

Information and Entertainment System - Audio System

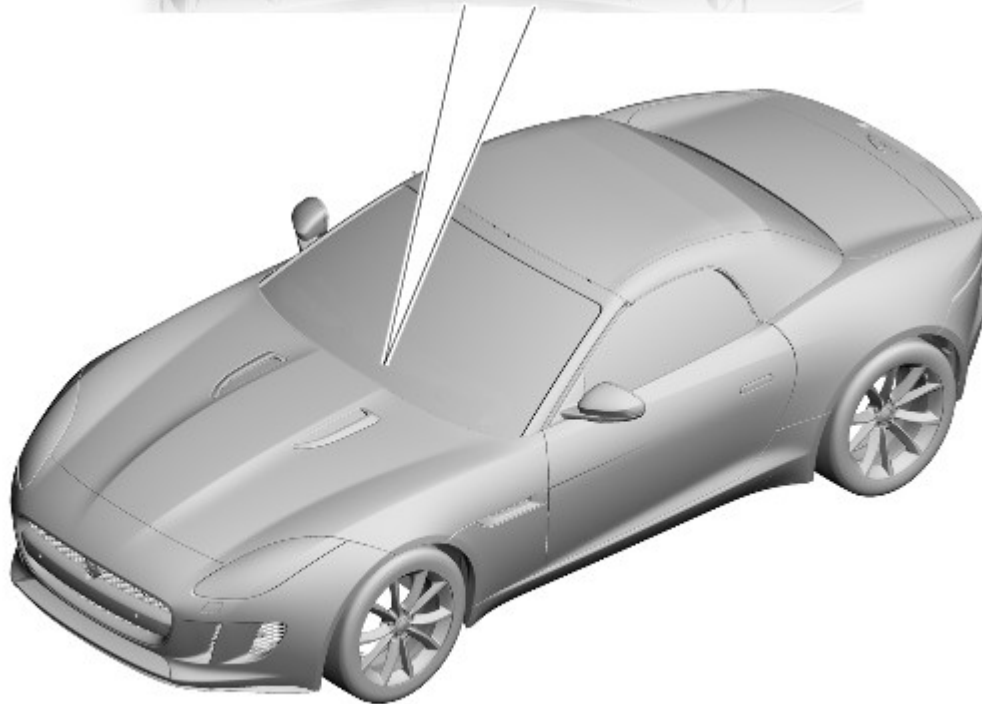
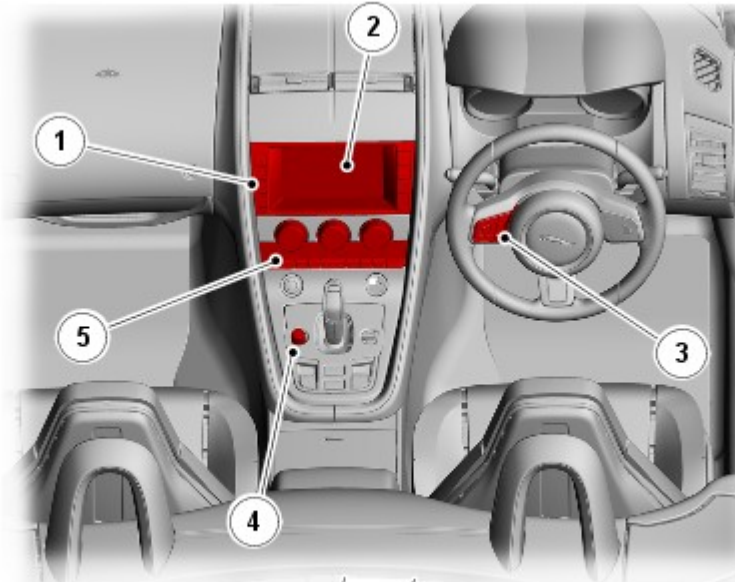
Description and Operation

COMPONENT LOCATION

AUDIO SYSTEM - SHEET 1 OF 3

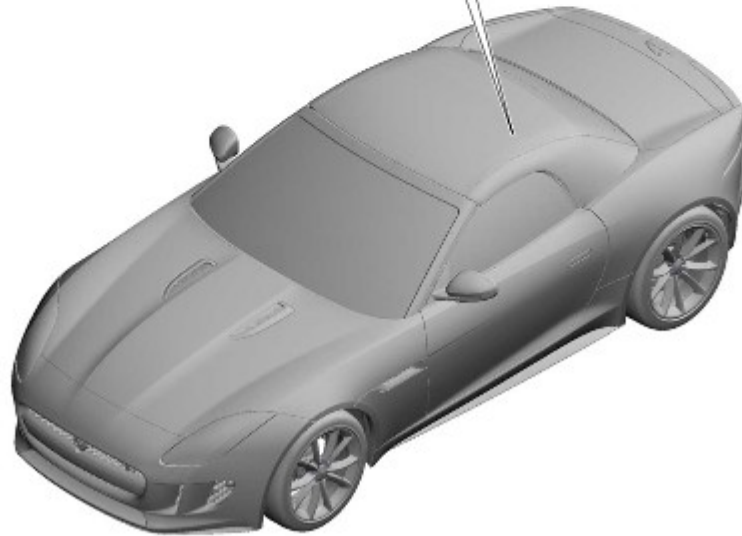
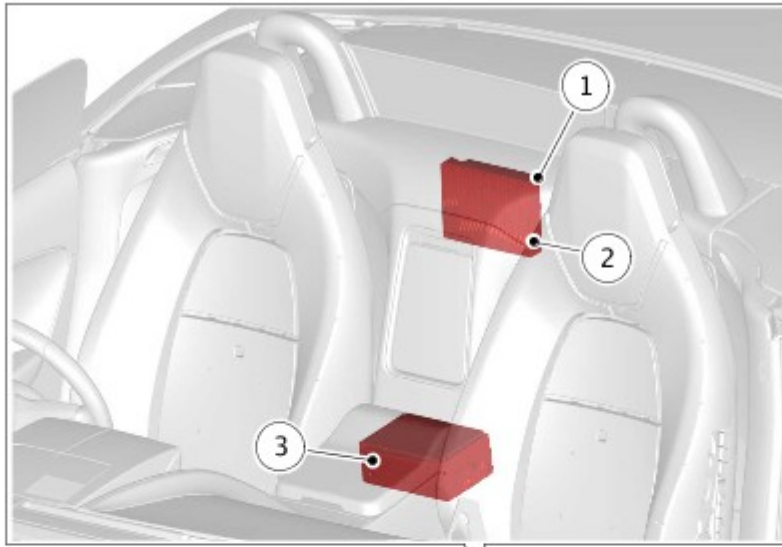


NOTE: Automatic Transmission (AT) variant is shown, Manual Transmission (MT) variant is similar.



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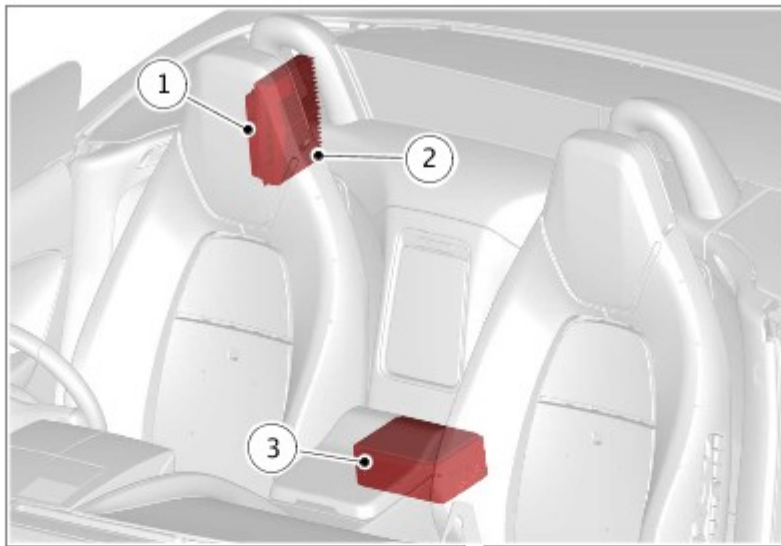
Item	Description
1	Touch Screen (TS) Switchpack
2	Touch Screen (TS)
3	Left Steering Wheel Switchpack
4	Audio Volume Control Switch
5	Integrated Control Panel (ICP)



E174949

Item	Description
1	Digital Radio Control Module (DRCM) or Satellite Radio Control Module (SRCM) (depending on market specification) (only on InControl Touch Plus Meridian® Surround Audio System (770W))
2	Audio Amplifier Module (AAM)
3	Integrated Audio Module (IAM) (on InControl Touch Plus Meridian® Surround Audio System) or Audio Head Unit (AHU) (on InControl Touch Audio Systems)

AUDIO SYSTEM - SHEET 3 OF 3 - COUPE VEHICLES



E175560

Item	Description
1	Digital Radio Control Module (DRCM) or Satellite Radio Control Module (SRCM) (depending on market specification) (only on InControl Touch Plus Meridian® Surround Audio System (770W))
2	Audio Amplifier Module (AAM)
3	Integrated Audio Module (IAM) (on InControl Touch Plus Meridian® Surround Audio System) or Audio Head Unit (AHU) (on InControl Touch Audio Systems)

OVERVIEW

The audio system is available in three versions:

- InControl Touch: 192W, 6 speaker audio system (Not available in NAS (North American Specification) and Japanese markets).
- InControl Touch: 380W, 10 speaker audio system.
- InControl Touch Plus with Meridian® Surround: 770W, 12 speaker audio system.

All sound systems have separate amplifiers and include:

- Auxiliary Input.
- MP3-Compatible, Single slot CD.
- AM/FM (Amplitude Modulation/Frequency Modulation) Radio.
- HD Radio™ (NAS only).
- SDARS satellite radio (NAS only)

- EON, RDS, PTY, TA.
- Bluetooth®, audio streaming and Bluetooth® hands free.
- Front Media Interface.
- Telematics
- GSM

InControl Touch Plus with Meridian® Surround Audio System

InControl Touch Plus with Meridian® Surround Audio System (770W) can be specified with:

- Hard Drive Navigation system (except Asian markets) with Virtual CD (Compact Disc) Multichanger and Single Slot DVD (Digital Versatile Disc) for front TS (Touch Screen).
- Single slot CD without hard drive.
- Single slot DVD without hard drive.
- DRCM (Digital Radio Control Module) or SRCM (Satellite Radio Control Module) (NAS only).

A range of audio systems are available combining radio and CD / DVD functions, satellite radio or digital radio, MP3 disc compatibility, RDS, PTY and TA functions. The IAM (Integrated Audio Module) is a combined radio tuner, CD / DVD player and incorporates on 40GB hard drive for use by the audio for storing music and also stores the operating system and files for the navigation system (not applicable to Asian market vehicles).

