Axxess Digital Signal Processor

INTERFACE FEATURES

- 31 Band graphic EQ
- 6 Inputs and 6 Outputs, including front, rear and subwoofer
- Selectable High and Low level inputs
- Front, rear and subwoofer outputs have an independent two-way crossover in-line with the EQ
- Front and rear outputs can be delayed independently up to 10ms
- Easy behind the radio installation
- Can be used with OE and aftermarket radios

- Chime control for vehicles with amp-generated chimes (When retaining OEM radio)
- Retains Sonar sensors in vehicles where the tone is provided by the amplifier (when retaining OEM radio)
- Clipping detection and limiting circuits
- Retains OE voice prompts (SYNC and OnStar)
- Settings adjusted via Bluetooth application, compatible with both Android and Apple devices
- Read, Write, and Store your configuration for future recall

INTERFACE COMPONENTS

- DSP interface
- Universal harness

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TOOLS REQUIRED

- Cutting tool • Crimping tool • Tape
- Connectors (example: butt-connectors, bell caps, etc.)

CAUTION! All accessories, switches, climate controls panels, and especially air bag indicator lights must be connected before cycling the ignition. Also, do not remove the factory radio with the key in the on position, or while the vehicle is running.
**INSTALLATION OPTIONS**

**Attention!** Axxess has created a line of vehicle specific T-harnesses for the AX-DSP. We highly recommend that you purchase the T-Harness to cut down on installation time and mistakes. Please visit www.axxessinterfaces.com for T-harness options.

**OE Radio with Digital Amplifier**
Digital systems work differently from analog. They have a fixed level output that is controlled through the vehicle’s CAN Bus. Most of the time the programming content (audio) is provided through two channels, this can be front or rear. The other channels are for content like Phone/Bluetooth, SMS reader, SYNC, or OnStar. The AX-DSP retains these OE features.

**Adding a Subwoofer to OE System**
This feature offers the installer the ability to add a subwoofer to an OE system. Whether the OE amplifier is digital or analog, the AX-DSP will output a usable signal to feed the aftermarket amplifier while maintaining the OE features.

**OE Radio with Analog Amplifier**
This option will allow the installer to tap directly to the output of the factory radio and feed signal into the DSP.

**Aftermarket Radio System**
The AX-DSP can be used in the aftermarket environment to improve the overall listening experience for car audio enthusiasts. Installers will plug the RCA inputs of the AX-DSP into the output of the aftermarket radio and continue with the normal installation process. When using an aftermarket radio and setting up the DSP in the Configuration tab, General must be chosen from the vehicle type button.

**OE Radio without factory amplifier**
This option will allow the installer to wire directly into the output of the factory radio for signal and feed it through the DSP to the aftermarket amplifiers. In many cases the CAN Bus wires need to be connected in order for the DSP to communicate with the vehicle to turn on and give your installer a 12-volt 150mA remote turn-on output.

**INSTALLING THE AX-DSP**

It is highly advisable to read the following steps beforehand, to ensure a clear understanding of what is to be expected. The following steps must be done in the order that they are numbered.

**With the vehicle completely off:**

**AX-DSP is designed to be installed behind the OE radio:**

1. Download AX-DSP app from Google Play Store or the Apple Store.
2. Remove the factory radio, we recommend you refer to www.metraonline.com, use our vehicle fit guide to get dash disassembly instructions.
3. Unplug all connectors from radio.
4. Install vehicle specific T-harness.
5. Plug 20-Pin AX-DSP harness into the DSP.
6. Plug 16-Pin output harness into the DSP.
7. Plug all connectors back into factory radio.
8. Plug in all applicable RCA's, leave amplifier turn on wire disconnected until DSP setup is complete.
9. Using the app, select the vehicle.
10. Connect the amplifier turn-on wire.
11. Test and reassemble.
**WIRE DESCRIPTION (20-PIN MICROFIT)**

**Pin 1 - RED - Accessory 12-volt**
- Connect this wire to 12-volt accessory that comes on when the key is in the run position.
  
