

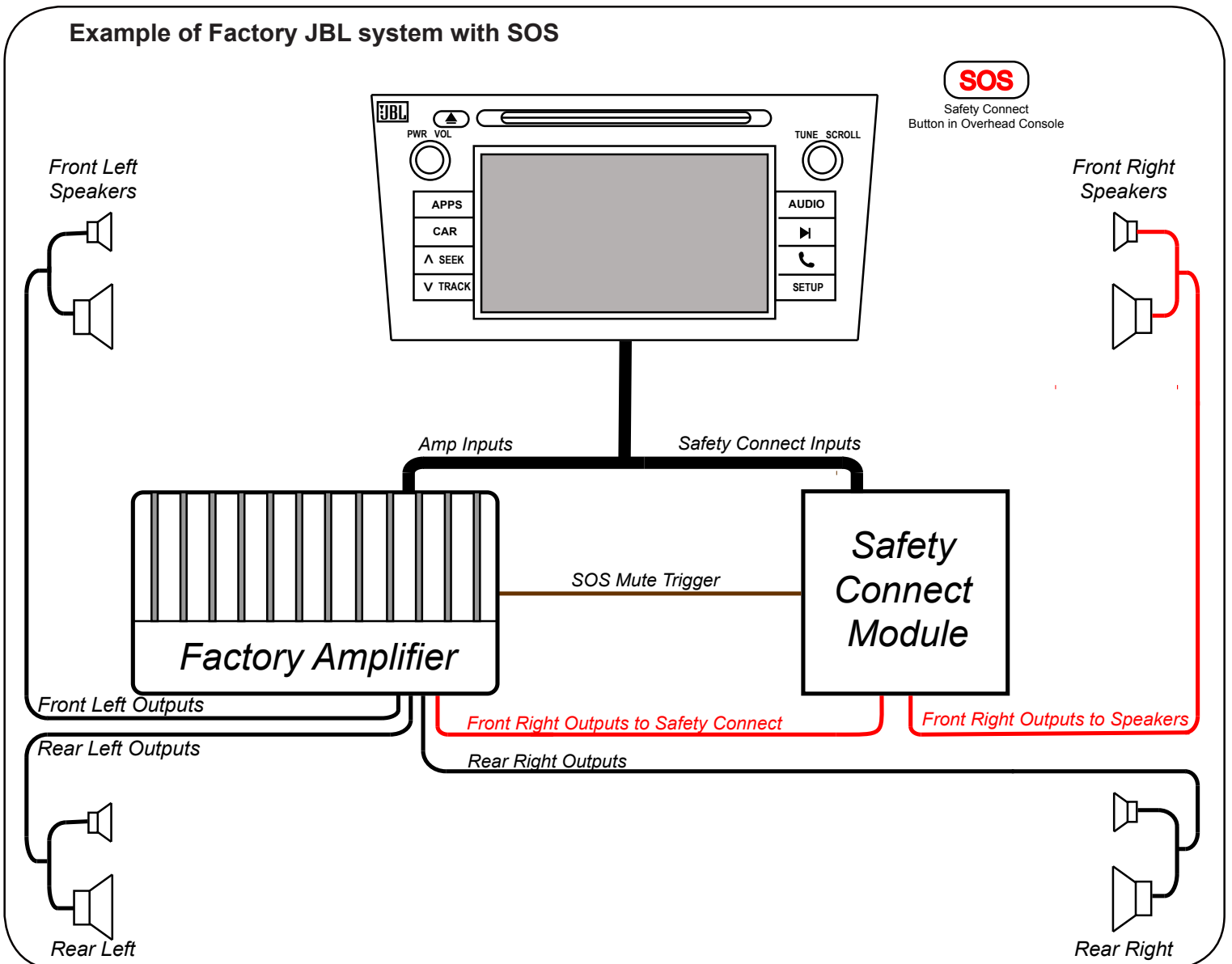
Technical Bulletin

Lexus / Toyota Amp PRO
Retention of SOS
(Safety Connect / Lexus Enform)

Overview:

Safety Connect (SOS) is a subscription based service provided for select Lexus / Toyota models. Verify the vehicle is equipped with Safety Connect / Lexus Enform (there will be an SOS button in the overhead console) and that it is an active account, and that retention of SOS is a concern prior to proceeding.