A portable audio interface panel allows for the connection of a range of portable audio devices to the car's audio system. The panel is connected to the IAM and is controlled by the customer via the TS, with play back through the vehicle's speaker system. This system allows the user to stream data from their personal portable media player to interface with the vehicle, including iPod® and other MP3 players, or USB (Universal Serial Bus) mass storage devices such as memory sticks. MP3 players can also be controlled through the TS if they are configured as mass storage devices. The portable audio interface panel includes a 3.5mm auxiliary jack-plug socket, plus a USB connector which allows connectivity for a wide variety of USB devices, including iPods via the USB. The USB port also includes a charging function, although it does not support a USB hub. The maximum charging current supplied is 500mA. The user can connect either an iPod or a USB device to the USB connector, and select the appropriate function from the TS.

Digital radio is available for Europe, Canada, Australia and Asian markets and gives access to digital radio channels for better sound quality, additional radio channels and enhanced functionality depending on local service availability. A DRCM processes the received digital signals. The system receives reception signals from the following sources to ensure optimum signal strength:

- Digital Radio band L antenna located in the luggage compartment lid (convertible vehicles) or in the roof pod and rear quarter window (coupe vehicles). (Band L is currently used only in the Czech Republic.)
- Digital Radio band III antenna located in the luggage compartment lid (convertible vehicles) or in the roof pod and rear quarter window (coupe vehicles).

For NAS vehicles, the digital formats adopted are HD Radio™ and SDARS (Satellite Digital Audio Radio Service) which specifically links to the XM™ satellite radio network. The subscription system operates in the S-band frequency range, and as a result of the use of satellite transmission and provides a large number of channels across the United States and Canada.

InControl Touch Plus with Meridian® Surround Audio System (770W) has a separate SRCM (Satellite Radio Control Module) The SRCM processes digital signals from the satellite radio antenna located in the rear luggage compartment lid (convertible vehicles) or roof pod (coupe vehicles).

Primary user control of the audio system is via the TS and the TS switchpack, which are located in the center of the instrument panel. Control signals from the TS switchpack are relayed directly to the TS. The TS relays the control signals to the rest of the audio system on a MOST (Media Oriented System Transport) ring. The TS is the timing master for the MOST ring and also hosts a gateway function between the MS CAN comfort systems bus and the MOST ring.

InControl Touch (192W) and InControl Touch (380W) Audio Systems

InControl Touch (192W) and InControl Touch (380W) Audio System can be specified with:

- InControl Telematics system
- Navigation system with Secure Digital (SD) memory card updates
- Digital Radio

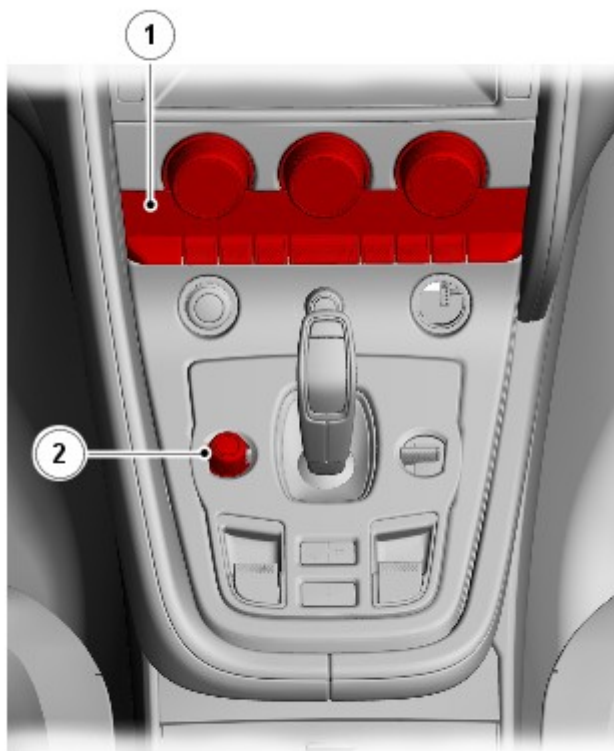
The TS is the gateway between infotainment system and other system (for example the Parking aid system). The systems use CAN bus connections between other modules and twisted pairs for audio signals instead of MOST ring connection.

A portable audio interface panel allows for the connection of a range of portable audio devices to the car's audio system. The panel is controlled through the AHU (Audio Head Unit), with play back through the vehicle's speaker system. This system allows the user to import data from their personal portable media player to interface with the vehicle, including iPod® and other MP3 players, or USB mass storage devices such as memory sticks. MP3 players can also be controlled through the TS if they are configured as mass storage devices. The portable audio interface panel includes a 3.5mm auxiliary jack-plug socket, plus a USB2 connector which allows connectivity for a wide variety of USB devices, including iPods via the USB. The USB port also includes a charging function, although it does not support a USB hub. The maximum charging current supplied is 0.5A or 2.1A dependant on level of AHU fitted. The user can connect either an iPod or a USB device to the USB connector, and select the appropriate function from the TS. On vehicles with a navigation system, the portable audio interface also includes an SD memory card port for navigation system and voice command software.

For additional information, refer to: [Telematics](#) (415-01 Information and Entertainment System, Description and Operation).

DESCRIPTION

Integrated Control Panel (ICP)



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Item	Description
1	ICP (integrated control panel)
2	Audio Volume Control Switch

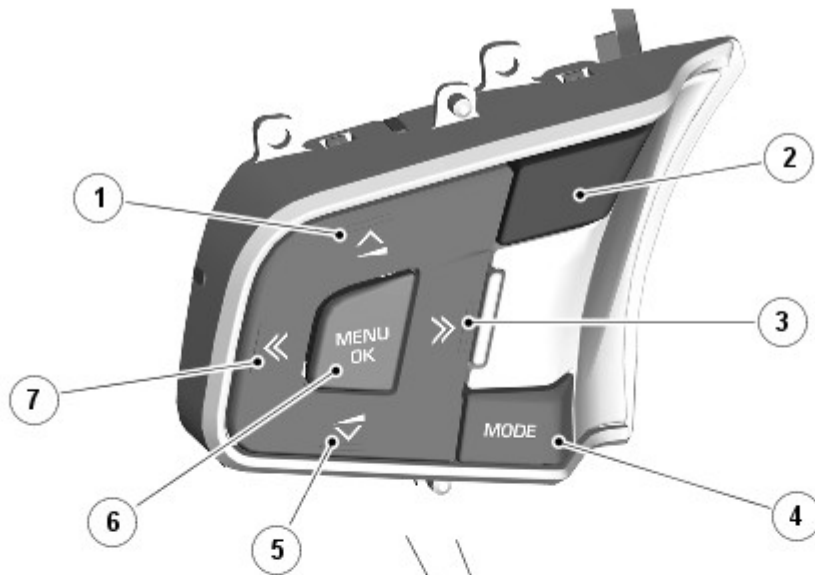
The ICP is located in the center of the instrument panel, below the TS. The ICP is also shared with the climate control system.

A audio volume control switch located on the left side of the transmission control switch; which controls the audio volume by rotation of the control. The audio system can be turned on and off by pressing the control. When the switch is activated, it sends a signal to the ICP, which then sends a signal from the ICP to the TS showing the drivers request.

The ICP also contains switches and controls for hazard warning indicators, climate control systems.

For additional information, refer to: [Control Components](#) (412-01 Climate Control, Description and Operation).

Steering Wheel Switchpack



E155135

Item	Description
1	Volume Increase Switch
2	Telephone Answer/End Call Switch
3	Seek, Next Track, Scroll Up Telephone List, Next Radio Preset (InControl Touch Plus) or Next Radio Channel (InControl Touch)
4	Mode Switch
5	Volume Decrease Switch
6	Increase Menu/OK Switch (Instrument Cluster Menu Control)
7	Seek, Previous Track, Scroll Down Telephone List, Previous Radio Preset (InControl Touch Plus) or Previous Radio Channel (InControl Touch)

The steering wheel switchpack is located on the left side of the steering wheel.

The switches are connected to the TS via Local Interconnect Network (LIN).

When the steering wheel switchpack is activated, a signal from switchpack goes to the clockspring which then informs the TS of drivers request.

The left steering wheel switchpack controls the following functions:

- MODE - Press repeatedly to scroll through all audio/video sources.
- » Short press up:

- To select the next radio preset (InControl Touch Plus) or next radio channel (InControl Touch).
- To select the next track on chosen audio source.
- When telephone is in use, press to scroll up lists of calls or phonebook entries.
- « Short press down:
 - To select the previous radio preset (InControl Touch Plus) or previous radio channel (InControl Touch).
 - To select the previous track or start of current track on chosen audio source.
 - When telephone is in use, press to scroll down lists of calls or phonebook entries.
 - With radio manual seek mode activated, further short presses will change the frequency in single increments. A further long press will scan forwards through the current waveband until the button is released.
- » Long press up:
 - To auto seek up the frequency to the next radio station (Only in InControl Touch Plus).
- « Long press down:
 - To auto seek down the frequency to the next radio station (Only in InControl Touch Plus).
 - Volume increase for any audio source.
 - Volume decrease for any audio source.

The MENU/OK button is for use with the IC (Instrument Cluster) menu.

For additional information, refer to: [Instrument Cluster](#) (413-01 Instrument Cluster, Description and Operation).

For further details on the telephone button refer to Cellular Phone.

For additional information, refer to: [Cellular Phone](#) (415-01 Information and Entertainment System, Description and Operation).

Antennas

On Convertible vehicles AM, FM, digital radio, satellite radio, GSM, TV (Television) and other system antennas are located in the luggage compartment lid and windshield.

On Coupe vehicles, depending on vehicle specification the roof pod can contain the GPS, GSM, digital radio L-Band or satellite radio antennas.

For additional information, refer to: [Antenna](#) (415-01 Information and Entertainment System, Description and Operation).

Speakers

The number, location and specification of the speakers in the vehicle differ depending on the level of audio system fitted.

For additional information, refer to: [Speakers](#) (415-01 Information and Entertainment System, Description and Operation).

InControl Apps

InControl Apps presents a vehicle optimised, interactive set of well known apps on your vehicle's infotainment screen via a dedicated USB port. Once connected, a comprehensive selection of apps enabling media streaming, cloud based services, location based services and more is accessible via the vehicle's touch screen.

InControl Apps is compatible with iPhone 5 and newer devices running iOS7 and above, and Android phones running v4.0 and above.

For additional information, refer to: [Telematics](#) (415-01 Information and Entertainment System, Description and Operation).

