Infotainment Overview

Jaguar XE and F-PACE feature two new infotainment systems:

- InControl® Touch – New Entry Level Infotainment
- InControl® Touch Pro – Next Generation Infotainment

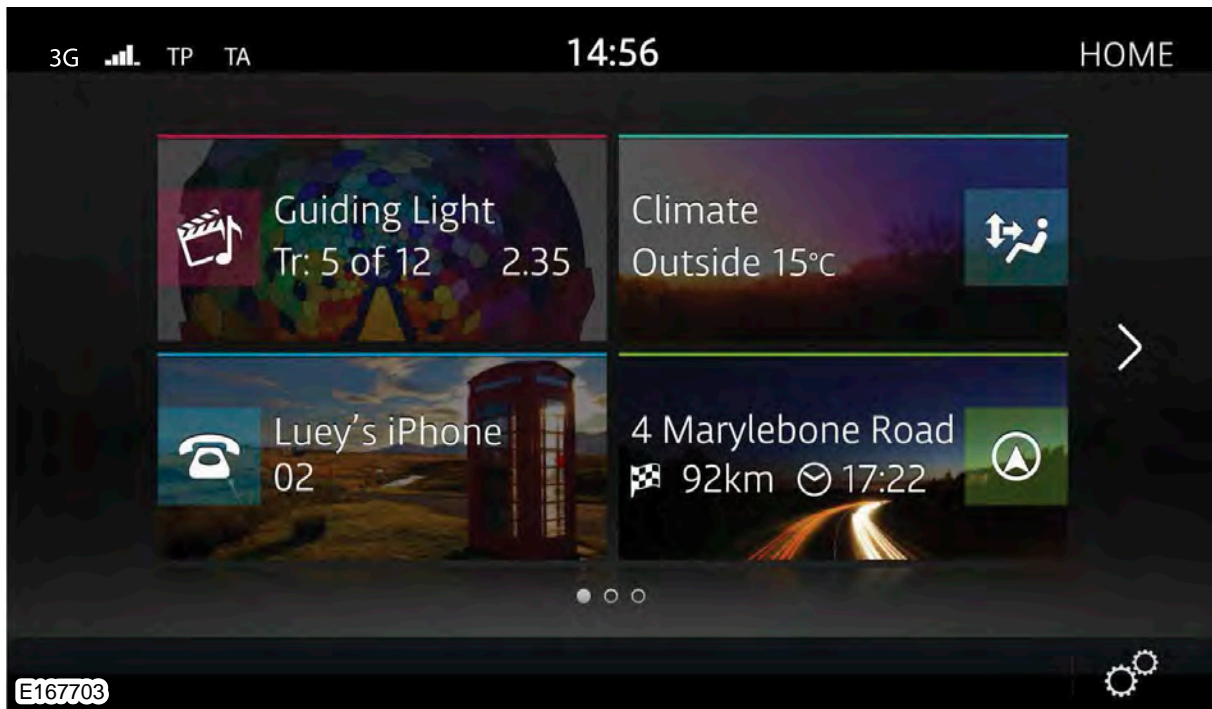### InControl Touch vs. InControl Touch Pro – Key Differences

InControl Touch	InControl Touch Pro
8-inch capacitive Touch Screen	10.2-inch capacitive Touch Screen
Meridian external amplifier (380W)	Meridian external amplifier (825W)
No Digital disc player (external media via USB)	Digital disc player
No on-board media storage	10GB media storage (SSD)
SD card based navigation	SSD based navigation
	12.3 inch Thin Film Transistor (TFT) Instrument Cluster (IC)
	Multiple port/device support, e.g. 2 x USB 3.0, HDMI, MHL

InControl Touch

Touch Screen

The InControl Touch capacitive Touch Screen (TS), with 800 x 480 resolution, has improved brightness and resistance to screen washout. Menu flows consist of a home page and two extra features pages providing access to various vehicle features and applications, dependent on the infotainment system equipment level.
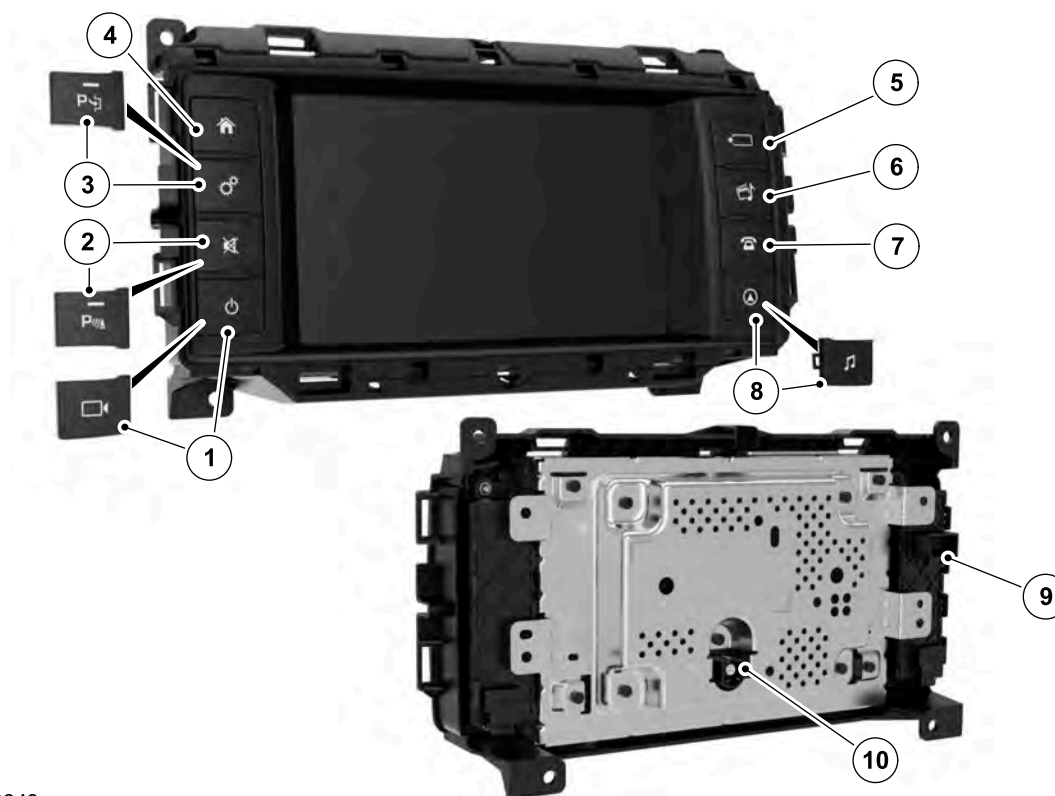
InControl Touch Home Screen

