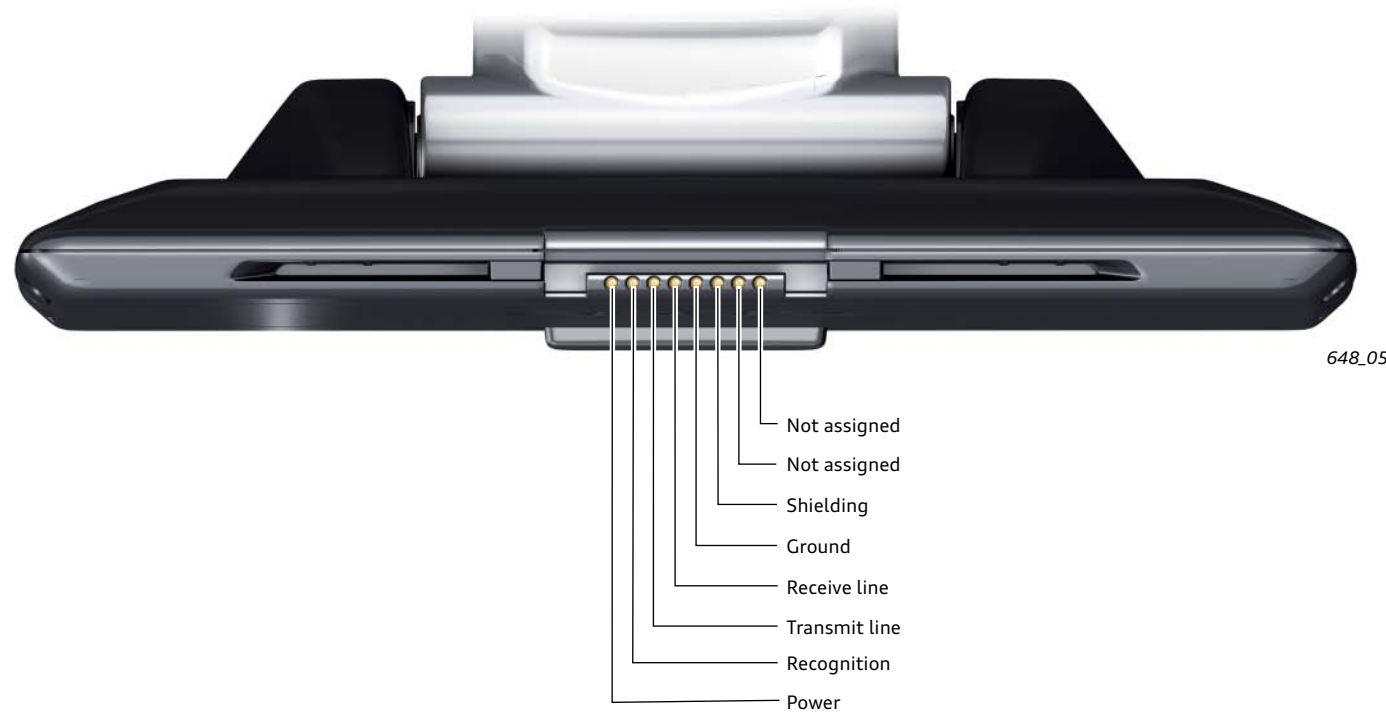
Versions

The Rear Seat Entertainment system is available in the following versions:

▸ Pr. No. 9WE - 1 Audi tablet
▸ Pr. No. 9WE - 2 Audi tablets
▸ Pr. No. 9WQ - Rear Seat Entertainment pre-wiring

If Pr. No. 9WE is ordered, a second Audi tablet cannot at present be retroffited.

It is also important to note that Pr. No. 9WQ is the Rear Seat Entertainment pre-wiring. This version does not include control units J648 and J649. It is not possible to use an Audi tablet. The Audi Entertainment mobile III option is available for this version with Audi Original accessories.