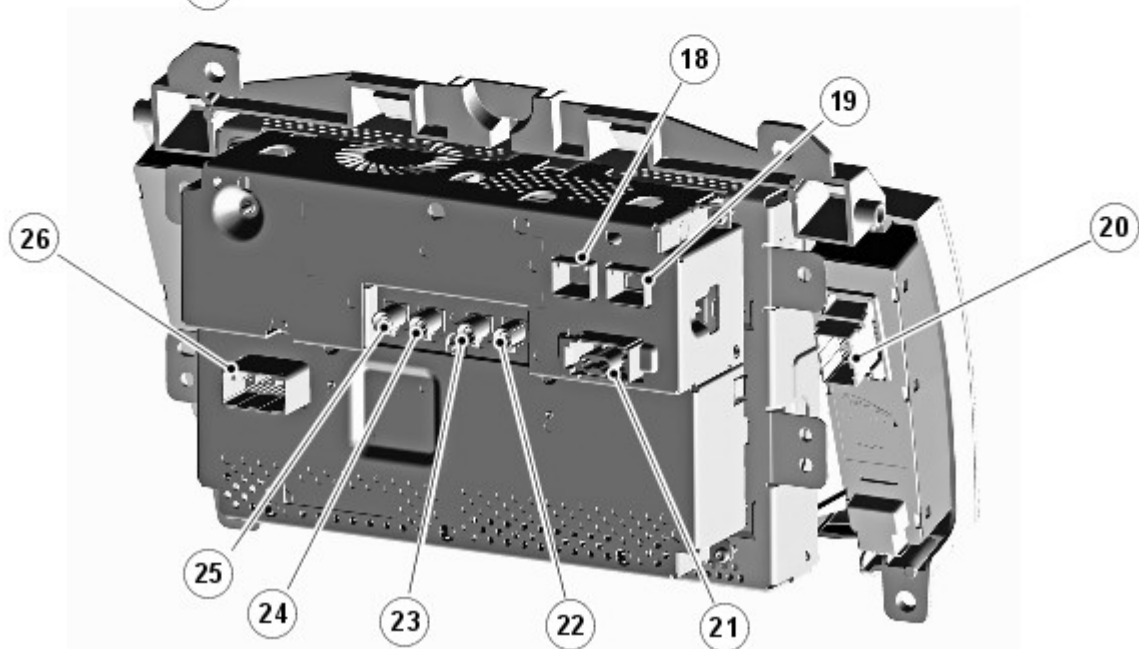
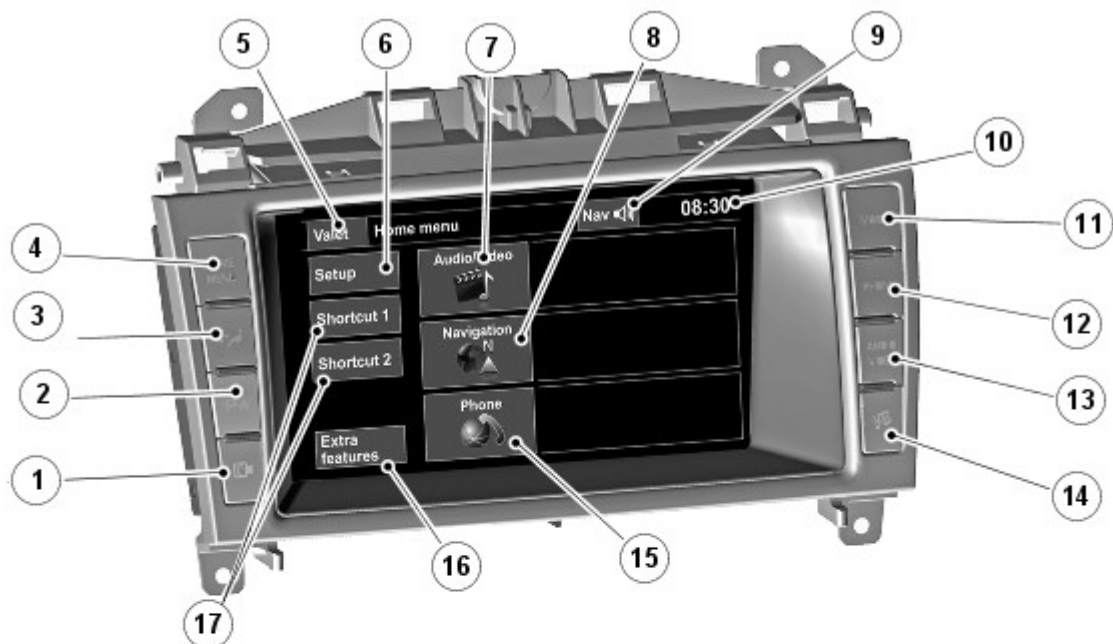
InControl Touch Plus with Meridian Surround Audio System

Touch Screen (TS) and Switchpack - InControl Touch Plus Audio System

Touch Screen (TS) - InControl Touch Plus Audio System



NOTE: Exact settings on display will vary depending on market specification and configuration of vehicle.



E155127

Item	Description
1	Power On/Off Switch
2	Parking Aid or Setup Switch (depending on specification)
3	Climate Control Switch
4	Home & Menu Switch
5	Valet Mode - Soft Key
6	Setup Menu - Soft Key
7	Audio and Video Menu - Soft Key
8	Navigation Menu - Soft Key
9	Repeat navigation audio instruction – Soft Key
10	Adjust Time and Date – Soft Key
11	Mode Switch
12	Phone Switch
13	Audio & Video Switch
14	Navigation or Audio Settings Switch (depending on specification)
15	Phone Menu - Soft Key
16	Extra Features Menu – Soft Key

17	Home Menu Shortcuts – Soft Key
18	Connector - LVDS (Low-Voltage Differential Signalling) input from IAM (Integrated Audio Module) or NCM (Navigation Control Module) (Japan or Asia Only)
19	Connector -LVDS (Low-Voltage Differential Signalling) output to IC (Instrument Cluster)
20	TS (Touch Screen) Switchpack Connector
21	Connector - MOST (Media Oriented System Transport)
22	Connector - CVBS (Composite Video Baseband Signal) video input from PACM (Parking Aid Control Module) or RVC (Rear view camera)
23	Connector - CVBS (Composite Video Baseband Signal) video input from TVCM (Television Control Module)
24	Connector - CVBS (Composite Video Baseband Signal) video input from IAM (Integrated Audio Module)
25	Connector - CVBS (Composite Video Baseband Signal) video output to IAM (Integrated Audio Module)
26	Connector - Power, Ground, Medium speed CAN bus, Steering wheel switchpack input

The TS is located in the center of the instrument panel. The TS comprises an 8 inch color, touch sensitive display, with a TS switchpack located on each side of the TS.

The TS is the Bus Master for the MOST system and contains the timing master for the MOST system.

When the vehicle systems become active the TS is powered up by the CJB (Central Junction Box) and receives signal from the BCM/GWM (Body Control Module/Gateway Module) on the MS CAN comfort systems bus and subsequently wakes up the other audio modules via the MOST.

The TS is the primary user interface of the audio system. It communicates with the other components of the audio/infotainment system on the MOST ring and allows control of the audio system and other infotainment systems from a single point.

The TS also allows the driver to alter the characteristics of vehicle setup using the dynamic mode feature.

For additional information, refer to: [Ride and Handling Optimization](#) (204-06 Ride and Handling Optimization, Description and Operation).

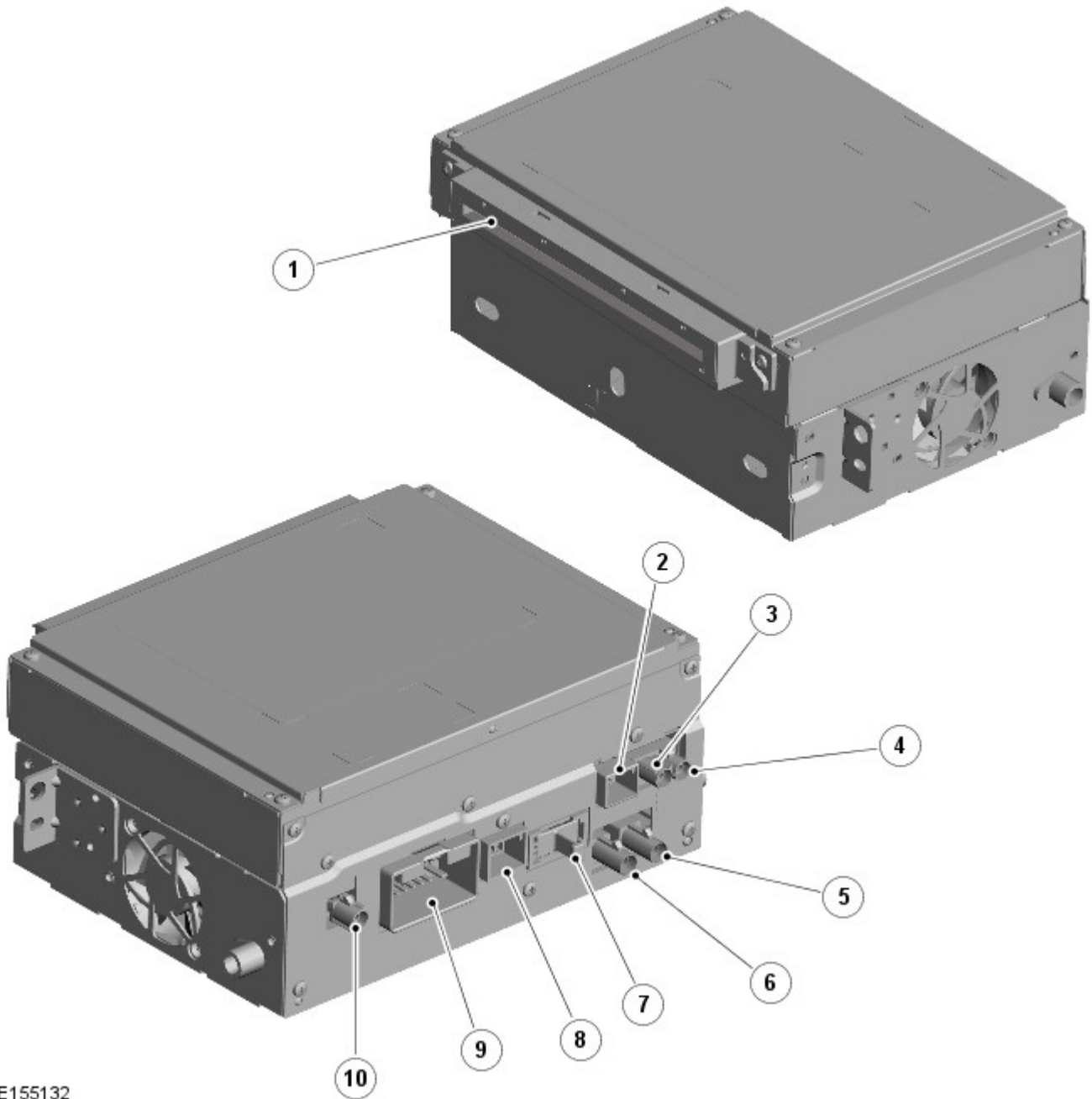
No configuration procedure is required if the TS or TS switchpack is replaced.