The Touch Screen is the primary user interface of the infotainment system, providing control of the system from a single point. As previously described, Touch Screen communication is through the APIX2 high speed digital serial link to the AHU.

The single view Touch Screen has a capacitive touch panel controller. The use of the capacitive Touch Screen reduces the amount of pressure required when pressing the screen soft key functions, enabling the user to drag, scroll or swipe the content.

Calibration of the Touch Screen using the Jaguar Approved Diagnostic Equipment enables updates to be downloaded as new technology becomes available or when fault concerns require software updates.

The Touch Screen switchpack is located on either side of the screen. All hard switch functions are replicated via the home and extra features menus on the Touch Screen. The Touch Screen switchpack is hardwired directly to the Integrated Control Panel.

Touch Screen and Switchpack

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Item	Description	Item	Description
1	Infotainment system on/off or proximity camera system	6	Media system options
2	Audio mute or parking aid on/off	7	Telephone
3	General settings menu or park assist on/off	8	Navigation or audio settings
4	Home menu	9	Electrical connector – Switchpack
5	Media source options	10	APIX2 connector – Touch Screen

No configuration procedure is required if either the Touch Screen or switchpack are replaced.
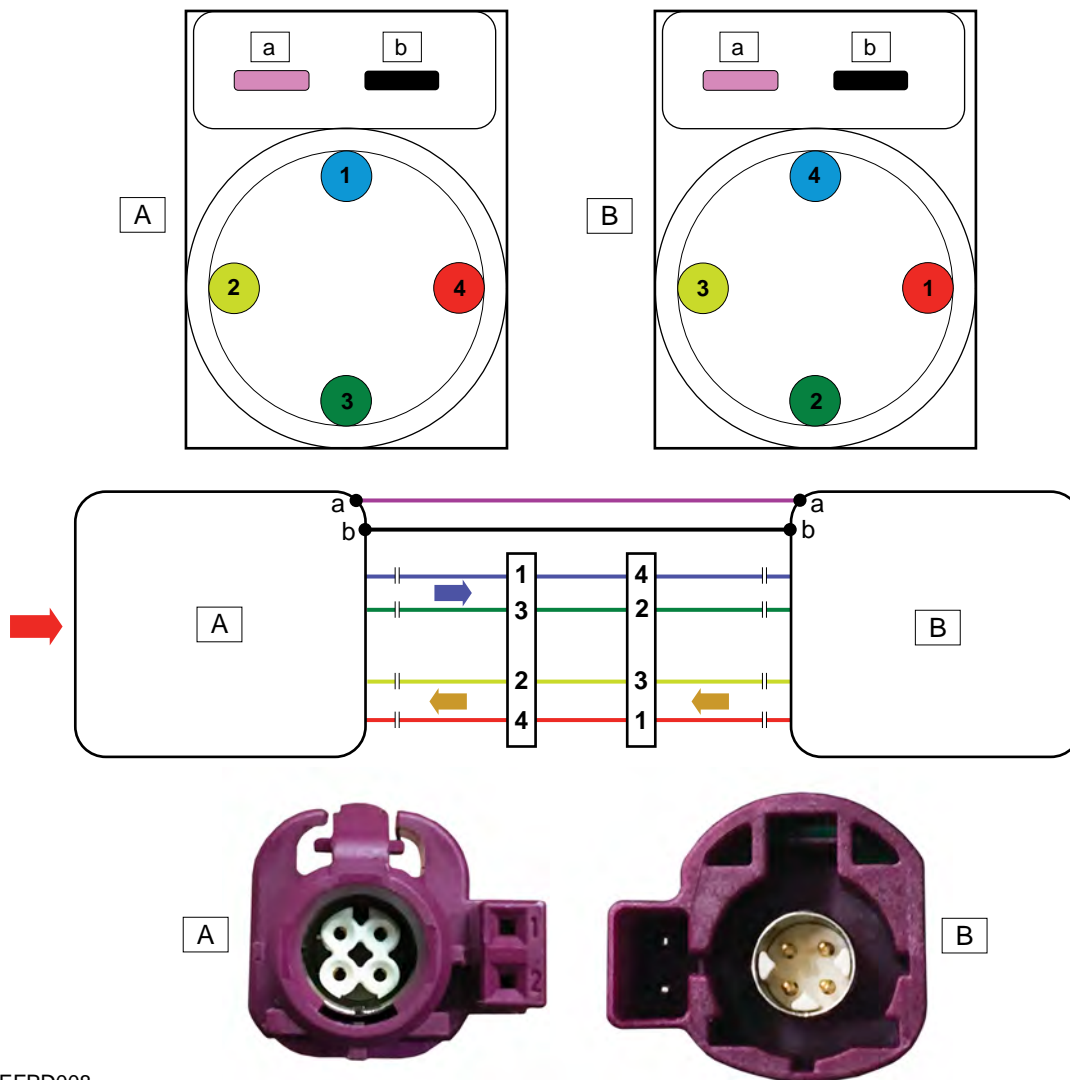
Automotive Pixel Link 2

