GM DSP Interface With Pre-Wired Harness
2019–Up

INTERFACE FEATURES
• Includes a DSP (Digital Signal Processor)
• 15 Band graphic EQ
• 4 inputs and 6 individually assignable outputs
• Independent equalization for front, rear, and sub
• Selectable low pass, band pass, and high pass filters
• Selectable crossover slopes; 12db, 24db, 36db, 48db
• Each channel can be delayed independently up to 10ms
• Clipping detection and limiting circuits
• Retains factory parking sensor chimes
• Retains OnStar® voice prompts
• Adjustable chime level
• Designed for non-amplified models
• Easy behind the radio installation with pre-wired harness
• Internal header port for adding interface modules
• Bass knob included for level control of subwoofer amp
• Settings adjusted via Bluetooth® in a smart device application (tablet or mobile phone), compatible with both Android and Apple devices
• Read, write, and store configurations for future recall
• Password protect feature available in the mobile app
• Micro-B USB updatable

INTERFACE COMPONENTS
• AXDSPL-GM31 interface
• AXDSPL-GM31 interface harness
• AXDSPL-GM31 vehicle T-harness • Bass knob

APPLICATIONS
Visit axxessinterfaces.com for current application list

TOOLS & INSTALLATION ACCESSORIES REQUIRED
• Crimping tool and connectors, or solder gun, solder, and heat shrink • Tape • Wire cutter
• Zip ties • Multimeter

TABLE OF CONTENTS
Installation Options ...............................................2
Installation ................................................................2
Connections.............................................................3-4
AXDSPL-BT Installation...........................................5
AXDSPL-SP Installation...........................................6
Mobile App .........................................................7-15
Specifications .......................................................16
Adding a sub to a factory system:
This feature offers the ability to add a subwoofer to a factory system. (refer to page 3)

Adding a full-range amp & sub to a factory system:
This feature offers the ability to add a full-range amp and sub to a factory system. (refer to page 4)

16-pin header port:
Inside the interface is a 16-pin header port for adding optional modules (sold separately). Page 5 and 6 will show the installation and use of these modules.

- AXDSPL-BT - Bluetooth streaming interface
- AXDSPL-SP - Toslink digital output

Note: The interface provides a 12-volt 1-amp output to turn on aftermarket amp(s). If installing multiple amps, an SPDT automotive relay will be required if the amp turn-on current of all amps combined exceeds 1-amp. Use Metra part number E-123 (sold separately) for best results.

1. Remove the factory radio †, then unplug all connectors.
2. Install the AXDSPL-GM31 vehicle T-harness to the vehicle and make all necessary connections, but leave the amp turn-on wire disconnected.
3. Plug the AXDSPL-GM31 vehicle T-harness to the AXDSPL-GM31 interface.
4. Plug the AXDSPL-GM31 interface harness to the AXDSPL-GM31 interface.
5. Download and install the AX-DSP-X app from the Google Play Store or Apple App Store.
6. Cycle the ignition on.
7. Open the app then select the Bluetooth Connection tab. Follow the instructions to pair the mobile device to the interface. Refer to page 6 for more information.
8. Scroll to the Configuration tab then select the vehicle type. Press the Lock Down ‡ button to save the configuration. Refer to page 7 for more information.
9. Connect the amp turn-on wire.
10. Adjust the settings in the app as desired. Press the Lock Down ‡ button to save any new configurations.

† Refer to Metra online for dash disassembly. If Metra makes a dash kit for the vehicle, disassembly will be within those instructions.

‡ Anytime the interface is locked down the key must be cycled off then back on
ADDING A SUB TO A FACTORY SYSTEM

These outputs can be used for additional sub amps, or for adding onto the system at a later date.

RCA Jacks (sold separately)

Black - Ground
Orange - Control

Vehicle T-Harness

Any remaining wires tape off and disregard

Keep Connected

Factory Radio Harness

Interface Harness

Any remaining wires tape off and disregard

Blue/White - Amp Turn-On Wire

REV. 11/2/2020 INSTAXDSPL-GM31

Keep Connected

Bass Knob
ADDING A FULL-RANGE AMP & SUB TO A FACTORY SYSTEM

Factory Radio

Factory Radio Harness

Any remaining wires tape off and disregard

Vehicle T-Harness

Bass Knob

Black - Ground
Orange - Control

Any remaining wires tape off and disregard

Interface

Unplug connector

Any remaining wires tape off and disregard

Interface Harness

An SPDT relay, Metra part number E-123, is required if the amp turn-on current of all amps exceeds 1-amp.