Calibration of the TS using approved Jaguar diagnostic equipment enables updates to be downloaded as new technology becomes available or any fault concerns require software updates.

The rear of the TS has electrical connectors for power, ground, MS CAN comfort systems bus, LVDS (Low Voltage Differential Signalling) and CVBS (Composite Video Baseband Signal) video and MOST. The usage of the LVDS and CVBS connectors differs depending on the equipment level of the vehicle.

The TS switchpack has a single connector which provides electrical connections to the control modules for the switch functions and tell-tale LED (Light Emitting Diode) illumination. The switchpack is connected to the ICP, which then sends signal via MS CAN comfort systems bus to the TS.

Integrated Audio Module (IAM) - InControl Touch Plus Audio System



E155132

Item	Description
1	CD/DVD Loading Slot
2	Connector – LVDS (low voltage differential signalling) output to TS (touch screen) (IAM 3 versions only)
3	Connector – AM/FM antenna amplifier input (all IAM versions)
4	Connector – FM2/TMC/(VICS JAPAN Only) antenna amplifier input (IAM3 Version Only)
5	Connector – GPS (global position system) antenna input (IAM3 version only)
6	Connector – Not Used
7	Connector – MOST (media oriented system transport) input/output (all IAM versions)
8	Connector – USB (universal serial bus) input from portable audio interface panel (all IAM versions)
9	Connector – Power, Ground, AM/FM antenna amplifier power output, Microphone inputs, Auxiliary inputs from portable audio interface panel (all IAM versions)
10	Connector – CVBS (composite video baseband signal) video output to TS (touch screen)

The IAM is located in behind the stowage compartment lid.

Two levels of IAM are available; IAM 1 and IAM3. The following table shows the features supported by each IAM version.

Feature	IAM Version 1	IAM Version 3
CD/DVD	Single CD	Single CD/DVD

Bluetooth®	Yes	Yes
USB	Yes	Yes
Virtual CD (Hard Disc Drive (HDD))	No	Yes
Compact Disc DataBase (CDDDB)	No	Yes
Navigation (40GB HDD)	No	Yes
Voice control	No	No
Microphone	Yes	Yes
Audio Auxiliary Input	Yes	Yes
Amplifier	External	External
Radio Tuners	2 (1xAM/2xFM)	2 (1x AM/2xFM)
	USA: Dual Tuner with HD Radio™	USA: Dual Tuner with HD Radio™ and RDS TMC
	Europe: Dual Tuner	Europe: Dual Tuner with RDS TMC
HD Radio™ (USA Only)	Yes	Yes
RDS (Europe) / RBDS (NAS)	Yes/Yes	Yes/Yes
Navigation	No	Yes
Video Output	No	Yes (one source)

The IAM3 has the following features, in addition to those supported by IAM1:

- Navigation 40GB Hard Disc Drive (HDD) (30GB used for Navigation).
- TMC (Traffic Message Center).
- 40GB HDD (10GB used for music storage) - virtual CD - allows the storage of up to 10 CD's to create a 'virtual' multichanger.

All versions of the IAM contain the following functionality:

- AM/FM radio tuner with diversity.
- HD Radio™ receiver (NAS only).
- CD/MP3 player (Single CD).
- Auxiliary audio/video is available via a portable audio interface panel. The panel allows for the connection of portable audio/video via 2 USB's, a 3.5mm jack plug and iPod connectivity.
- Bluetooth®, audio streaming and Bluetooth® hands free.

When the vehicle systems become active, the TS is woken up by MS CAN comfort systems bus activity and subsequently wakes up the IAM via the MOST.

The IAM incorporates an AM/FM tuner which allows for the storage of 3 banks of FM presets, FM1/2/3, containing 6 presets each and 3 banks of AM Presets, AM1/AM2/AMA, containing 6 presets each. The AM bank gives the 6 strongest AM stations stored by an AM autostore. Pre-set stations are stored in the IAM memory. The radio tuner also incorporates the following radio functions:

- HD Radio™ (NAS only).
- AM Auto Store (AST).
- FM Station List.
- Presets.
- TA (Traffic Announcements) – (all vehicles except NAS).
- RDS (Radio Data System)/(RBDS (Radio Broadcast Data System) in NAS markets) Functions:
- Station Name.
- Radio Text.
- PTY.
- TA (Not NAS).
- AF Switching (Not NAS).
- REG to Lock to Regional/Local Broadcast (Not NAS).
- Seek Station.
- Tune Up/Down.

When the optional DRCM is specified, the audio system is fitted with a separate digital radio tuner. This allows the reception of digital broadcast stations which can be received via the FM2/digital radio band III antenna located in the luggage compartment lid (Convertible vehicles) or in the roof pod (Coupe vehicles).

In NAS markets, SDARS can be specified; the audio system is fitted with a separate SRCM. This allows for the reception of the satellite digital broadcast stations which are received via a satellite radio antenna located in the luggage compartment lid (Convertible vehicles) or in the roof pod (Coupe vehicles).

The IAM supplies an external power feed to the AM/FM antenna amplifier. FM2 uses a phantom power output to the antenna amplifier.

The IAM incorporates a power management function. Should the vehicle battery level drop below a predetermined level, the unit will limit its functionality. The IAM receives MOST signals from the TS. The TS receives MS CAN comfort systems bus signals from other vehicle systems which it uses to determine the wake up/shut down process for the modules on the MOST ring.

Calibration of the IAM using approved Jaguar diagnostic equipment enables updates to be downloaded as new technology becomes available or any fault concerns require software updates. If the IAM is replaced it must be configured as a new module using approved Jaguar diagnostic equipment.

CD PLAYER (ALL IAM's)/DVD PLAYER (IAM3 ONLY)

The CD player has the capability to play MP3 files. The MP3 discs follow a format of folders and files within the folder.

The random and repeat features follow the normal CD random and repeat feature functions.

When a CD error occurs, the IAM will alert the user by showing a message related to the error in the TS. This will be displayed while the CD audio mode is selected until the error is corrected. The CD related error does not affect other areas of the IAM and a different audio source can be selected.

Error Message in IAM display	Cause
Mechanism Error	Mechanical Error, CD Stuck, Servo Related Error, etc.
Disc Error	Invalid Disc, CD ROM (read only memory) Inserted, Disc Inserted Upside-Down, etc.

The IAM3 has the ability to load audio files and 'rip' the music onto the internal hard drive, a 10GB partition is reserved to store music. It is possible to store up to 10 uncompressed albums onto the hard drive. Only CDDA files can be loaded into the virtual changer.

File compatibility for the single slot CD mechanism includes:

- CD Audio.
- MP3 – (MPEG Layer III).
- WMA – (Microsoft Windows Media Audio).
- WAV – (Waveform).
- AAC – (Advanced Audio Coding. Apple iTunes - only through iPod interface).

NOTES:

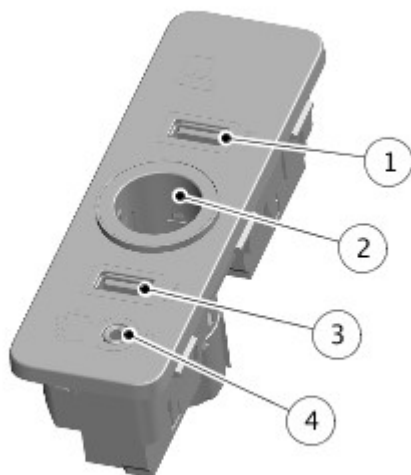


The CD player may take a longer time to load an MP3 disc, if there are more tracks than on a normal CD. To minimize loading time, a rigid folder structure is recommended.



In the event of customer complaints relating to audio quality, file compression should be taken into consideration during diagnosis.

Portable Audio Interface Panel - InControl Touch Plus Audio System



E177012

Item	Description
1	USB (Universal Serial Bus) Connector for smartphone (if InControl Apps is fitted)
2	12V Accessory Socket
3	USB (Universal Serial Bus) Connector
4	3.5mm Jack Plug - MP3 Connection

The portable audio interface panel is located inside of the compartment lid and is fitted to all audio systems. The interface is a media hub between a portable input device and the IAM. The interface contains a 3.5mm jack plug connector one USB port as standard and a second USB port for InControl Apps (if fitted).

Devices that can be connected to the portable audio interface panel include:

- USB mass storage devices (for example a memory stick). Devices must use FAT or FAT32 file format.

- iPod® (iPod Classic, iPod touch, iPhone and iPod Nano are supported - full functionality for older devices cannot be guaranteed). iPod shuffle functionality cannot be guaranteed.
- Auxiliary device (Personal Audio, MP3 Players).

When connecting a portable storage device, select AUX on the TS (touch screen) to select that device input. Depending on the device connected, many of the audio controls on the TS and steering wheel switches can be used.



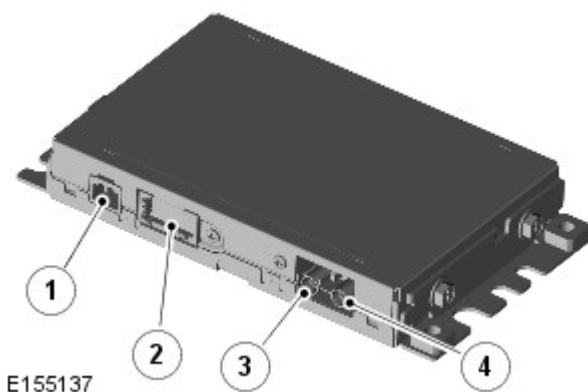
NOTE: It is recommended to disconnect an iPod when leaving the vehicle. Failure to do so may result in the iPod battery discharging.

To maximise playback quality, it is recommended to use lossless compression for any media files on iPod. Failing this, it is recommended that compressed files utilise a minimum bitrate of 192 kb/s (a higher bitrate is strongly recommended for increased quality playback).

For media files delivered via USB or MP3 players, the highest compression rate supported is 320 kbps (Kilobits per second). If anything less than 128 kbps is used, DSP (Digital Signal Processing) functionality may be lost.

Some MP3 players may have a file system that is not supported by the IAM. To use an MP3 player, it must be set to USB Removable Device or Mass Storage Device mode. Only music that has been added to the device in this mode can be played.

