Axxess 10-Channel Digital Signal Processor

- 31 Band graphic EQ
- 6 Inputs, 10 individually assignable outputs
- Independent equalization on each of the 10 outputs
- Independent high pass, low pass, and bandpass filters
- Each channel can be delayed independently up to 10ms
- Easy behind the radio installation in most applications
- Can be used with OE and aftermarket radios
- Chime control for GM/Chrysler vehicles
- Clipping detection and limiting circuits
- Bass knob included
- Retains OE voice prompts (SYNC® and OnStar®)
- Retains factory chimes including parking sensor and cross path detection alerts
- 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

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INTERFACE COMPONENTS
- AX-DSP-X interface
- AX-DSP-X harness (16-pin & 20-pin)

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

Google Play Store
iOS 12.1 or higher

Apple App Store

AxxessInterfaces.com
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REV. 9/19/19 INSTAX-DSP-X
The AX-DSP-X can be used with an aftermarket system, OEM system, and also an OEM system that is amplified with either an analog or digitally controlled (fixed signal) OEM amplifier. The AX-DSP-X can also grow as your stereo system grows. Start off by adding a subwoofer to an OEM system, then add on from there. Simply reference the Installation Options page to change the AX-DSP-X to the new system. All 10 channels of the AX-DSP-X can be assigned however needed for the installation at hand. If 10 channels of a subwoofer signal is needed, the AX-DSP-X can do it.

In the following section, Installation Options, choose the installation type, then either click on the hyperlink, or reference the page number.

It is highly suggested to use an AX-DSP-X pre-wired harness (sold separately) unless you are installing it with an aftermarket radio. As such, the instructions are written in that manner. Certain connections to the vehicle are unique per vehicle and will require the pre-wired harness to reference to.

The AX-DSP-X provides a 12v 1-amp output to turn on an aftermarket amplifier. If installing multiple amplifiers, an SPDT automotive relay will be required if the current exceeds that amount. Use Metra part number E-123 (sold separately) for best results.

If installing the AX-DSP-X behind the radio to install a sub amp, the OEM amp can be retained for mids/highs. If installing the AX-DSP-X at the OEM amp location, the OEM amp must be fully removed.

In most cases the CAN Bus wires need to be connected in order for the AX-DSP-X to communicate with the vehicle to turn on and provide an amp turn-on output.
**Aftermarket radio system:**
The AX-DSP-X can be used with an aftermarket radio to improve the overall listening experience for car audio enthusiasts. Installers will connect the RCA inputs from the AX-DSP-X to the outputs from the aftermarket radio; Front, Rear, Sub (sub is optional). When using an aftermarket radio with the AX-DSP-X, General must be chosen for the vehicle type. (refer to page 4)

**Adding a subwoofer to an OEM System:**
This feature offers the Installer the ability to add an aftermarket subwoofer to an OEM system, whether the OEM system is non-amplified, or amplified with an analog or digitally controlled (fixed signal) amplifier. If the vehicle is equipped with noise canceling mics, they must be disabled for this type of system. (refer to page 5)

**OEM System without an amplifier:**
This option allows the Installer to wire the AX-DSP-X directly to the speaker outputs from the OEM radio for an audio signal (high-level). (refer to page 6)

**OEM System with an “analog” amplifier:**
This option allows the Installer to tap directly to the output of the OEM radio and feed an audio signal into the AX-DSP-X. This type of installation requires the removal of the factory amplifier, and will provide a full range signal to the input side of the AX-DSP-X. (refer to page 7)

**OEM System with a “digitally controlled” amplifier:**
Digitally controlled systems function differently than analog systems. They have a fixed level audio signal that is controlled through the vehicle’s CAN bus. In most cases the programming content (audio) provided is just two channels, which can be either front or rear. The other channels are for content like Phone/Bluetooth, SMS reader, SYNC, or OnStar. The AX-DSP-X can retain these OEM features, and also provide a clean audio signal. This type of installation requires the removal of the factory amplifier, and will provide a full range signal to the input side of the AX-DSP-X. (refer to page 7)

**Factory Radio Systems**
1. Remove the factory radio*, then unplug all connectors.
2. Install the vehicle specific T-harness (sold separately) and make all necessary connections, but leave the amp turn-on wire disconnected.
3. Plug the 20-pin AX-DSP-X harness into the AX-DSP-X.
4. Plug the 16-pin AX-DSP-X harness into the AX-DSP-X.
5. Plug all connectors back into the OEM radio.
6. Download and install the AX-DSP-X app from the Google Play Store or Apple App Store.
7. Using the app, select the vehicle.
8. Connect the amp turn-on wire from the AX-DSP-X.
9. Test all functions of the installation, then reassemble the dash to complete the installation.

