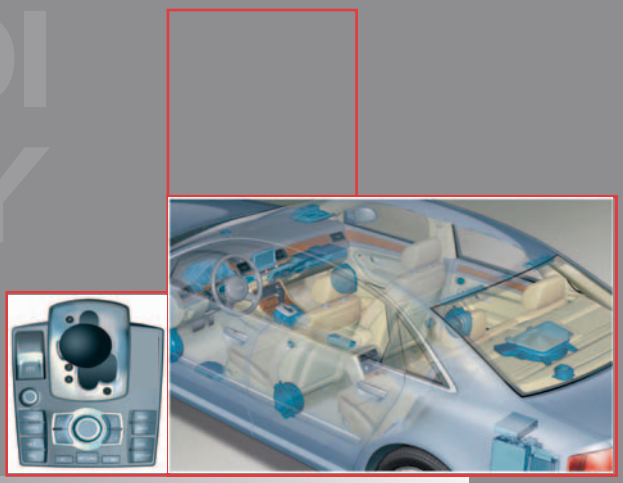
A8L Infotainment SSP

AUDI ACADEMY



Audi Academy

Self-Study Program
Course Number 993303

Audi of America, Inc.
Service Training
Printed in U.S.A.
Printed 03/2003
Course Number 998303

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Table of Contents

Introduction 1
Summary of Media and Functions in the 2004 A8L, System Layouts

MMI Navigation 8
Multimedia Interface (MMI)

Infotainment System 10
List of Functions, MMI Design, Front Information Display Control Head (J523), Front Information Display Control Module (J685), Front Information Display, Low Voltage Differential Signalling (LVDS), Multimedia Control Head (E380), Front Display Open/Close Button (E462), Multi-Function Steering Wheel and Display in Instrument Panel Insert

Sound System 35
Introduction, Digital Sound System, New Sound Settings, Digital BOSE® Surround Sound System, Audio Pilot, Microphones, Radio Module R, Dialogue System (SDS),

Navigation 57
Introduction, Control Module for Navigation with CD Mechanism,

Telephone/Telematics 61
Introduction, Address Book, Input/Output Signals, Card Reader (Telephone) R115, Emergency Battery - Telematics (A16) and SIM Card in Telephone/ Telematics Control Module, Operating Control Module, MOST Bus Links

Table of Contents

This Self- Study Program (SSP) is not a Repair Manual!

Its purpose is to describe new design features and functions of the VAS 5051. All values given in this program are intended to facilitate your understanding of the program, and are based on the software version that was valid at the time the SSP was developed.

For service and repair work, use the current service technical literature.

New!



Caution/Note!



Introduction

Being able to access a wide range of information and entertainment systems (such as radio, CD, and navigation) is playing a major role in consumer desires. To fulfill those requests, Audi has developed the 2004 A8L vehicle with full in-car infotainment; a mixture of both information and entertainment.



Introduction

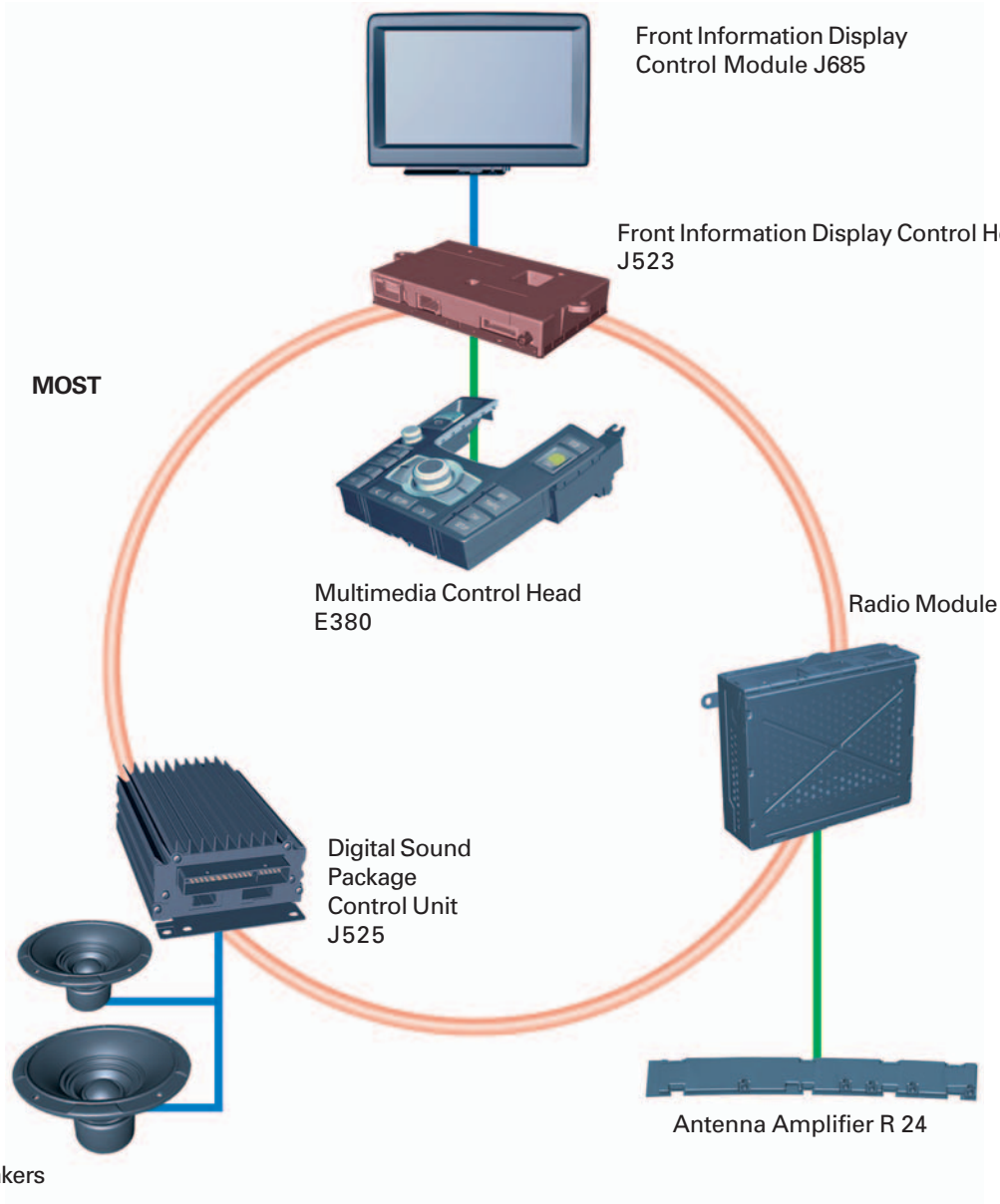
Summary of Media and Functions in the 2004 Audi A8L

Both in the modern business world and in the private domain, mobile information and entertainment are becoming more important. Our customers are becoming increasingly interested in enjoying the benefits of modern media. With this in mind, the '04 Audi A8L is equipped with an Infotainment System which offers a wide range of modern media.



SSP293_001

In the Infotainment System, a simple activity such as operating the radio requires the interaction of several control units. An understanding of how electronic control units are linked in this distributed system is the basis for successful diagnosis and repair.



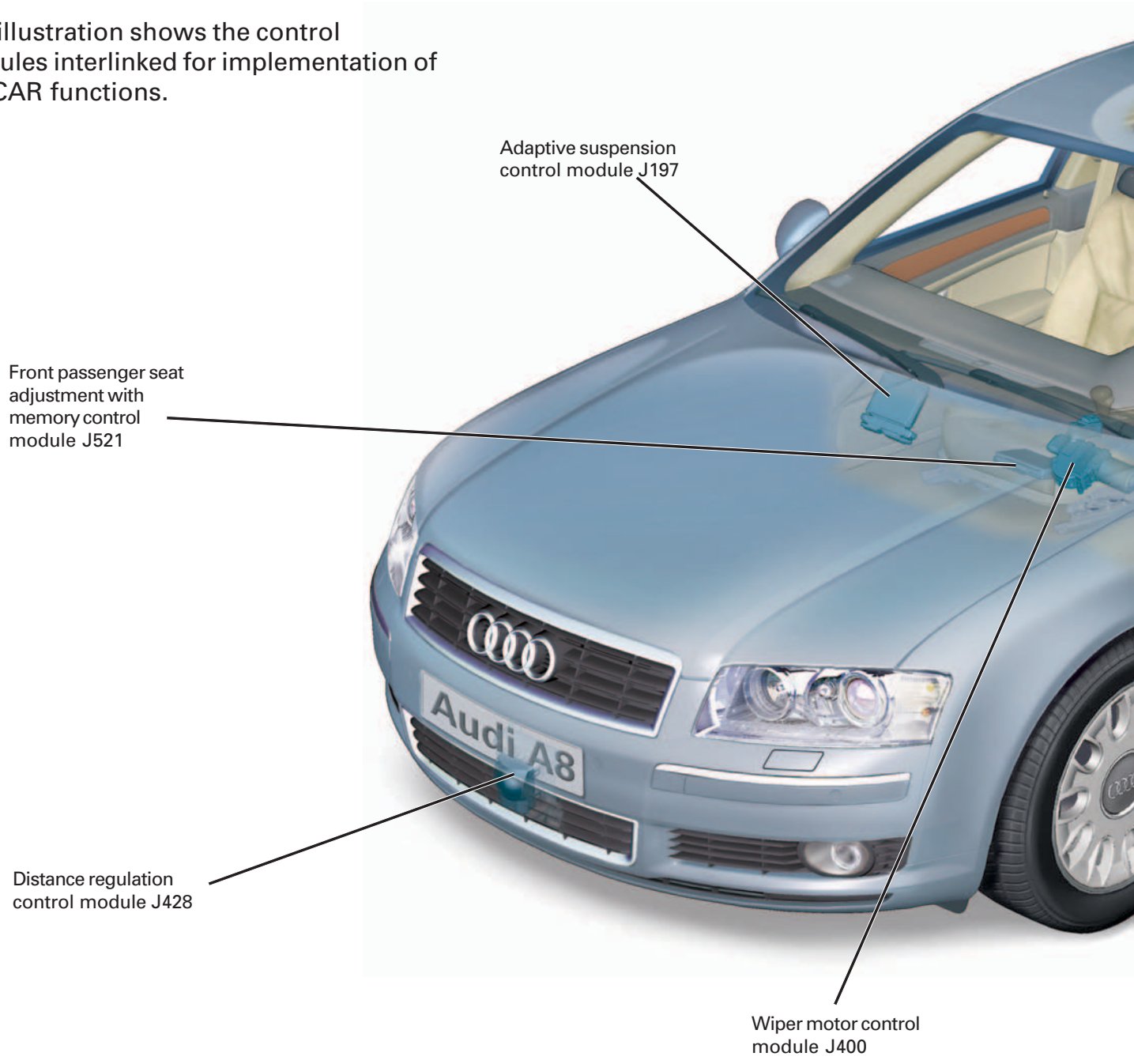
SSP293_002

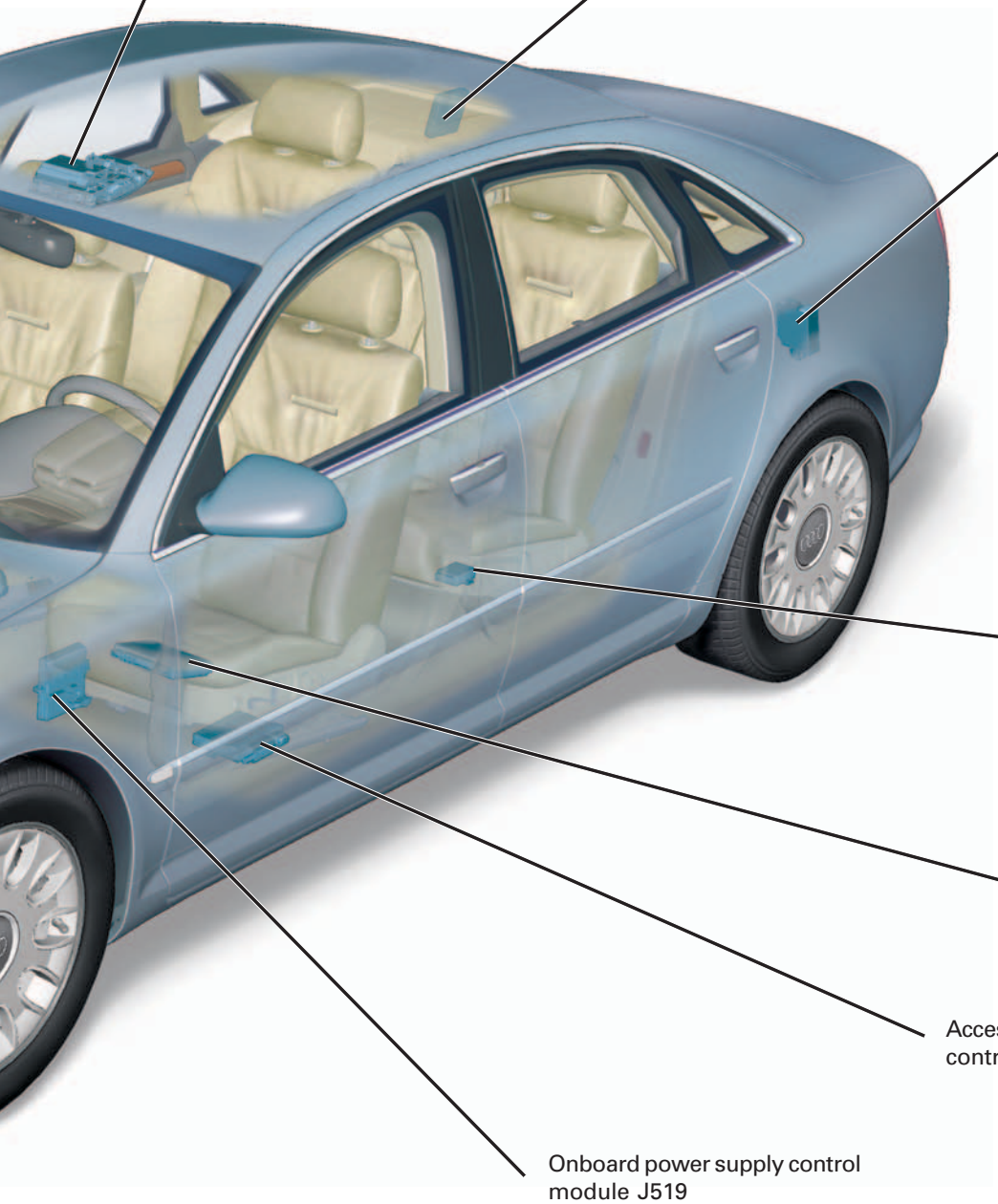
System Layout

CAR functions

The multimedia interface (MMI) enable the driver to make settings for various vehicle systems.

The illustration shows the control modules interlinked for implementation of the CAR functions.