Digital Radio Control Module - InControl Touch Plus Audio Systems



Item	Description
1	Connector - Power and Ground
2	Connector - MOST (Media Oriented System Transport)
3	Connector - L Band Antenna Input
4	Connector - Band III Antenna Input

The DRCM is located always next to the AAM, behind the passenger compartment rear trim (Convertible vehicles) or over the rear right wheel arch, behind the driver seat (Coupe vehicles).

Digital radio is designed to provide reliable, multi-service broadcasting for reception by mobile, portable and fixed tuners.

Digital radio provides a clear signal with minimal interference, hiss or fading. After a channel (or station) has been tuned and stored, it does not need retuning.



NOTE: Radio signals travel in a straight line so large obstacles, such as tall buildings, can shield the vehicle from the signal causing temporary loss of reception (known as dead spots). The DRCM selects the strongest radio transmitter, minimizing signal loss.

Digital radio is transmitted from regional terrestrial transmitters. Local digital radio channels are not available outside the range of a transmitter. To receive new local channels during vehicle movement around a country, the auto-tune function is used to build new channel lists.



NOTE: When the vehicle digital radio is first used the system will not receive any digital stations until the auto-tune function has been completed.

Digital radio channels are organized into groups called ensembles (also known as multiplexes). Some individual channels may also provide a number of subchannels. For example, if several sports events are being held simultaneously, the channel may temporarily choose to broadcast each different event on a separate subchannel.

Digital radio is broadcast in 3 formats on a compatible network structure. The DRCM is capable of processing all digital formats and is therefore not market specific. The 3 formats are:

- Digital Radio - MP3 coding.

- Digital Radio + - MP3 and MP4 coding.
- Digital Radio - MP3 and MP4 coding with video/multimedia.

Digital radio is currently broadcast across Europe, Australia and parts of Asia. System transmission is via a terrestrial network, on two separate broadcasting bands:

- Band-L - Received from antenna located inside the luggage compartment lid (Convertible vehicles) or roof pod (Coupe vehicles).
- Band III - Received from antenna located inside the luggage compartment lid (Convertible vehicles) or roof pod (Coupe vehicles).



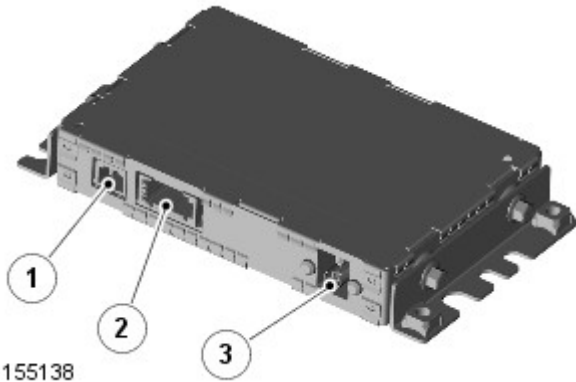
NOTE: Band L is currently only used in the Czech republic.

Operation of the digital radio system is the same as the radio operations with selections made through the TS to access and navigate the system functions.

The DRCM is a dedicated tuner which is controlled by the TS on the MOST ring. The tuner processes the signals from the digital radio antennas. Information is transmitted on the MOST ring and processed by the IAM. The processed information is sent out to the AAM and broadcast through the speaker system.

No configuration procedure is required if the DRCM is replaced. Calibration of the module using jaguar approved diagnostic equipment enables updates to be downloaded as new technology becomes available or any fault concerns require software updates.

Satellite Radio Control Module (SRCM) - InControl Touch Plus Audio Systems (NAS only)



Item	Description
1	Connector - Power and Ground
2	Connector - MOST (Media Oriented System Transport)
3	Connector - Satellite Radio Antenna Input

The SRCM is located always next to the AAM, behind the passenger compartment rear trim (Convertible vehicles) or over the rear right wheel arch, behind the driver seat (Coupe vehicles).

The SRCM is a dedicated tuner which is controlled by the IAM on the MOST ring. The tuner filters the signals from the satellite radio antenna located in the luggage compartment lid (Convertible vehicles) or roof pod (Coupe vehicles). Information is transmitted on the MOST ring and processed by the IAM. The processed information is sent out to the AAM and broadcast through the speaker system.

The digital radio format adopted for NAS vehicles is satellite radio operating in the S-Band frequency range (2.3 GHz). SDARS service provider 'SiriusXM®' transmit a signal from their up-link facility (which is the original point of transmission of data, voice or other information through an antenna system) to a satellites (two satellites are active at any one time) where the signal is then down linked to both the terrestrial repeater network and the individual satellite radio system in the vehicle. The SRCM switches between the satellite signal and the repeater network signal depending on the strength of the signal at any given time.

The Sirius® satellite system comprises:

- Satellites.
- Ground repeaters.
- Up-link ground stations.
- Radio receiver systems.

The Sirius® satellite radio system uses two satellites on an inclined elliptical orbit and one satellite in a Geostationary orbit. This ensures continuous coverage North America.

The satellites beam their signals down to the ground where the signal is picked up by receivers or is transmitted to repeater stations to cover built up areas where the signal is obscured. The satellite service comprises over 100 channels of digital

entertainment which is provided by subscription requiring a monthly payment. In order to obtain a subscription, the satellite radio control module ID number will need to be retrieved from the module. This is achieved as follows:

- When the vehicle first receives live signal within the US or Canada, the TS will display ch184 as the tuned channel (labelled as Preview). The radio text will display Call 1888-539-Sirius. Alternatively, when the radio is subscribed, unsubscribe channels shall also display this information in the radio text
- The ESN/SID can always be found the following way, regardless of the subscription status of the radio. Press **Settings** on the TS, then select **Sat Info** icon in the settings view. This will display the ESN/SID and the phone number. If a telephone is paired to the Bluetooth® system, the user can select the green phone button in the Sat info view to call the call center.

If no subscription has been taken, the TS will display the Sirius® telephone number. To subscribe to Sirius® use the displayed phone this number. The user will need payment details, the Sirius® ID number and details of the required package.

The satellite radio function is accessed by pressing the **SAT Radio** soft key. This allows the user access to another bank of possible favourites, with the option to store 6 favourites on each of SAT 1, SAT 2 and SAT 3.

Operation of the satellite radio system is the same as the radio operations with selections made through the TS to access and navigate the system functions.

No configuration procedure is required if the SRCM is replaced. Calibration of the SRCM using approved Jaguar diagnostic equipment enables updates to be downloaded as new technology becomes available or any fault concerns require software updates.

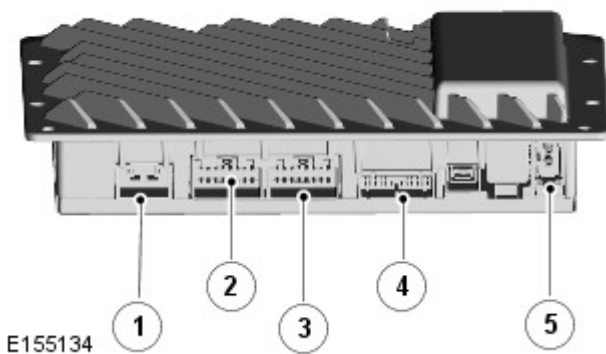
HD Radio™ (NAS only)

HD Radio™ technology is a free digital radio format broadcast available in the NAS market and may become available for other markets in the future.

HD Radio™ digital broadcasts are transmitted alongside the analogue AM and FM signals by stations broadcasting HD Radio™ signals. HD Radio™ technology has the ability to deliver improved sound quality and content to the listener, blending between analogue and a digital audio stream of the primary station and delivering extra multicast stations on the same frequency.

The HD Radio™ receiver is integrated into the AM/ FM tuner on NAS variants of the IAM.

Audio Amplifier Module (AAM) - InControl Touch Plus Audio Systems



Item	Description
1	Connector - Power Supply from AJB (Auxiliary Junction Box) and Ground
2	Connector - Speakers
3	Connector - Speakers
4	Connector - Power from QCCM (Quiescent Current Control Module), Ground and Microphones input
5	Connector - MOST (Media Oriented System Transport)

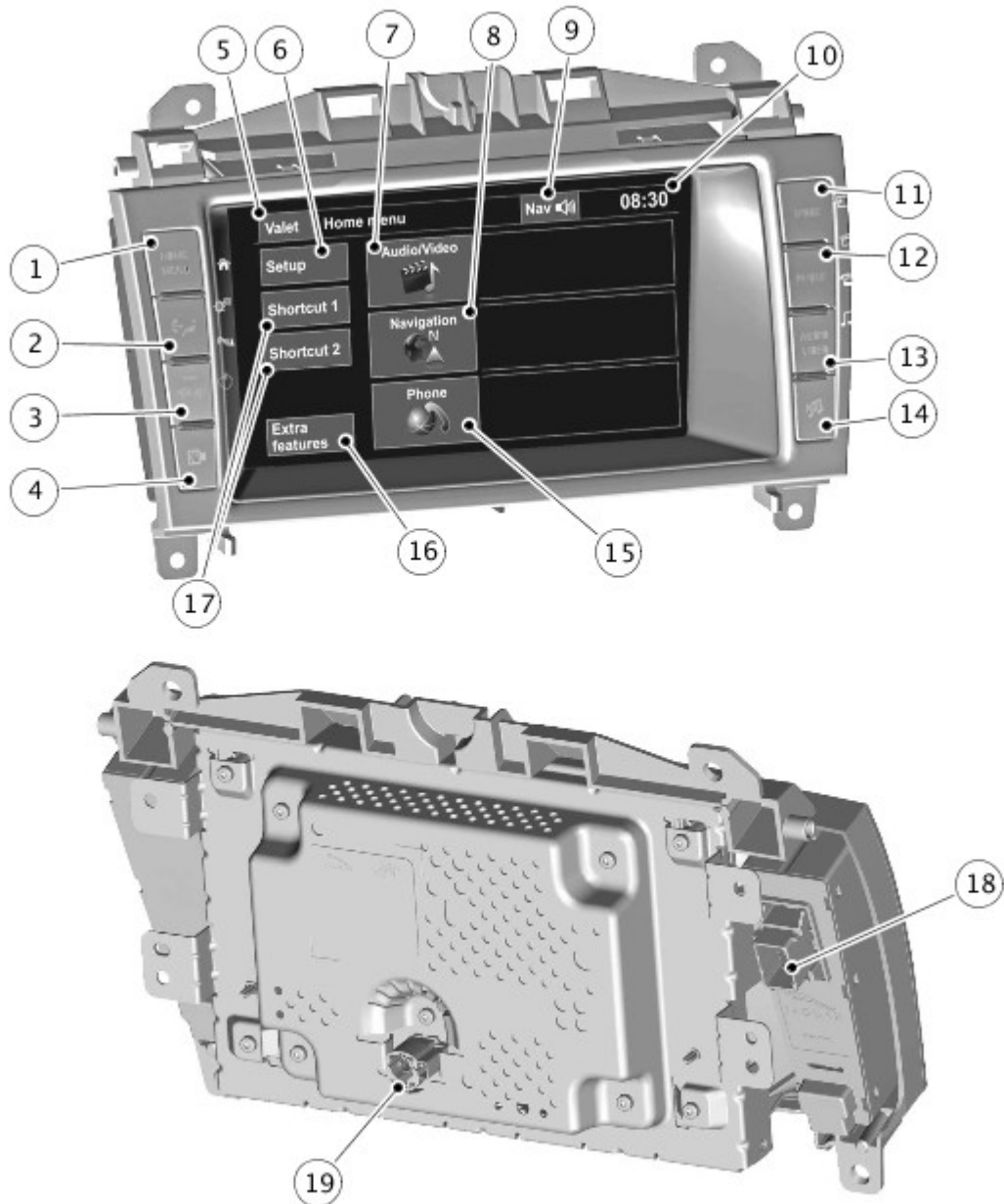
The AAM (Audio Amplifier Module) is located behind the passenger compartment rear trim (Convertible vehicles) or over the rear right wheel arch, behind the driver seat (Coupe vehicles).

