Axxess 10-Channel Digital Signal Processor with Water Resistant Case

INTERFACE COMPONENTS
- AXDSP-X circuit board • AXDSPX-WR harness (with gaskets) • AXDSPX-WR enclosure (w/ case, cap, and O-ring)

INTERFACE FEATURES
- Water resistant enclosure with zip tie mounts included
- 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
- Designed for motorcycle and UTV applications
- Clipping detection and limiting circuits
- Bass knob included
- 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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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

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REV. 7/30/20 INSTAXDSPX-WR
In the following section, Installation Options, choose the installation type, then either click on the hyperlink, or reference the page number.

The AXDSPX-WR 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.

The AXDSPX-WR can also grow as your stereo system grows. Start off by adding a subwoofer, then add on from there. Simply reference the Installation Options page to change the AXDSPX-WR to the new system. All 10 channels of the AXDSPX-WR can be assigned however needed for the installation at hand. If 10 channels of a subwoofer signal is needed, the AXDSPX-WR can do it.

Aftermarket radio system:
The AXDSPX-WR 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 AXDSPX-WR to the outputs from the aftermarket radio; Front, Rear, Sub (sub is optional). (refer to page 4)

Adding a subwoofer to an existing radio:
This feature offers the Installer the ability to add an aftermarket subwoofer to an existing radio. (refer to page 5)

Full range system to an existing radio:
This option allows the Installer to wire the AXDSPX-WR directly to the speaker outputs from an existing radio for a full range audio signal (high-level). (refer to page 6)
1. With the arrow stamped onto the cap facing upwards, push the 16-pin connector from the AXDSPX-WR harness into the left side of the cap. The locking clip on the connector should face upward. Make sure the gasket is seating properly in the cap. (Figure A)

2. With the arrow stamped onto the cap still facing upwards, push the 20-pin connector from the AXDSPX-WR harness into the right side of the cap. The locking clip on the connector should face upward. Make sure the gasket is seating properly in the cap. (Figure A)

3. Plug the 16-pin and 20-pin connectors from the AXDSPX-WR harness into the AXDSP-X circuit board. (Figure A)

4. Slide the assembly into the case, then click it shut. Zip-tie the enclosure to a secure location to secure it. Make sure the Axxess logo is facing up to further ensure that no outside elements can enter the enclosure.

5. Complete all necessary connections to the radio and vehicle, but leave the amp turn-on wire disconnected.

6. Download and install the AXDSP-X app from the Google Play Store or Apple App Store.

7. Open the app and follow the instructions on the Bluetooth Connection tab to pair the mobile device to the AXDSPX-WR.

8. Scroll to the Configuration tab then select General as the vehicle type.

9. Connect the amp turn-on wire from the AXDSPX-WR.

10. Adjust the DSP settings in the app as desired. Refer to the instructions starting on (page 7) for an explanation of each tab in the app. (refer to page 7)
Do not use amp turn-on from aftermarket radio!

Any remaining wires tape off and disregard

Blue/White - Amp Turn-On Wire

Orange - Control Wire

Black - Chassis Ground
Yellow - Battery Power
Red - Accessory Power

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

Do not use amp turn-on from aftermarket radio!
ADDING A SUBWOOFER TO AN EXISTING RADIO

- **RCA Jacks** (sold separately)
- **Blue/White** - Amp Turn-On Wire
- **Bass Knob** (included)
- **Factory Radio**
- **Orange** - Control Wire
- **INPUT 5**
- **INPUT 6**
- **AXDSP-X & Enclosure** (included)
- **Wire information on page 17**
  (RCA Jacks shown cut off)
- **These outputs can be used for additional sub amps, or for adding onto the system at a later date**
- **RCA Jacks** (sold separately)
FULL RANGE SYSTEM TO AN EXISTING RADIO

- Bass Knob (included)
- Factory Radio
- Orange - Control Wire
- AUXDSP-X & Enclosure (included)
- Blue/White - Amp Turn-On Wire
- RCA Jacks (sold separately)
-Assignable Inputs Labeled CH 6-10
-An SPDT relay, Metra part number E-123, must be used if more than one amplifier will be installed

Wire information on page 17 (RCA Jacks shown cut off)
Setup Instructions

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 AXDSP-X.
Bluetooth Connection

**Scan** - Press this button to start the Bluetooth pairing process, then select the AXDSP-X from the mobile device. The AXDSP-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 AXDSP-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.
Continued on the next page
Configuration (Cont.)

• **About** - Displays information about the app, AXDSP-X, and mobile device.