The installation of remote Touch Screen and control displays typically requires several cables to connect the display with the graphics, video and control data. Automotive Pixel Link 2 (APIX2) is a serial high-speed interface that allows many different signals to travel along 4 wires. It allows Infotainment Systems to utilize displays, cameras and control units with simplified cabling.

In addition to pixel data, the APIX2 system can transmit bi-directional control data along the same cabling. For example, APIX2 between the Infotainment Master Controller (IMC) and Touch Screen (TS) will require pixel data for the display, and control data for the Touch Screen inputs.

APIX2 can be configured for many applications. The transmissions are dynamically filled with either video, audio or data. APIX2 is used on both InControl™ Touch and InControl™ Touch Pro systems.
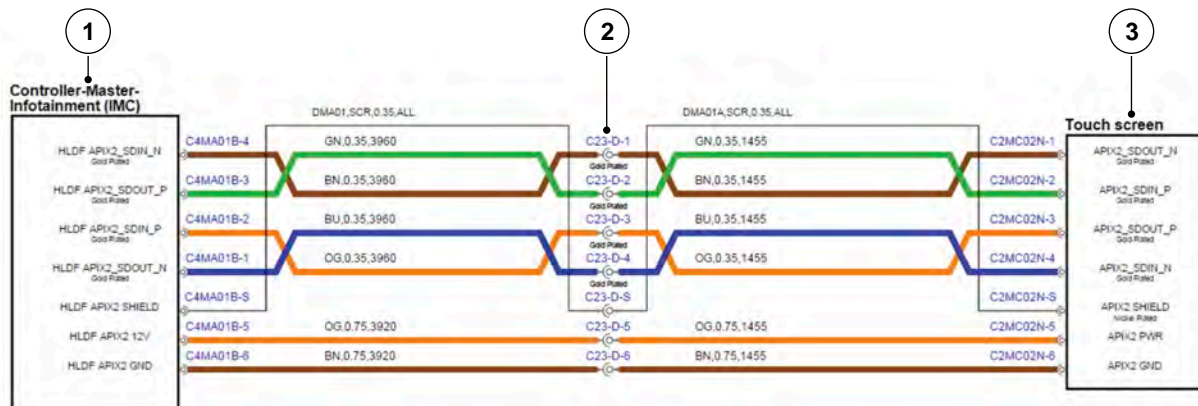
APIX2 Connector

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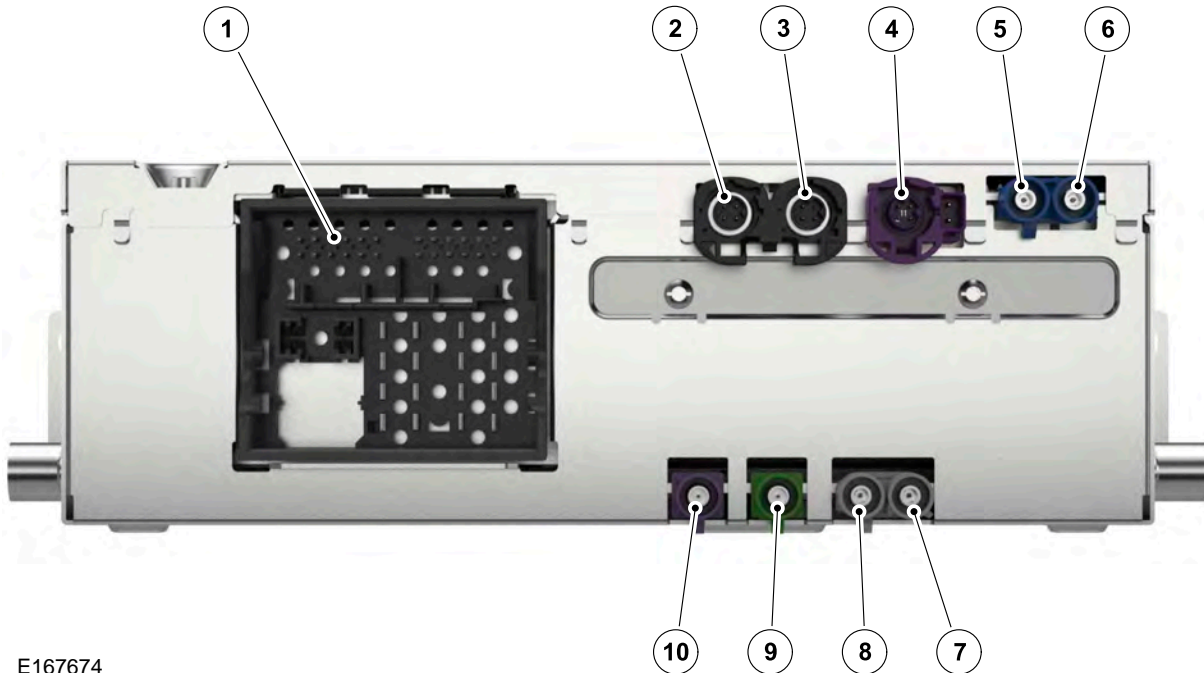| Item	Description	Item	Description
1	SDOUT Negative	A	APIX 2 HSD connector at Audio Head Unit (transmitter)
2	SDIN Positive	B	APIX 2 HSD connector at Touch Screen
3	SDOUT Positive	a	Positive supply to Touch Screen
4	SDIN Negative	b	Ground for Touch Screen