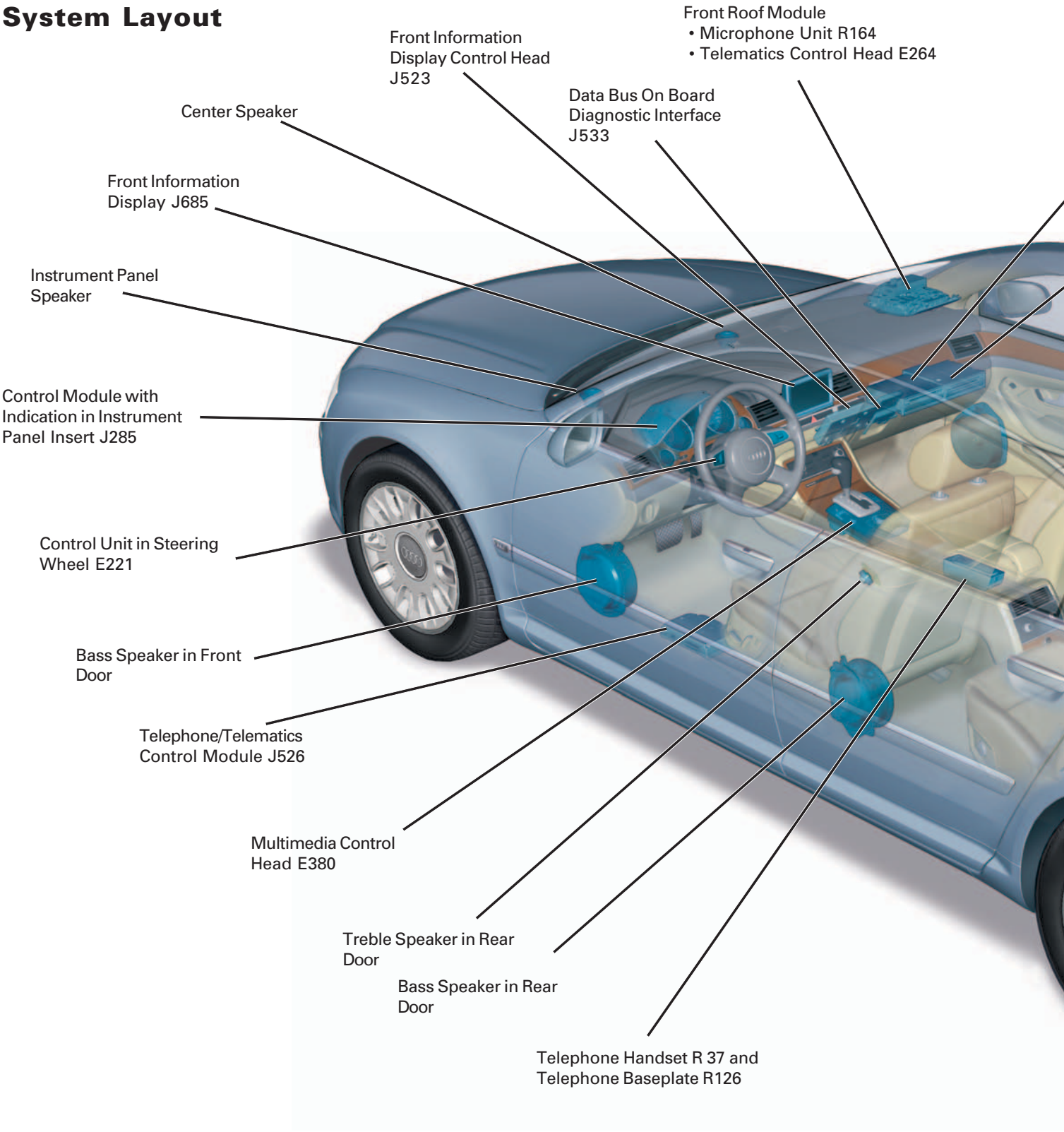


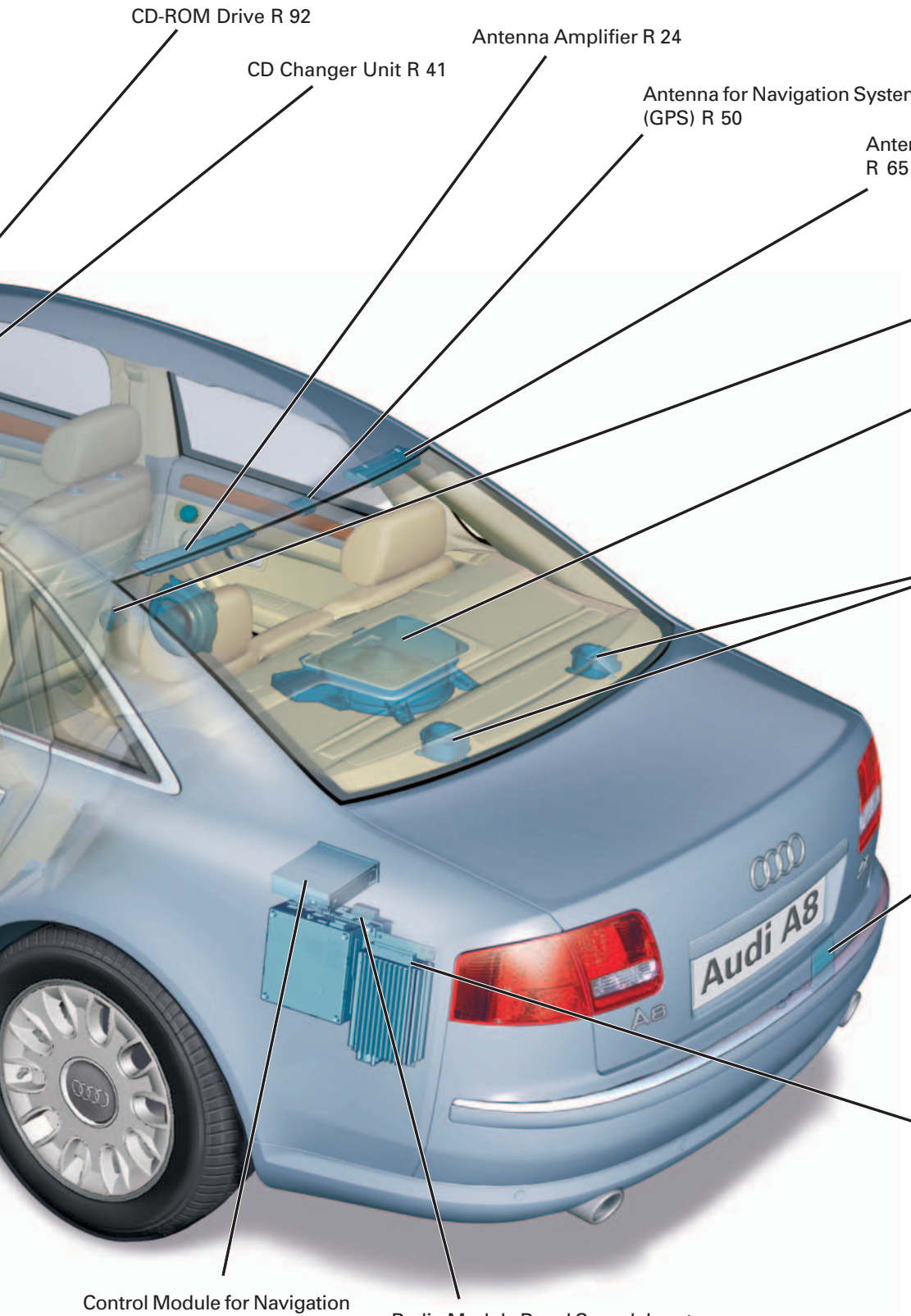

Sunroof electronics control module J528
Convenience system central control module J393
Parking aid control module J446
Tire pressure monitor control module J502
Seat adjustment with memory control module J136
Access/Start control module J518
Onboard power supply control module J519

SSP293_003

Infotainment System

System Layout




CD-ROM Drive R 92
CD Changer Unit R 41
Antenna Amplifier R 24
Antenna for Navigation System (GPS) R 50
Antenna for Telephone R 65
Auxiliary Speaker (Telematics) R 91
Subwoofer R148
Surround Speakers in Parcel Shelf
Auxiliary Antenna (Telematics) R 90
Digital Sound System Control Module J525
Control Module for Navigation with CD-mechanism J401
Radio Module R and Speech Input Control Module J507
Audi A8

SSP293_004

Multimedia Interface (MMI)

The MMI allows users of the Infotainment System in the '04 Audi A8L to implement a wide range of functions and settings with a Central Control Element. The selection menus and settings can be viewed on an additional display in the Instrument Panel. Only four different control elements are used to implement the required function.

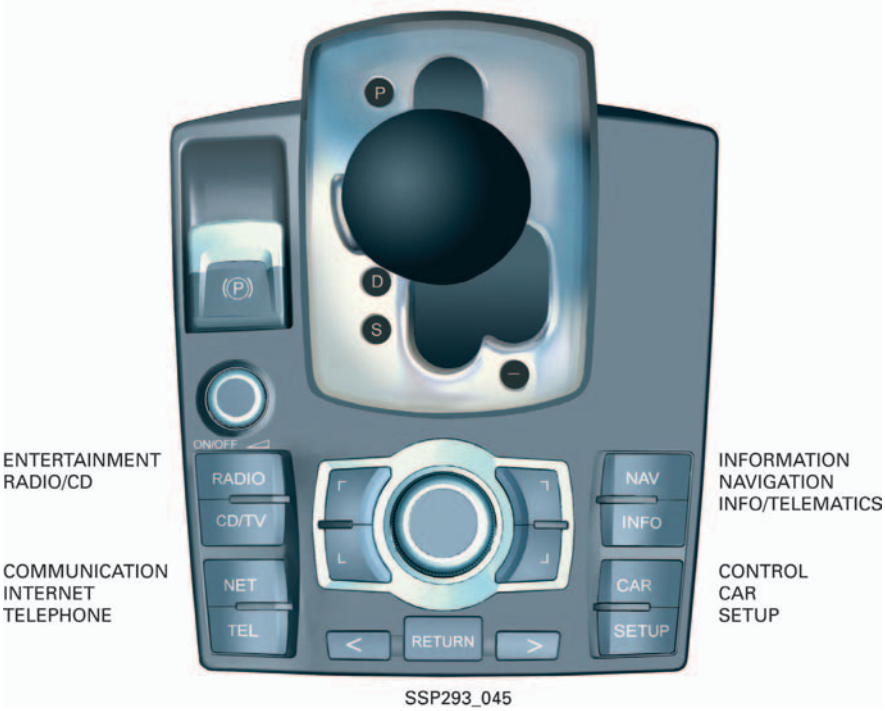
Multimedia Interface Control Elements

1. Main Function Buttons

The Main Function Buttons are used to access the Main Menu for the corresponding function group on the display. This allows quick access to the function, regardless of the sub-menu currently displayed (the SETUP button is an exception). The menu content that appears after pressing the SETUP button depends on the function group previously selected.

The setting and selection menus for the Air Conditioning System are displayed in the MMI (although the system is operated by the Climatronic Control Module J255).

The Internet (NET) + Telematics functions will be available at a later date.

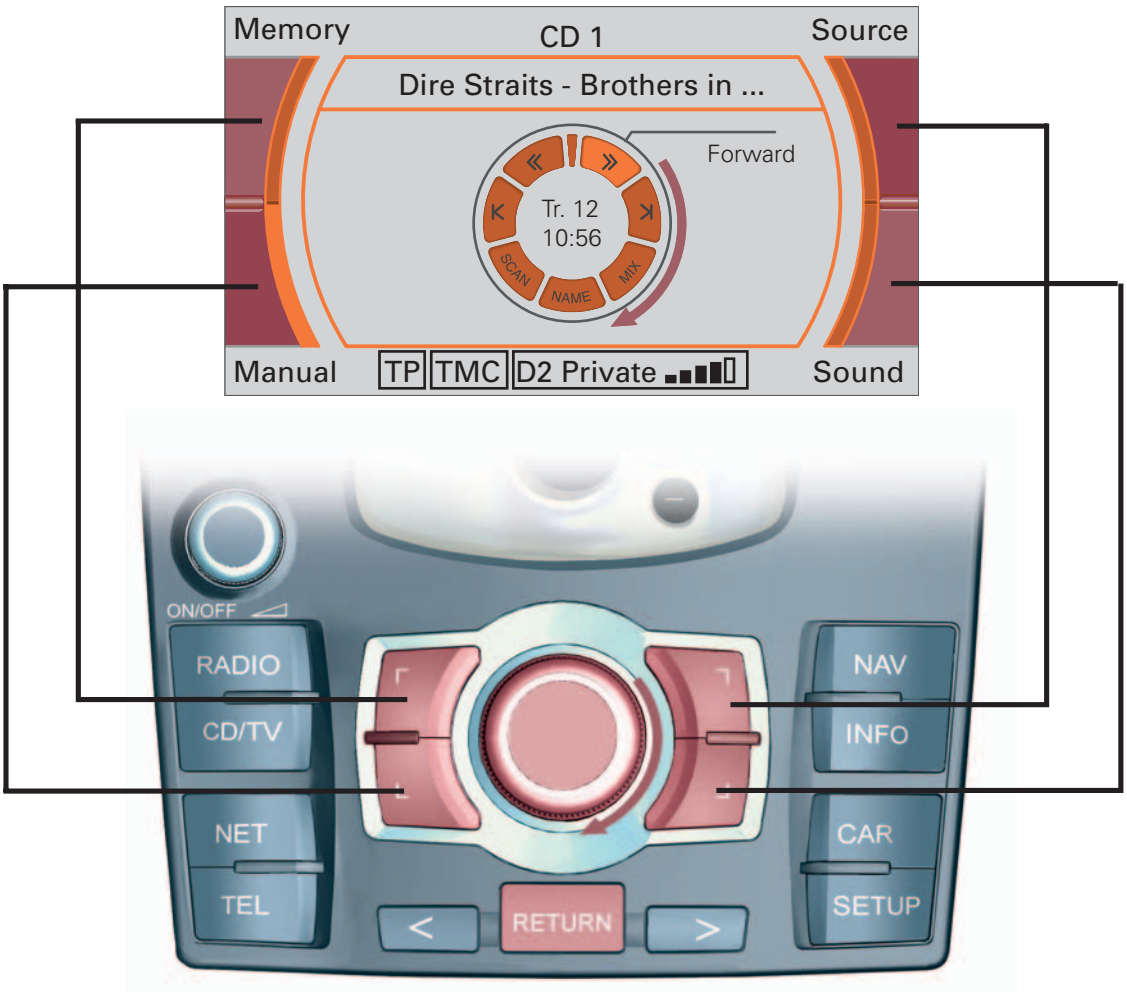


SSP293_045

2. Soft Keys

The soft key functions appear in the corresponding corners of the display.

The functions of the soft keys differ depending on which menu is active.



SSP293_043

3. Central Control Knob

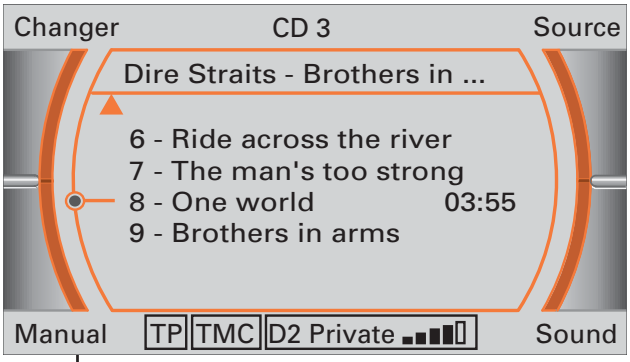
The Central Control Knob is used to select a menu item or setting. Pressing the Control Knob confirms the selection or setting.

4. RETURN Button

When the RETURN button is pressed the next higher-ranking menu is displayed.

List of Functions



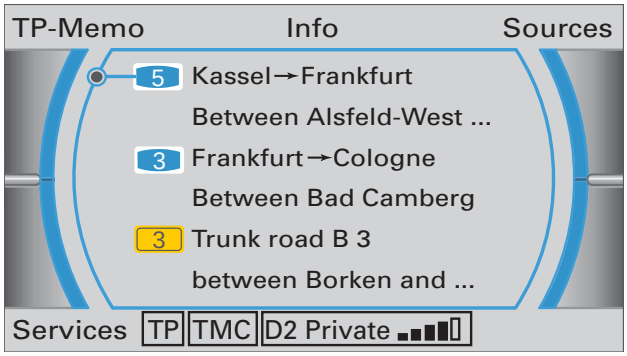


- ●RADIO Central Menu
  - – Dynamic Station List
- ○Memory
  - – Memory List
- ○Tape
  - – FM (VHF)
  - – MW (Medium Wave)
  - – LW (Long Wave)
- ○Sound
  - – <See Setup - Softkey Sound>
- ○Manual
  - – Manual Forward
  - – Forward Search
  - – Store Station
  - – Play Station
  - – Search Back
  - – Manual Back
- ●Radio Setup
  - – Traffic News
  - – Regional Setting
  - – Station Reception
  - – Station Display
  - – Alternative Frequency
  - – PTY Filter
  - – Erase Last Stations

* Not Yet Available

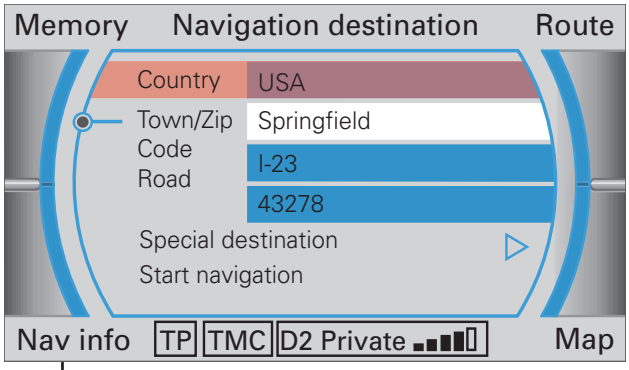
- ●CD/TV Central Menu
  - – CD Track
  - – TV Station
- ○Changer
  - – CD List
- ○Source
  - – CD
  - – TV
  - – External AV Source
- ○Sound
  - – <See Setup - Softkey Sound>
- ○Manual
  - – Forward
  - – Back
  - – Track Back
  - – Track Forward
  - – Track Mix
  - – Play Track
  - – Name CD
- ●CD/TV Setup
  - ▷CD
    - – Repeat
    - – Display CD Text
  - ▷TV
    - – Brightness
    - – Contrast
    - – Color
    - – Picture Format
    - – TV Standard

●Hardkey
○Softkey
▷Sub-menu
– TV Standard



- ● Info Central Menu
  - – TMC Message List
- ○ TP-Memo
  - ▷ Message Call
- ○ Sources
  - – < Radio >
  - – < Telephone* >
- ○ Services
  - – <Emergency Call>
  - – <Breakdown Call>
- ● Info setup
  - – TP-Memo Timer
  - – TMC Display Filter

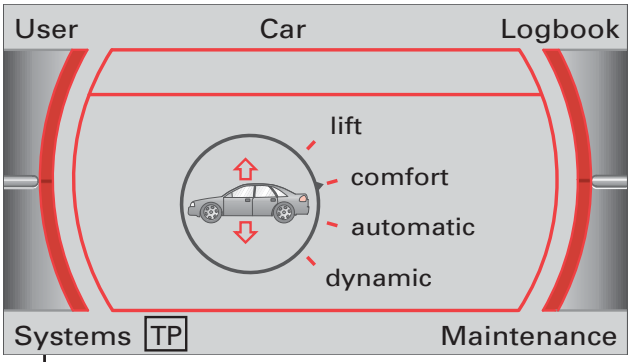
* Not Yet Available

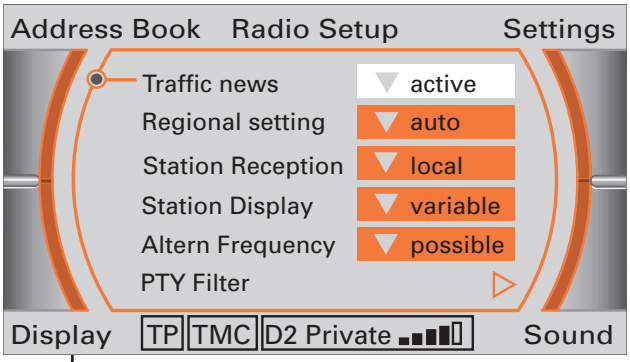


- ● Navigation Central Menu
  - ▷ <Single Destination Mode>
    - – Country
    - – Town/Post Code
    - – Road
    - – Special Destination
    - – Start Navigation
  - ▷ <Route Planning Mode>
    - – Int. Destinations 1...3
    - – Destination
- ○ Memory
  - – Last Destinations
  - – Top Special Destinations
  - – Destination from Address Book
  - – Store Current Destination
  - – Store Route
  - – Load Route
- ○ Route
  - – Route Criteria
  - – Route List
  - – Route With Intermediate Destinations
  - – Route Without Intermediate Destinations
  - – Block Route As Of Here
- ○ Map
  - – Zoom
  - – Map Menu
- ○ NAV Info
  - – Destination
  - – Location
  - – GPS Data

- ● Navigation Setup
  - – Map Type
  - – Map Content
  - – Info Setup
  - – Zoom
  - – Map Menu
  - – Destination
  - – Location
  - – GPS Data
  - – Voice Messages
  - – Demo Mode
  - – Erase Last Destinations
  - – Location, Manual

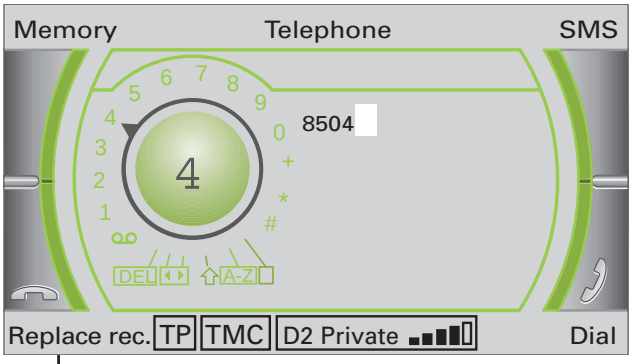
Infotainment System



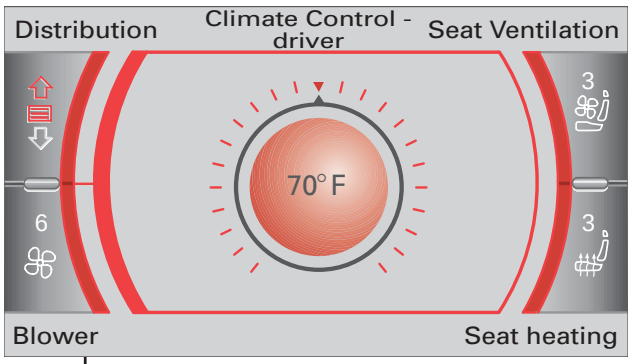


- ●CAR Central Menu
  - – Air Suspension
- ○Users
  - – Users 1 – 4
  - – User Management
- ○Logbook
  - – Brief Instructions
  - – Operating Manual
  - – Audi MMI
- ○Maintenance
- ○Systems
  - – “Ambient” Lighting
  - – Acoustic Parking System
  - – Exterior Lighting
  - – Battery Charge
  - – Vehicle ID Number
  - – Windows
  - – Dash Panel Insert
  - – Tire Pressure Monitoring System
  - – Wipers
  - – Seat Setting
  - – Mirror Setting
- ●Central Locking
  - CAR Setup
  - – Trailer Mode
  - – Jacking Mode

- ●SETUP Central Menu
  - – Radio Setup
- ○Address Book
  - – Find Entry
  - – View List
  - – New Entry
  - – Erase Address Book
- ○Settings
  - – Menu Language
  - – Units
  - – Time Setting
  - – System Sound
  - – Voice Control
  - – Factory Settings
- ○Sound
  - – Balance
  - – Fader
  - – Treble
  - – Bass
  - – Subwoofer
  - ▷DSP (Digital Signal Processing)
    - – Standard
    - – BOSE ®
  - ▷Volume Settings
    - – Navigation Info
    - – Traffic Bulletin
    - – Dialog System
    - – Telephone Volume
- ○Display
  - – Brightness