The 3 versions are illustrated below

Pr. No. 9WE – 1 Audi tablet   *648_054*

Pr. No. 9WF – 2 Audi tablets   *648_055*

Pr. No. 9WQ – Rear Seat Entertainment pre-wiring   *648_056*

Connectivity options

A WLAN connection to the information electronics control unit 1 J794 is needed in order to utilise the full range of functions.
As this is purely a WLAN tablet, it does not have direct Internet connectivity.

To go online with the Audi tablet and its full range of functions, one of the following conditions must be met:

▸ Data SIM card in J794
▸ Active SAP Bluetooth connection between J794 and a smart-phone
▸ Connection of J794 to a WLAN hotspot via the *hotspot* ↗ & Client mode

There must be an active data connection between the vehicle and the Internet.

The Audi tablet must be connected to the in-car Wi-Fi hotspot.

It is also possible to to connect the Audi tablet to any hotspot. In this case, the Audi tablet acts as a commercially available Android tablet and does not allow access to media content or the in-car Internet connection. In this version, vehicle data cannot be updated by the Audi tablet either.

Networking

Smart Display Control (*SDC* ↗) units J648 and J649 are MIB-CAN users. Display units 3 and 4 are connected via a serial connection and discrete lines.

Topology of Audi Rear Seat Entertainment system

	Modular Infotainment System CAN (MIB-CAN)
	Infotainment CAN
	Discrete line
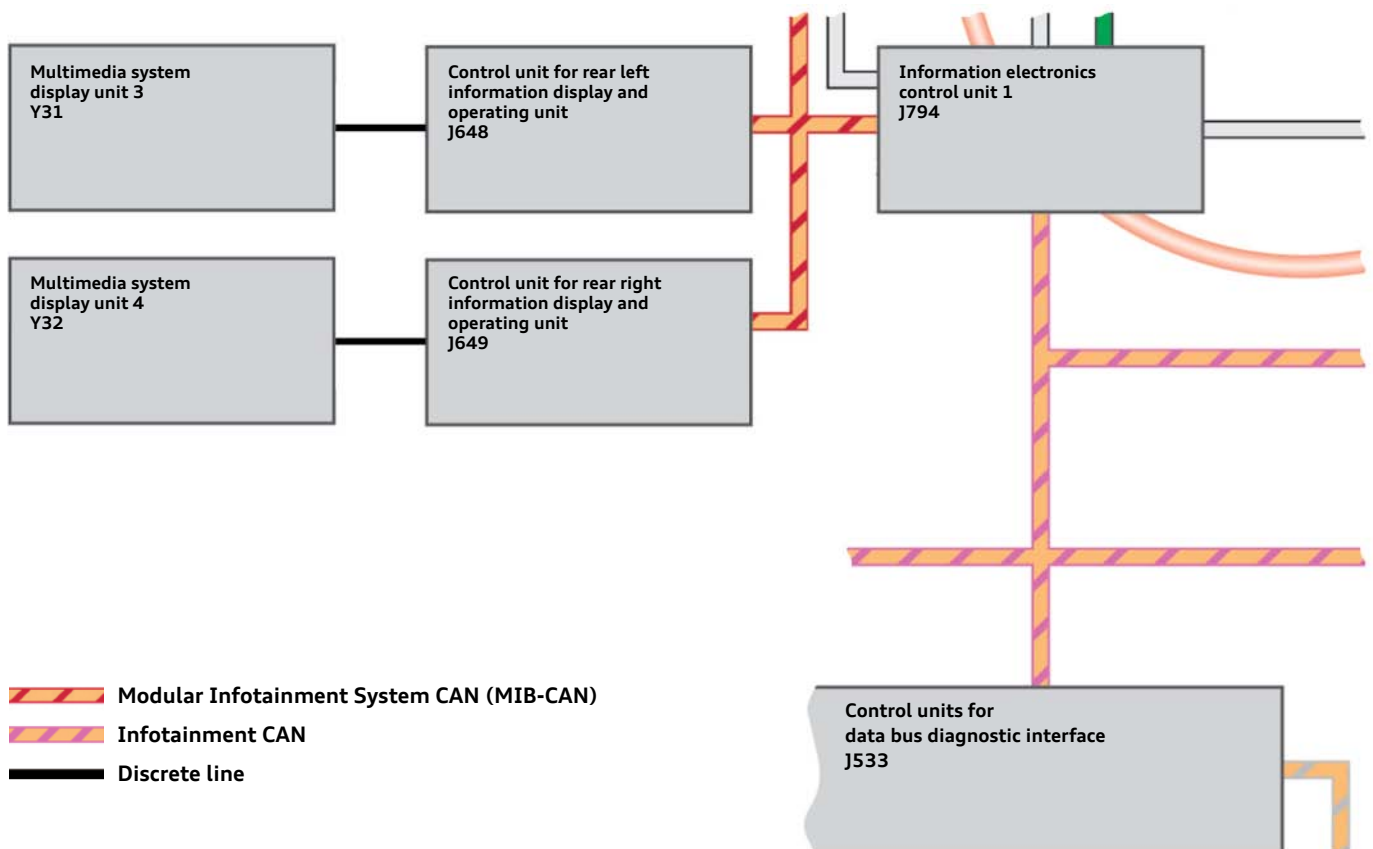
648_057