APIX2 Example

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Item	Description	Item	Description
1	Infotainment Master Controller (IMC)	3	Touch Screen (TS)
2	APIX2 with additional power supply and ground		

InControl Touch Audio Head Unit (AHU)

The Audio Head Unit (AHU) is located in the center of the instrument panel, behind the Integrated Control Panel (ICP). InControl Touch has the following four AHU options globally:

- Level B – internal amplifier, without navigation (ROW)
- Level C – external amplifier, with/without navigation (NAS)
- Level C – external amplifier, with navigation and DAB (ROW)
- Level C – external amplifier, with navigation and SDARS (NAS)

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Item	Description	Item	Description
1	Main connector – 40 pin	6	GPS antenna
2	USB – audio/video/InControl connector	7	AM/FM antenna
3	USB – SD card input	8	FM2 antenna
4	Touch Screen output (APIX2)	9	DAB III antenna
5	Camera Input	10	DAB L antenna

NOTE: Level C AHU with Navigation and DAB shown.

Depending on market and vehicle equipment level, the AHU has the following integrated functions:
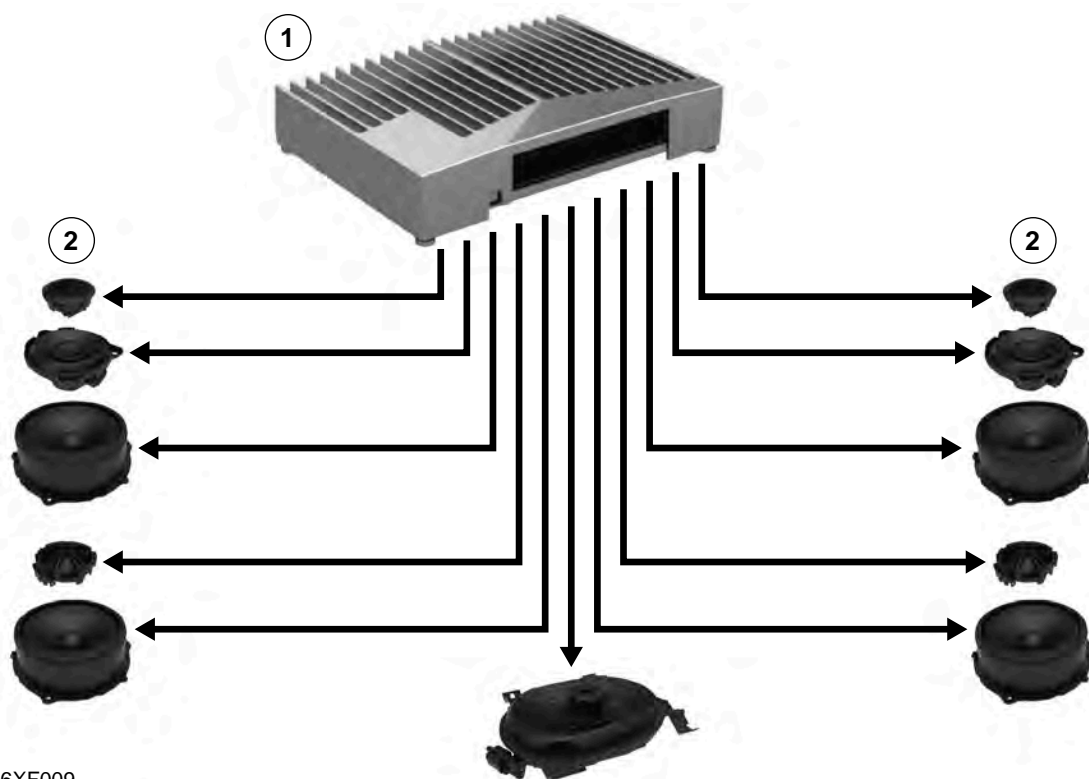
- AM/FM diversity
- DAB Radio (ROW)
- SDARS/HD radio (NAS)
- Bluetooth phone and audio streaming
- InControl Apps
- Voice recognition
- SMS text read out
- SD card navigation
- 3.5mm AUX input
  - Media player
  - USB audio/USB video/iPod audio
  - Single USB input (powered for charging)

The Comfort High Speed CAN bus provides communication with other system control modules, for example, inputs from the Parking Aid Control Module (PACM) for sound generation and display on the Touch Screen.