- ●Telephone Central Menu
  - – Enter PIN
  - – Telephone Menu
- ○Memory
  - – Address Book
  - – Numbers Dialed
  - – Calls Accepted
  - – Calls During Absence
  - – Number Of SIM Card
  - – Store Current Number
- ○SMS
  - – New SMS
  - – Standard
  - – SMS In
  - – SMS Out
  - – SMS Memory
  - – Erase All SMS Read
  - – Erase All SMS
- ○Dial
- ○Replace Receiver
- ●Telephone Setup
  - – Telephone Settings
  - – Call Options
  - – Security Settings
  - – Mailbox
  - – Call Re-Routing
  - – Network Selection



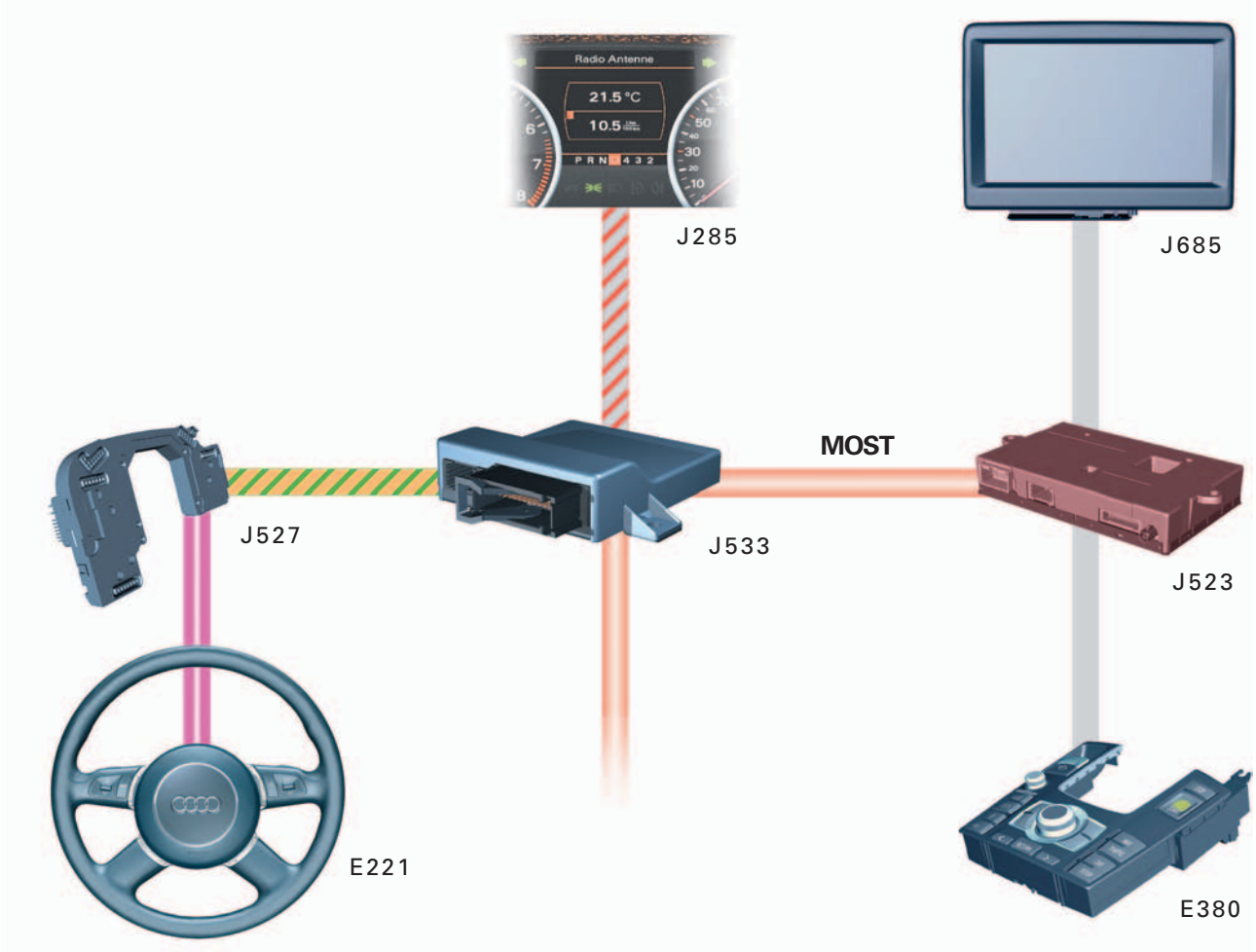
- ●Climate Control Central Menu
  - – Driver
  - – Front Passenger
- ○Distribution
  - – Driver
  - – Front passenger
- ○Seat ventilation
  - – Driver
  - – Front passenger
- ○Seat heating
  - – Driver
  - – Front passenger
- ○Blower
  - – Driver
  - – Front passenger
- ●Climate Control Setup
  - – Econ
  - – Automatic air recirculation
  - – Synchronization
  - – Center vent
  - ▷Rear control
  - – Solar operation
  - – Auxiliary heating
  - – Auxiliary ventilation
  - – Timer setting
  - – Operating time

MMI Design

The MMI consists of the:

- Front Information Display Control Head (J523)
- Front Information Display (J685)
- Multimedia Control Head (E380)
- Control unit in steering wheel (E221)
- Control module with indicator in instrument panel insert (J285)

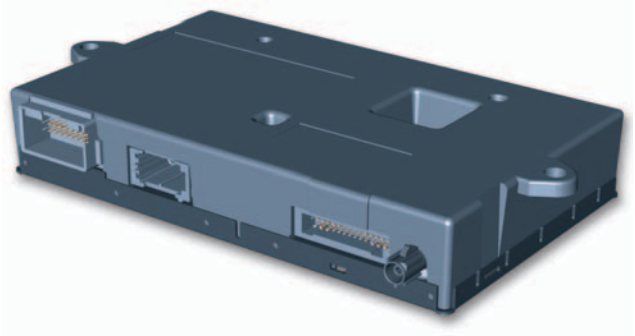
Data are transferred from the Steering Wheel Control Head to the corresponding control units over the Steering Column Electronics Control Module (J527) and Data Bus On Board Diagnostic Interface (J533).



SSP293_008

Front Information Display Control Head (J523)

The master control unit for the Infotainment System is the Front Information Display Control Head (J523).

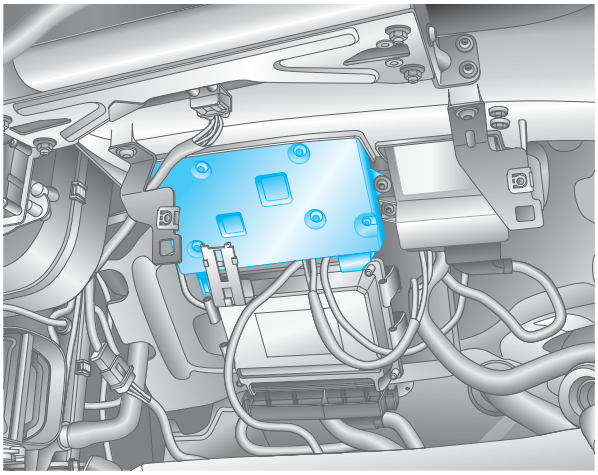


SSP293_030

Functions

- Controls communication on the MOST Bus. It represents the MOST Bus System Manager.
- Actuates Front Information Display
- Actuates Control module with indicator in instrument panel insert (J285) for displaying MMI information
- Performs Multimedia Control Head (E380) and Front Information Display diagnosis.

The Front Information Display Control Head is located at the Module Carrier, behind the Glove Box.

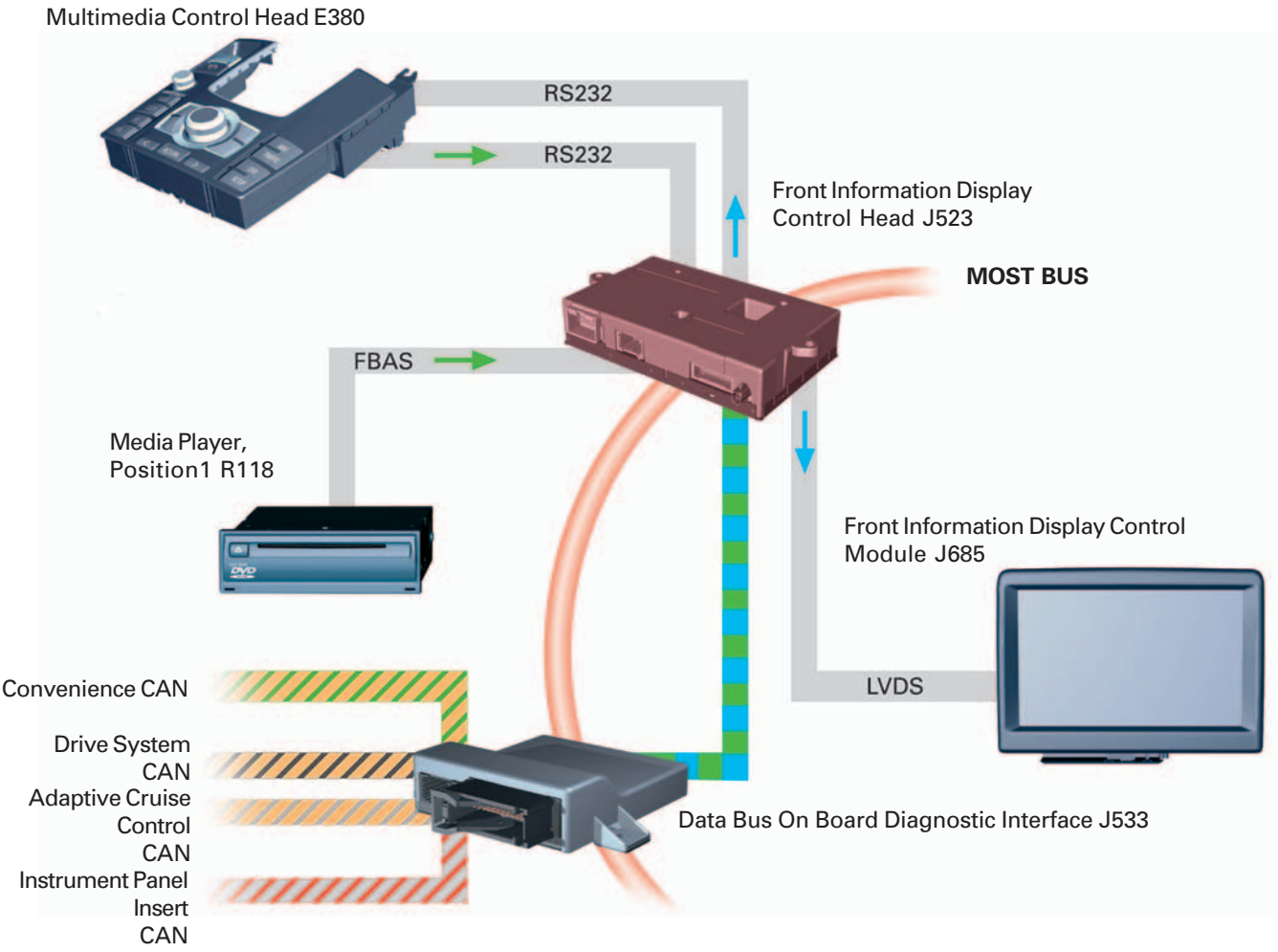


SSP293_023

Input and Output Signals

The Front Information Display Control Head manages many functions. Inputs and outputs are described for individual components throughout this Self-Study Program.

The illustration below shows the layout of the components connected to the Front Information Display Control Head.



SSP293_008

Diagnosis

Address word 07 - Control and Display Module

The self-diagnosis monitors communication with other control units over the MOST Bus. The self-diagnosis also checks the power supply and temperature of the Fiber Optical Transmitter (FOT). For more information on the MOST Bus, refer to SSP 971303 - New Data Bus Systems.

In case of a malfunction, a code is set in the system memory.

Encoding Mode

The encoding sets the language version in the MMI.

Adaptation Mode

The following settings can be made in Adaptation Mode:

- Control Units used for the CAR Functions
- RHD/LHD
- Time span for automatic closing of the Information Menu
- Speed Shutoff Threshold for TV Picture, CAR Menu, Adaptation Process for One-Touch Memory
- Reduction of optical power of FOT for test purposes

Measured Value Blocks

The following values are displayed in the Measured Value Blocks:

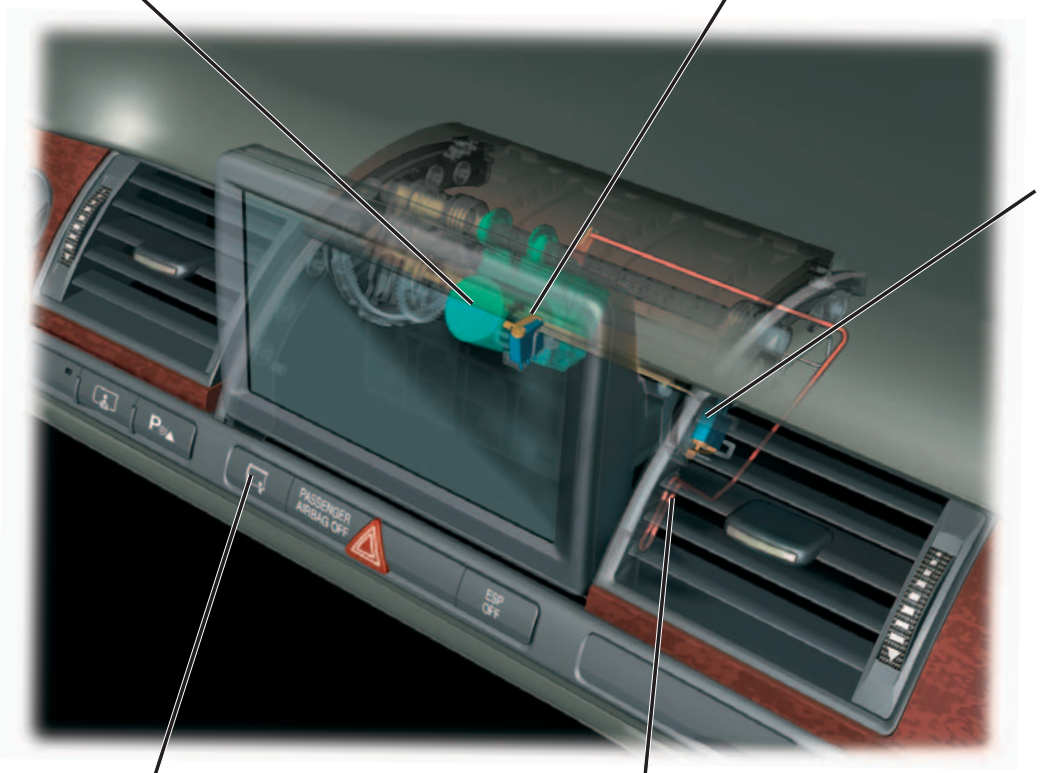
- Power Supply
- Status of Terminals S, 15, X, 50
- MOST Address (Position in Ring)
- MOST Identifier (Type of Unit)
- Status of Diagnosis Wire

Front Information Display Control Module (J685)

The Front Information Display Control Module is hidden when the MMI system is activated. It opens by an electrically actuated mechanical unit in the center section of the instrument panel.

Milled rupture joints are provided in the housing for crash safety.

Mechanical Unit



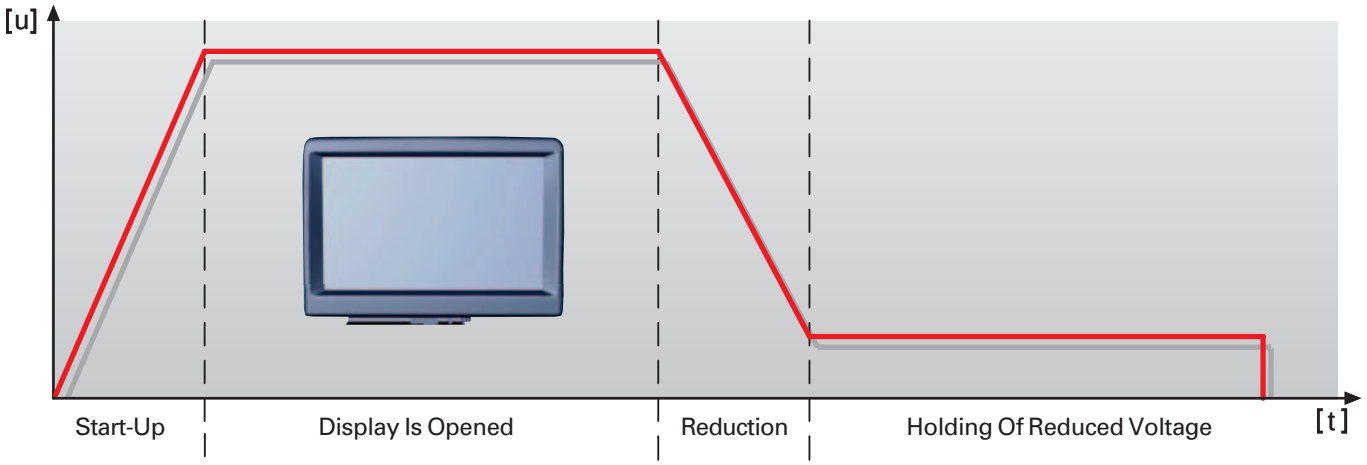
Operation

The Front Information Display opens when MMI is activated or when the Front Display Open/Close Button (E462) is pressed. When the ignition is turned on, the Front Information Display returns to the position it was in before the ignition was turned off.

The Open-Close Display Motor is actuated by the Vehicle Electrical System Control Module 2 (J520) and a regulated voltage. The voltage level influences the speed of the opening and closing. The speed can be set in Adaptation Mode.

The Vehicle Electrical System Control Module 2 recognizes full opening and closing of the Front Information Display by limit switches. When the display is open, two spring-loaded balls engage in the Front Information Display mount.

When the display reaches the closed position, a reduced voltage is briefly applied to the motor to make sure the display is securely positioned against the stop to prevent rattling.



SSP293_013

If the Front Information Display is blocked from opening, the motor is protected by an overrunning clutch.

Emergency Release

A cable-operated emergency release can be accessed by removing the center vent. Pulling the cable disengages the clutch.

Opening and Closing the Display

Address word 4E - Electronic Central Electrics 2

The status of the limit switches is displayed in the Measured Value Blocks. The holding time and voltage level can be set in the Adaptation Mode.

Infotainment System

Front Information Display

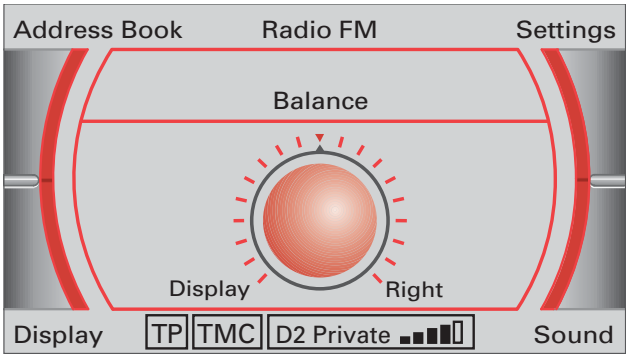
The Front Information Display is 154 x 87 mm (6 x 3.5 in.) and has a resolution of 480 x 240 pixels.

Thin-Film Transistor (TFT) technology provides a high resolution display.