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

---

<table>
<thead>
<tr>
<th>CONNECTED TO AXDSP-X META LBO7 40</th>
<th>704BD538</th>
<th>(47)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SETUP INSTRUCTIONS</strong></td>
<td><strong>BLUETOOTH CONNECTION</strong></td>
<td><strong>CONFIGURATION</strong></td>
</tr>
<tr>
<td>CROSSOVER ADJUST</td>
<td>EQUALIZER ADJUST</td>
<td>DELAY ADJUST</td>
</tr>
</tbody>
</table>

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

**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**
Stores the current configuration into the AX-DSP

**SAVE CONFIG**
Saves the current configuration to your device

**RECALL CONFIG**
Recalls a configuration from your device and applies the recalled configuration to the AX-DSP

**ABOUT**
Displays Information about this App and the AX-DSP

**SET PASSWORD**
Changes password for accessing the AX-DSP
## Outputs

### Output Channels

<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>
<tr>
<td>6</td>
<td>Not Used</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Not Used</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Not Used</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Not Used</td>
<td>None</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Not Used</td>
<td>None</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **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 AXDSP-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

<table>
<thead>
<tr>
<th>Crossover Adjust</th>
<th>Equalizer Adjust</th>
<th>Outputs</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Setup Instructions</strong></td>
<td>Bluetooth Connection</td>
<td>Configuration</td>
</tr>
<tr>
<td><strong>Crossover Adjust</strong></td>
<td><strong>Equalizer Adjust</strong></td>
<td><strong>Outputs</strong></td>
</tr>
<tr>
<td>○ Band Pass</td>
<td>○ High Pass</td>
<td>○ Low Pass</td>
</tr>
<tr>
<td>○ Band Pass</td>
<td>○ High Pass</td>
<td>○ Low Pass</td>
</tr>
<tr>
<td>○ Band Pass</td>
<td>○ High Pass</td>
<td>○ Low Pass</td>
</tr>
<tr>
<td>○ Band Pass</td>
<td>○ High Pass</td>
<td>○ Low Pass</td>
</tr>
</tbody>
</table>

**Right Front**
- Lower Freq: 100 Hz

**Left Rear**
- Lower Freq: 100 Hz

**Right Rear**
- Lower Freq: 100 Hz

**Sub Woofer**
- Upper Freq: 100 Hz

- 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.

*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’.
Inputs/Levels

<table>
<thead>
<tr>
<th>Connected to AXDSP-X Metra 6852039 (64)</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SETUP INSTRUCTIONS</td>
<td>BLUETOOTH CONNECTION</td>
<td>CONFIGURATION</td>
<td>OUTPUTS</td>
</tr>
<tr>
<td>CROSSOVER ADJUST</td>
<td>EQUALIZER ADJUST</td>
<td>DELAY ADJUST</td>
<td>INPUTS/LEVELS</td>
</tr>
</tbody>
</table>

- **Clipping Level** - Use this feature to protect sensitive speakers like tweeters from being driven past their capabilities. If the output signal of the AXDSP-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** - Not applicable in this application.

- **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.

- **Subwoofer Input** - For selecting either a dedicated subwoofer input or summed from the front and rear inputs.

The Chime Volume control is provided to prevent warning tones from being overly loud. High sets the chimes to their maximum level, Low sets them to their minimum level.

The AX-DSP can detect clipping of the audio signals and reduce the level for a period of time to prevent damage to the speakers.

The AMP ON line can be turned on whenever accessory power is on, or only when a signal is detected from the radio.

The Subwoofer output can be driven from the sum of the Front and Rear inputs, or it can be from the Subwoofer input.
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!!!
**PINOUT**

### 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

- **Black** - Chassis Ground
- **Pink** - Not applicable in this application
- **Blue/Pink** - Not applicable in this application
- **Brown** - Future Use
- **Orange** - Control Wire for Bass Knob
- **Red** - Accessory Power
- **Yellow** - Battery Power

- **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
## Specifications

<table>
<thead>
<tr>
<th><strong>Specifications</strong></th>
<th></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>0 - 28v Peak to Peak</td>
</tr>
<tr>
<td>High Level Range</td>
<td></td>
</tr>
<tr>
<td>Low Level Range</td>
<td>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>
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<tr>
<td>Equalizer Type</td>
<td>31 Band Graphic EQ, +/- 10dB</td>
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<td>THD</td>
<td>&lt;0.03%</td>
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<td>Frequency Response</td>
<td>20Hz - 20kHz</td>
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<tr>
<td>Crossover</td>
<td>3-Way LPF, BPF, HPF THP per channel</td>
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<tr>
<td>Crossover Type</td>
<td>Linkwitz-Riley 24DB Slope, Fixed</td>
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<tr>
<td>Sampling</td>
<td>48kHz</td>
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<tr>
<td>S/N Ratio</td>
<td>105dB @ 5V RMS</td>
</tr>
</tbody>
</table>

## General

<table>
<thead>
<tr>
<th><strong>General</strong></th>
<th></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