A new communication protocol between the Audio Head Unit (AHU) and Touch Screen, referred to as Automotive Pixel Link 2 (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/graphics, audio and data transmission. All communication and data transmission to the Touch Screen is passed through this one communication protocol from/to the AHU.

Speakers and Amplifier

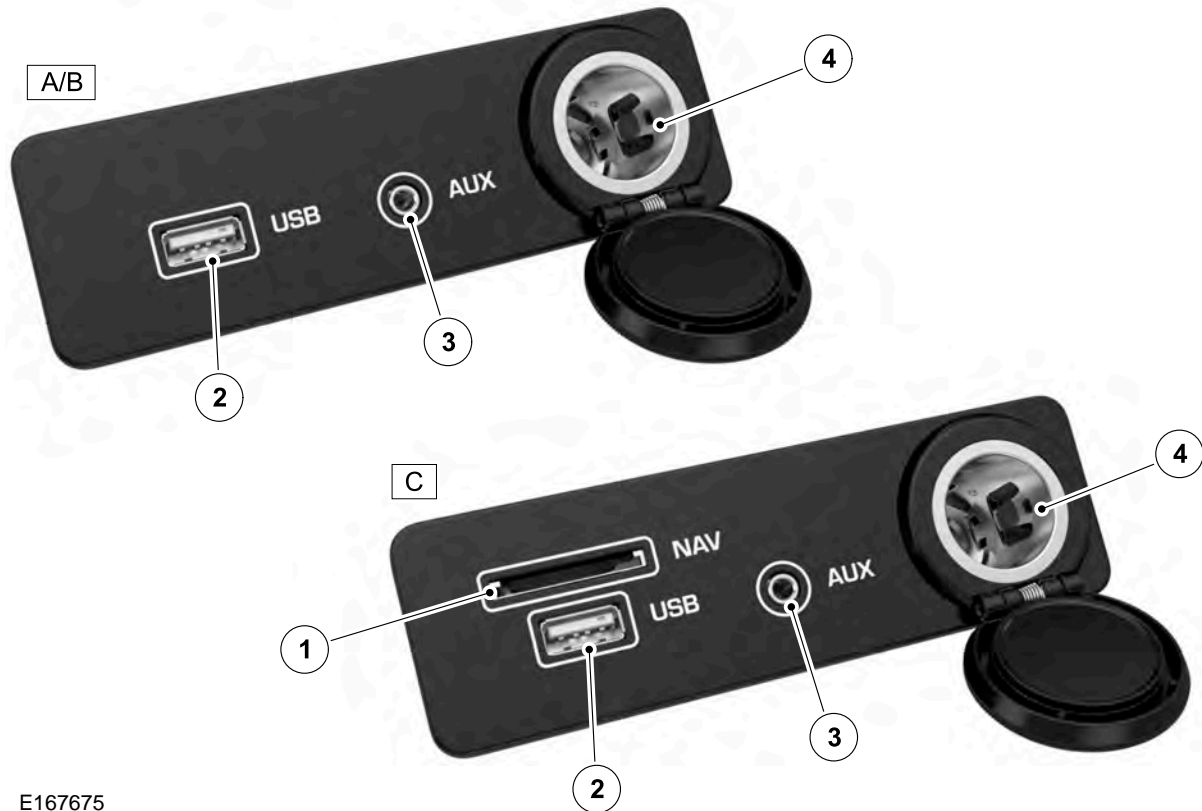**Meridian Sound System – InControl Touch**

NP16XF009

Item	Description	Item	Description
1	12 channel amplifier – 380W	2	10 speakers + subwoofer

Portable Audio Interface Panel

The portable audio interface panel is located in the front floor console stowage compartment, and is directly connected to the AHU. The panel has three variants globally:

• A – USB (supports media only) and is specific to the Level B AHU

• B – USB (supports media and InControl Apps) and is specific to Level C AHU, without navigation