Display Options

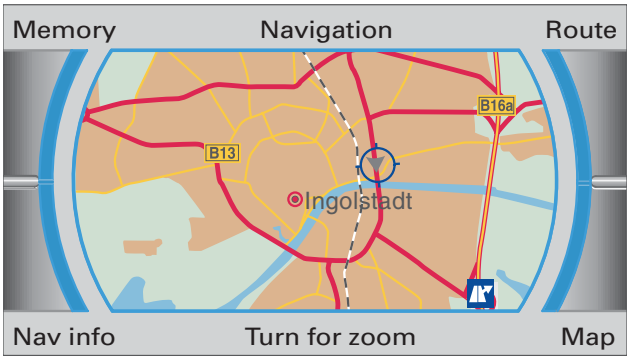
Input and setting menus

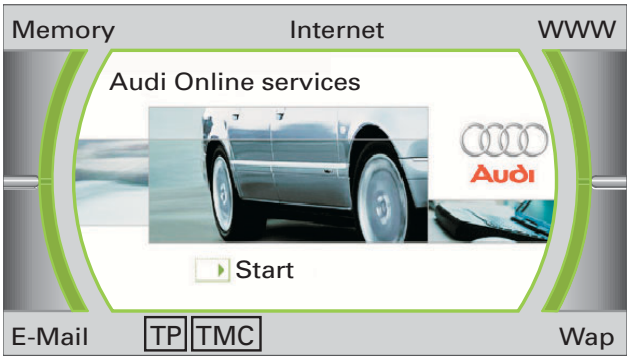




Navigation system map display

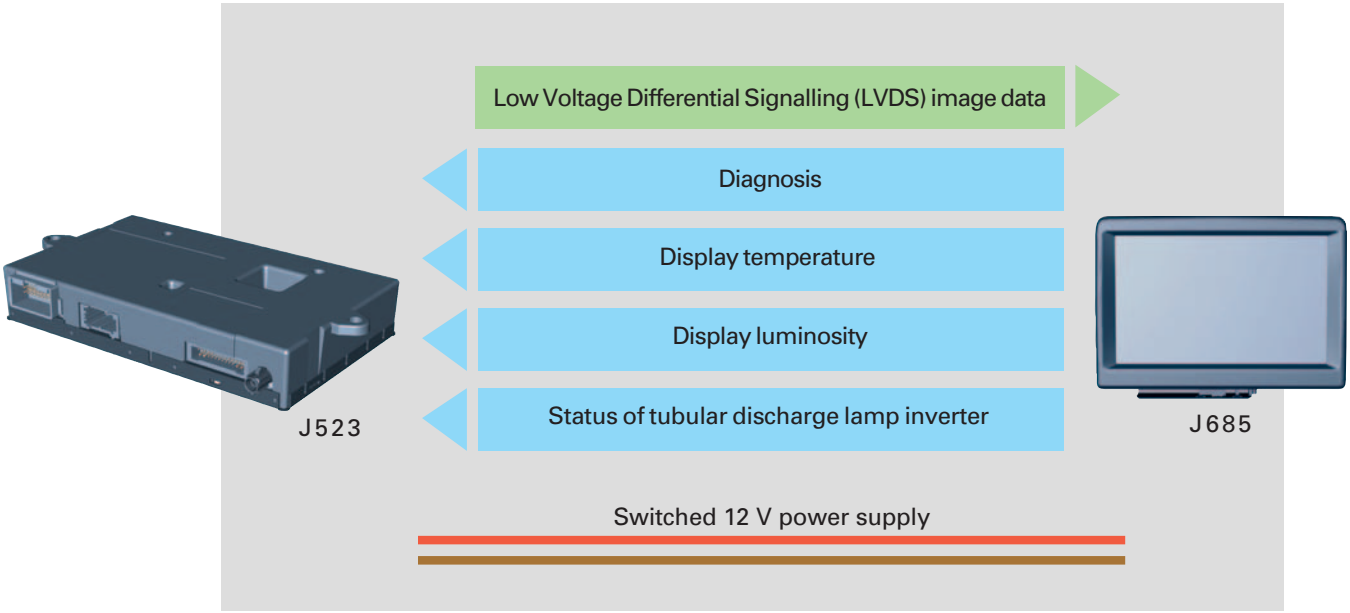
PC interfaces (Internet, email)





Input and Output Signals

The Front Information Display is hardwired to the Front Information Display Control Head.



SSP293_017

The wire is note intended to be repaired. It must be replaced complete. Take care to ensure clearance from opening-up/closing mechanism when laying wire.

Low Voltage Differential Signaling (LVDS)

Low Voltage Differential Signaling (LVDS) is used for digital transmission of the image data from the processor unit to the display. To ensure Electromagnetic Compatibility (EMC), the signal requires twisted wire pairs similar to CAN Bus technology. Opposing voltage signals are transmitted on the two wires to prevent interference with other electronic systems. The voltage difference between the recessive and dominant bit is only 0.5 V, hence the name Low Voltage Differential Signaling.

Compared to a CAN Bus, LVDS is not used to transmit data packets. The bits are transmitted continuously at a frequency of 210 MHz.

This signal cannot be checked with measuring instruments that are currently available.

The wire cannot be repaired. It must be replaced. When replacing the wire, make sure the clearance of the opening/closing mechanism is maintained.

The function of the LVDS signal is monitored by the Front Information Display and Control Head with comprehensive self-diagnosis. Whenever the system is switched to Standby Mode (refer to SSP 971303, New Data Bus Systems), the Front Information Display Control Head sends data to the Front Information Display and checks the LVDS link for completeness and plausibility. If the Front Information Display determines that the LVDS signal is not OK, it hardwires a fault message back to the Front Information Display Control Head.

Display Temperature

The Front Information Display has an NTC temperature sensor. Proper operation is guaranteed over a broad temperature range. However if ambient temperature or operating temperature is exceeded, the Front Information Display may be damaged. Initially, the damage can be seen as bright areas at the corners of the display, and ultimately lead to total failure.

Status of Tubular Discharge Lamp Inverter

The Front Information Display has two tubular discharge lamps that illuminate the viewing points. Up to 1300 V are applied to the tubular discharge lamps. This high voltage is generated by an inverter integrated into the Front Information Display. In addition, the inverter recognizes the failure of one or both tubular discharge lamps. The Front Information Display relays this information over an additional wire to the Multimedia Control Head.

Display Luminosity

The Front Information Display sets the degree of switch and display dimming. The dimming level is transmitted as a percentage to the corresponding control units over the Data Bus Systems. To adjust the illumination of the Front Information Display to the specified degree of dimming, the Multimedia Control Head has to have the current luminosity as feedback. This value is determined by a photodiode installed in the display and hardwired from the display to the Multimedia Control Head.

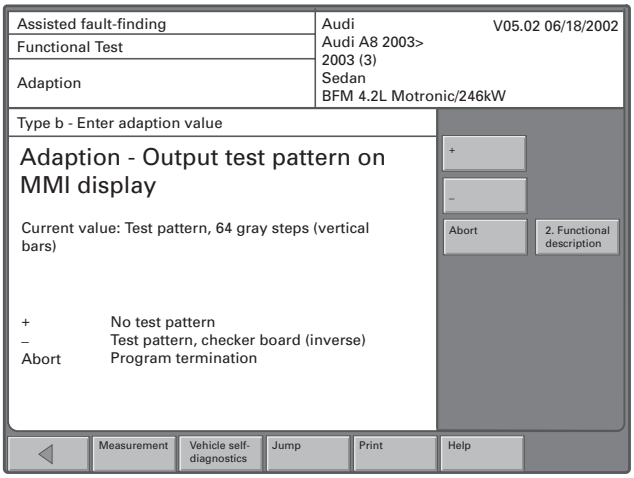
Diagnosis

Address Word 07 - Control and Display Module

The Front Information Display fault messages are stored in the Fault Memory.

- LVDS Signal Failure
- Failure of one or both Tubular Discharge Lamps
- Maximum permissible temperature exceeded

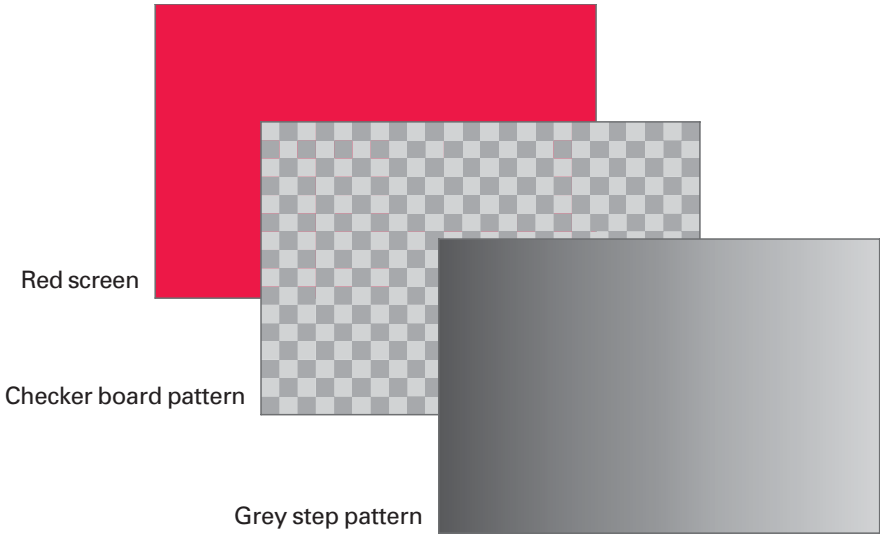
The current temperature and luminosity of the Front Information Display are indicated in the Measured Value Blocks.



SSP293_034

Test Pattern Selection

The Adaptation Mode can be used to present various test patterns in the Front Information Display. The brightness of the Front Information Display can be adjusted using the Adaptation Function.



SSP293_018

Multimedia Control Head (E380)



SSP293_022A1

The following components are integrated into the Control Head:

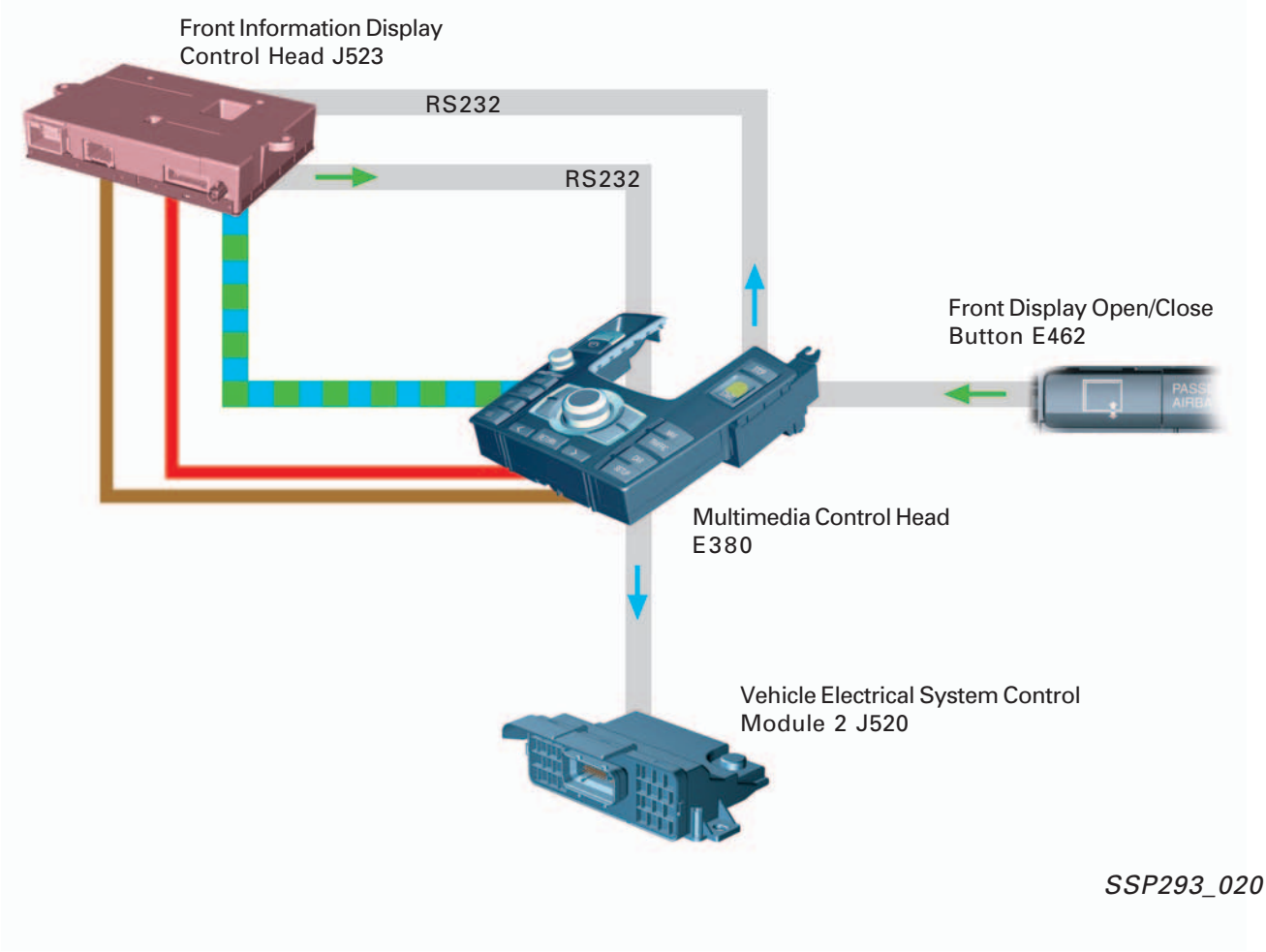
- Buttons and Control Knob for MMI operation
- Electronics for converting button and controller signals into digital data
- Antenna for remote control of MMI (Optional)
- Parking Brake Contact Switch (F321)

The MMI (E380) uses integrated electronics to convert the button and control knob signals into digital information. The information is transmitted over a Serial Interface (RS232) to the Front Information Display Control Head. In addition, the control unit sends information back to the Front Information Display.

The Parking Brake Contact Switch (F321) is an independent component. Further information on this component is in SSP 999303 - '04 Audi A8L Electrical Components.

Infotainment System

Inputs/Outputs



Serial Interface (RS232) Signals:

Multimedia Control Head → Front Information Display Control Head

- Buttons
- Control Knob Selection
- Control Knob ON/OFF, Volume
- MMI Remote Control Aerial
- Front Display Open/Close Button E462

Front Information Display Control Head → Multimedia Control Head

- Button and controller illumination
- Message confirming reception of button and controller signals

Serial interface (RS232)

"Serial Interface" is a computer engineering term which means that digital information is transmitted consecutively (serially). The designation RS232 is the data transmission standard. The information is only transmitted in one direction per wire. Two wires are therefore required for exchange of data between two control units.

- The plug connection at the Control Unit for data reception is designated RX (receive).
- The plug connection for data transmission is designated TX (transmit).

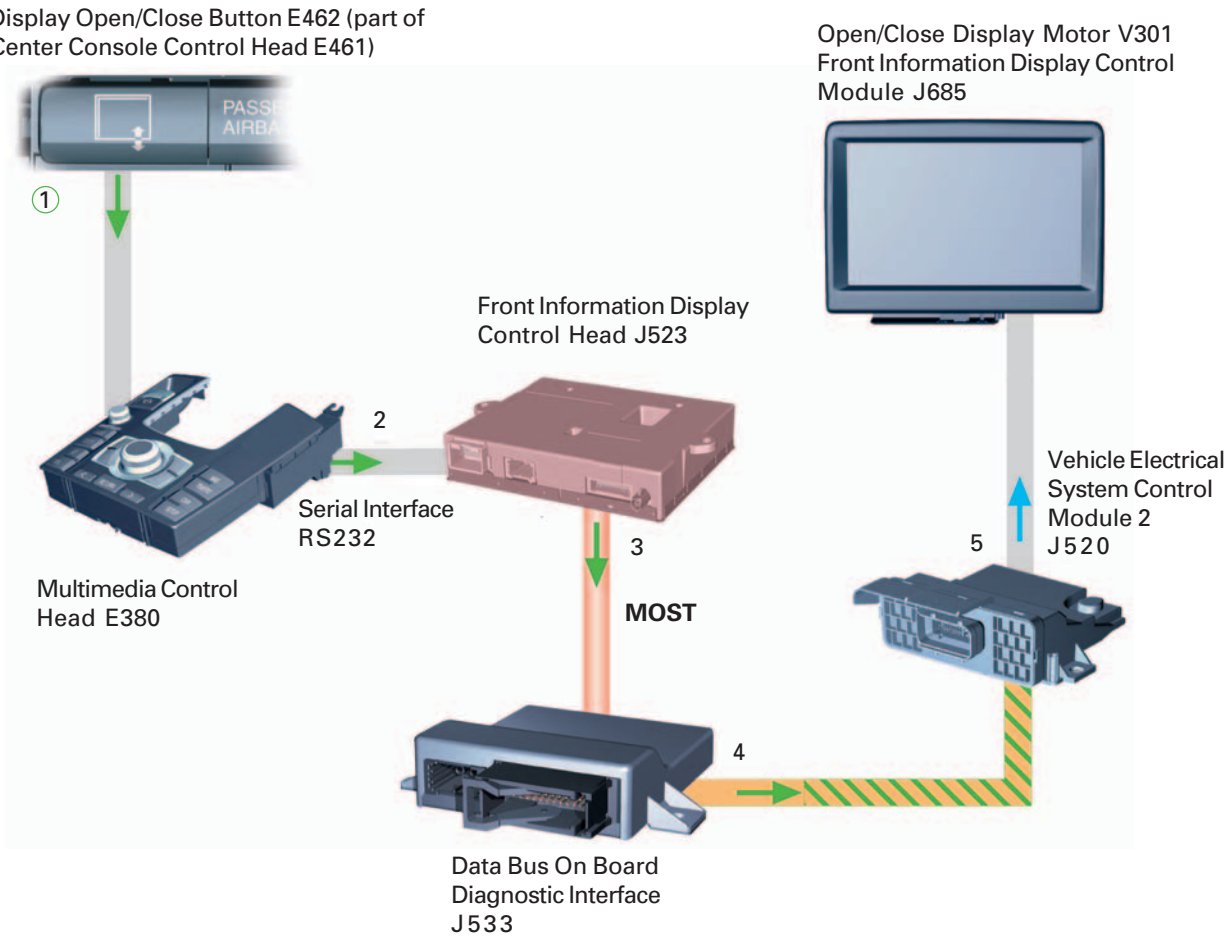
When a button or controller is actuated, the Serial Interface is monitored by the Control Unit self-diagnosis. If the exchange of data is not OK, an entry is made in the fault memory.

Front Display Open/Close Button (E462)

The button (E462) is integrated into the Front/Center Console Control Head (E461). The wake-up process for the MOST and Convenience CAN Bus systems takes about 3 - 4 seconds.