In Toyota / Lexus vehicles equipped with Safety Connect / Lexus Enform and a digital amplifier, the front right output of the factory amplifier (sometimes tweeter, sometimes door woofer, sometimes both) goes through the factory SOS telematics module. This telematics module is what creates the audio for the SOS system (Voice Prompts, etc). There is an analog mute wire that runs from the SOS module to the factory amp, and when the SOS is triggered by the user, the SOS module sends a ground signal on this wire to mute the audio coming from the factory amplifier. When this happens, the audio to the SOS speaker (or speakers) is muted and the SOS module internally switches the front right speaker to now pass audio from the telematics module, instead of the amplifier.



When using the AmpPRO to add aftermarket amplifiers, and retention of the factory SOS system is desired, there are a few important points to remember:

- If you are not using an aftermarket amplifier on the front speakers, and you wish to mute audio when SOS is active, the factory mute wire mentioned in the overview must be found and connected to the Yellow / Black wire on the AP4-TY harness labeled "Mute Input From Telematics". See "Method 1" in the next section for further details.
- If you are using an aftermarket amplifier on the front speakers and do not plan on running new speaker wires to each speaker, your aftermarket amplifier's front right output will be passed through the factory SOS module. The factory SOS module cannot handle any more than 150w RMS (The engineers at PAC have tested running 150w RMS through a Toyota SOS module for extended periods of time without issue). See "Method 2" in the below for further details.
- If you are planning on running new speaker wires to each speaker, and wish to retain the SOS system, or the aftermarket amplifier is rated at higher than 150w RMS to the front speakers, you will need to follow the steps outlined as "Method 3" on page 4.

SOS Retention Methods:

Prior to interrupting any of the wires between the factory amplifier, factory telematics module, or the speakers, activate the SOS and note which speaker (or speakers) play the SOS audio for later use. For instance, if only the front right mid is playing the SOS audio and there are additional front right speakers, if you connect to the wires for the front right tweeter at the amplifier, the SOS audio will not be retained. To retain the SOS in this instance, you must connect to the wires for the front right mid.

Method 1 (ex: Subwoofer Only Install):

Method 1 is used in cases where the factory amplifier will continue to power the front speakers and you wish to mute the audio from the aftermarket amplifiers when SOS is active.

- Extend a wire from the Yellow / Black "Mute Input From Telematics" wire to the SOS Mute Trigger wire at the factory Safety Connect Module. Refer to the "Vehicle Connections" section for vehicle specific information (page 5).

Method 2 (Amplifying Cabin Speakers):

Method 2 is used when wiring an aftermarket amplifier to the front speaker outputs of the factory amplifier rather than running new speaker wires from the aftermarket amp straight to the front speakers. One of the front right speaker outputs of the aftermarket amplifier passes through the Safety Connect Module. It is recommended to use an amplifier that provides 150 watts RMS or less so that the factory telematics module is not damaged due to excessive heat. If the front speaker output is in excess of 150 watts, use Method 3 instead (page 4).