The AAM is connected to the other audio system components on the MOST ring. The AAM processes incoming audio signals from other system modules on the MOST ring. Hardwired connectors provide outputs for the vehicle speakers, power and ground. Power supplies are received from the AJB (Auxiliary Junction Box) and QCCM (Quiescent Current Control Module).

InControl Touch Audio Systems

Touch Screen (TS) and Switchpack

Touch Screen (TS) - InControl Touch Audio Systems (192W and 380W)



E175697

Item	Description
1	Power On/Off Switch
2	Parking Aid or Setup Switch (depending on specification)
3	Climate Control Switch
4	Home & Menu Switch
5	Valet Mode - Soft Key
6	Setup Menu - Soft Key
7	Audio and Video Menu - Soft Key
8	Navigation Menu - Soft Key
9	Repeat navigation audio instruction – Soft Key
10	Adjust Time and Date – Soft Key
11	Mode Switch
12	Phone Switch
13	Audio & Video Switch
14	Navigation or Audio Settings Switch (depending on specification)
15	Phone Menu - Soft Key
16	Extra Features Menu – Soft Key

17	Home Menu Shortcuts – Soft Key
18	Connector - Touch screen switchpack
19	Connector - Touch screen

The 8 inch 800 X 480 resolution, single view TS is located in the center of the instrument panel. The TS comprises an 8 inch color, touch sensitive display, with a TS switchpack located on either side.

The TS switchpack differs depending on system specification; for example, if parking aid or navigation are specified on the vehicle, these switches will replace 'Audio Settings' or 'Mute' functions respectively. The functions can still be accessed via the home menu using the TS.

The TS is the primary user interface of the audio system. It communicates with the other components of the audio/infotainment system on the MS CAN comfort systems and allows control of the audio system and other system functions from a single point. No configuration procedure is required if the TS or TS switchpacks are replaced.

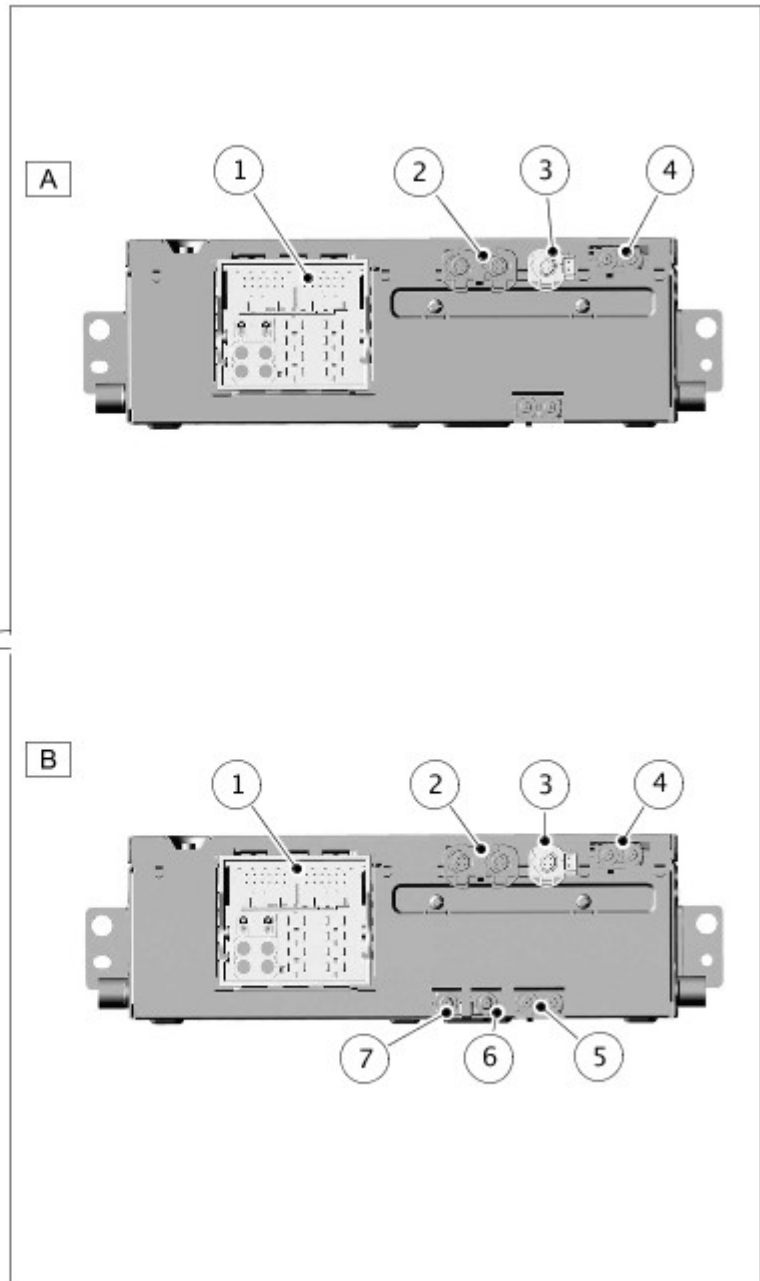
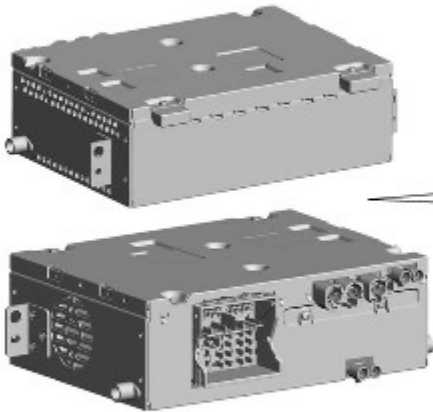
Calibration of the TS using approved Jaguar diagnostic equipment enables updates to be downloaded as new technology becomes available or any fault concerns require software updates.

The rear of the TS has a single 6 pin connector for power, ground and APIX2 connections.

The TS switchpack comprises 8 switches. The function of the switches can differ dependant on the infotainment system installed in the vehicle.

The TS switchpack has a single 12 pin connector which provides electrical connections to and from the switches. The connector provides switch power supplies, switch illumination supplies and output from the switches via a resistive ladder. The outputs from the Parking Aid and Park Assist switches are passed directly to the PACM (Parking Aid Control Module).

Audio Head Unit (AHU) - InControl Touch Audio Systems



E175561

Item	Description
A	Level 'C' AHU with navigation - All markets
B	Level 'C' AHU with navigation and Digital radio - European markets only
1	Connector - 40 pin
2	Connector - USB
3	Connector - Touch Screen APIX2
4	Connector - GPS and camera
5	Connector - AM/FM antenna input
6	Connector- DAB-III (European markets only)
7	Connector - DAB-L (European markets only)

The AHU is located in behind the stowage compartment lid.

The InControl Touch Audio Systems are fitted with Level C AHU:

Feature	Audio Head Unit Level C
AM/FM radio Diversity	Yes
8-channel internal amplifier	Yes
Bluetooth® phone system	Yes
Bluetooth® audio streaming	Yes

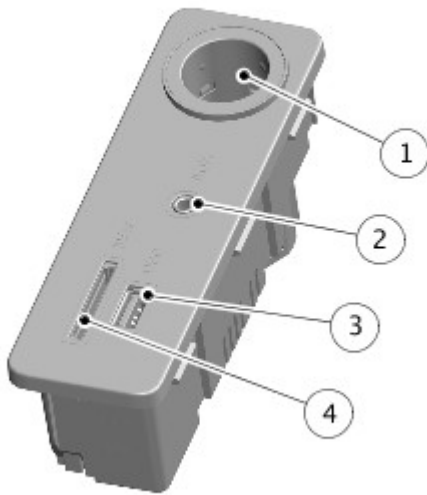
Digital Radio (SDARS/HD Radio for NAS markets)	Yes
Voice recognition	Yes
SMS Text display	Yes
Navigation system with SD memory card updates	Yes
Audyssey MultEQ XT audio tuning system	Yes
'InControl' telematics system	Yes
WiFi hotspot	Yes
3.5mm Auxiliary input	Yes
USB Input - Media player/Audio/Video/iPod Audio/USB Charging	Yes - 2.1A charging

The AHU receives a 12V fused power supply from the BJB (Battery Junction Box) and the QCCM (Quiescent Current Control Module).

MS CAN comfort system bus connections provide communication with other system control modules, for example; inputs from the PACM for sound generation and display on the TS.

The AHU uses APIX2 which is a new protocol for video output to the Touch Screen (TS). APIX2 is a high speed digital serial link capable of communicating up to 1 Gbit/second of digital video data. The serial link can support simultaneous video, audio and data transmission from the AHU and the TS.

Portable Audio Interface Panel - InControl Touch Audio Systems



E177013

Item	Description
1	12V Accessory Socket
2	3.5mm Jack Plug Connector
3	USB (Universal Serial Bus) Connector
4	Secure Digital (SD) memory card port for Navigation system

The portable audio interface panel is located inside of the compartment lid and is fitted to all audio systems. The interface is a media hub between a portable input device and the AHU. The interface contains one USB port, a 3.5mm jack plug connector and an SD memory card slot for navigation system.

For additional information, refer to: [Navigation System](#) (415-01 Information and Entertainment System, Description and Operation).



NOTE: The SD memory card must not be removed or the files modified. If the card is removed, the navigation, voice control and telephone will be inoperable. The SD memory card slot cannot be used for media files. Installation of any external content or modification of the files on the SD memory card can corrupt the SD memory card and cause voice control, telephone and navigation systems to be inoperable.