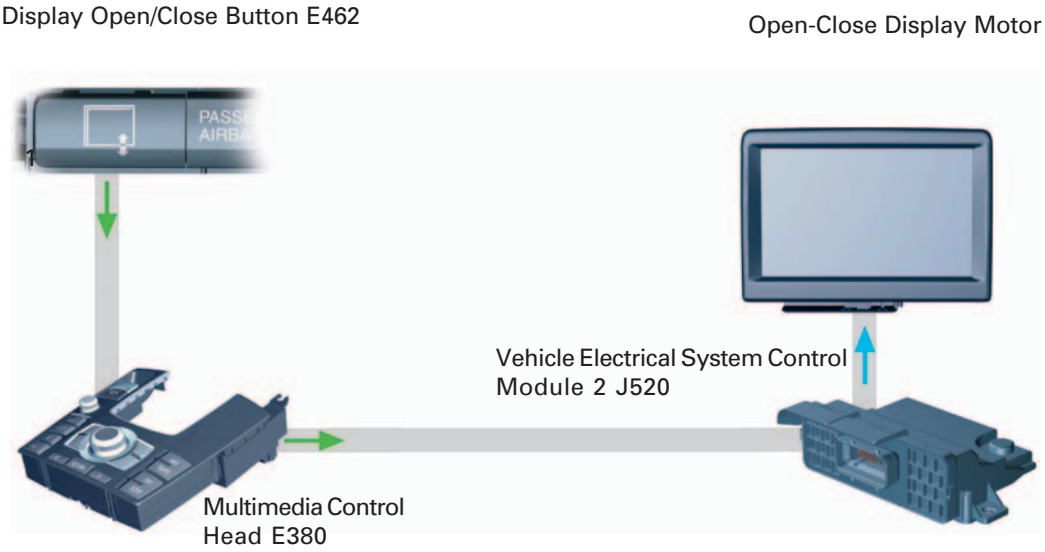
1. Bus Systems Active

This results in a delayed opening of the Front Information Display if the Bus systems are in sleep mode. The Control Head therefore sends the signal to the Vehicle Electrical System Control Module 2 (J520) on two paths.



SSP293_047

2. Bus System Sleep Mode



Closing of the display for the Front Display Open/Close Button (E462) requires data transmission over the Bus systems.

Wake-Up Wire

The Wake-Up Wire is bi-directional.

- If a button is pressed with the Bus systems in sleep mode, the MMI Control Head sends a once-only wake-up pulse to the Front Information Display Control Head to start the system.
- If the Infotainment System is activated by a different wake-up procedure (such as inserting a CD into the CD cahnger), the affected control module sends a wake-up pulse to the Front Information Display Control Head to activate its electronics.

Diagnosis

Address word 07 - Control and Display Module

Fault Memory Entries

Fault Memory Entries are made in case of:

- Problems with data transmission between the Control Head and the Control Module
- Stuck or short circuit in one or more Control Head buttons
- Stuck or short circuit in “Front Display OPEN/CLOSE button” in the fault memory of the Front Information Display Control Head J523.

Measured Value Blocks

The status of the buttons and control knob in the operating unit, as well as the Front Display Open/Close button can be shown in the Measured Value Blocks.

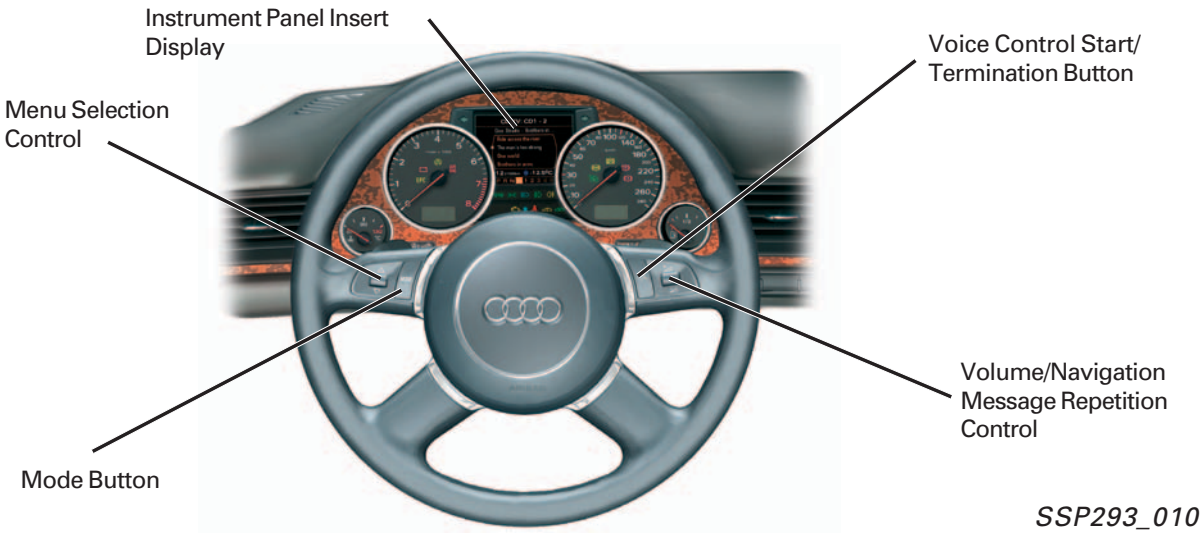
Adaptation

The brightness of the button illumination can be adjusted using the adaptation function.

Multi-Function Steering Wheel and Display In Instrument Panel Insert

A multi-function steering wheel is standard on the '04 Audi A8L. There is no need for the driver to take a hand off the steering wheel to use the Telephone, Navigation System, make audio selections or use the Driver Information System (DIS). This is a major contribution to increased road safety and convenience.

It includes Tiptronic® operation, voice control and volume regulation. It also makes available the functions of the instrument panel insert display.



SSP293_010

MODE Button

The driver selects the appropriate menu by pressing the MODE button several times.

Menu Selection Control

The driver selects the required menu tem by turning the control. Selection is confirmed by pressing the control.

Volume/Navigation Message Repetition Control

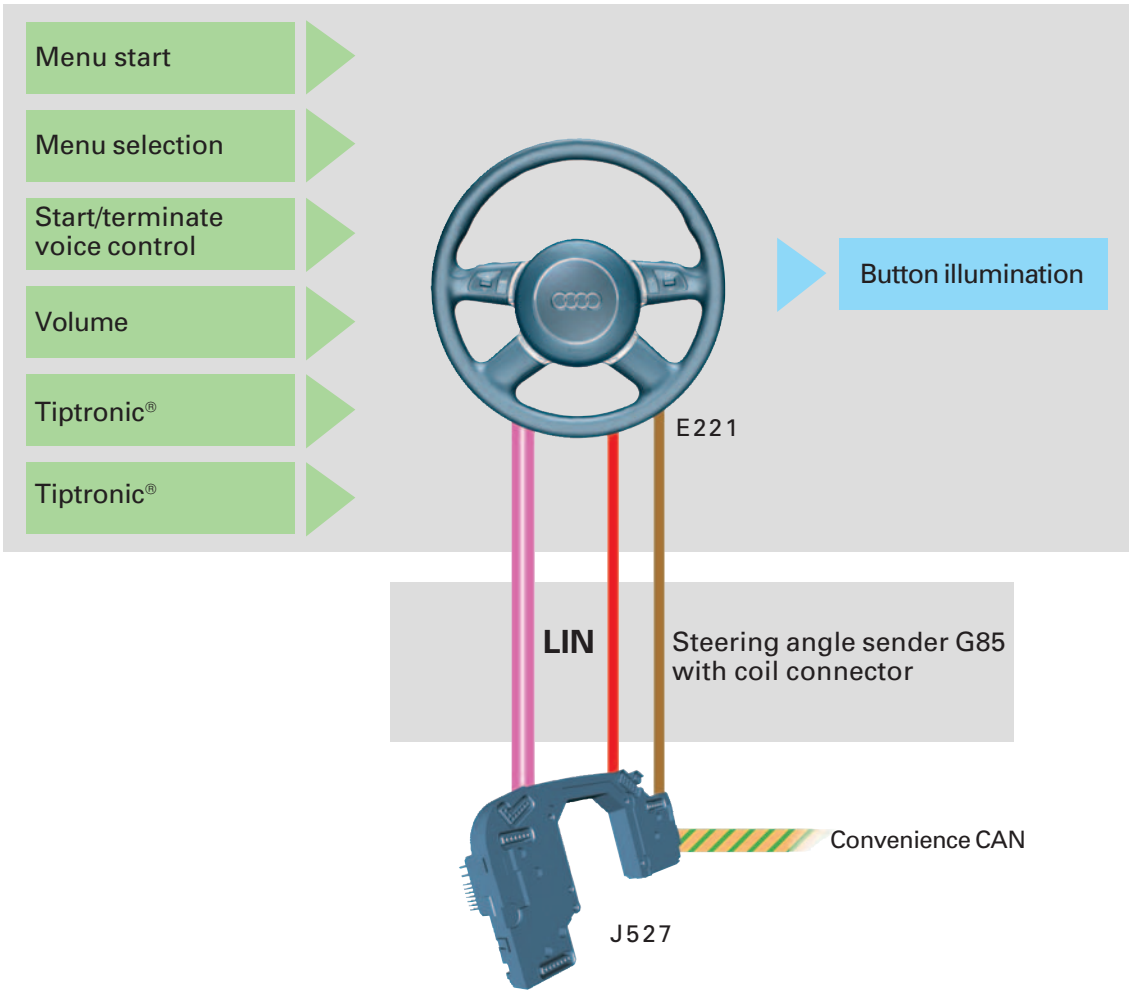
The driver sets the volume by turning the volume control. After pressing the control, the last navigation system voice message is repeated.

Display in instrument panel insert

Depending on steering wheel button operation, the driver is presented with the selection menus for radio station, CD track and telephone address book. Navigation information is also presented on the display.

Multi-function Steering Wheel Signal Transmission

The operating unit in the steering wheel is a LIN Slave Control Unit.

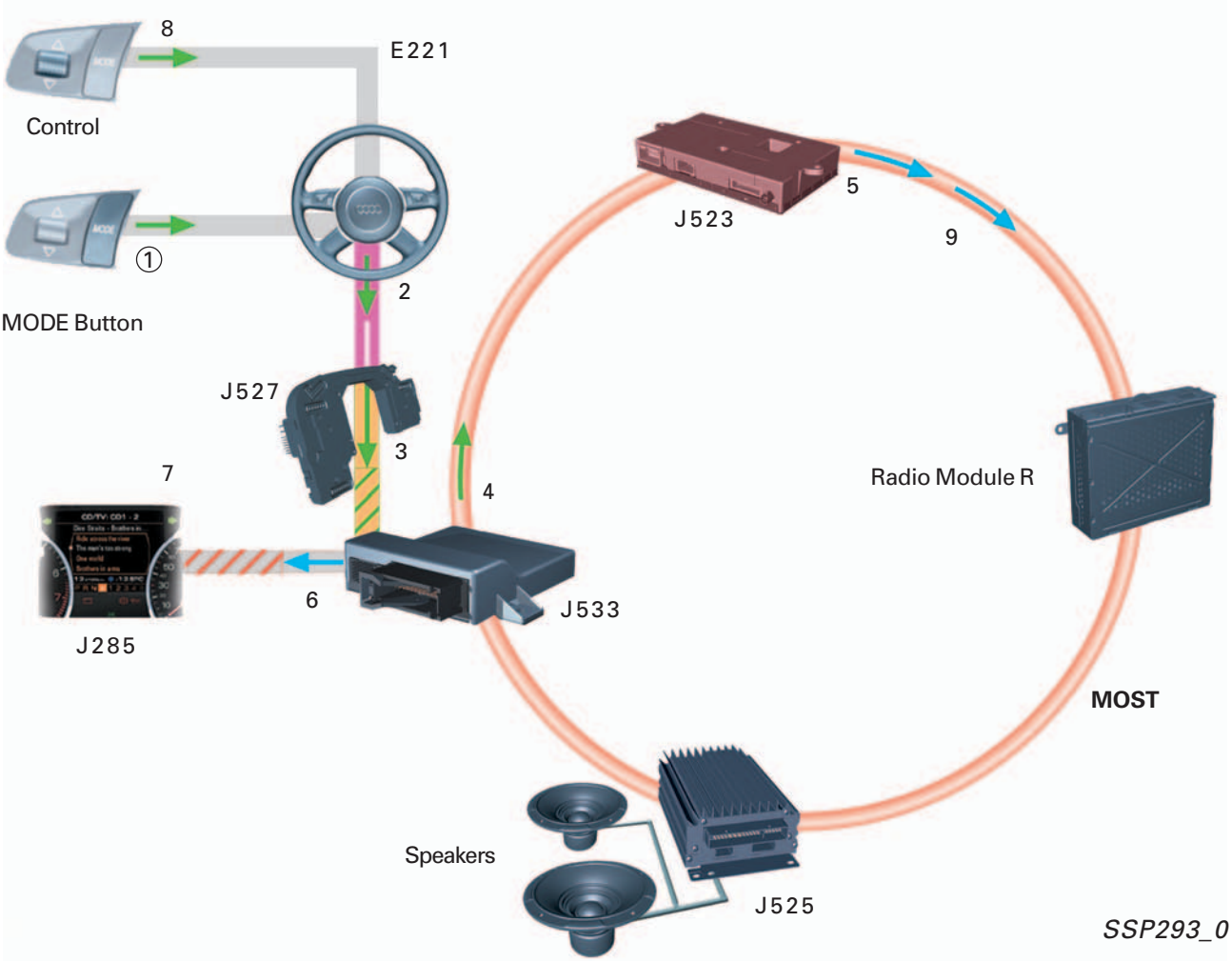


SSP293_011

The Control Unit in Steering Wheel (E221) detects the steering wheel button and control signals and converts these into digital information. The digital information is transmitted with the aid of a LIN Bus wire in the coil connector of the Steering Angle Sensor (G85) to the Steering Column Electronics Control Module (J527).

The steering column electronics sends the information from the LIN Bus to the Convenience CAN. The steering wheel information is distributed by the Data Bus On Board Diagnostic Interface (J533) to the other Bus systems according to the functions requested. The control units implement the corresponding functions.

Example: Switching radio station over multi-function steering wheel



1. The driver presses the MODE button several times to select the desired menu in the Control Module with Indicator in Instrument Panel Insert (J285).

2. Each button signal is converted by the Control Unit in Steering Wheel (E221) into digital information. The operating unit sends this information over the LIN Bus wire to the Steering Column Electronics Control Module (J527).

3. The control unit integrates the "MODE Button Pressed" information into a Convenience CAN message.

4. The Data Bus On Board Diagnostic Interface (J533) reads the information on the Convenience CAN and sends it on the MOST Bus to the Front Information Display Control Head.

5. When the control unit receives the "MODE button pressed" signal, it sends the graphics data for presentation of the next selection menu in the display to the MOST Bus.

6. The Data Bus Diagnostic Interface sends this information to the Instrument Panel Insert CAN.

7. The instrument panel insert reads this information and presents the corresponding selection menu in the display.

   The steps are repeated every time the MODE button is pressed until the radio station selection menu appears on the instrument panel insert display.

8. The driver selects the desired radio station by turning the left control. Each turn updates the instrument panel insert display. Selection is confirmed by pressing the control.

9. The Front Information Display Control Head starts playing of the selected radio station. For further information, refer to Page 46.

Self-Diagnosis

Address word 16 - Steering Column Electronics

When the Convenience CAN is active, the Steering Column Electronics Control Module J527 checks:

- communication on LIN Bus wire to the operating unit in the steering wheel
- Tiptronic® and MMI buttons, as well as the controls and illumination for short circuit and open circuit

A corresponding fault memory entry is made in case of malfunction.

Encoding

The steering wheel equipment must be stated in the steering column electronics control unit encoding.

Measured Value Blocks

The Measured Value Blocks display:

- Signal inputs of buttons and controls
- Hardware and software version of Control Unit in Steering Wheel E221
- Status of communication on LIN Bus
- Measured value of Heated Steering Wheel Sensor G428

Control Element Test

The Control Element Test checks the steering wheel heating and button illumination.

Introduction

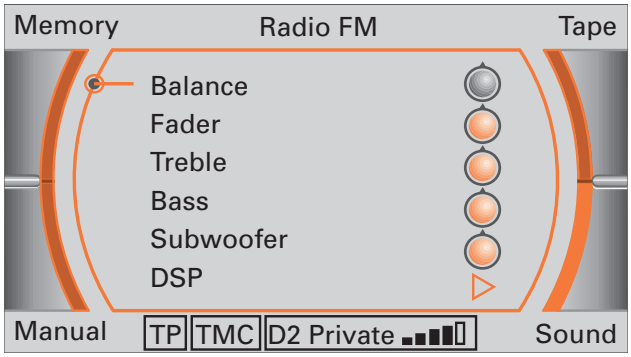
The standard BOSE® Surround Sound System offers an even better overall effect, volume adjustment to compensate for vehicle noise (AudioPilot™) and unique surround sound.

Digital Sound System

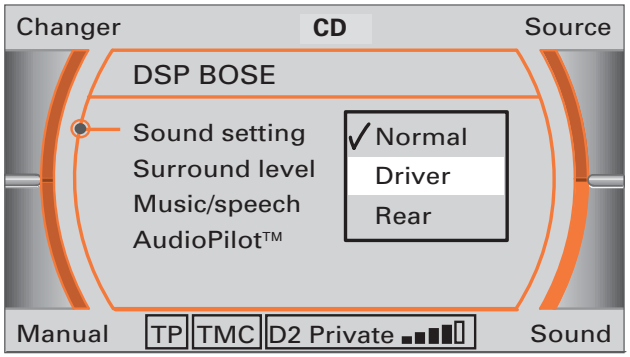
The digital sound system has five audio channels. The stereo signals are distributed over five channels by the digital system and reproduced by nine speakers. This dispersion of audio signals gives listeners the impression of being in the middle of a concert hall.

Notes:

New Sound Settings



SSP293_042



SSP293_060

Sound Setting

Normal: The sound system sets the speakers to optimum levels for all seats.

Driver: The sound system is optimized for the driver position.

Rear: The sound system is optimized for the rear seat positions.

Surround Sound

Surround sound settings are available for front and rear seat optimization. The surround feature is only available with a CD in the player or changer.

Music/Speech

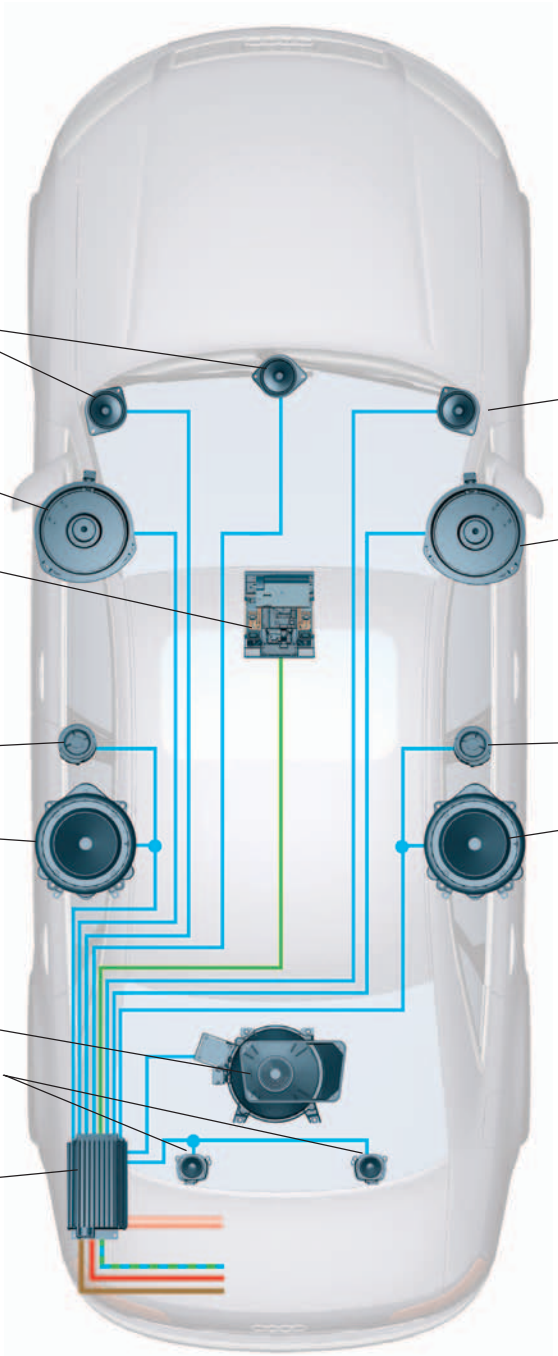
Clarity of speech reproduction requires different sound settings than those for music. As an additional service, RDS stations transmit an encoded signal together with the signal for spoken broadcasts.