  **Note:** If your vehicle does not have an accessory wire at the radio, cap off and disregard the wire.

**Pin 2 - BROWN - Not in use**

**Pin 3 - PINK - CAN High (CAN +)**
- This wire is connected to the CAN Bus wire in the radio connector. Consult the vehicle specific manual to the wire locations. (All CAN Bus wires must be soldered)

**Pin 4 - BLACK/YELLOW - Future use, do not connect**

**Pin 5 - WHITE/BLACK - Front Left Speaker (-)**
- Connect to the front left signal wire from the OE radio to this wire.

**Pin 6 - GREY/BLACK - Front Right Speaker (-)**
- Connect to the front right signal wire from the OE radio to this wire.

**Pin 7 - GREEN/BLACK - Rear Left Speaker (-)**
- Connect to the rear left signal wire from the OE radio to this wire.

**Pin 8 - PURPLE/BLACK - Rear Right Speaker (-)**
- Connect to the rear right signal wire from the OE radio to this wire.

**Pins 9 & 19 - RCA Input 5**
- Alert input that is required on some Ford models, installation manual will reference when required. In aftermarket applications, this will be the subwoofer input from your aftermarket radio.

**Pins 10 & 20 - RCA Input 6**
- TBD

**Pin 11 - YELLOW - Constant 12-volt Supply**
- Connect to the 12-volt constant wire in the radio harness.

**Pin 12 - ORANGE - Control Wire for AX-BASSKNOB**
- This wire gets connected to the **Orange** wire of the AX-BASSKNOB, this is an optional accessory (sold separately) and allows external control of the subwoofer level.

**Pin 13 - BLUE/PINK - CAN Low (CAN -)**
- This wire is connected to the CAN Bus wire in the radio connector. Consult the vehicle specific manual to the wire locations. All CAN Bus wires should be soldered.

**Pin 14 - BLACK - Ground**
- This wire gets connected to the ground wire in the factory radio harness.

**Pin 15 - WHITE - Front Left Speaker (+)**
- Connect to the front left signal wire from the OE radio to this wire.

**Pin 16 - GREY - Front Right Speaker (+)**
- Connect to the front right signal wire from the OE radio to this wire.

**Pin 17 - GREEN - Rear Left Speaker (+)**
- Connect to the rear left signal wire from the OE radio to this wire.

**Pin 18 - PURPLE - Rear Right Speaker (+)**
- Connect to the rear right signal wire from the OE radio to this wire.
**WIRE DESCRIPTION (16-PIN MICROFIT)**

**16-pin Microfit**

- White (+) and White/Black (-) RCA Output - Left Front speaker
- Gray (+) and Gray/Black (-) RCA Output - Right Front Speaker
- Green (+) and Green/Black (-) RCA Output - Left Rear Speaker
- Purple (+) and Purple/Black (-) RCA Output - Right Rear Speaker
- Red and White RCA Output - Subwoofer
- Red Single RCA - CH 6 Output

**Pin 16 – Blue/White Remote Turn-on**

- Provides 12-volt output for aftermarket amplifiers. This is a 150mA remote turn-on, Axxess recommends that a relay be added when connecting more than 150mA amplifiers.
- DO NOT USE remote turn-on from the aftermarket radio, use turn-on from DSP.

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**DSP APPLICATION**

The AX-DSP is a free application that can be found in the Google Play Store and iTunes. We recommend download on a tablet with a larger screen for easier viewing.

**Bluetooth Connection** - Set-up and Disconnect from the AX-DSP device.

- **Scan** - Hit the Scan button and select your AX-DSP from the available devices. Conformation that you are connected to the DSP will show in the top left corner of your screen.
- **Disconnect** - Disconnects your AX-DSP from the application.
DSP APPLICATION (CONT)

Configuration - Select your vehicle and save your configured files for future recall.