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

**Aftermarket Radio Systems**
1. Complete all necessary connections to the radio and vehicle, but leave the amp turn-on wire disconnected.
2. Plug the 20-pin AX-DSP-X harness into the AX-DSP-X.
3. Plug the 16-pin AX-DSP-X harness into the AX-DSP-X.
4. Download and install the AX-DSP-X app from the Google Play Store or Apple App Store.
5. Using the app, select the vehicle.
6. Connect the amp turn-on wire from the AX-DSP-X.
7. Test all functions of the installation, then reassemble the dash to complete the installation.
**AFTERMARKET RADIO SYSTEM**

**Aftermarket Radio**
- Bass Knob (included)

**Bass Knob**
- Do not use amp turn-on from aftermarket radio!

**RCA Jacks**
- Sold separately

**AX-DSP-X (included)**

**Optional**
- An SPDT relay, Metra part number E-123, must be used if more than one amplifier will be installed.

**Any remaining wires**
- Tape off and disregard

**Axial Cables**
- Sub
- Rear
- Front

**Assignable Outputs Labeled CH 6-10**

**Blue/White**
- Amp Turn-On Wire

**Black**
- Chassis Ground

**Yellow**
- Battery Power

**Red**
- Accessory Power

**Orange**
- Control Wire
ADDING A SUBWOOFER TO AN OEM SYSTEM

Factory Radio

Bass Knob (included)

Orange - Control Wire

Refer to pre-wired harness for wire connections

AX-DSP-X pre-wired harness (sold separately)

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

Blue/White - Amp Turn-On Wire

RCA Jacks (sold separately)

Keep Connected

Factory Harness

AX-DSP-X (included)
OEM SYSTEM WITHOUT AMP

- Factory Radio
- RCA Jacks (sold separately)
- AX-DSP-X (included)
  - Blue/White - Amp Turn-On Wire
  - Assignable Outputs Labeled CH 6-10
  - An SPDT relay, Metra part number E-123, must be used if more than one amplifier will be installed
- Factory Harness
- AX-DSP-X (included)
  - Bass Knob (included)
  - Orange - Control Wire
  - Refer to pre-wired harness for wire connections
  - AX-DSP-X pre-wired harness (sold separately)
  - Unplug Connector
- Orange - Control Wire
- Blue/White - Amp Turn-On Wire
- Refer to pre-wired harness for wire connections
  - AX-DSP-X pre-wired harness (sold separately)
OEM SYSTEM WITH AMP BYPASS HARNESS

**RCA Jacks** (sold separately)

**Factory Amp (must be removed)**

**Assignable Outputs Labeled CH 6-10**

**Factory Amp Harness**

**Speaker Wire Out to Amp(s)**

**Bass Knob (included)**

**Orange - Control Wire**

**AX-DSP-X (included)**

**AX-DSP-X pre-wired harness** (sold separately)

**Blue/White - Amp Turn-On Wire**

**Refer to pre-wired harness for wire connections**

An SPDT relay, Metra part number E-123, must be used if more than one amplifier will be installed.
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 AX-DSP-X.
Bluetooth Connection

• **Scan** - Press this button to start the Bluetooth pairing process, then select the AX-DSP-X from the mobile device. The AX-DSP-X must be powered during this process. Confirmation that you are connected will show in the top left corner of the app.

• **Disconnect** - Disconnects the AX-DSP-X 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.
**AX-DSP-X APP (CONT.)**

**Configuration**

<table>
<thead>
<tr>
<th>SETUP INSTRUCTIONS</th>
<th>BLUETOOTH CONNECTION</th>
<th>CONFIGURATION</th>
<th>OUTPUTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>CROSSOVER ADJUST</td>
<td>EQUALIZER ADJUST</td>
<td>DELAY ADJUST</td>
<td>LEVELS</td>
</tr>
</tbody>
</table>

- **Identify** - Click this button to confirm that the AX-DSP-X is connected properly. If so, a chime will be heard from the front left speaker.