In addition to the usual sound settings, new adjustments are available with the GALA Speed-Dependent Volume Adaptation Function. The new GALA function is integrated into the Digital Sound System Control Module (J525). It uses the vehicle speed to calculate the typical background noise level.

Based on the background noise level established, the control module only increases the volume of the frequency bands affected.

Since the typical background noise level differs depending on the type of engine the vehicle has (gasoline or diesel), the engine version must be set in the encoding.

Digital BOSE® Surround Sound System



SSP293_037

Front Midrange Speakers R26, R27

The left and right main channel speakers in the instrument panel transmit the:

- mid-range and high frequencies
- music and all video mode sounds intended to be emitted from the front speakers, but not directly from the center speaker

Center Mid/High Range Loudspeaker R158

The function of the Center Mid/High Range Loudspeaker (R158) is visual and audio harmonization in video mode. In other words, it allows the assignment of sound to images, and creates the impression that the actors' voices are coming from the center of the screen.

For music reproduction, the digital BOSE® Surround Sound System uses the Center Speaker to achieve the all-round effect. It gives the impression of being in the center of a concert hall regardless of whether the listeners are on the right or left side.

Bass Speaker in Front Doors R21 and R23

The passive Bass Speakers in the front doors reproduce the low audio frequencies in the front area of the passenger compartment, providing the full bass effect in the vehicle.

Two Main Channels (Rear)

The Rear-Door Mid-Range/Bass Speakers (R15, R17) and the Treble (R14, R16) act in the same way as the front main channels to reproduce music and sound for the rear area of the passenger compartment.

Surround Channel

The two Loudspeakers (R150) achieve the all-round acoustic effects. They are installed under the parcel shelf on the right and left. Since both speakers reproduce exactly the same sound, they are connected in series.

Rear Subwoofer

The Active Rear Subwoofer reproduces the bass tones and reinforces the full bass impression during music reproduction. The Subwoofer is actuated over a lineout output. The External Subwoofer Amplifier boosts this incoming signal to 100 W.

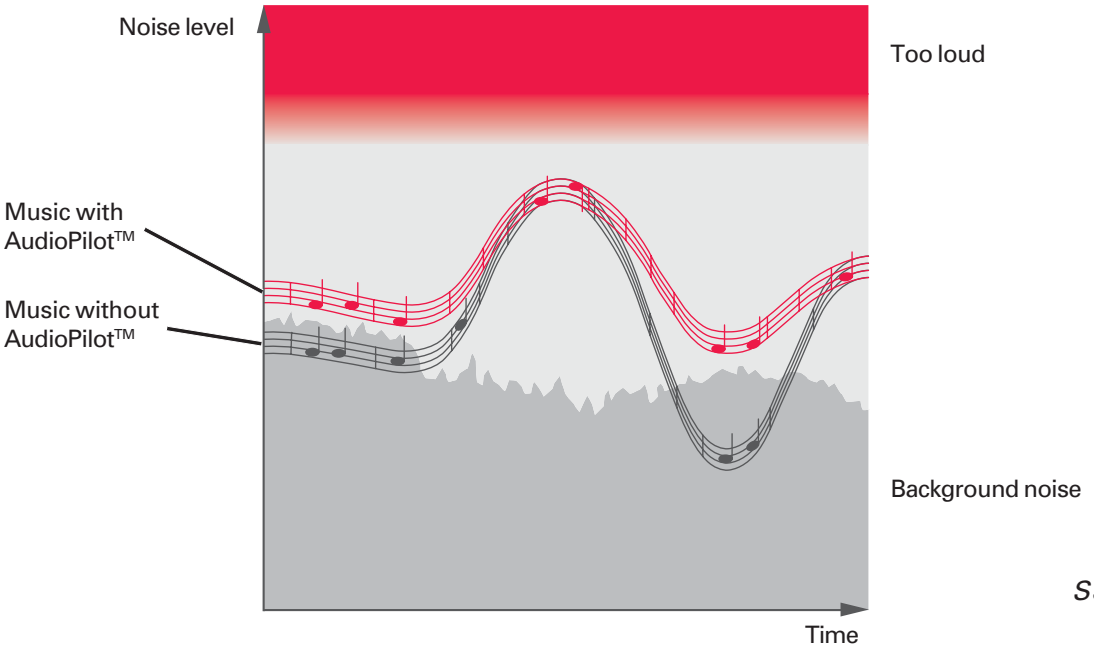


The surround sound function is only available for purely stereo sources such as CD and DVD. The surround sound function is not activated in radio mode, because sometimes the input signals are only mono.

The acoustic coordination of all speakers is essential to the reproduction of surround sound. If one of the speakers does not reproduce the correct tones due to malfunction, the surround sound effect will be considerably impaired.

AudioPilot™

The AudioPilot™ function provides compensation for vehicle background noise by increasing the volume of the frequency band affected.



SSP293_039

The background noise is picked up by the microphones in the Roof Module and evaluated by the Digital Sound System Control Module. The problem with background noise detection is to distinguish this from music or speech.

Example: AudioPilot™ cannot distinguish between the noise of the AC fresh-air blower and the sound patterns of music.

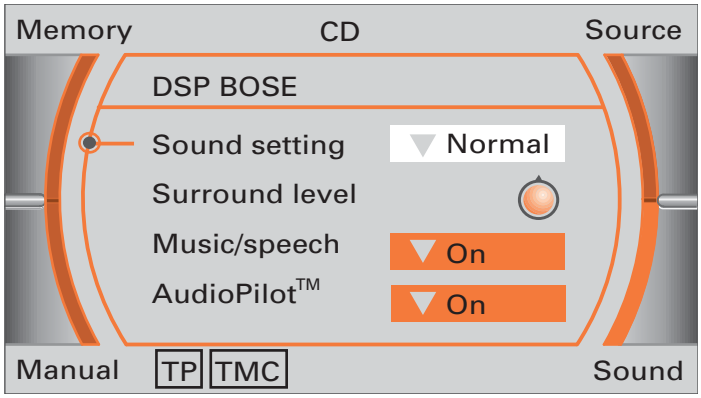
The Digital Sound System Control Module needs more information, such as the speed of the AC fresh-air blower and the engine version.

- The speed of the fresh-air blower enables the Digital Sound System Control Module to recognize the sound picked up by the microphones as background noise and provide compensation.
- The engine version (diesel or gasoline) enables the Digital Sound System Control Module to recognize the engine background noise picked up by the microphones and to increase the volume of the frequency bands affected.

As with series equipment, the engine version must be set in the encoding.

BOSE® Surround Sound System Settings

In addition to the sound settings described above, the BOSE® Surround Sound System adjusts the sound level for particular areas. With this function, the area for which surround sound reproduction is to be adjusted, can be selected.



SSP293_041

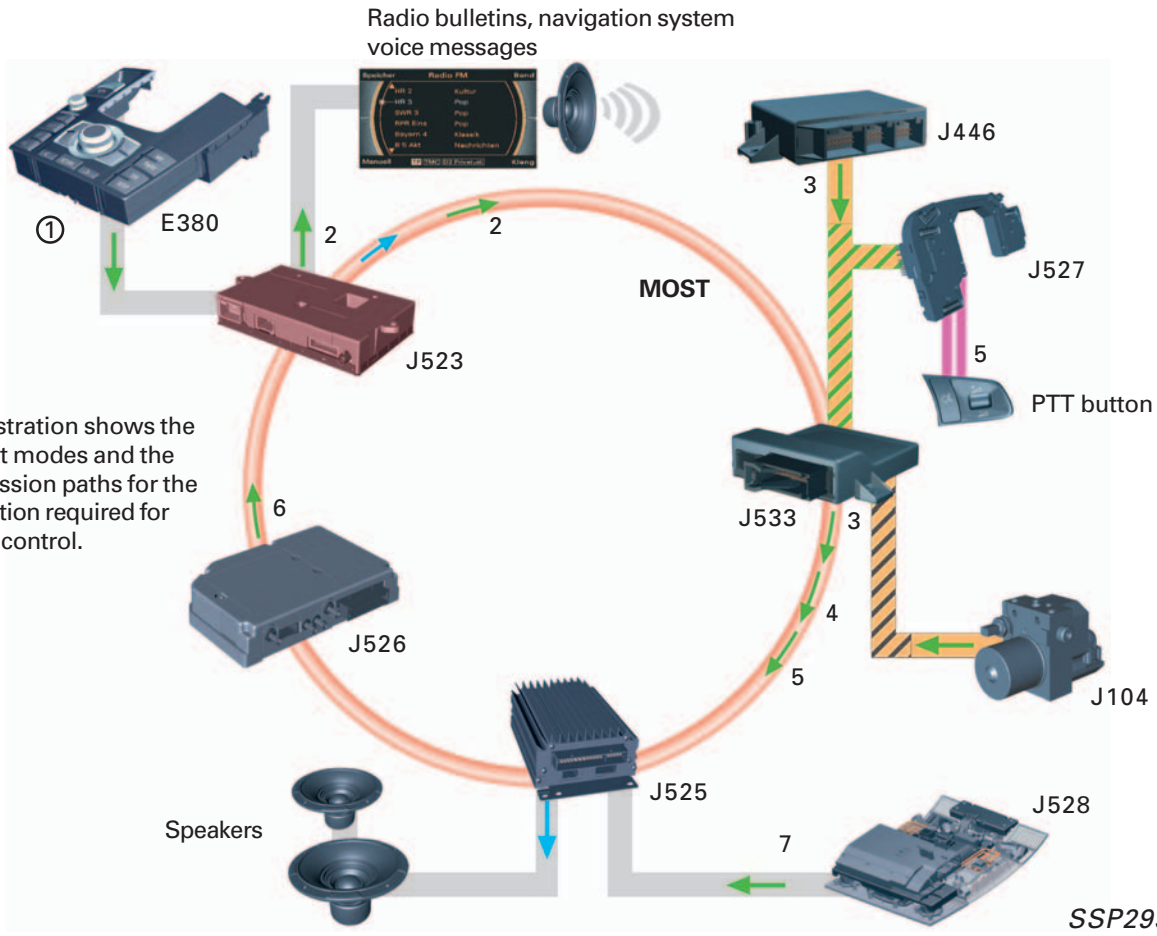
Sound System

Audio Management Distributed Function

The Operating Control Module is the audio master in the Infotainment System. The volume and sound settings made by the user are stored separately for the individual modes in the Control Module.

The sound settings are made by the user either with the corresponding mode activated, or with the "Sound/Volume Settings" setup menu in the MMI.

The following illustration shows the different modes and the transmission paths for the information required for volume control.



The illustration shows the different modes and the transmission paths for the information required for volume control.

SSP293_040

The audio signals are transmitted directly over the MOST Bus from each audio source to the Digital Sound System Control Module (J525).

1. Entertainment
   The volume and sound settings for the entertainment functions are made on the Multimedia control head (E380) and are stored separately and on a personalized basis (optional) for each mode.

2. Information
   In case of emergency and traffic messages, the entertainment functions and voice control system are interrupted. Traffic messages are output on the driver's side, emergency announcements on all speakers. During navigation messages, the volume of the entertainment functions is reduced. Navigation messages are output on the driver's side.

3. Acoustic Parking System (APS)
   When the APS system is active (Control module for parking aid [J446]), the volume of the entertainment systems is reduced.

4. Vehicle Speed
   The "Vehicle Speed" information is transmitted by the ABS Control Module [w/EDL] (J104) by the Drive System CAN over the Data Bus Diagnostic Interface (J533), and the MOST Bus to the Front Information Display Control Head. This information is required for the GALA function.

5. Control
   Activation of the Dialog System (SDS) with the PTT button in the steering wheel reduces the volume of the entertainment functions. Active traffic or emergency messages are terminated. Output is on the driver's side.

6. Communication
   When telephoning over the Telephone/Telematics control module, the volume of the entertainment functions is reduced. The driver has the option of setting the telephone output as required between front and rear.

7. Microphone Module
   The microphones are used for the AudioPilot™ function (optional). The microphone signals are transmitted in the form of digital information to the MOST Bus. The number of microphones depends on vehicle equipment. Further information on the microphones can be found in the following.

Microphones



SSP293_035

An '04 Audi A8L with the full range of equipment has three microphones in a unit in the Front Roof Module. The number of microphones depends on vehicle equipment and must be noted when the component is replaced.

Depending on equipment version, the analog microphone signals are converted into digital signals in the Digital Sound System Control Module (J525) or Telephone/ Telematics Control Module (J526) and transmitted over the MOST Bus. The following is a list of the available options.

SDS	Telephone/ Telematics	Microphone Connected To	MICROPHONE Audio data MOST bus
No	No	DSP: No Microphone Equipped Bose DSP: Microphone 2 Connected to DSP	None
No	Yes	DSP: Microphone 1 Connected to Telephone/Telematics BOSE®DSP: Microphone 1 Connected to Telephone/Telematics; Microphone 2 connected to DSP	With BOSE® DSP TEL
Yes	No	Microphones 1 and 2 connected to DSP	DSP SDS
Yes	Yes	Microphones 2 and 3 connected to DSP Microphone 1 connected to telephone/telematics Microphone signals following process by echo suppression in SDS control unit	DSP SDS TEL SDS SDS TEL

Diagnosis

Address Word 47 - Digital Sound System

Fault Memory Entries

The following result in corresponding Fault Memory Entries in the Digital Sound System Control Module (J525).

- Supply voltage undershot/exceeded
- Open circuit/increased attenuation in MOST Bus
- Short circuits or open circuits in speakers
- Short circuits or open circuits in microphones (optional)
- Loss of communication with Control Units over Bus systems
- Activation of component protection

Measured Value Blocks

The Measured Value Blocks display:

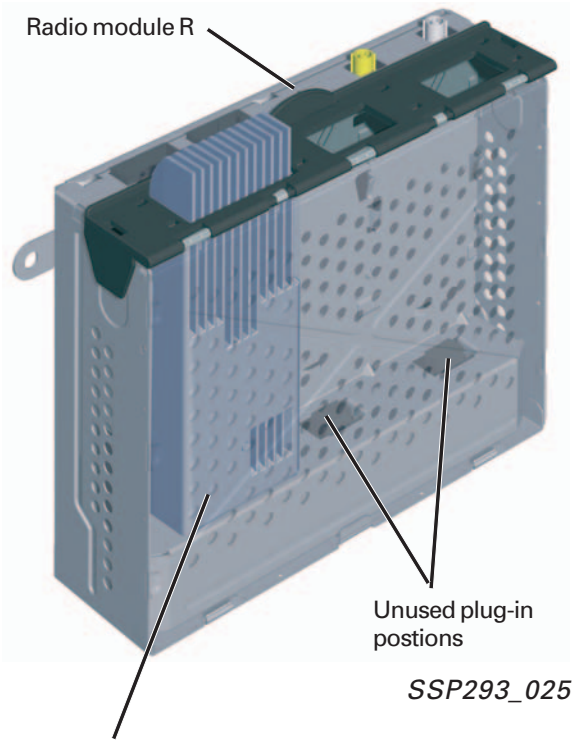
- Power Supply
- MOST Address
- MOST Identifier (Type of Unit)
- Status of Ring Fault Diagnosis Wire
- Status of AF Mute Connection
- Vehicle Speed
- Speed of Cooling Blower (only BOSE®)
- Amplifier Temperature
- Manufacturer's Data (Serial Number, etc.)
- Voltages at Microphone Inputs (optional)

Radio Module R

The Radio Module allows integration of additional systems into the Infotainment System. Plug-in positions are provided for three modules, one of which is used for the Speech Input Control Module (J507) Plug-In Module.

The function of the Radio Module is to ensure analog radio station reception, convert antenna signals into digital audio signals and to transmit these over the MOST Bus to the Digital Sound System.

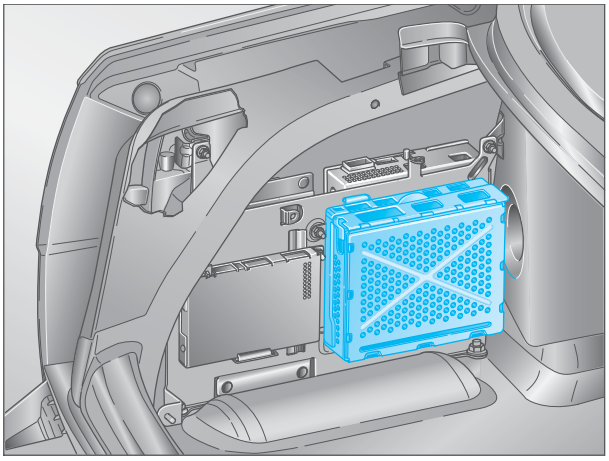
As with the Second Generation Symphony Radio, the Radio Module has two integrated radio tuners. SSP 254 Audi A4 ´01 Technical Features has more information on the tuners.



SSP293_025

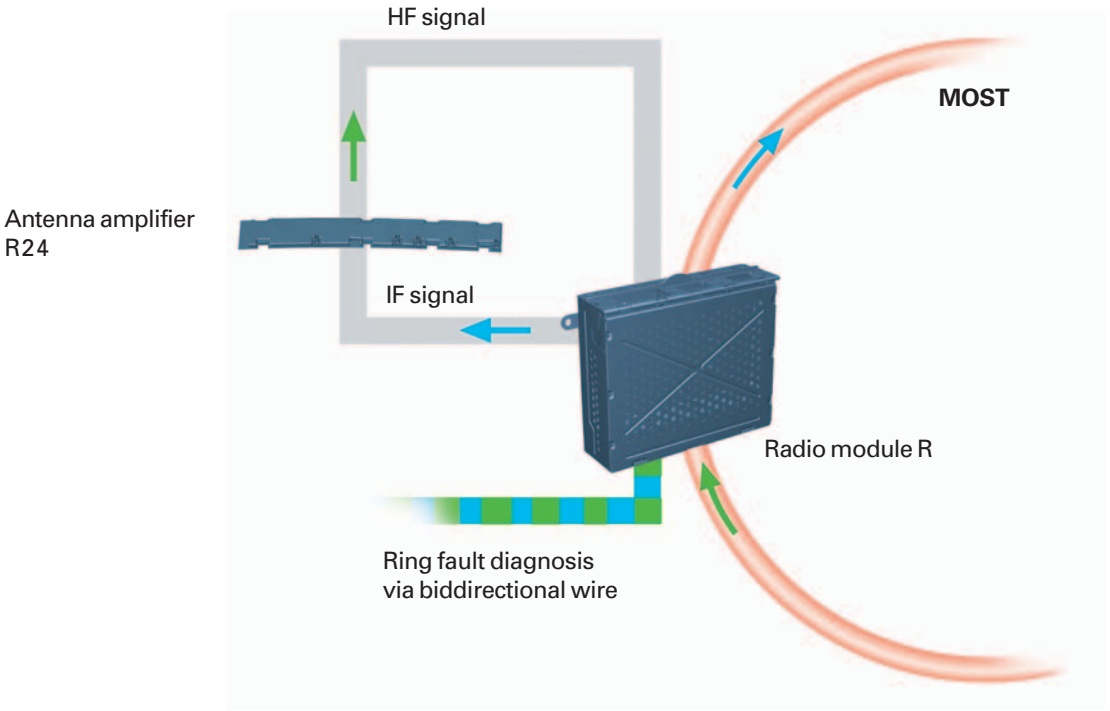
Location

The Radio Module is installed on a base plate on the left side of the trunk.