Removal and re-installation of the SD memory card when the ignition is on will cause navigation systems to be inoperable. To re-initialise the SD memory card, switch the ignition to 'off' and lock and arm the vehicle. Install the SD memory card in the slot in the portable audio interface panel and switch the ignition to 'on'. The card will be detected and navigation will operate correctly.

Devices that can be connected to the portable audio interface panel include:

- USB mass storage devices (for example a memory stick). Devices must use FAT or FAT32 file format.
- iPod® (iPod Classic, iPod touch, iPhone and iPod Nano are supported - full functionality for older devices cannot be guaranteed). iPod shuffle functionality cannot be guaranteed.

- Auxiliary device (Personal Audio, MP3 Players).

When connecting a portable storage device, select AUX on the TS (touch screen) to select that device input. Depending on the device connected, many of the audio controls on the TS and steering wheel switches can be used.



NOTE: It is recommended to disconnect an iPod when leaving the vehicle. Failure to do so may result in the iPod battery discharging.

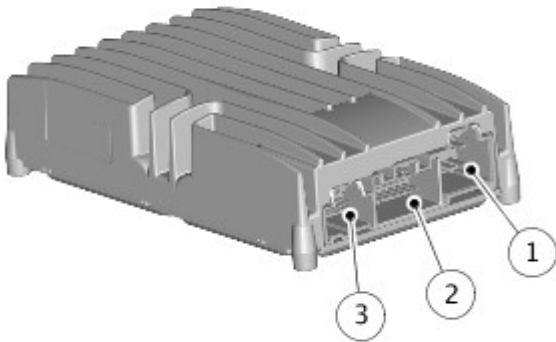
To maximise playback quality, it is recommended to use lossless compression for any media files on iPod. Failing this, it is recommended that compressed files utilise a minimum bitrate of 192 kb/s (a higher bitrate is strongly recommended for increased quality playback).

For media files delivered via USB or MP3 players, the highest compression rate supported is 320 kbps (Kilobits per second). If anything less than 128 kbps is used, DSP (Digital Signal Processing) functionality may be lost.

Some MP3 players may have a file system that is not supported by the AHU. To use an MP3 player, it must be set to USB Removable Device or Mass Storage Device mode. Only music that has been added to the device in this mode can be played.

Audio Amplifier Module (AAM) - InControl Touch Audio Systems

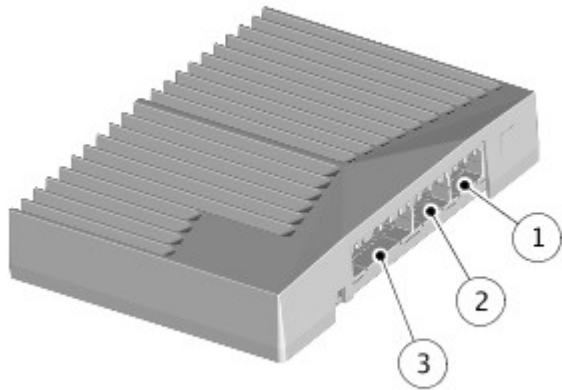
Audio Amplifier Module (AAM) - InControl Touch 192W Audio Systems



E176147

Item	Description
1	Connector - Power Supply from AJB (Auxiliary Junction Box) and Ground
2	Connector - Speakers
3	Connector - MS CAN comfort systems bus

Audio Amplifier Module (AAM) - InControl Touch 380W Audio Systems



E177014

Item	Description
1	Connector - Power Supply from AJB (Auxiliary Junction Box) and Ground
2	Connector - MS CAN comfort systems bus
3	Connector - Speakers

The AAM (Audio Amplifier Module) is located behind the passenger compartment rear trim (Convertible vehicles) or over the rear right wheel arch, behind the driver seat (Coupe vehicles).

The AAM is connected to the AHU on the MS CAN comfort systems bus. The AAM processes incoming audio signals from other system modules. Hardwired connectors provide outputs for the vehicle speakers, power and ground. Power supplies are received from the AJB (Auxiliary Junction Box) and QCCM (Quiescent Current Control Module).

OPERATION

InControl Touch Plus with Meridian® Surround Audio System

Media Oriented Systems Transport

The components of the audio/infotainment systems are all connected on the MOST ring. The MOST ring is a fiber optic communications bus for multimedia applications. Audio and control information is passed around the MOST ring and can be picked up by any of the systems units. For example, radio station tuning/selection input by the vehicle user into the TS is sent along the MOST ring and collected by the IAM/AHU which then selects the requested radio station.

MOST technology uses a plastic optical fiber which forms a network connecting the audio and multimedia system components. Each component in the ring is connected to the plastic optical fiber through a device known as a FOT (Fiber Optical Transceiver). Each FOT has two optical connections; one connection is sensitive to light and is the input, the second connection forms the light source and is the output. The system operates by connecting the output from one FOT to the input of another FOT.

The light signals are sent in one direction only and are formed in the following way:

- Electrical signals are converted into an electrical current.
- The current then drives an LED in the FOT to produce a high intensity red light
- The LED transmits the light through a fiber optic cable.
- A photo diode in the FOT at the opposite end of the fiber optic cable detects the light.

The following components may be connected to the MOST ring dependant on the vehicle equipment level:

- IAM.
- TS.
- DRCM (if fitted).
- SRCM (NAS only).
- AAM.
- NCM (Navigation Control Module) (Japan only).
- TVCM (Television Control Module) (if fitted).

MOST is a synchronous network. A timing master supplies the clock information and all other devices on the network synchronize their operation to this clock. The timing master for the MOST network on this vehicle is the TS. This TS controls and manages the MOST ring and the system components. An Optical Bus tester is used in conjunction with approved Jaguar diagnostic equipment to diagnose the MOST system.

The Optical Bus tester emits a visible, high intensity red light which can be connected into the ring at any point to test the ring integrity. Disconnecting a MOST connector will reveal if the high intensity red light is visible. If a break occurs in the MOST ring, fault codes are stored in the TS which can be retrieved using approved jaguar diagnostic equipment.

Audio System Gateway Functions

The TS is the gateway between CAN bus systems and the MOST systems. A typical example of information transfer is vehicle speed information from the ABS (Anti-lock Brake System) control module used to control the dynamic equalization function (where fitted). The vehicle speed information from the ABS control module is sent on the HS (High Speed) CAN powertrain systems bus and collected by the IC gateway. The signal is passed to the MS CAN comfort systems bus to the TS. The TS passes the information on the MOST to AAM which also uses the inputs from the microphones to calculate the volume adjustment required. The calculations are performed by the audio amplifier module which adjusts the output to the speaker system.

InControl Touch 192W and 380W Audio System

The ICP, RVC (Rear View Camera) control module, TS and switchpack are connected to the AHU on the MS CAN comfort systems bus. The rear view camera transfers video image via CVBS (Composite Voltage Baseband Signal) to the AHU.

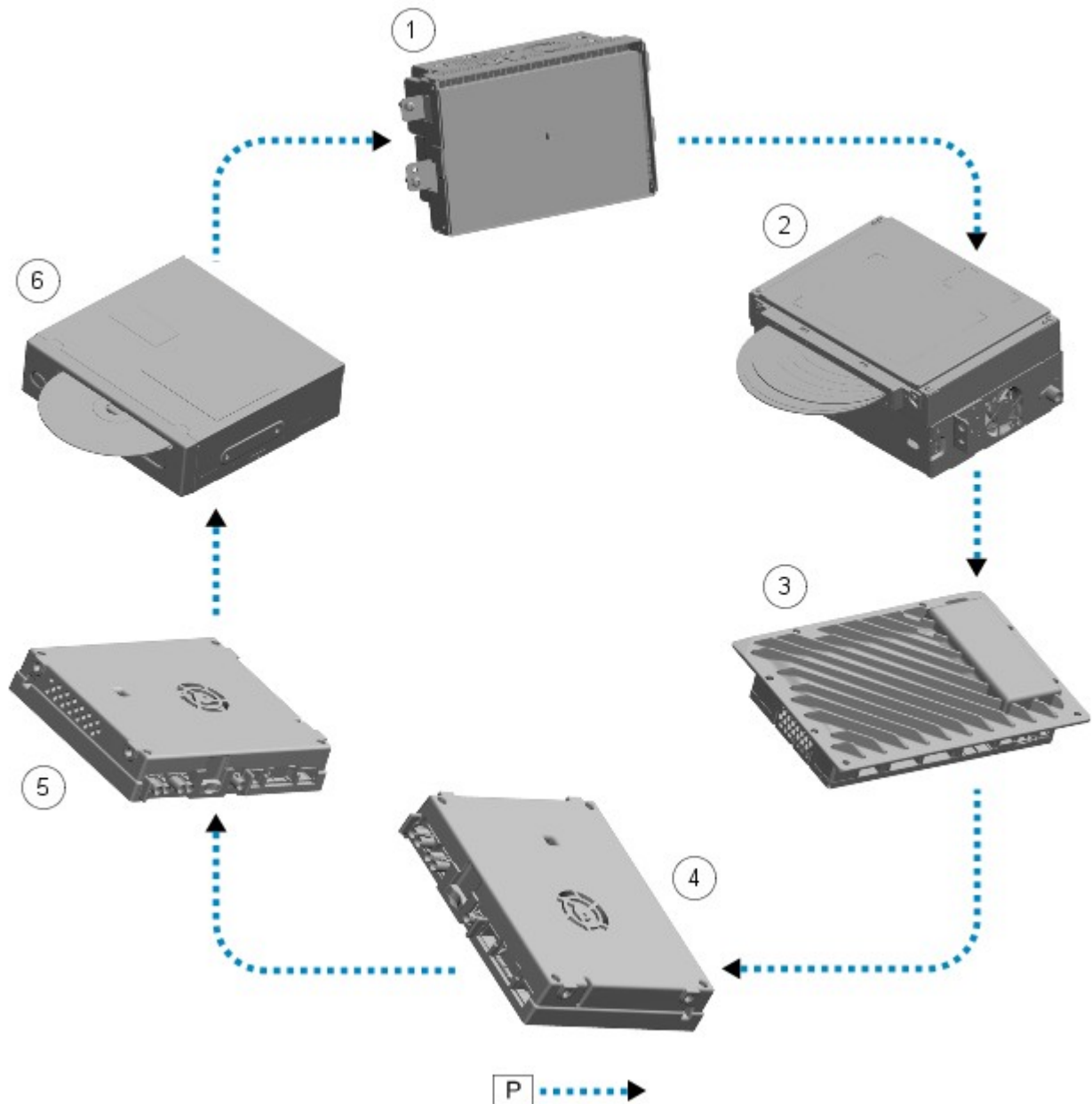
The AAM is also connected to the AHU on the MS CAN comfort systems bus. The speakers are directly connected to the AAM via twisted pairs.