• C – USB (supports media and InControl Apps), plus an SD card slot, which is specific to Level C AHU with navigation
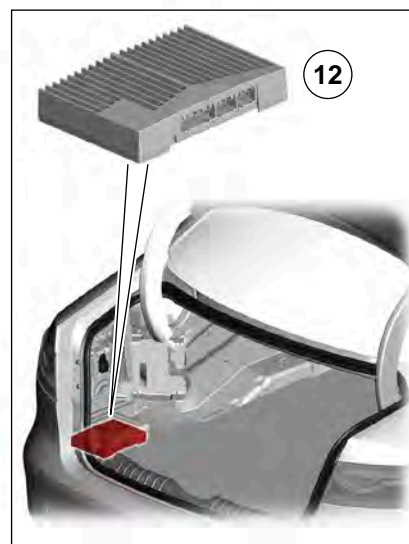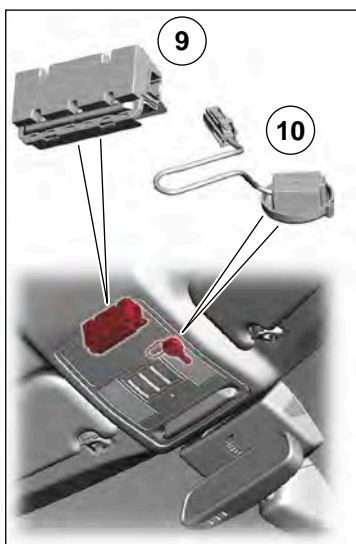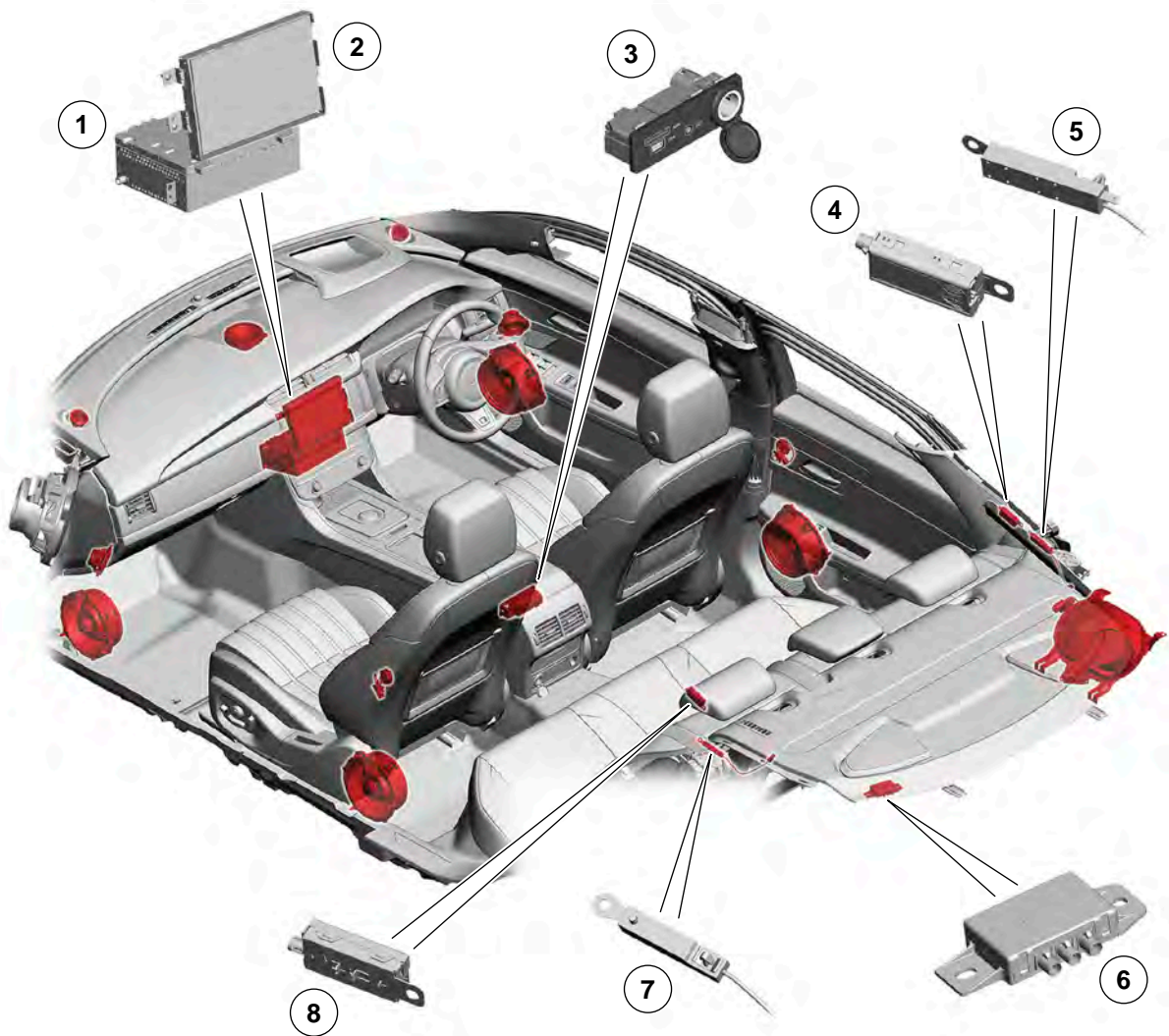

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The panel supports USB (supports media and InControl Apps), plus an SD card slot, which is specific to AHU with navigation. The USB port includes a 5V charging function, but does not support a USB hub. The maximum charging current supplied is 2.1A for the NAS AHU.