Functions

The two in-seat control units perform the following functions:

▸ Charge management for the Audi tablet
▸ Diagnostic interface
▸ Theft protection/programming
▸ Seat recognition

Charge management

Control units J648/J649 (Smart Display Control) decide whether or not to charge the Audi tablet on the basis of their voltage and temperature.

The Audi tablet decides itself whether to maintain a stable battery charge or to discharge the battery. This depends, among other things, on the temperature of the Audi tablet and the ambient conditions. It may be the case that the Audi tablet is not charged or even discharged even though it has still not reached its full charge capacity. This function serves to protect the battery.

Antitheft protection

The Audi tablet has a theft protection feature. Each Audi tablet is programmed for a specific vehicle. If the Audi tablet is not docked for longer than 30 days, it will be deactivated. Prior to deactivation, a message is displayed informing the customer. To reactivate the Audi tablet, it must be reattached to one the brackets in the vehicle. To this end, the information electronics control unit 1 J794 must be awake.
It is not possible to interchange an Audi tablet with other vehicles. When an Audi tablet is interchanged, it behaves like a normal Android tablet. It is not possible to access the vehicle. In this case, too, the theft protection features will be activated after 30 days.

It is possible to program an Audi tablet for another vehicle. The programming routine is initiated via the component protection system.

Seat recognition

The seat recognition function enables control units J648 and J649 to identify the seat in which they are installed. This is done using the "Recognition" connection pin. This is the only way in which a diagnostic request can be correctly processed via the diagnostic tester.

Diagnostic interface

It is possible to access the Audi tablet and its event memory via the diagnostic interface and the tester.
The address codes are:

▸ J648: 5E Control unit for rear left information display and operating unit
▸ J649: 4E Control unit for rear right information display and operating unit

Among other things, the following data blocks are made available:

▸ Ambient data
  - Mileage
  - Current ambient temperature

▸ System status
  - Term. 30 supply voltage
  - System status
    - activated/deactivated

  ▸ Charging status
    - active/inactive

▸ Connection status
  - connected/not connected

▸ Status of battery
  - Charge level in %
  - Battery level
    - OK/NOK

▸ WLAN status
  - connected/not connected

▸ Map reader
  - connected/not connected

▸ Serial number

▸ Date of manufacture

▸ Vehicle identification
  - VIN

Appendix

Glossary

This glossary explains to you all terms which are shown in italics and indicated by an arrow ↗ in this self study programme.