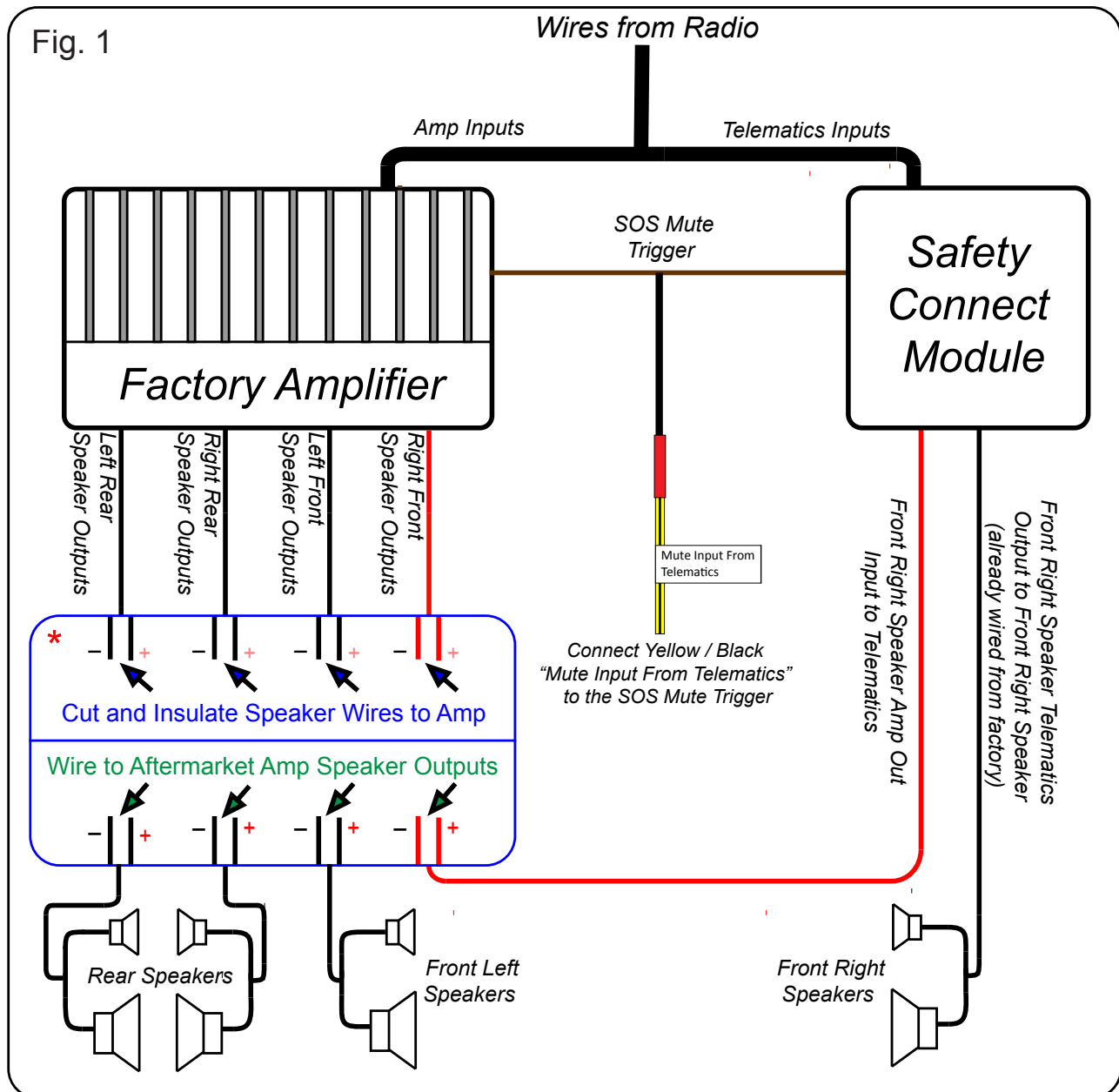
- If you are wiring an aftermarket amplifier to the front speakers through the Telematics Module, it will require running a wire from the AP4-TY harness Yellow / Black wire labeled "Mute Input From Telematics" to a wire at the Safety Connect Module. Refer to the "Vehicle Connections" section for vehicle specific information (page 5). Next, cut the front speaker outputs (and rear if applicable) to the speaker wire outputs at the factory amplifier and insulate the side that goes towards the amplifier (these wires will not be used). Wire the aftermarket amplifier outputs to the appropriate remaining speaker wires. See the example "Fig. 1" on the following page.



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Method 2 (cont.):

Note: In some vehicles there will be multiple speakers on the front right output of the factory amplifier with only one speaker passing the SOS audio. If that is the case, it is important to use the exact speaker output of the factory amp that corresponds to the speaker playing the SOS audio to connect to the front right speaker output of the aftermarket amplifier. If the front right dash speaker is the only speaker playing the SOS audio and now only the door speakers are going to be used, it would be necessary to run the aftermarket amplifier's front right output to the front right dash speaker wires, then use the front right speaker output from the Safety Connect Module to connect to the door speaker that needs to be powered by the aftermarket amplifier. Method 3 can be substituted for ease of SOS retention if desired. Refer to the "Vehicle Connections" section on page 5 for vehicle specific information.