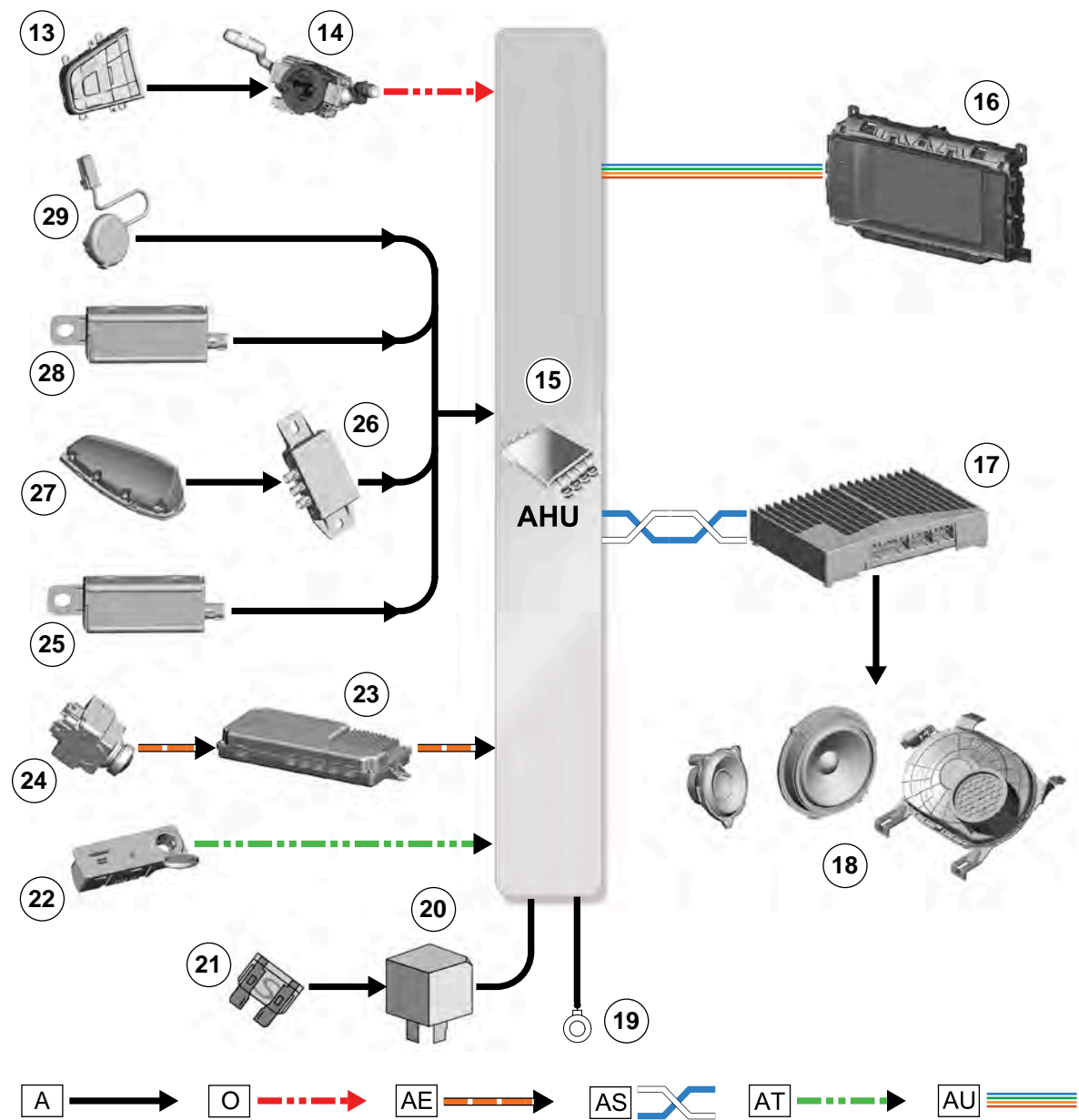| Item	Description	Item	Description
1	Navigation SD card slot	3	3.5 mm auxiliary jack plug
2	USB port	4	12V power socket

Component Locations (XF Shown; XE / F-PACE Similar)

NP16XF020

Key to NP16XF020 on facing page

Item	Description	Item	Description
1	Audio Head Unit (AHU)	7	RF filter – Heated Rear Window negative (-)
2	Touch Screen	8	AM/FM antenna amplifier
3	Portable Audio Interface panel	9	Headphone transmitter (Rear Seat Entertainment only)
4	FM/TMC/DAB-3 antenna amplifier	10	Microphone
5	RF filter – Heated Rear Window positive (+)	11	Roof pod – GPS/GSM/DAB antenna
6	Global Positioning System (GPS) signal splitter	12	Audio Amplifier Module (AAM)

InControl Touch Audio System Control Diagram

(13) (14) → (15) AHU

(29)

(28)

(26)

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NP16XF019

Key to NP16XF019 on facing page

Item	Description	Item	Description
13	Steering Wheel Switchpack – left	25	FM/TMC/DAB-3 Antenna Amplifier
14	Clockspring	26	GPS Signal Splitter (if equipped)
15	Audio Head Unit (AHU)	27	Roof Pod – GPS/GSM/DAB antenna
16	Touch Screen	28	AM/FM antenna amplifier
17	Audio Amplifier Module (AAM)	29	Microphone
18	Vehicle Speakers	A	Hardwired
19	Ground	O	Local Interconnect Network (LIN)
20	Relay (located in the QCCM)	AE	LVDS
21	Fuse (located in the QCCM)	AS	Infotainment Local CAN
22	Portable Audio Interface panel	AT	Universal Serial Bus (USB)
23	Camera Control Module	AU	APIX2
24	Rear View Camera		

SD Card Navigation

InControl Touch navigation is a midlevel SD card based system. The navigation module is integral with the AHU, with mapping data and speech files streamed direct from the navigation SD card.