The steering wheel switchpack is connected to the CLKSPG (Clockspring) and the CLKSPG is connected to the AHU via LIN (Local Interconnect Network).

All antennas are directly connected to the AHU.

CONTROL DIAGRAMS

CONTROL DIAGRAM - SHEET 1 OF 3 - MOST RING - INCONTROL TOUCH PLUS WITH MERIDIAN® 770W SURROUND AUDIO SYSTEMS

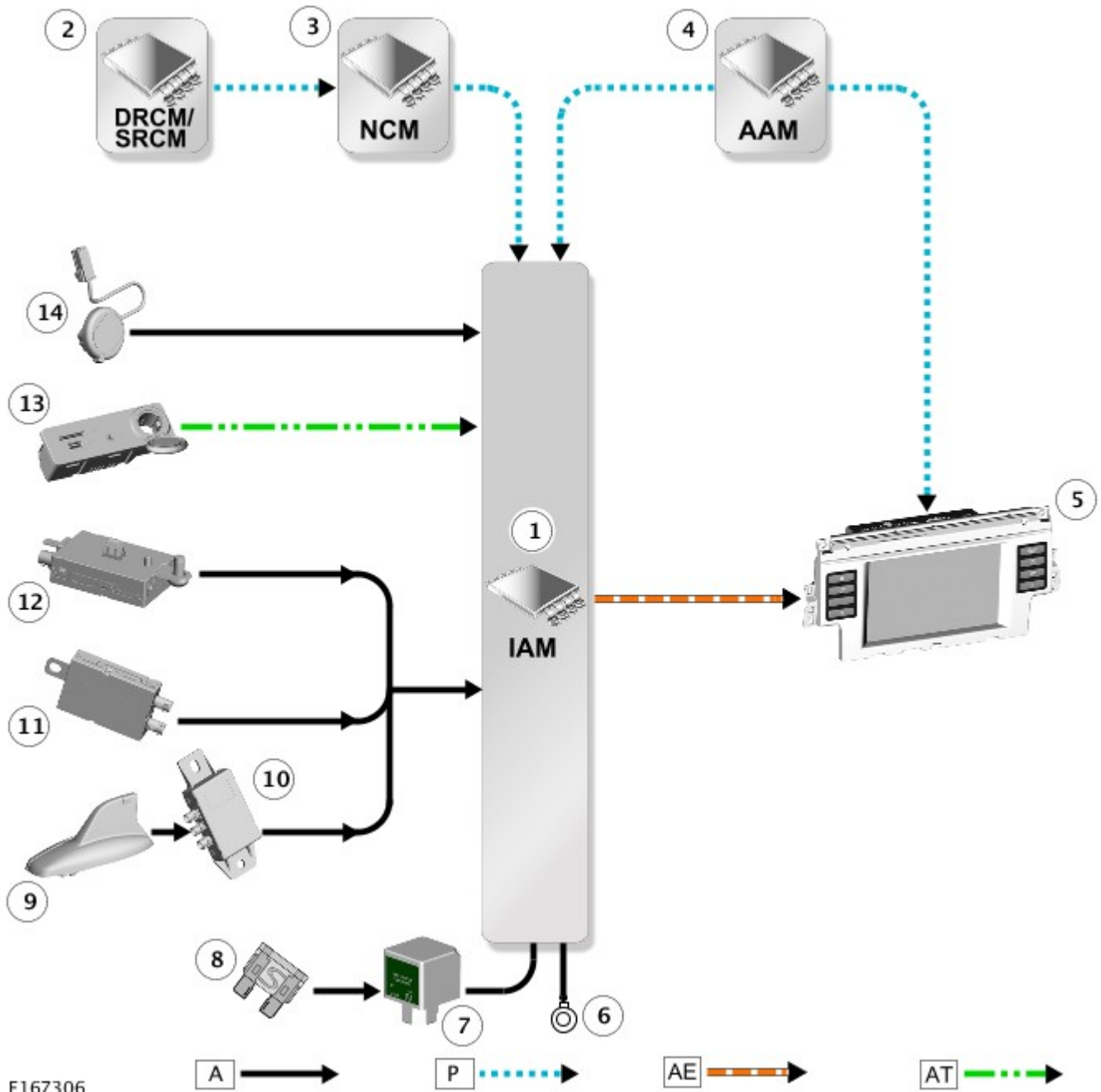


E155241

P = MOST Line

Item	Description
1	Touch Screen (TS)
2	Integrated Audio Module (IAM)
3	Audio Amplifier Module (AAM)
4	Digital Radio Control Module (DRCM) or Satellite Radio Control Module (SRCM)
5	Television Control Module (TVCM)
6	Navigation Control Module (NCM) (japan only)

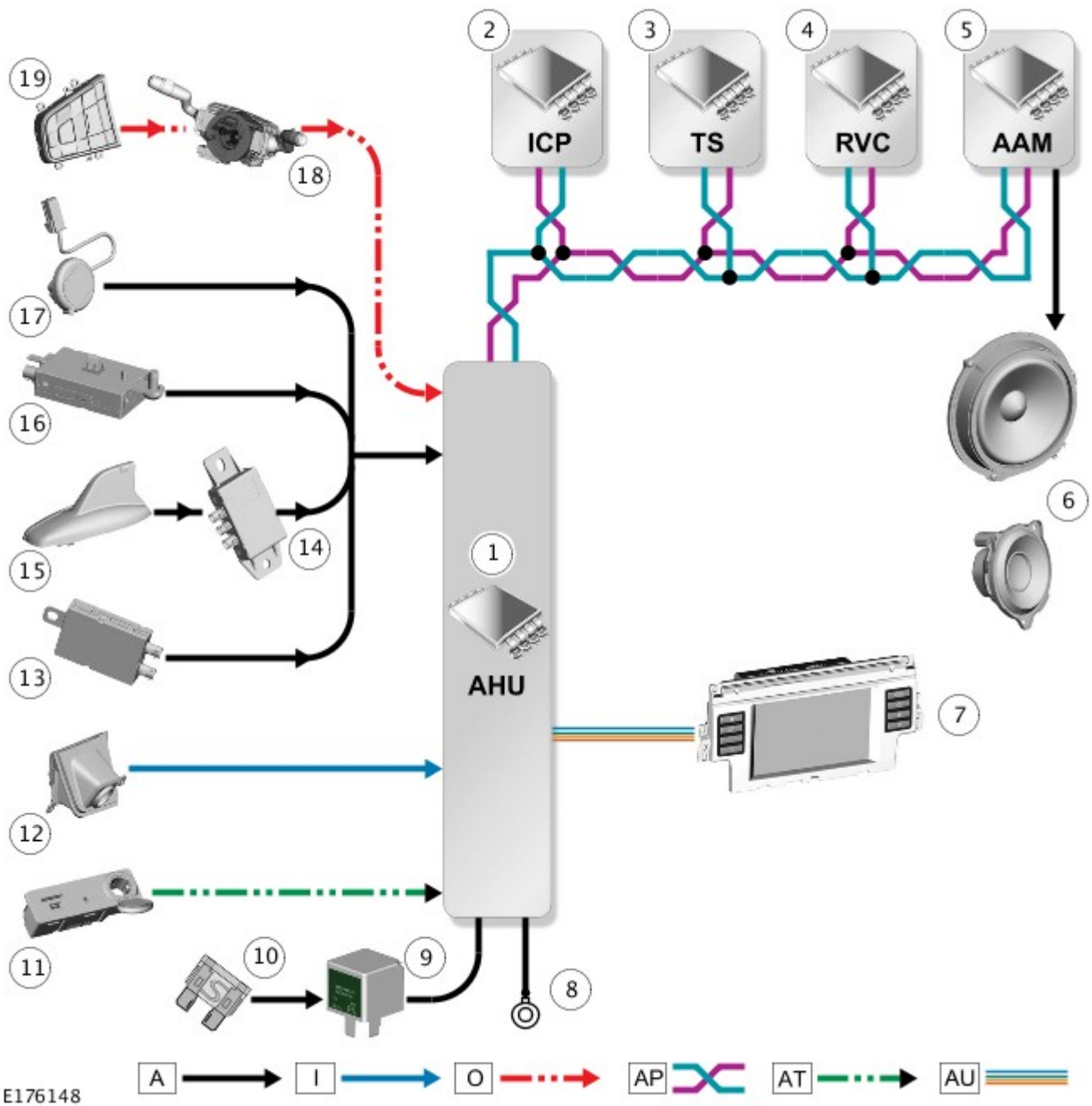
CONTROL DIAGRAM - SHEET 2 OF 3 - INCONTROL TOUCH PLUS WITH MERIDIAN® 770W SURROUND AUDIO SYSTEMS



A = Hardwired; P = MOST line; AE = LVDS; AT = Universal Serial Bus (USB)

Item	Description
1	Integrated Audio Module (IAM)
2	Digital Radio Control Module (DRCM) or Satellite Radio Control Module (SRCM) - NAS only
3	Navigation Control Module (NCM) - Japan only
4	Audio Amplifier Module (AAM)
5	Touch Screen (TS)
6	Ground
7	Relay - located in Quiescent Current Control Module (QCCM)
8	Fuse - located in QCCM
9	Roof pod - Global Positioning System (GPS) antenna / DAB-L antenna (Coupe)
10	GPS signal splitter - if fitted
11	FM / TMC / DAB-III antenna amplifier
12	Amplitude Modulation (AM)/FM antenna amplifier
13	Portable audio interface panel
14	Microphone

CONTROL DIAGRAM - SHEET 3 OF 3 - INCONTROL TOUCH AUDIO SYSTEMS



A = Hardwired; I = Composite Voltage Baseband Signal (CVBS); O = Local Interconnect Network (LIN); AP = Medium Speed (MS) Controller Area Network (CAN) comfort systems bus; AT = Universal Serial Bus (USB); AU = APIX2

Item	Description
1	Audio Head Unit (AHU)
2	Integrated Control Panel (ICP)
3	Touch Screen (TS)
4	Rear view camera
5	Audio Amplifier Module (AAM)
6	Vehicle speakers
7	Touch Screen (TS) switchpack
8	Ground
9	Relay - located in Quiescent Current Control Module (QCCM)
10	Fuse - located in QCCM
11	Portable audio interface panel
12	Rear view camera
13	FM / TMC / DAB-III antenna amplifier

14	GPS signal splitter
15	Roof pod - Global Positioning System (GPS) antenna / DAB-L antenna (Coupe)
16	Amplitude Modulation/Frequency Modulation (AM/FM) antenna amplifier
17	Microphone
18	Clockspring
19	Steering wheel switchpack