- **Reset to Defaults** - Resets the AX-DSP-X to factory settings. During the reset process the amplifiers will shut off for 5-10 seconds.

- **Vehicle Type** - Select the vehicle type from the drop down box, select either **Without OE Amplifier** or **With OE Amplifier**, then click the apply button.

- **Lock Down** - Click this button to save the selected settings. **Attention!** This button must be selected before closing the app or cycling the key otherwise all settings will be lost.

- **Save Configuration** - Saves the current configuration to the mobile device.

- **Recall Configuration** - Recalls a configuration from the mobile device.

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Continued on the next page
• **Apply Configuration** - Allows a recalled configuration to the AX-DSP-X. The AX-DSP-X will need to be locked down to save the recalled configuration. This process will shut the amplifier off between 5-10 seconds while the configuration is uploaded to the AX-DSP-X.

• **About** - Displays information about the app, vehicle, AX-DSP-X, and mobile device.

• **Set Password** - Assign a 4-digit password to lock the AX-DSP-X. If no password is desired, use “0000”. This will clear out any currently set password. It is not necessary to lock down the AX-DSP-X when setting a password.

**Note:** A 4-digit only password must be chosen otherwise the interface will show “password not valid for this device”.

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**Continued on the next page**
Outputs

Amp Turn On

- **Signal Sense** - Will turn the amplifier on when an audio signal is detected, and keep on for 10 seconds past the last signal. This ensures the amplifier doesn’t shut off between tracks.

- **Always On** - Will keep the amplifiers on as long as they is cycled on.

- **Turn on Delay** - Can be used to delay amp turn-on to avoid turn-on pops.

Output Channels

- **Location** - Location of speaker.

- **Group** - Used to join channels together. Example, left front woofer/midrange and left front tweeter will be considered simply left front to the AX-DSP-X. The letter M denotes 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.
Crossover Adjust

If installing a subwoofer, the front and rear outputs will default to a 100Hz high pass filter to keep the low frequency signals out of the full range speakers. 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 to.

Selecting **High Pass** and **Low Pass** will provide one crossover frequency adjustment. Selecting **Band Pass** will provide two crossover frequency adjustments, one for low pass, and one for high pass.

<table>
<thead>
<tr>
<th>Component</th>
<th>Low Pass</th>
<th>Band Pass</th>
<th>High Pass</th>
<th>Lower Freq</th>
<th>Upper Freq</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Front</td>
<td></td>
<td></td>
<td></td>
<td>80 Hz</td>
<td>5000 Hz</td>
</tr>
<tr>
<td>Right Front</td>
<td></td>
<td></td>
<td></td>
<td>80 Hz</td>
<td>5000 Hz</td>
</tr>
<tr>
<td>Left Rear</td>
<td></td>
<td></td>
<td></td>
<td>150 Hz</td>
<td></td>
</tr>
<tr>
<td>Right Rear</td>
<td></td>
<td></td>
<td></td>
<td>148 Hz</td>
<td></td>
</tr>
<tr>
<td>Sub Woofer</td>
<td></td>
<td></td>
<td></td>
<td>36 Hz</td>
<td>113 Hz</td>
</tr>
</tbody>
</table>

Continued on the next page
Equalizer Adjust

- All channels can be adjusted independently within this tab with 31 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, up to 10 milliseconds. First measure the distance (in inches) from each speaker to the listening position, then enter those values. If a delay is desired, add to the desired channel(s), up to 99 inches.

Distance from each speaker to 'Head' position (in inches)

<table>
<thead>
<tr>
<th>Speaker Type</th>
<th>Distance (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Left Front</td>
<td>37</td>
</tr>
<tr>
<td>Right Front</td>
<td>54</td>
</tr>
<tr>
<td>Left Rear</td>
<td>27</td>
</tr>
<tr>
<td>Right Rear</td>
<td>46</td>
</tr>
<tr>
<td>Sub Woofer</td>
<td>57</td>
</tr>
<tr>
<td>Left Front Tweeter</td>
<td>26</td>
</tr>
<tr>
<td>Right Front Tweeter</td>
<td>45</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".
• **Clipping Level** - Use this feature to protect sensitive speakers like tweeters from being driven past their capabilities. If the output signal of the AX-DSP-X 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.