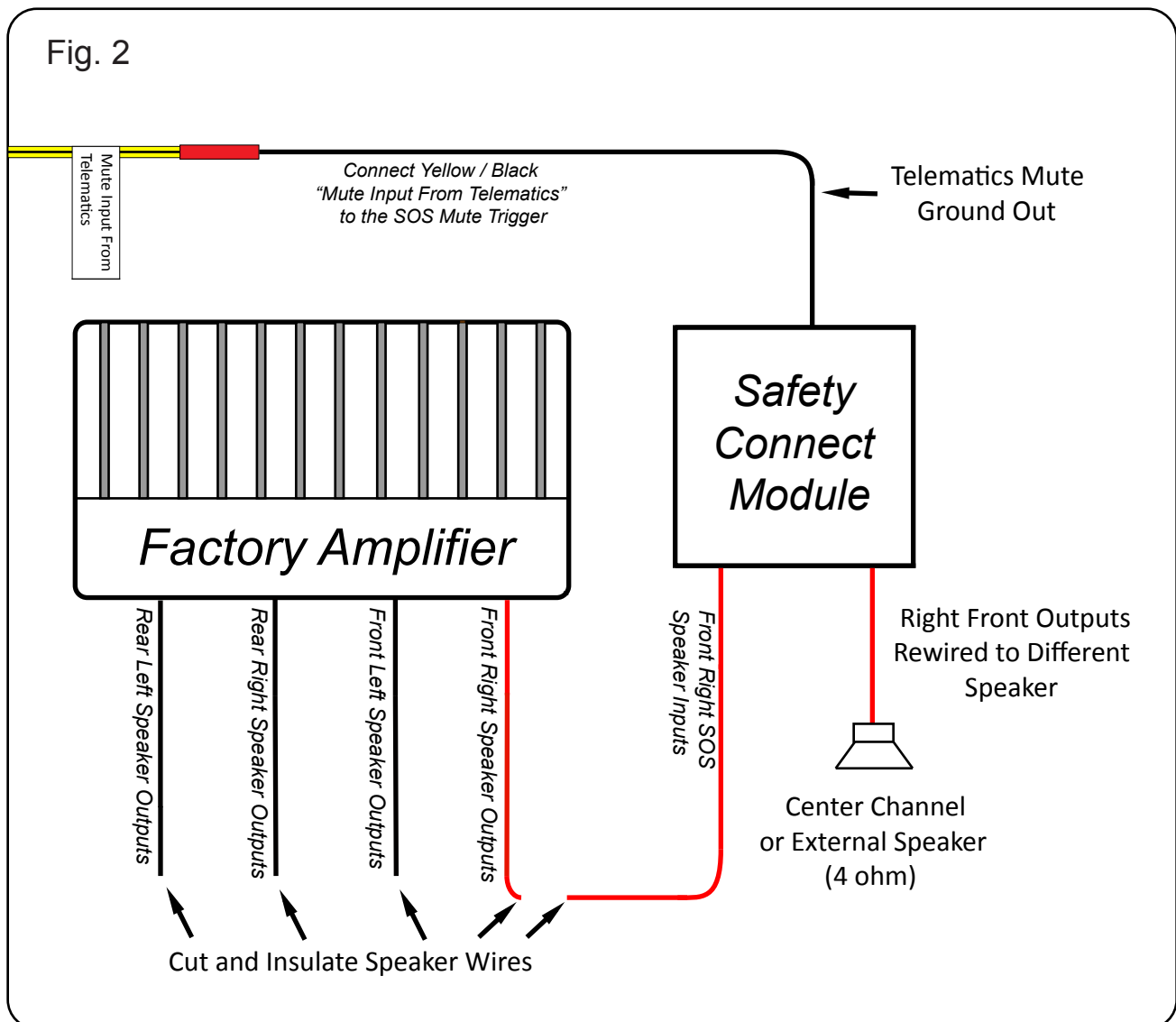
* Image is zoomed in to show the individual positive and negative speaker wires



Method 3 (using a separate speaker):

Method 3 bypasses the Safety Connect Module and uses an external speaker (not supplied) to provide the SOS audio.

- Method 3 will require running a wire from the AmpPRO harness Yellow / Black wire labeled "Mute Input From Telematics" to a wire at the Safety Connect Module. Refer to the "Vehicle Connections" section on page 5 for vehicle specific information. It also requires cutting the audio input and output wires at the Safety Connect Module, and insulating the input wires that lead back to the factory amp (to prevent shorting them out). Extend a speaker wire from the Safety Connect audio output wires to an external 4 ohm speaker and hide it in a place where it will be audible (commonly under the dashboard on the driver's side of the vehicle facing downward). If the vehicle has a center channel speaker that is no longer being used, it is possible to run the speaker wires to this speaker rather than adding an additional speaker. See "Fig. 2". Refer to the "Vehicle Connections" section on page 5 for information regarding where the Safety Connect Module is located and what wire to extend the Yellow / Black wire to.