- **Identify** - Click this button to confirm the AX-DSP is connected properly. Chimes will be generated from the front left speaker confirming the AX-DSP is working.

- **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.

- **Lock Down** - This is a very important button. This saves all your settings and must be hit before you exit the app or cycle the ignition. If you fail to hit the “Lock Down” button, all your information will be lost.

- **Vehicle Type** - Select the vehicle from the drop down box. Select the vehicle, then select “Without OE Amplifier” or “With OE Amplifier” before the apply button can be selected. This will load the vehicle parameters into the AX-DSP.
Configuration (Cont)

- **Save Configuration** - Saves the current configuration to the smart device memory stored on tablet.
- **Recall Configuration** - Recalls a configuration from the smart device from the device and into the app.
- **Apply Configuration** - Applies the recently recalled configuration to the AX-DSP. This process will shut the amplifier off between 5-10 seconds while the settings are being loaded into the AX-DSP.
  
  **Note:** The Lock Down process still needs to happen, this only applies the configuration.
- **Delete Configuration** - Delete unused or old file from the device.
- **About** - Displays information about this app, the vehicle that has been selected and the AX-DSP.

Continued on the next page
Inputs - Adjusting the way the inputs are installed.

- **Subwoofer Input: Front + Rear** - When using an OE radio, the subwoofer signal will be summed from the front and rear signals.

  Subwoofer - Select this option to use the subwoofer output signal when using an aftermarket unit.

- **Input Level Select** - Use this section to indicate the option that was used for installation, low level (RCAS) or high level (wire-to-wire). If using a T-harness the option will be high level.

- **Amplifier Turn-on**

  Signal Sense - Will turn-on the amplifier any time audio is detected, and keep it on for 10 seconds past the last signal (so the amplifier doesn’t shut off between tracks). The main benefit of this is to prevent hiss when the radio is off.

  Always on - Will keep your amplifiers on when the vehicle ignition is on and will shut off with your ignition.
Crossover Adjust - If a subwoofer is being installed, the front and rear outputs are set up with a 100Hz high pass filter, to keep the low bass out of the mid-range speakers. If a subwoofer is not being used, drag the front and rear crossover points down to 20Hz for full range. The crossover points can be moved around to fit the installations specific needs.

Equalizer Adjust - The fronts, rears, and subwoofer can be adjusted independently within this tab. We offer 31 bands of equalization. The subwoofer gain can also be adjusted here, but start with the gain settings on the aftermarket amplifiers, and then fine tune them here. Get an RTA (Real Time Analyzer), or do it by ear.
Delay Adjust - Allows for the user to adjust the delay of each speaker, up to 10 milliseconds. Measure the distance from each speaker to the listening position and enter those values in inches into the corresponding locations on the app.

Clipping Level - This is designed to protect tweeters, which get damaged when the volume of the audio is driven past the capabilities of the electronics. If the output signal of the AX-DSP clips, the audio will be reduced by 20dB, which is done intentionally. Turn it down a little, and your audio comes back. You can set the sensitivity of this function, depending on your customers’ listening preferences.
DSP APPLICATION (CONT.)

- **Chime Volume** -
The best way to identify if the vehicle requires the AX-DSP to generate the chimes is to leave the OE amplifier connected and disconnect the OE radio, with ignition off and the driver’s door open, turn-on the headlights. If chimes are heard coming through the factory speakers, there is a digital amplifier and the chime feature will be required to maintain that feature in the vehicle.

**Note:** If the OE amplifier produces the vehicle’s chimes, use this feature to add them back into the system.

**Note:** The slider bar will control the volume of the chime. 10 sets the chimes to their maximum level and 1 sets them to the minimum level.

**Note:** In newer Ford vehicles, when disconnecting the OE amplifier, chimes and sensor sounds will re-direct to sound through the gauge cluster.

Last and the most important:
You Must Lock Down Your Configuration!!!