RCA Jacks (sold separately)

Cut the male connector off and connect speaker wires to amp (non-amplified models only)

White / Front Left +
White/Black / Front Left -
Gray / Front Right +
Gray/Black Front Right -
Green / Rear Left +
Green/Black / Rear Left -
Purple / Rear Right +
Purple/Black / Rear Right -

Blue/White - Amp Turn-On Wire

White/Black - Amp Turn-On Wire
• The AXDSPL-BT Bluetooth streaming interface can be used to stream media directly to the interface.

• While streaming media the volume on the phone will be used. As an option, the AXBK-1 (sold separately) can be used to control the volume.

  Note: The bass knob included with the AXDSPL-GM31 can be used if it will not be used to control a subwoofer.

1. Important! Unplug the interface from the vehicle.

2. Remove (4) Phillips screws securing the interface, then remove the top cover, exposing the circuit board within.

3. Locate the 16-pin header on the circuit board.

4. Important! Referencing how the AXDSPL-BT is laid out in the picture, carefully line up the header pins to the interface. Gently press down to secure.

  Note: Both interfaces may be damaged if installed wrong.

5. Reinstall the top cover to complete the installation.

**AXBK-1 Installation:**

6. Connect the Brown wire from the interface to the Orange wire from the AXBK-1.

  Ground the Black wire from the AXBK-1.

Continued on the next page
The AXDSPL-SP Toslink digital output can be used for adding a digital output to the interface.

1. **Important!** Unplug the interface from the vehicle.
2. Remove (4) Phillips screws securing the interface, then remove the top cover, exposing the circuit board within.
3. Locate the 16-pin header on the circuit board.
4. **Important!** Carefully line up the header pins to the AXDSPL-SP, with the Toslink port facing outward. Gently press down to secure.
   
   **Note:** Both interfaces may be damaged if installed wrong.
5. Reinstall the top cover provided with the AXDSPL-SP to complete the installation.
Setup Instructions

MOBILE APP

Using the vehicle specific harness, install the AX-DSP. The high level outputs from the OEM radio go to the inputs of the AX-DSP. The AX-DSP outputs are low level and should be connected to the amplifier inputs.

- Power on the system, and verify audio to the front (left and right), rear (left and right), and Subwoofer.
- Set the OEM radio bass and treble controls for flat frequency response.
- Set the left/right balance to center.
- Set the front/rear fader to center.

Detailed installation instructions are available on-line. Click the button below to view the instructions.

• General information tab for installing the interface.
Bluetooth Connection

**Scan** - Press this button to start the Bluetooth pairing process, then select the interface once it is found. “Connected” will appear in the top left corner of the app once paired.

**Note:** The ignition must be cycled on during this process.

**Disconnect** - Disconnects the interface from the app.

To connect to the AX-DSP, make sure the ignition is in the on position and the AX-DSP is powered up.

Hit the SCAN Button and select the AX-DSP from the available devices.

Confirmation that you are connected to the DSP will show in the top left corner of the screen.

To disconnect from the AX-DSP hit the Disconnect button.

Continued on the next page
**Configuration**

- **Identify** - Click this button to send a test tone to the front left speaker*.  
  * Only installations using the front left output (white RCA jack).
- **Reset to Defaults** - Resets the DSP customization settings, will not reset vehicle type. During the reset process, the amplifiers will shut off for 5–10 seconds, and then turn back on once completed.
- **Vehicle Type** - Select the type of vehicle the AX-DSP is installed in.
- **Lock Down** - Click this button to save the selected settings.
  **Attention!** This must be done before closing the app or cycling the key otherwise all new changes will be lost!
- **Save Configuration** - Saves the current configuration to the mobile device.
- **Recall Configuration** - Recalls a configuration from the mobile device.
- **About** - Displays information about the app, vehicle, interface, and mobile device.
- **Set Password** - Assign a 4-digit password to lock the interface. If no password is desired, use “0000”. This will clear out any currently set password. It is not necessary to lock down the interface when setting a password.
  **Note:** A 4-digit only password must be chosen otherwise the interface will show “password not valid for this device”.

*Continued on the next page*
### Outputs

<table>
<thead>
<tr>
<th>#</th>
<th>Location</th>
<th>Group</th>
<th>Invert</th>
<th>Mute</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Left Front</td>
<td>None</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>2</td>
<td>Right Front</td>
<td>None</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>3</td>
<td>Left Rear</td>
<td>None</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>4</td>
<td>Right Rear</td>
<td>None</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>5</td>
<td>Sub Woofer</td>
<td>None</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

#### Output Channels

- **Location** - Location of speaker.
- **Group** - Used to join channels together for simple equalization. Example, left front woofer/midrange and left front tweeter will be considered simply left front. The letter M indicates the speaker assigned as the master speaker.
- **Invert** - Will invert the phase of the speaker.
- **Mute** - Will mute desired channel(s) for tuning individual channels.