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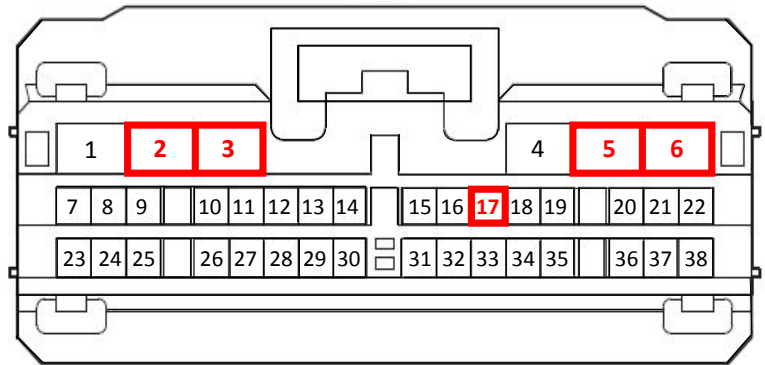
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Vehicle Connections

Use the information contained in the chart below to determine the factory Amp location, Safety Connect Module location, and the Pin positions and colors for the wires necessary for specific methods of SOS retention.

The connector to the right represents the Safety Connect Module connector for all of the Lexus / Toyota applications listed below. The Pin positions highlighted in Red are indicative of the wire positions outlined in the chart below.

38 - Pin Safety Connect Module Connector



Connector Viewed From Pin Side

Toyota

| Model | Years | OEM/Amp Location | Safety Connect Module Location | Safety Connect Input Audio | Safety Connect Output/Audio | Telematics Mute Trigger |
|------------|-------------|---|--------------------------------|--|--|-------------------------------------|
| 4Runner | 2010 - 2018 | Behind Right Rear Side Panel in Rear Cargo Area | Behind Glovebox Left Side | 38 Pin Connector Pin 2 (+) Violet Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Blue | 38 Pin Connector Pin 17 Blue |
| Avalon | 2013 - 2018 | Under Front Left Seat | Under Front Right Seat | 38 Pin Connector Pin 2 (+) White or Pink Pin 3 (-) Red or Violet | 38 Pin Connector Pin 5 (+) Gray or Red Pin 6 (-) Brown or White | 38 Pin Connector Pin 17 Lt Green |
| Camry | 2012 - 2018 | Under Front Left Seat | Under Front Right Seat | 38 Pin Connector Pin 2 (+) Yellow Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Blue | 38 Pin Connector Pin 17 Red |
| Highlander | 2014 - 2018 | Under Front of Center Console | Under Front of Center Console | 38 Pin Connector Pin 2 (+) Lt Green Pin 3 (-) Blue | 38 Pin Connector Pin 5 (+) White or Lt Green Pin 6 (-) Black or Blue | 38 Pin Connector Pin 17 Lt Green |
| Prius | 2010 - 2011 | Under Front Right Seat | In Dash Below Radio | 38 Pin Connector Pin 2 (+) Lt Green Pin 3 (-) Blue | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Blue | 38 Pin Connector Pin 17 Green |
| Prius | 2016 - 2017 | Under Front Right Seat | In Dash Below Radio | 38 Pin Connector Pin 2 (+) Beige Pin 3 (-) Green | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Blue | 38 Pin Connector Pin 17 Lt Green |
| Sienna | 2011 - 2014 | Under Front Right Seat | Behind Center Console | 38 Pin Connector Pin 2 (+) White Pin 3 (-) Red | 38 Pin Connector Pin 5 (+) Blue Pin 6 (-) Lt Green | 38 Pin Connector Pin 17 Red |
| Sienna | 2015 - 2017 | Under Front Right Seat | Behind Center Console | 38 Pin Connector Pin 2 (+) Blue Pin 3 (-) Lt Green | 38 Pin Connector Pin 5 (+) Blue Pin 6 (-) Lt Green | 38 Pin Connector Pin 17 Red |