↗ **Activity Bar (Android Auto)**
Lower display bar on the MMI display. The icons for the relevant categories are displayed on the "Activity Bar" (from left to right).

↗ **A2DP (Advanced Audio Distribution Profile)**
A Bluetooth profile for the transmission (streaming) of HiFi audio signals via a Bluetooth channel.

↗ **AAC (Advanced Audio Codec)**
A compression standard for audio files

AMI (Audi music interface)
The Audi music interface integrates portable media players into the Audi MMI.

asf (ASF = Advanced Streaming Format)
A digital audio and video format specially developed by Microsoft for streaming purposes.

ASI (Audi smartphone interface)
Selected smartphone applications can be used in the vehicle via the ASI.

ASX (Advanced Stream Redirecting)
Allows the playback and combination of WMV or WMA files in the Windows Media Player.

↗ **Aux-In (Auxiliary)**
A signal input on audio amplifiers to which any device with a Line output can be connected.

AV input (audio/video input)
Signal input on video playback devices.

avi (AVI = Audio Video Interleave)
A video format defined by Microsoft.

AVRCP (Audio Video Remote Control Profile)
A Bluetooth profile for the control of audio and video devices.

CD (Compact Disc)
An optical storage medium where data is burned onto a metal-coated plastic disc by means of a laser beam.

CD-R (Compact Disc Recordable)
Write-once CD

CD-R (Compact Disc Recordable)
Rewritable CD

↗ **DAB (Digital Audio Broadcast)**
A digital transmission standard for the terrestrial reception of radio stations.

DAB+
An advanced version of DAB, which provides more radio stations per frequency band.

Dead reckoning
A process of continuous position calculation which involves the use of a previously determined position and advancing that position at a defined speed, in a defined direction and over a defined period of time.

DivX
A video compression standard which is used mainly to compress large files with a high level of quality.

DLNA (Digital Living Network Alliance)
A WLAN standard for the transmission of media files within a network.

DMB (Digital Multimedia Broadcast)
A digital transmission standard for the terrestrial reception of video and audio programs.

DRM (Digital Rights Management)
A digital rights management technology which can be used, for example, to protect and charge for the use of media (Internet, e.g. Napster).

DVBT (Digital Video Broadcasting – Terrestrial)
Digital transmission standard for terrestrial television signals.

DVD (Digital Versatile Disc)
An advanced version of the CD with a storage capacity of 4.7 GB on singleside, singlelayer DVDs.

DVD±R
DVD-R and DVD+R are write-once variants of the DVD.

DVD±RW
DVD-RW and DVD+RW are rewritable variants of the DVD.

EDGE (Enhanced Data Rates for GSM Evolution)
Extended GSM standard for data transmission. Data rates up to 220 kbit/s.

exFAT (Extended File Allocation Table)
A file system developed specially for solid state drives (SSD).

FAT (File Allocation Table)
A file system developed by Microsoft. FAT16 is used for most types of mobile data media up to a size of 2 GB.

FAT (File Allocation Table)
File system developed by Microsoft. FAT32 is used for mobile data media with storage capacities ranging from 2 GB to 32 GB.

↗ FBAS (colour image blanking synchronous signal)
A video transmission standard where all signals are transmitted across a single cable.

FLAC (Free Lossless Audio Codec)
A codec designed for lossless compression of data.

↗ FM (frequency modulation)
A modulation method where the base frequency is modified by the signal to be transmitted. The wavelength is within a range from 30 kHz to 300 kHz.

FPIC
Freely programmable instrument cluster

GIF (Graphics Interchange Format)
A special graphic format for the comperssion of images with low colour depth.

↗ GPS (Global Positioning System)
A global navigation satellite positioning system.

Gracenote
A proprietary database owned by Gracenote. This database contains information about the audio CDs available on the market (such as track, artist, genre, playing time).

↗ GSM (Global System for Mobile Communications)
An international digital wireless network standard which is used mainly for telephony but also for data transmission and text messaging.