*Continued on the next page*
MOBILE APP (CONT.)

Crossover Adjust

- Select the desired crossover filter per channel, low pass, band pass, or high pass.
- Select the desired crossover slope per channel, 12db, 24db, 36db, or 48db.
- Select the desired crossover frequency per channel, 20hz to 20kHz.

**Note:** The front and rear channels default to a 100Hz high pass filter to keep the low frequency signals out. If a subwoofer is not being installed, change the front and rear crossover points down to 20Hz for a full range signal, or to the lowest frequency the speakers will play down to.

Continued on the next page
Equalizer Adjust

• All channels can be adjusted independently within this tab with 15 bands of available equalization. It is best to tune this by using an RTA (Real Time Analyzer).

• The Gain slider on the far left is for the channel selected.
Delay Adjust

- Allows a delay of each channel. If a delay is desired, first measure the distance (in inches) from each speaker to the listening position, then enter those values to the corresponding speaker. Add (in inches) to the desired speaker to delay it.

Distance from each speaker to ‘Head’ position (in inches)

<table>
<thead>
<tr>
<th>Speaker</th>
<th>Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Front</td>
<td>0</td>
</tr>
<tr>
<td>Right Front</td>
<td>0</td>
</tr>
<tr>
<td>Left Rear</td>
<td>0</td>
</tr>
<tr>
<td>Right Rear</td>
<td>0</td>
</tr>
<tr>
<td>Sub Woofer</td>
<td>0</td>
</tr>
</tbody>
</table>

Measure the distance from each speaker to the desired ‘Head’ position and enter those values in the corresponding boxes. Maximum distance is 99".

Continued on the next page
• **Chime Volume** - Allows the chime volume to be adjusted up or down.

• **Clipping Level** - Use this feature to protect sensitive speakers like tweeters from being driven past their capabilities. If the output signal of the interface clips the audio will be reduced by 20dB. Turning down the stereo will allow the audio to come back at a normal level. The sensitivity of this feature can be adjusted to the listening preference of the user.

• **Amp Turn On**
  - **Signal Sense** - Will turn the amp(s) on when an audio signal is detected, and keep on for 10 seconds after the last signal. This ensures the amp(s) won’t shut off between tracks.
  - **Always On** - Will keep the amp(s) on as long as the ignition is cycled on.
  - **Turn on Delay** - Can be used to delay audio output to avoid turn-on pops.

• **Subwoofer Input** - Select **Front + Rear**
Locking Down Data

Last and the most important.
You must lock down your
configuration and cycle the key!!!
## SPECIFICATIONS

<table>
<thead>
<tr>
<th>Input Impedance</th>
<th>1M Ohm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Channels</td>
<td>6</td>
</tr>
<tr>
<td>Input Options</td>
<td>High Level or Low Level</td>
</tr>
<tr>
<td>Input Type</td>
<td>Differential balanced</td>
</tr>
<tr>
<td>Input Voltage (high level range)</td>
<td>0 - 28-volts (peak-to-peak)</td>
</tr>
<tr>
<td>Input Voltage (low level range)</td>
<td>0 - 4.9-volts (peak-to-peak)</td>
</tr>
<tr>
<td>Output Channels</td>
<td>6</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>Up to 5-volts RMS</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>Equalizer Type</td>
<td>15 Band Graphic EQ, +/- 10dB</td>
</tr>
<tr>
<td>THD</td>
<td>&lt;0.03%</td>
</tr>
<tr>
<td>Frequency Response</td>
<td>20Hz - 20kHz</td>
</tr>
</tbody>
</table>

- **Crossover Filter**
  - Low pass, band pass, high pass
  - Selectable 20Hz to 20kHz
- **Crossover Frequency**
- **Crossover Slope**
- **Crossover Type**
- **Sampling**
- **S/N Ratio**
- **Operating Voltage**
- **Standby Current Draw**
- **Operation Current Draw**
- **Adjustments/Controls**
- **Remote Output**
  - Application via Bluetooth
  - 12 volts DC (signal sense or with ignition)

**Tech Support Hours (Eastern Standard Time)**
- Monday - Friday: 9:00 AM - 7:00 PM
- Saturday: 10:00 AM - 7:00 PM
- Sunday: 10:00 AM - 4:00 PM

Having difficulties? We’re here to help.

Contact our Tech Support line at:

386-257-1187

Or via email at:

techsupport@metra-autosound.com

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