SSP293_026

Input/Output Signals



SSP293_027

Radio stations are received over one AM Antenna and four FM Antennas which are integrated into the rear window. The operation of the Antenna Amplifier R24 with Integrated Antenna Diversity is the same as the ´01Audi A4.

All the control signals and the audio signals converted into digital information are transmitted over the MOST Bus.

Notes:

"Radio Listening" Distributed Functions

The Front Information Display Control Head is the master control unit for this function. Up to 20 radio stations are stored in the control unit and listed in the RADIO main menu in the Front Information Display Control Module. Radio stations which have been stored but are not currently being received appear in gray.

Six radio stations that have been listened to for at least 45 seconds are displayed at the top of the list and stored on a user-specific basis. New radio stations replace those that have not been listened to for the longest.

The display sequence is based on the Program Identifier (PI) Code. This enables radio stations belonging to one group to be displayed in direct succession. SSP 147 - Radio Systems ´94 has information on the PI Code.

The Station Category (PTY code) is also shown in the list. Users can select the desired station categories in the Radio Function Setup Menu.

Like the PI Code, the PTY Code is integrated into the RDS data and contains additional information on the radio station that has been selected.

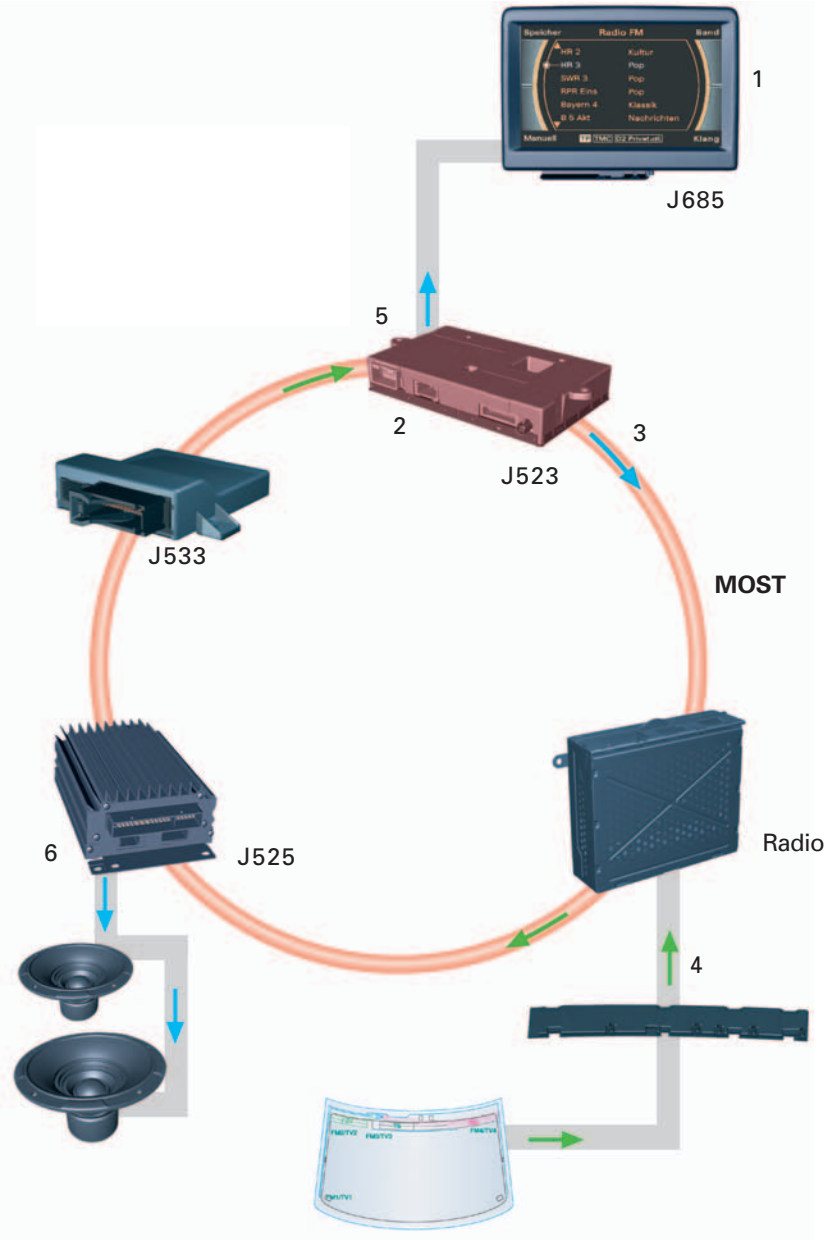


SSP293_038

Radio Module R

The Front Information Display Control Head remembers the last user-specific status (Display Open/Closed; Radio/CD/ TV etc.) before the Infotainment System was turned off. When it is turned on, the stored status is activated again.

The next illustration shows the sequence of operations when switching on the Infotainment System in Radio Mode, in a vehicle with the optional One Touch Memory System.



Aerials FM1 - FM4

SSP293_024

1. The last user-specific status before turning off the system is stored in the Front Information Display Control Head.

   In the example shown, "RADIO" was the last active mode for this user and the Front Information Display had been open.

   Opening of the Front Information Display is as described in the "Open/ Close Front Information Display Button" Section.

2. The Front Information Display Control Head sends an inquiry to the Radio Module R:

   - Which radio stations are currently being received?
   - Which transmission channels are being used for audio transmission?

3. The Radio Module responds with the information and starts to transmit the synchronous data for audio transmission to the MOST Bus.

4. The Front Information Display Control Head sends the graphics data to the Front Information Display Control Module. The corresponding station list is displayed. In addition, the Front Information Display Control Head sends the following information to the Digital Sound System Control Module (J525):

   - Command for Reproduction of radio Transmission Channels
   - Volume (User-Specific)
   - Sound Setting (User-Specific)
   - Muting Sound OFF

5. The Digital Sound System Control unit converts the Digital Audio Transmission Data into analog signals and reproduces these over the speakers. The user hears the radio station.

Radio Module

Diagnosis

Address Word 56 - Radio

Encoding

The encoding is used to set the:

- country version for adaptation of frequency bands
- Infotainment System configuration to ensure communication over the data Bus systems

Fault Memory Entries

The following situations result in corresponding Fault Memory Entries in the Radio Module.

- Power Supply Undershot/Exceeded
- MOST Bus Open Circuit/Increased Attenuation
- Loss of Communication with Control Module for Navigation with CD-mechanism (J401)
- Open Circuit/Short Circuit in HF Wire
- Open Circuit/Short Circuit in IF Connection

Measured Value Blocks

The Measured Value Blocks display

- Power Supply
- MOST Address (Position in Ring)
- MOST Identifier (Type of Unit)
- Status of Diagnosis Wire
- Power Supply and Current Input of Antenna Amplifier and Antenna Diversity
- Strength of Current Radio Station Reception

Control Element Test

In the Control Element Test, a test tone with a frequency of 100 Hz is transmitted by the Radio Module R to the Digital Sound System Control Module (J525). The digital sound system reproduces the test tone over the speakers. This permits checking of the audio data transmission over the MOST Bus.

Dialog System (SDS)

The Speech Control Module (J507) is included in the Radio Module as a plug-in module. It is a self-contained control unit with a separate MOST address and address word for self-diagnosis.

The functions of the familiar voice control system have been considerably extended in the '04 Audi A8L SDS.

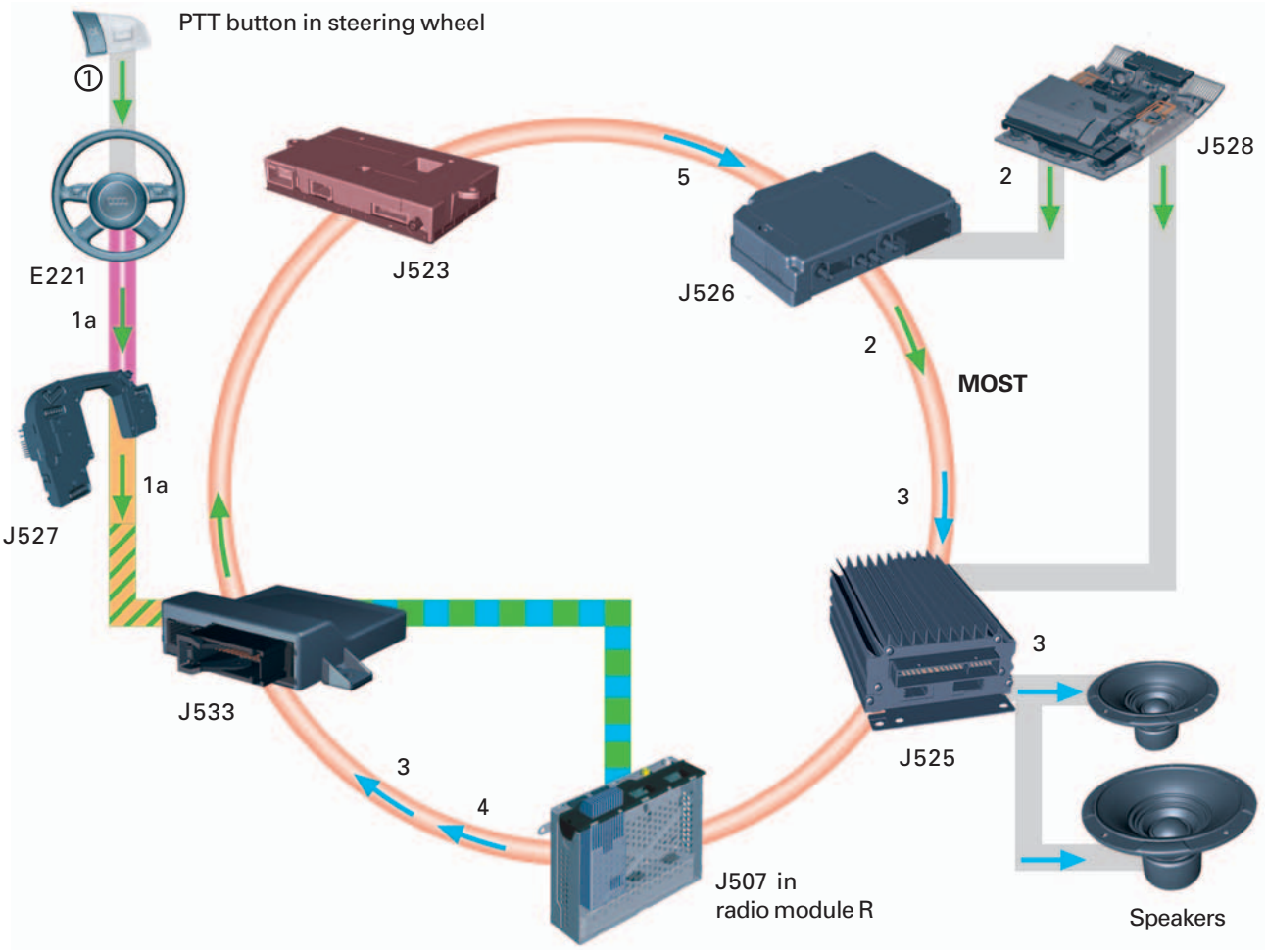
The following table is a summary of the SDS functions.

The "Help" command informs the driver of the commands available on the current level. This is a major contribution to increased road safety and ride comfort.

Radio	CD	Navigation	Address book	Telephone
FM/AM	Next CD	Start/stop navigation	Specify name	Enter PIN
Next station	Previous CD	Destination entry	Read out name	Call <name>
Station number 1 ... 99	CD Number N	Go to <address book entry>	Find entry and make call	Private
87.5 ... 108.0 (direct frequency input)	Next track	Map settings	Navigate	Office
Play station <station name>	Previous track	Traffic news ON/OFF	Erase	Fixed network
Station name (specify)	Track number 1 ... 99	Traffic news (read out)	Call <name> (private/office/fixed/mobile>	Mobile
Station list (read out + select)	Specify CD name		Navigate to <name>	Number <0123456789>
	CD <name> (play)			Correct
	CD list (read out + select)			Dial
				Redial

Radio Module

Voice Control Input/Output Signals



SSP293_029

E221	Control Unit in Steering Wheel
J526	Telephone/Telematics Control Module
J507	Speech Input Control Module
J527	Steering Column Electronics Control Module
J523	Front Information Display Control Head
J528	Roof Electronics Control Module
J525	Digital Sound System Control Module
J533	Data Bus On Board Diagnostic Interface

The plug-in contacts in the Radio Module are used for all Input and Output Signals, as well as the power supply. MOST Bus data transmission in the Radio Module is over electrical pulses. This is made possible by

- Screening against Electromagnetic Interference over the metal case
- Short Transmission Path

The illustration on the left shows the Input and Output Signal paths.

1. The SDS is activated by pressing the PTT button in the Control Head in Steering Wheel. As shown, the button signal is transmitted to the Speech Input Control Module (J507).

2. The Digital Sound Control Module (J525) and Telephone/Telematics (J526) Control Modules convert the signals from the microphone unit in the Roof Module into digital information and transmits it over the MOST Bus to the Language Input Control Unit.

3. The Dialog System Speech Output is achieved in the reverse direction using the Digital Sound System Control Module.

4. The user requests are transmitted by the dialog system over the MOST Bus to the Front Information Display Control Head.

5. As Infotainment Master, the Front Information Display Control Head J523 actuates the appropriate control modules to implement the required functions.

The digital microphone signals are filtered by an elaborate software function in the Speech Input Control Module and mixed to improve recognition of voice commands.

Microphone signal processing is also active in telephone hands-free mode. The Speech Input Control Module (J507) provides the Telephone/Telematics Control Module (J526) with the processed microphone signals over the MOST Bus. This considerably enhances hands-free quality.

Component Protection

The Speech Input Control Module (J507) is incorporated into the Component Protection System. Activated component protection results in restricted dialog system operation.

Radio Module

Diagnosis

Address Word 67 - Voice Control

Fault Memory Entries

The following situations result in corresponding Fault Memory Entries in the Radio Module.

- Power Supply Undershot/Exceeded
- MOST Bus Open Circuit/Attenuation
- Loss of Communication with Access/ Start Control Module (J518)
- Activated Component Protection

Measured Value Blocks

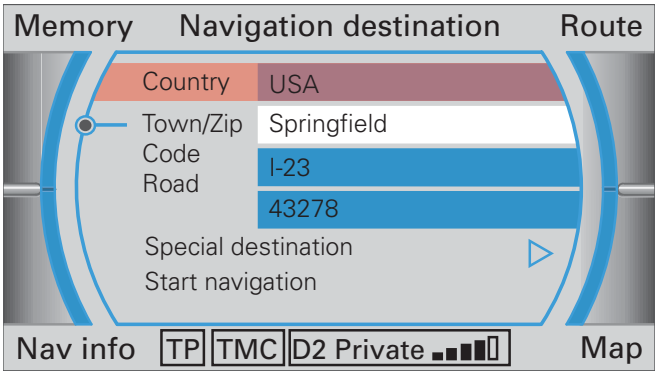
The Measured Value Blocks display:

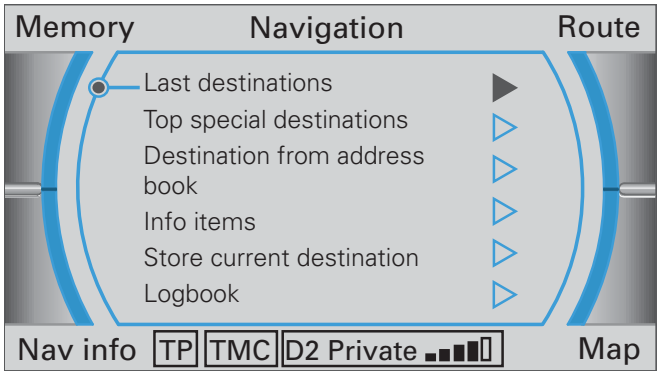
- Power Supply
- MOST Address (Position in Ring)
- MOST Identifier (Type of Unit)
- Status of Diagnosis Wire
- PC Board Temperature
- Reception level of microphones during last command
- Last Command Recognized, for example “RADIO”

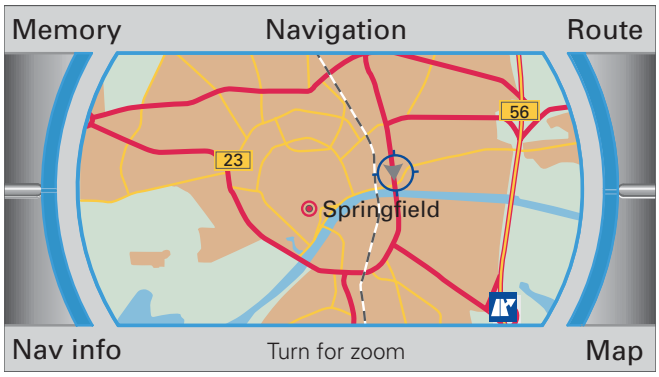
Control Element Test

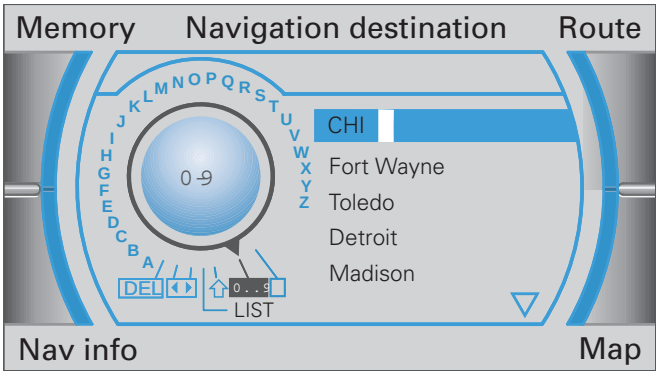
The Language Input Control Unit performs a recognized internal self-test in thr Control Element Test mode. Any faults occurring are displayed.

Introduction









The Navigation System in the '04 Audi A8L permits the use of Digital Versatile Discs (DVD) as navigation system information source. A DVD can store up to 4.7 gigabytes of data. This corresponds to roughly seven times the storage capacity of a CD-ROM.