InControl Touch navigation has the following key features:

- One shot voice destination entry
- 3D Terrain and building graphics (dependent on market support)
- Auto prompts for parking and coffee stops
- Customer updatable maps (future development)
- Historical traffic data (dependent on market support)

InControl Touch navigation has the following guidance highlights:

- Advanced text-to-speech in including announcement of road names
- Traffic information
- Traffic events read out
- Historical traffic data where available
- Traffic Congestion View
- High Quality 2D Maps
- 3D Junction view displays upcoming junctions
- 3D city models and land marks
- Time sense – navigation system recognizes which roads are open/closed
- Lane guidance icons to indicate appropriate lane positioning
- Tunnel view showing road sign boards and bifurcations

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InControl Touch navigation maps are market specific; SD cards are supplied according to market regions. The SD card activation and update process intention is to supply the latest map version on vehicle delivery, followed by two updates per year for the warranty period. The activation and update process will be carried out using a standalone software tool on the Jaguar Approved Diagnostic Equipment. At a later stage, the intention is for the customer to carry out updates via an online portal.

The activation process provides a mechanism to lock the SD card to the Vehicle Identification Number (VIN) of the vehicle. SD cards activated with a particular VIN will only work with a matched vehicle VIN.

Voice Recognition

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When navigation is fitted, voice recognition and SMS text functionality are also provided. The voice engine in InControl Touch features the following voice commands:

• One shot destination entry for navigation

• Allows customer to tune radio by voice command

• Allows customer to dial a phone number or call a contact directly
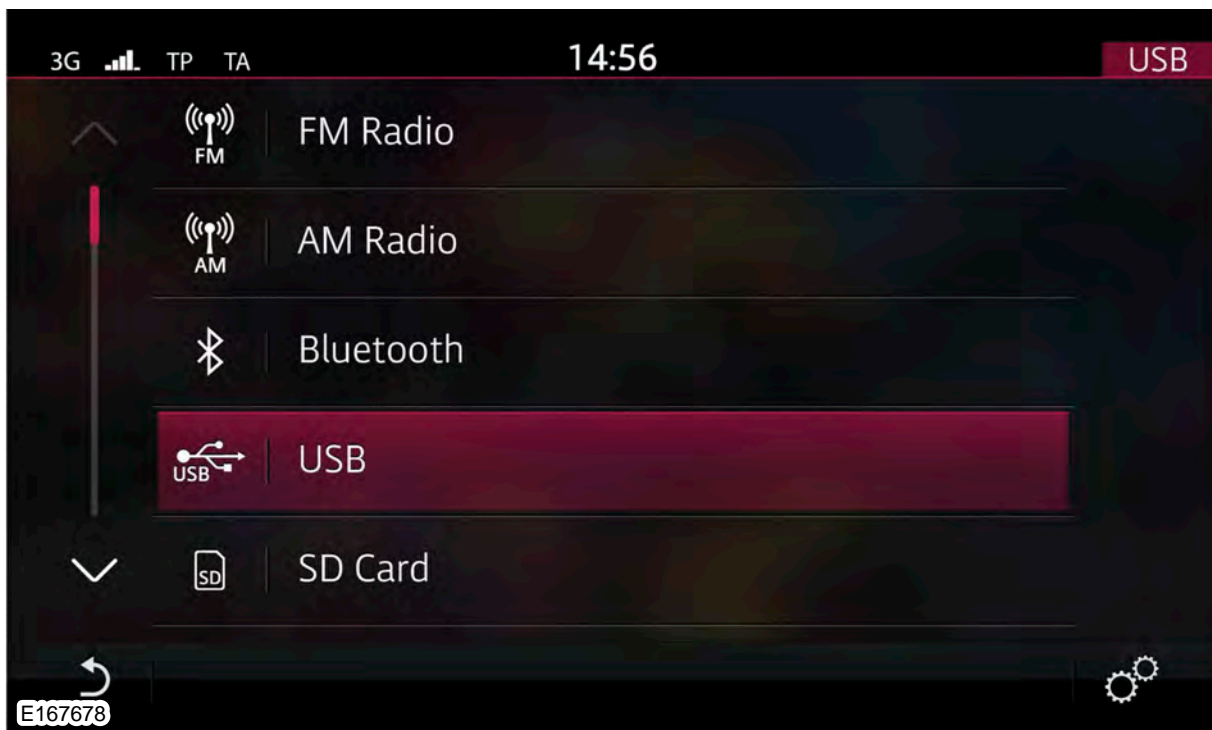
Function examples:

• 'Tune 97.6'

• 'Navigate to 555 MacArthur Boulevard, Mahwah'

• 'Call Tony'

Media Options

The following media sources are available:

- AM radio
- FM Radio
- DAB (Option)
- HD Radio (NAS)
- SDARS (NAS – Option)
- USB
- iPod
- Bluetooth Audio
- AUX

InControl Touch media player supports the latest iPhone through the USB input and also via Bluetooth streaming (standard on all InControl Touch equipped vehicles). Video and images stored on a connected smart phone or portable USB media can be searched through the vehicle Touch Screen.

InControl Touch supports the following formats:

- Image Formats
  - JPEG
  - BMP
  - PNG
  - GIF
- Video Formats
  - DivX
  - FLV
  - AVI
  - MP4

Phone Connectivity

The InControl Touch system enables the customer to make and receive phone calls via the steering wheel controls, Touch Screen and voice command. The system allows two phones to be connected at one time, one for making and receiving calls, the other for audio streaming via Bluetooth.

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The following functions are available:

- Digital keypad
- Redial function
- Call lists
- Swap calls
- SMS alerts via popup
- Create/receive messages
- Message templates
- Send message via Touch Screen
- Bluetooth connectivity