ALCHIMIST

DSP Installation Guide

Step-by-Step Setup for All Alchimist DSP Models

Introduction

Thank you for choosing an Alchimist DSP processor. This guide provides comprehensive installation instructions applicable to all Alchimist DSP models. Please read all safety warnings before beginning installation.

Safety Warnings

- Disconnect the vehicle battery before starting installation.
- Do not install the unit in locations exposed to excessive heat, moisture, or vibration.
- Use only the supplied wiring harness and connectors.
- Ensure all connections are secure and properly insulated.
- Do not modify the unit or open the enclosure; doing so voids the warranty.
- Route cables away from moving parts and heat sources.

Hardware Installation

Required Tools

- Wire strippers, crimping tool, and soldering iron
- Phillips and flathead screwdrivers
- Multimeter for voltage and continuity testing
- Zip ties and adhesive cable management clips
- RCA cables (appropriate length for your vehicle)

Installation Steps

1. Disconnect the negative terminal of the vehicle battery.
2. Choose a mounting location that is flat, dry, and accessible (under a seat or in the trunk).
3. Mount the DSP unit securely using the supplied brackets and screws.
4. Connect the high-level input harness to the factory head unit speaker outputs.
5. Connect RCA output cables from the DSP to your amplifier(s).
6. Connect the remote turn-on wire (blue) to the head unit remote output or ACC.
7. Connect the ground wire (black) to a solid chassis ground point within 18 inches.
8. Connect the 12V constant power wire (red) through the supplied fuse holder to the battery.
9. Reconnect the vehicle battery and verify the DSP powers on.
10. Secure all wiring with zip ties and ensure nothing interferes with vehicle operation.

Software Setup

PC Connection

1. Download the Alchimist DSP software from www.alchimists.com/downloads.
2. Install the software and USB drivers on your Windows PC.
3. Connect the DSP unit to your PC using the supplied USB cable.
4. Launch the software; the unit should be detected automatically.
5. Select your DSP model from the device list to load the correct channel configuration.

Android / iOS Connection

1. Download the 'Alchimist DSP' app from Google Play Store or Apple App Store.
2. Enable Bluetooth on your mobile device.
3. Power on the DSP unit and put it in pairing mode (hold the BT button for 3 seconds).
4. Open the app and select your DSP unit from the discovered devices list.
5. The app will sync with the DSP and display the tuning interface.

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EQ Configuration Guide

All Alchimist DSP models feature a 31-band parametric equalizer per channel. This allows precise correction of your vehicle's acoustic characteristics.

1. Start with all EQ bands set to 0 dB (flat response).
2. Play a pink noise test track or frequency sweep through the system.
3. Using an RTA (real-time analyzer) app or measurement microphone, identify frequency peaks and dips.
4. Reduce peaks by lowering the corresponding EQ band by 2-3 dB at a time.
5. Boost dips gently (no more than +3 dB) to fill in missing frequencies.
6. Fine-tune using music you are familiar with, listening for natural tonal balance.
7. Save your tuning preset in one of the available memory slots.

Crossover Settings Guide

Recommended crossover settings for common system configurations:

Driver	Frequency	Slope	Filter Type
Tweeters	HP 3.5-5 kHz	12-24 dB/oct	Butterworth / LR
Mid-range	BP 250 Hz - 3.5 kHz	12-24 dB/oct	Butterworth / LR
Mid-bass	BP 80-250 Hz	12-24 dB/oct	Butterworth / LR
Subwoofer	LP 60-80 Hz	24 dB/oct	Linkwitz-Riley

Time Delay Alignment

Time alignment compensates for the different distances between each speaker and the listening position. Measure the distance from each speaker to the primary listening position (driver's seat head position) and enter the values in the DSP software.

Formula: Delay (ms) = (Farthest distance - Speaker distance) / 343 x 1000. The farthest speaker gets 0 ms delay; all closer speakers receive positive delay values.

Troubleshooting FAQ

Problem	Solution
No power	Check fuse, 12V connection, and ground wire
No sound output	Verify input source selection and RCA connections
Distorted sound	Reduce input gain; check for clipping in DSP software
Bluetooth won't pair	Reset BT module: hold BT button 10 seconds
USB not detected	Install latest USB drivers; try different USB port
Engine noise/whine	Use ground loop isolator; verify single ground point
Uneven volume	Check channel levels and time alignment settings
Software crashes	Update to latest firmware and software version