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Vehicle Connections

Lexus

| Model | Years | OEM Amp Location | Safety Connect Module Location | Safety Connect Module Input/Audio | Safety Connect Module Output/Audio | Telematics Mute Trigger |
|------------------|-------------|---|------------------------------------|--|---|----------------------------------|
| CT200h | 2011 - 2017 | Under Front Right Seat | In Dash Above Radio | 38 Pin Connector Pin 2 (+) Lt Green Pin 3 (-) Blue | 38 Pin Connector Pin 5 (+) Green Pin 6 (-) Brown | 38 Pin Connector Pin 17 Blue |
| ES300h | 2013 - 2017 | Under Front Left Seat | Under Front Right Seat | 38 Pin Connector Pin 2 (+) Black Pin 3 (-) Yellow | 38 Pin Connector Pin 5 (+) Black Pin 6 (-) Yellow | 38 Pin Connector Pin 17 Black |
| ES350 | 2016 - 2017 | Under Front Left Seat | Under Front Right Seat | 38 Pin Connector Pin 2 (+) Black Pin 3 (-) Yellow | 38 Pin Connector Pin 5 (+) Black Pin 6 (-) Yellow | 38 Pin Connector Pin 17 Black |
| GX460 | 2010 - 2017 | Under Front Right Seat | In Dash to the Right of Radio | 38 Pin Connector Pin 2 (+) Lt Green or Red Pin 3 (-) Blue or White | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Blue | 38 Pin Connector Pin 17 Pink |
| HS250h | 2010 - 2012 | Under Front Right Seat | In Dash Above Radio | 38 Pin Connector Pin 2 (+) Lt Green Pin 3 (-) Blue | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Blue | 38 Pin Connector Pin 17 Gray |
| IS200T | 2016 - 2017 | Right Rear Side in Rear Cargo Area | Behind Instrument Cluster | 38 Pin Connector Pin 2 (+) Beige Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Beige Pin 6 (-) Pink | 38 Pin Connector Pin 17 Black |
| IS250 IS350 | 2010 - 2013 | Right Rear Side in Rear Cargo Area | Right Side of Dash Behind Glovebox | 38 Pin Connector Pin 2 (+) Blue Pin 3 (-) Lt Green | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Red | 38 Pin Connector Pin 17 White |
| IS250 IS350 | 2014 - 2015 | Right Rear Side in Rear Cargo Area | Behind Instrument Cluster | 38 Pin Connector Pin 2 (+) Beige Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Beige Pin 6 (-) Pink | 38 Pin Connector Pin 17 Black |
| IS350 | 2016 - 2017 | Right Rear Side in Rear Cargo Area | Behind Instrument Cluster | 38 Pin Connector Pin 2 (+) Beige Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Beige Pin 6 (-) Pink | 38 Pin Connector Pin 17 Black |
| IS250C IS350C | 2010 - 2015 | Right Rear Side in Rear Cargo Area | Right Side of Dash Behind Glovebox | 38 Pin Connector Pin 2 (+) Black Pin 3 (-) Gray | 38 Pin Connector Pin 5 (+) Black Pin 6 (-) Gray | 38 Pin Connector Pin 17 Pink |
| IS-F | 2010 | Right Rear Side in Rear Cargo Area | Right Side of Dash Behind Glovebox | 38 Pin Connector Pin 2 (+) Blue Pin 3 (-) Lt Blue | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Red | 38 Pin Connector Pin 17 White |
| IS-F | 2011 - 2014 | Right Rear Side in Rear Cargo Area | Right Side of Dash Behind Glovebox | 38 Pin Connector Pin 2 (+) Blue Pin 3 (-) Lt Green | 38 Pin Connector Pin 5 (+) Lt Green Pin 6 (-) Red | 38 Pin Connector Pin 17 White |
| NX Series | 2015 - 2018 | Behind Right Rear Side Panel in Rear Cargo Area | In Dash Above Radio | 38 Pin Connector Pin 2 (+) Pink or White Pin 3 (-) Red | 38 Pin Connector Pin 5 (+) Yellow or Red Pin 6 (-) Black or White | 38 Pin Connector Pin 17 Black |
| RC Series | 2015 - 2017 | Right Rear Side in Rear Cargo Area | Behind Instrument Cluster | 38 Pin Connector Pin 2 (+) Beige Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Beige Pin 6 (-) Pink | 38 Pin Connector Pin 17 Black |



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Vehicle Connections

Lexus (cont.)

| Model | Years | OEM Amp Location | Safety Connect Module Location | Safety Connect Module Input/Audio | Safety Connect Module Output/Audio | Telematics Mute Trigger |
|-----------|-------------|---|---|--|--|-------------------------------------|
| RX Series | 2010 - 2015 | Under Floor Right Front Side of Luggage Compartment | On Floor Below Center Console | 38 Pin Connector Pin 2 (+) Red Pin 3 (-) Pink | 38 Pin Connector Pin 5 (+) Green Pin 6 (-) Red | 38 Pin Connector Pin 17 Lt Green |
| RX Series | 2016 - 2017 | Behind Right Rear Side Panel in Rear Cargo Area | Center Console Below Radio Controller Panel | 38 Pin Connector Pin 2 (+) Blue Pin 3 (-) Violet | 38 Pin Connector Pin 5 (+) Blue Pin 6 (-) Pink | 38 Pin Connector Pin 17 Beige |