↗ HFP (Hands Free Profile)
A Bluetooth profile which allows mobile phones to be coupled to the in-car hands-free set.

↗ Hotspot
Internet access point

HSDPA (High Speed Downlink Packet Access)
An extended UMTS standard which allows data transmission rates of up to
7.2 Mbit/s

HSP (Headset Profile)
A Bluetooth profile which allows a Bluetooth enabled device to communicate with a headset.

(ID3) tag
A metadata container which allows additional information, such as the title and artist, to be stored in an MP3 file.

↗ Icon
An "icon" is a symbolic representation of an object which is used mainly for graphical user interfaces such as the Windows operating system, user programs or websites.

JPEG (Joint Photographic Expert Group)
A special image data format which is used for the compression of image data.

↗ LTE
Long Term Evolution

↗ LVDS (Low Voltage Differential Singaling)
A data transmission standard where signals are transmitted across 2 cables at a low voltage.

M3U
An open playlist file format which is used for the storage of playlists.

m4a (MPEG 4 audio)
MPEG 4 format for audio content

m4b (MPEG 4 audiobook)
MPEG 4 format for audiobooks

m4a (MPEG 4 video)
MPEG 4 format for video content

↗ MIB (modular infotainment system)
A cross-brand and cross-model modular system for infotainment components.

MMC (Multi Media Card)
Digital memory card

↗ MMI
Multimedia interface

MPEG (Moving Pictures Expert Group)
An expert group tasked with the standardisation of video compression techniques.

MPEG-1/-2 Layer 3
File format for the compression of audio files with minimal loss of sound quality. The standard file ending is ".mp3".

MPEG-2/-4
MPEG 2/4 formats are designed for video and audio compression and are used, among other things, for DVDs (MPEG-2) and mobile phones (MPEG-4).

MPEG-4 H.264 (AVC)
A standard for highly efficient video compression, which can be used for a number of applications including HDTV, digicams or portable video (e.g. mobile phones, iPod).

MW (medium wave)
These are electromagnetic waves, where the signal to be transmitted has the effect of changing the amplitude of the waves (amplitude modulation). The wavelength is within the 300 kHz to 3000 kHz range.

NTFS (New Technology File System)
A file system developed by Microsoft.

OGG
A file format for multimedia files (also known as OGG Vorbis).

OPP (Object Push Profile)
A Bluetooth profile for the transmission of individual files (e.g. business cards or images).

PAL (Phase Alternation Line)
A standard for the analogue transmission of colour television. The 2. red colour difference signal of every second image line is shifted in phase through 180° relative to the preceding image line, with the result that transmission errors are less visible to the observer.

PBAP (Phone Book Access Profile)
A Bluetooth profile which allows the transmision of telephone and address entries.

PIN (Personal Identification Number)
A numeric code which is required for connecting mobile phones and thus for enabling mobile phone data.

Podcast (an artificial word made up from the terms "iPod" and "broadcasting")
A podcast is a media file which can be streamed from the Internet (audio or video) and which may also be available on subscription.

PR. No. (primary feature number)
A number which is used to identify the individual equipment features of a vehicle.

IMEI (International Mobile Station Equipment Identity)
The IMEI is a unique 15-digit serial number which is allows the clear identification of GSM and UMTS user devices. R, N, D and S.

PLS (Playlists)
A file format which is used for the storage of playlists.

PNG (Portable Network Graphics)
A special graphic format developed for the purposes of lossless compression.

Qi Standard
The term Qi is of Chinese origin and means "vital energy".

RDS (Radio Data System)

RSE
Rear Seat Entertainment

RSS (Rich Site Summary or Really Simple Syndication)
A format for the dissemination of information and revised information via the Internet.

RSS Feed
A term used for RSS pages in Internet browsers.

↗ **SAP (SIM Access Profile)**
A Bluetooth profile which provides direct access to SIM card data on mobile phones. Also known as rSAP (remote SIM Access Profile).