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

*Note:* In newer Ford vehicles chimes will be heard through the gauge cluster if the OEM amplifier is removed.

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**Continued on the next page**
Locking Down Data

Click this button to identify the AX-DSP; the chimes will play.

Resets the DSP customization settings, will not reset vehicle type. During the reset process, your amplifiers will shut off for 5-10 seconds, and then turn back on once completed.

Select the type of vehicle the AX-DSP is installed in.

Stores the current configuration of the AX-DSP.

Saves the current configuration to your device.

Recalls a configuration from your device.

Applies the recalled configuration to the AX-DSP.

Displays Information about this App and the AX-DSP.

Last and the most important. You must lock down your configuration!!!
**Input Connector**

- **Input 6** - Subwoofer Right Input
- **Input 5** - Subwoofer Left Input
- **Purple RCA Jack** - Rear Right Input *
- **Green RCA Jack** - Rear Left Input *
- **Gray RCA Jack** - Front Right Input *
- **White RCA Jack** - Front Left Input *
- **Black/Yellow** - Future Use

* Cut off RCA jack for speaker level input

**Output Connector**

- **Blue/White** - Amp Turn-On
- **Red/White** - Future Use
- **Channel 6-10** - User Assignable Outputs
- **Sub RCA Jacks** - Use Assignable Outputs
- **Purple RCA Jack** - User Assignable Output
- **Green RCA Jack** - User Assignable Output
- **Gray RCA Jack** - User Assignable Output
- **White RCA Jack** - User Assignable Output

**Connectors**

- Black - Chassis Ground
- Pink - CAN-HI
- Blue/Pink - CAN-LO
- Brown - Future Use
- Orange - Control Wire for Bass Knob
- Red - Accessory Power
- Yellow - Battery Power

**Channels**

- Channel 6-10 - User Assignable Outputs

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**PINOUT**

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**Axxess**
## Specifications

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input Impedance</td>
<td>1M Ohm</td>
</tr>
<tr>
<td>Input Channels</td>
<td>6 High/Low level Selectable</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</td>
<td>High Level Range: 0 - 28v Peak to Peak</td>
</tr>
<tr>
<td></td>
<td>Low Level Range: 0 - 4.9v Peak to Peak</td>
</tr>
<tr>
<td>Output Channels</td>
<td>10</td>
</tr>
<tr>
<td>Output Voltage</td>
<td>Up to 5v RMS</td>
</tr>
<tr>
<td>Output Impedance</td>
<td>50 Ohms</td>
</tr>
<tr>
<td>Equalizer Type</td>
<td>31 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>
<tr>
<td>Crossover</td>
<td>3-Way LPF, BPF, HPF THP per channel</td>
</tr>
<tr>
<td>Crossover Type</td>
<td>Linkwitz-Riley 24DB Slope, Fixed</td>
</tr>
<tr>
<td>Sampling</td>
<td>48kHz</td>
</tr>
<tr>
<td>S/N Ratio</td>
<td>105dB @ 5V RMS</td>
</tr>
</tbody>
</table>

## General

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Voltage</td>
<td>10 - 16VDC</td>
</tr>
<tr>
<td>Standby Current Draw</td>
<td>~7mA</td>
</tr>
<tr>
<td>Operation Current Draw</td>
<td>~150mA</td>
</tr>
<tr>
<td>Adjustments/Controls</td>
<td>Application via Bluetooth</td>
</tr>
<tr>
<td>Remote Output</td>
<td>12VDC, Signal Sense, or with Ignition</td>
</tr>
</tbody>
</table>
KNOWLEDGE IS POWER

Enhance your installation and fabrication skills by enrolling in the most recognized and respected mobile electronics school in our industry. Log onto www.installerinstitute.com or call 800-354-6782 for more information and take steps toward a better tomorrow.

Metra recommends MECP certified technicians

Having difficulties? We’re here to help.

Contact our Tech Support line at:
1-800-253-TECH

Or via email at:
techsupport@metra-autosound.com

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

Knowledge is Power

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