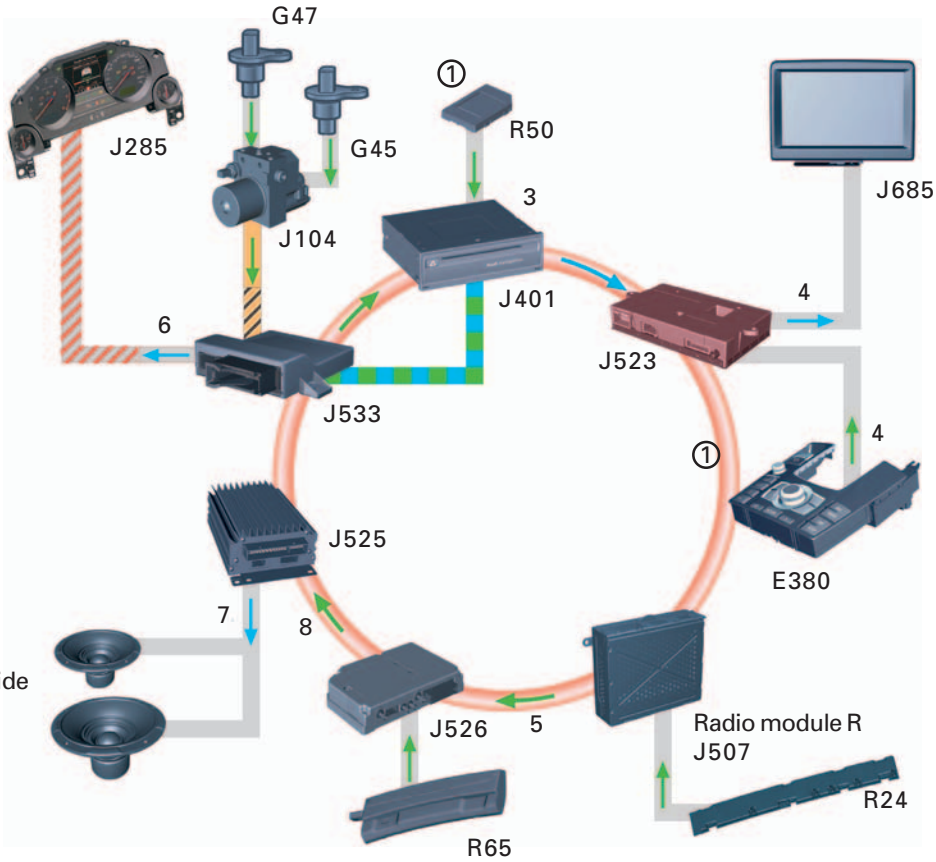
Navigation data for several countries and additional information such as a travel guide, restaurant guide and sports guide can be stored. The Destination Input Menu has been extended to include "Country." Destinations can still be selected by entering a zip code. Destination entries using the dialog system are an optional feature. With this function, the name of the place or road can be given as voice command.

Address Book

The "Memory" function enables users to make entries in an address book. The following data and the navigation data relating to the entry are stored.

- Surname
- First Name
- Category

Control Module For Navigation With CD-Mechanism (J401)



Signals for Calculating Current Vehicle Location

1. Design and operation of the Antenna for Navigation System (GPS) R50 is the same as the GPS Antenna installed in the Audi A4 ´01. The antenna is located at the top of the rear window.

2. The Navigation System uses the number of front wheel travel pulses for dead reckoning. The number of front wheel travel pulses is calculated by the ABS with ABS Control Module [w/EDL] (J104) on the basis of the Left Front (G47) and Right Front (G45) ABS speed sensor signals and transmitted to the Drive System CAN. The Data Bus On Board Diagnostic Interface (J533) reads the information in the Drive System CAN and sends it over the MOST Bus to the Control Module for Navigation with CD-mechanism.

3. As with other navigation systems, a Yaw Rate Sensor is integrated into the Control Module for Navigation with CD-mechanism.

4. As Infotainment System master, the Front Information Display Control Head J523 controls:

   - Destination input and selection with the aid of the MMI and Dialog System.
   - Presentation of navigation displays in the Front Information Display Control Module and Instrument Panel Insert Display.
   - Reproduction of voice messages over the speakers.

5. The Speech Input Control Module (J507) sends the voice inputs for destination entry and navigation activation converted into digital information to the Front Information Display Control Head over the MOST Bus. J523 accepts the entries and controls the navigation system accordingly.

6. The Control Module for Navigation with CD-mechanism sends the information for presentation of navigation displays to the Front Information Display Control Head over the MOST Bus. This makes use of the information to set up the presentations that are then shown on the two displays. The map display images are an exception. These images are set up by the Control Module for Navigation with CD-mechanism.

   The Control Module for Navigation with CD-mechanism also sends the information for reproduction of voice messages to the Digital Sound System Control Module (J525).

7. The Control Module for Navigation with CD-mechanism sends the audio data in a synchronous MOST Bus Transmission Channel. As directed by the Front Information Display Control Head, the Digital Sound System Control Module J525 reduces the volume of the entertainment functions and reproduces the audio data over the speakers on the driver's side.

8. The Telephone/Telematics Control Module (J526) and the Radio Module R transmit the traffic news data over the MOST Bus to the Control Module for Navigation with CD-mechanism. This makes allowance for the reported traffic delays in the dynamic navigation process.

On the Navigation Map Display, a traffic delay is shown as a graphic symbol. A new feature is that the traffic delay symbols are shown in gray and relate to the opposite direction, and therefore do not affect the navigation process. In addition, users can have traffic information displayed in text form over the multimedia interface after pressing the INFO button.

Diagnosis

Address word 37 - Navigation

Fault Memory Entries

The following situations result in fault memory entries in the Control Module for Navigation with CD-mechanism.

- Incorrect Loading and Ejection of CD/DVD-ROM
- Exceeding of maximum permitted temperature of CD/DVD Drive
- Access Problems with Navigation CD/DVD Data
- Implausible Yaw Rate Sensor Signal
- Stuck EJECT Button
- Open MOST Bus Circuit or Increased Attenuation

Adaptation

In addition to adaptation of the familiar Navigation Systems, the Adaptation function permits:

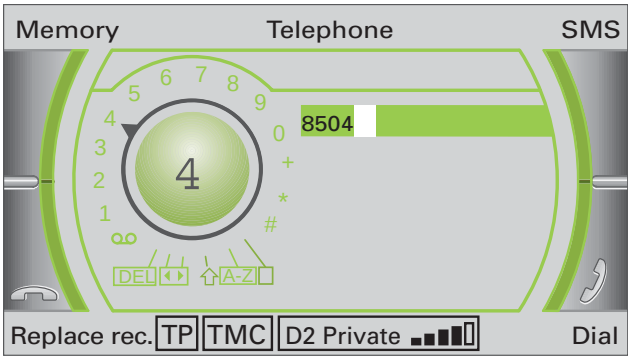
- Self-Testing of Processor Unit
- Self-Testing of CD/DVD drive
- Ejection of CD/DVD

Measured Value Blocks

As with the previously described systems, the MOST communication statuses are displayed in the Measured Value Blocks. Compared to previous Navigation Systems, new Measured Value Blocks are:

- Temperature of CD/DVD drive
- Direction of Travel
- Status of Satellite Reception
- Status of CD/DVD Drive
- Status of EJECT Button
- Current Longitude and Latitude Based on GPS Signal
- GPS Data

Introduction







SSP293_051

In addition to the multimedia interface, the '04 Audi A8L has a completely new communications platform for Telephone and Telematics™ applications.

The communications platform features dual- band capability which means that the telephone and data link can be established by the carrier frequencies 900 (D-network) and 1800 MHz (E-network).

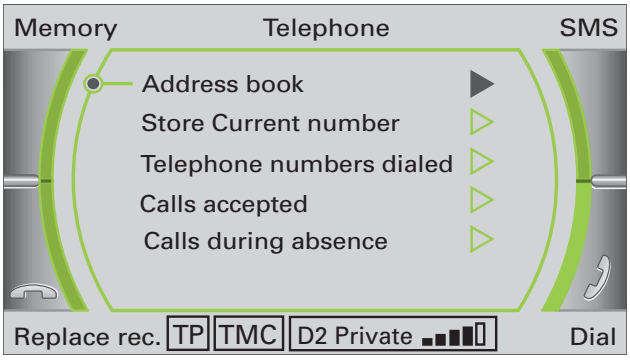
The MMI and Hands-Free Unit are used for control and operation of the communications platform. A cordless handset is also available as an option.

Bluetooth™ technology is employed for the exchange of data between handset and communications platform. In addition, the communications platform enables users to receive SMS messages.

Bluetooth™ technology is described in SSP 971303 - New Data Bus Systems LIN, MOST, Bluetooth™.

Address Book

A personalized Address Book is stored in the Front Information Display Control Head. The data structure takes the form of lists of electronic entries (Address Cards).



SSP293_051

Each Address Card contains data fields for storage of:

1. Data on person concerned
   - Surname, First Name
   - Title
   - Profession
   - Position In Company
   - Company, Division

2. Corresponding Data Required for Communication
   - Private and Business Telephone Numbers
   - Private and Business Telefax Numbers
   - Email Address
   - Web Address

3. Address data
   - Private Address
   - Business Address

4. Destination Address for Navigation
   - Private and business addresses are used as the basis for navigation destination address
   - Geographical location of address (longitude and latitude)

The address book data are displayed as required for the desired function. In other words, the Front Information Display shows

- Name
- Data on Person Concerned
- Navigation Address Data in the "Navigation Address Book" Menu.

In the telephone function, the Front Information Display shows the telephone numbers of the person, instead of the address.

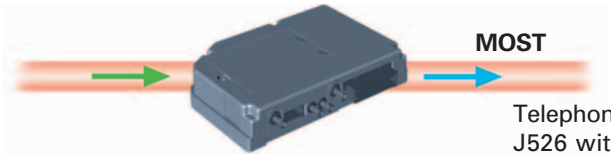
Input/output signals

The Telephone/Telematics Control Module receives the following Input Signals:

- Card Reader (Telephone) R115
- Navigation System Antenna
- Microphone 3 in Microphone Unit in Roof Module R164
- Telematics Control Head E264
- Airbag Control Module J234
- ABS Control Module [w/EDL] J104

Over Bi Directional Wire:

- Bluetooth™Antenna R152
- Telephone Baseplate R126
- Antenna for Telephone R65
- Auxiliary Antenna for Telematics R90
- Data Bus On Board Diagnostic Interface J533



Telephone/telematics control module J526 with
- Emergency battery, telematics A16
- SIM card reader for telematics

The Telephone/Telematics Control Module actuates the following:

- Card Reader (Telephone) R115
- Telematics Control Head E264
- Auxiliary Speaker for Telematics R91
- Telephone Handset R37

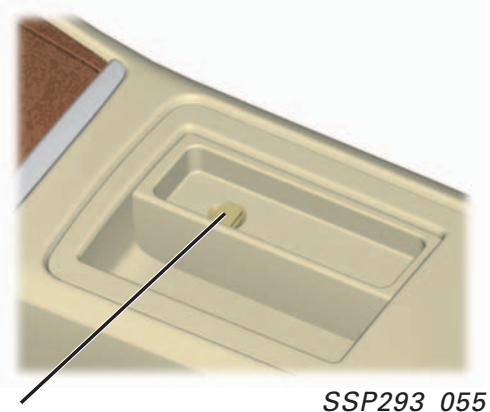
Over Bi Directional Wire:

- Bluetooth™ Antenna R152
- Telephone BaseplateR126
- Antenna for Telephone R65
- Auxiliary Antenna for Telematics R90
- Data Bus On Board Diagnostic Interface J533

Telephone/Telematics

Card Reader (Telephone) R115

All telephone functions are fully integrated into the MMI system. A telephone card reader is provided in the center console to facilitate replacement of the SIM card. This means that the telephone is operated with the aid of the MMI and microphone/ loudspeaker system only.



SSP293_055

Emergency Battery, Telematics A16 and SIM Card in Telephone/ Telematics Control Module

As with earlier Telematics systems, the emergency battery A16 and Telematics SIM card are installed in the Telephone/Telematics control module J526. Further information is in SSP 236, Audi Telematics.

The additional antenna for Telematics is only active in case of failure of the telephone antenna R65. In case of sound system failure only, telephone audio reproduction is provided in emergency operation over the auxiliary loudspeaker for Telematics R91.

Diagnosis

Address word 77 - Telephone
75 - Emergency Call Module

Fault Memory Entries

The self-diagnosis function of the Telephone/ Telematics Control Unit monitors:

- Power Supply
- Communication over MOST Bus
- Communication with Card Reader (Telephone) R115
- Telematics Control Head E264
- Auxiliary Speaker for Telematics R91
- Wiring from Airbag Control Module J234 for Transmission of Crash Signal
- Microphone Unit (in front roof module) R164
- Telephone Antenna R65
- Additional Antenna for Telematics™ R90
- Status of Emergency Battery for Telematics™ A16
- Antenna for Navigation System R50
- Bluetooth™ Antenna in Telephone Baseplate R126
- Wiring from ABS with EDL Control Module J104 for Transmission of Wheel Speeds
- Communication with Internal Telematics SIM Card with the corresponding Fault Memory Entries being made.

Measured Value Blocks

The Measured Value Blocks display:

- Statuses of vehicle battery and emergency battery
- MOST Address (Position in Ring)
- MOST Identifier (Type of Unit)
- Status of Diagnosis Wire
- Statuses and Numbers of Users as well as of Telematics SIM Card
- Status of Mobile Phone Link
- Status of Telephone Antenna and Additional Antenna for Telematics
- Number of GPS Satellites Received
- Number and Designations of Connected Bluetooth™ Units
- Status of Microphone 3 in Microphone Unit in Roof Module
- Speed of Rear Wheels
- Status of Antenna for Navigation System (GPS)

Control Element Test

The Control Element Test permits checking of

- Auxilary Speaker for Telematics R91
- Lamps in Telematics Control Head
- Telephone Antenna/Additional Antenna Switching
- Antenna for Navigation System (GPS)
- Bluetooth™ Link with Handset

Encoding

The vehicle version must be indicated in the encoding.

Adaptation

The adaptation function is used to:

- Activate Service Mode
- Deactivate Telematics Function
- Deactivate Bluetooth™ Function
- Reset Timer on Replacing Emergency Battery
- Set Telephone Continued Operation Time

Operating Control Module

As master control module, the Operating Control Module is responsible for:

- Telephone and Telematics System Display over MMI
- Control of Address list in Instrument Panel Insert Display
- Activation of Telephone Over Multi-Function Steering Wheel
- Control Signals for Hands-Free Unit Audio Transmission
- Storage and Selection of Entries in Address Book with Transmission of data in the MOST Bus to the Telephone/Telematics Control Module (J526).

Digital Sound System Control Module J525)

The Digital Sound System Control Module reproduces the audio signals for the Hands-Free Unit and call tones over the loudspeakers. It also sends the audio signals of Microphones 1 and 2 in the Microphone Unit in the Roof Module to the MOST Bus.

Speech Input Control Module (J507)

This Control Module conditions the digital audio data of the microphones and returns the conditioned signals to the MOST Bus. These signals are reproduced by the Telephone Hands-Free Unit for the exchange of commands with the driver.

Control module for navigation with CD-mechanism (J401)

The Telephone/Telematics Control Module (J526) receives data on traffic delays over SMS (messages from Telematics service provider) by the usual Telematics function. This data is transmitted by the Telephone/Telematics Control Unit on the MOST Bus to the Control module for navigation with CD-mechanism (J401), where it is used for dynamic navigation purposes.

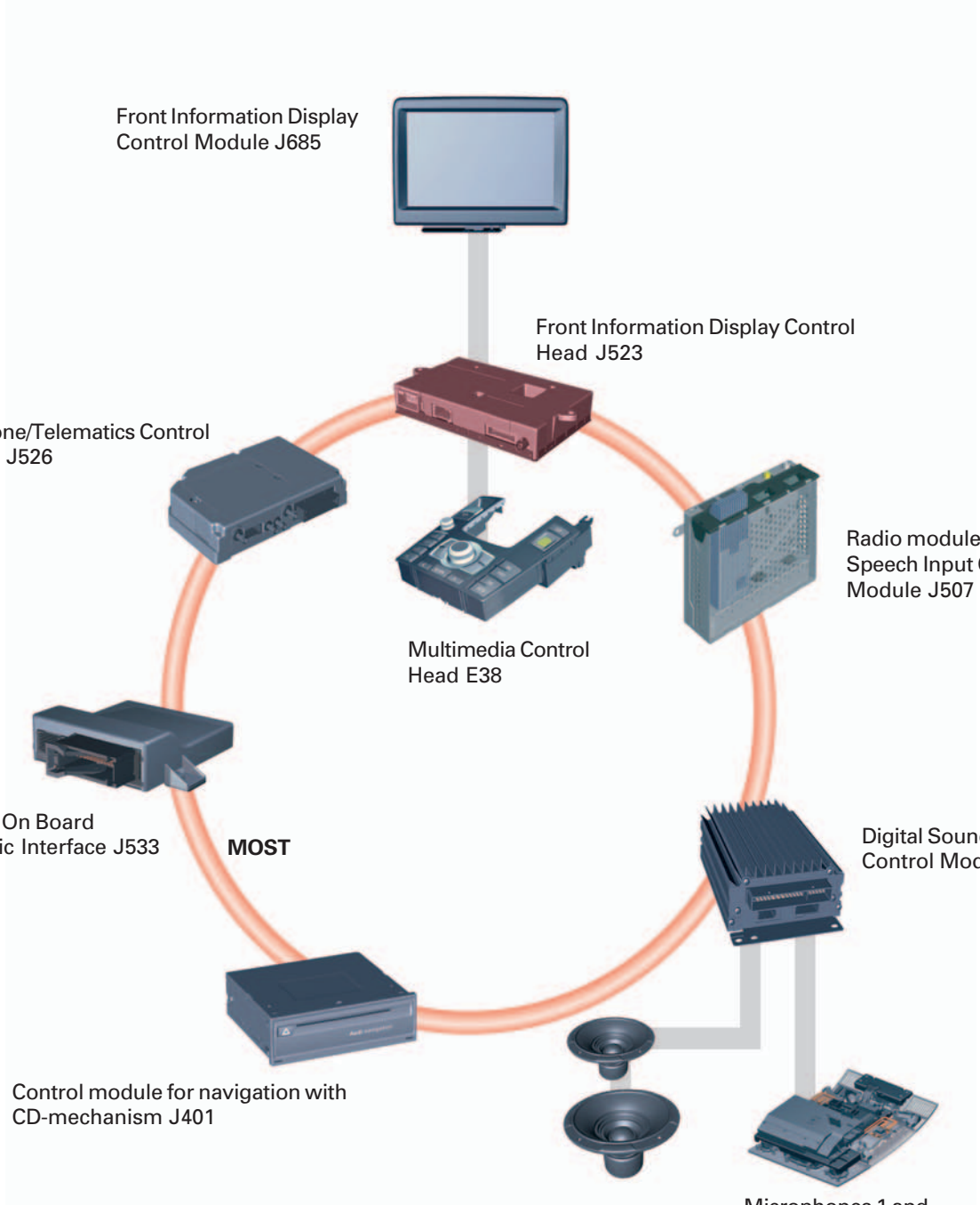
Data Bus On Board Diagnostic Interface (J533)

In the Telephone/Telematics system, the Data Bus On Board Diagnostic Interface is responsible for:

- Transmission of data for address book display in Instrument Panel Insert to Instrument Panel Insert CAN
- Transmission of diagnosis data to diagnosis CAN

MOST Bus Links

The illustration shows the MOST Bus applications required for operation of the Telephone/Telematics System.



SSP293_052

Cordless Telephone Handset

The handset is available as an option. The handset holder is located under the front center armrest. Since Bluetooth™ technology is used for data transmission, the molded holder only has three integrated contacts for charging the battery in the handset and for terminal 15. To ensure an optimum handset charge, the handset should always be replaced in its holder.



SSP293_053

Establishing Bluetooth™ Link with Handset

Activation of the handset automatically establishes the Bluetooth™ link. If the link is not established automatically when the handset is activated, the connection process must be repeated. Handset adaptation must be performed if handset/telephone assignment no longer exists because of component replacement or user error. Refer to the Handset Owners Manual.



SSP293_059

For more information on Bluetooth™ technology, refer to SSP 971303 “New Data Bus Systems - LIN, MOST, Bluetooth TM “ and MMI operating instructions.

Knowledge Assessment

An on-line Knowledge Assessment (exam) is available for this SSP.

The Knowledge Assessment may or may not be required for Certification.

You can find this Knowledge Assessment at:

www.accessaudi.com

From the accessaudi.com homepage:

- Click on the “ACADEMY” Tab
- Click on the “Academy Site” Link
- Click on the ”CRC Certification” Link

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