↗ **SD (Secure Digital Memory Card)**
A secure digital memory card which can be used for MP3 players, digital photography, etc.

↗ **SDC**
Smart Display Control – a control unit which is used by the Rear Seat Entertainment system for diagnostics etc.

↗ **SDARS (Satellite Digital Audio Radio Services)**
A digital radio standard used for commercial satellite radio in North America.

SDHC (SD High Capacity)
A special SD card which uses an extended standard allowing storage capacities of up to 32 GB. The performance class (Class) displayed on the card specifies the storage speed.

SDIS
Smart Display (e.g. Audi tablet)

↗ **SDXC (SD eXtended Capacity)**
A special SD card which uses an extended standard allowing storage capacities of up to 2 TB (2.048 GB) and storage speeds of up to 104 MB/s.

Secam (Séquentiel couleur à mémoire)
(eng. Sequential Colour with Memory) A television standard for analogue
transmission which is used mainly in France and Eastern Europe.

↗ **SIM card (Subscriber Identity Module card)**
A chip card used on mobile phones for user identification within mobile phone networks.

Multi SIM
A term used for SIM cards which use the same contract and the same telephone number. In Germany for example, this allows up to 3 user devices
(e.g. mobile phone + Audi connect + laptop) to be operated simultaneously with a single telephone number.

↗ **SMS (Short Message Service)**
A service for the transmission of text messages.

↗ **SSD (Solid State Drive)**
A digital storage module which supersedes previously used hard drives.

SSID (Service Set Identifier)
A freely selectable name for a wireless network.

↗ **Third Party Apps**
A company which offers network products or replacement parts for products and product families which are not proprietary products of the original equipment manufacturer.

TFT (Thin Film Transistor)
In a TFT display each pixel is represented by 3 transistors.

TMC (Traffic Message Channel)
Reception of traffic data for use in dynamic navigation.

UDF (Universal Disk Format)
A file system for disks

UHV (universal mobile phone prewiring)
The MIB is also referred to as the "Audi phone box" and has the PR. No. "9ZE".

↗ UMTS (Universal Mobile Telecommunications System)
A third-generation (3G) mobile radio standard which allows data transmission rates of up to 384 kbit/s.

UPnP (Universal Plug and Play)
The UPnP data protocol is used for the activation of devices within a network.

↗ USB (Universal Serial Bus)
Universal serial interface for the exchange of data between a computer and a user device.

vCard (electronic business card)
A file format which is used for the direct transfer of address cards to an e-mail program. The usual file ending is ".vcf".

WAVE
A compression standard for the digital storage of audio files.

↗ WLAN (Wireless Local Area Network)
A wireless local area network
Known as WiFi in English-speaking countries.

↗ wma (Windows Media Audio)
A special audio format for Microsoft Windows.

wmv (Windows Media Video)
A standard developed by Microsoft for the compression of video files. Common file endings are ".asf" and ".wmv".

WPL (Windows Media Player Playlist)
Audio file playlists for a Windows Media Player.

XviD
A free video codec for the compression of video files on the basis of the MPEG 4 format.
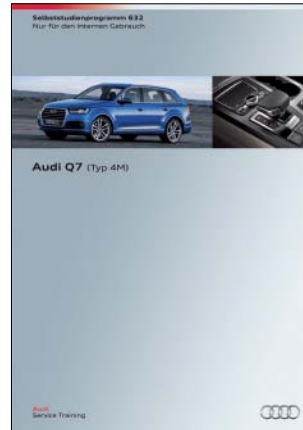
Self study programmes

For further information, i.e. information supplementary to this self study programme, please refer to the following
self study programmes:

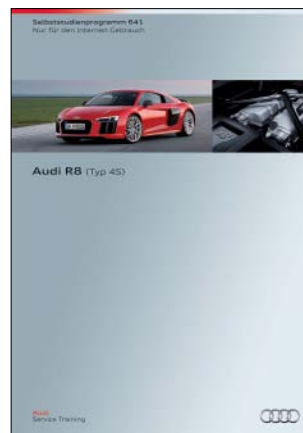### SSP 609 Audi A3'13

Order number: A12.5S00.93.20

SSP 632 Audi Q7 (type 4M)

Order number: A15.5S01.16.20

SSP 618 Audi Modular Information/Entertainment System

Order number: A13.5S01.01.20

SSP 641 Audi R8 (type 4S)

Order number: A15.5S01.26.20

SSP 628 Audi virtual cockpit

Order number: A14.5S01.13.20

SSP 647 Audi A4 (type 8W) Infotainment and Audi connect

Order number: A15.5S01.29.20

SSP 629 Audi TT (type FV) Vehicle electrics, electronics and infotainment

Order number: A14.5S01.14.20

Test your knowledge

For all questions there is only one correct answer.

Question 1:   What is the largest image format which can be represented by the MIB2 in the vehicle?

☐ a) 800 x 600 pixels
☐ b) 1024 x 480 pixels
☐ c) 480 x 240 pixels
☐ d) 1440 x 540 pixels

Question 2:   What are the versions of the MIB2?

☐ a) MIB2 Entry, MIB2 Scale, MIB2 High
☐ b) MIB2 Entry plus, MIB2 Scale, MIB2 High
☐ c) MIB2 Standard, MIB2 Scale, MIB2 High
☐ d) MIB2 Low, MIB2 Scale, MIB2 High

Question 3:   The monitor arm is…

☐ a) … the bracket for the MMI display.
☐ b) … a bracket for flatscreen televisions.
☐ c) There is no monitor arm.
☐ d) … the bracket for the Audi tablet.

Question 4:   What is the maximum number of telephones which can be connected simultaneously to MIB2 via HFP?

☐ a) 1
☐ b) 2
☐ c) HFP is no longer supported.
☐ d) 8

Question 5:   Which vehicle has different operating units E380 in MIB2 depending on gearbox version?

☐ a) Audi A4
☐ b) Audi R8
☐ c) Audi S1 Sport quattro (Pikes Peak)
☐ d) Audi Q7

Question 6:   In which vehicle with MIB2 can a DVD changer be installed?

☐ a) Audi R8
☐ b) Audi Q7
☐ c) Audi TT
☐ d) Audi A4

Question 7: What is the storage capacity of the jukebox in MIB2?

- ☐ a) 1 gigabyte
- ☐ b) 100000 megabytes
- ☐ c) 10 gigabytes
- ☐ d) 2 terrabytes

Question 8: Which vehicle has the largest Audi virtual cockpit?

- ☐ a) Audi A4
- ☐ b) Audi TT
- ☐ c) Audi R8
- ☐ d) The Audi virtual cockpit display is of the same size in all of the above vehicles.

Question 9: Which wireless charging standard is used in Audi vehicles?

- ☐ a) Qi
- ☐ b) Powermat
- ☐ c) A4WP
- ☐ d) Wireless charging is not available.

Question 10: What is the maximum charging current achievable with wireless charging in MIB2?

- ☐ a) 1.6 A
- ☐ b) 5V
- ☐ c) 23 A
- ☐ d) 1 A

Question 11: Which smartphone operating systems are supported by the Audi smartphone interface?

- ☐ a) Blackberry OS and Android
- ☐ b) iOS and Android
- ☐ c) Windows and iOS
- ☐ d) Linux and Unix

Question 12: What does A2DP mean?

- ☐ a) Audi Two Digital Priority
- ☐ b) Acoustic Attitude Display Parameters
- ☐ c) Advanced Audio Distribution Profile
- ☐ d) Audio Attention Drop Pixel

Solutions: 1) d; 2) c; 3) d; 4) b; 5) a; 6 b; 7) b; 8) c; 9) d; 10) a; 11) b; 12) c