



KICKER®

Owner's Manual

KEYLOC

DSP-Powered Line Output Converter

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Overview

IMPORTANT SAFETY WARNING

PROLONGED CONTINUOUS OPERATION OF AN AMPLIFIER, SPEAKER, OR SUBWOOFER IN A DISTORTED, CLIPPED OR OVER-POWERED MANNER CAN CAUSE YOUR AUDIO SYSTEM TO OVERHEAT, POSSIBLY CATCHING FIRE AND RESULTING IN SERIOUS DAMAGE TO YOUR COMPONENTS AND/OR VEHICLE. AMPLIFIERS REQUIRE UP TO 4 INCHES (10CM) OPEN VENTILATION. SUBWOOFERS SHOULD BE MOUNTED WITH AT LEAST 1 INCH (2.5CM) CLEARANCE BETWEEN THE FRONT OF THE SPEAKER AND ANY SURFACE. KICKER PRODUCTS ARE CAPABLE OF PRODUCING SOUND LEVELS THAT CAN PERMANENTLY DAMAGE YOUR HEARING! TURNING UP A SYSTEM TO A LEVEL THAT HAS AUDIBLE DISTORTION IS MORE DAMAGING TO YOUR EARS THAN LISTENING TO AN UNDISTORTED SYSTEM AT THE SAME VOLUME LEVEL. THE THRESHOLD OF PAIN IS ALWAYS AN INDICATOR THAT THE SOUND LEVEL IS TOO LOUD AND MAY PERMANENTLY DAMAGE YOUR HEARING. PLEASE USE COMMON SENSE WHEN CONTROLLING VOLUME.

In addition to providing you with a preamp-level signal for use with aftermarket amplifiers, the KEYLOC revolutionizes the audio installation and tuning process by automatically detecting the available frequency response for an input signal, and detecting and defeating factory EQ, time-delay or single all-pass filter.

This DSP-powered dynamo strips the factory audio of coloration and filters, while correcting and maximizing available frequencies. This allows you to get to the important work of tuning your audio system with the ease and confidence that come from knowing you're working with a clean signal.

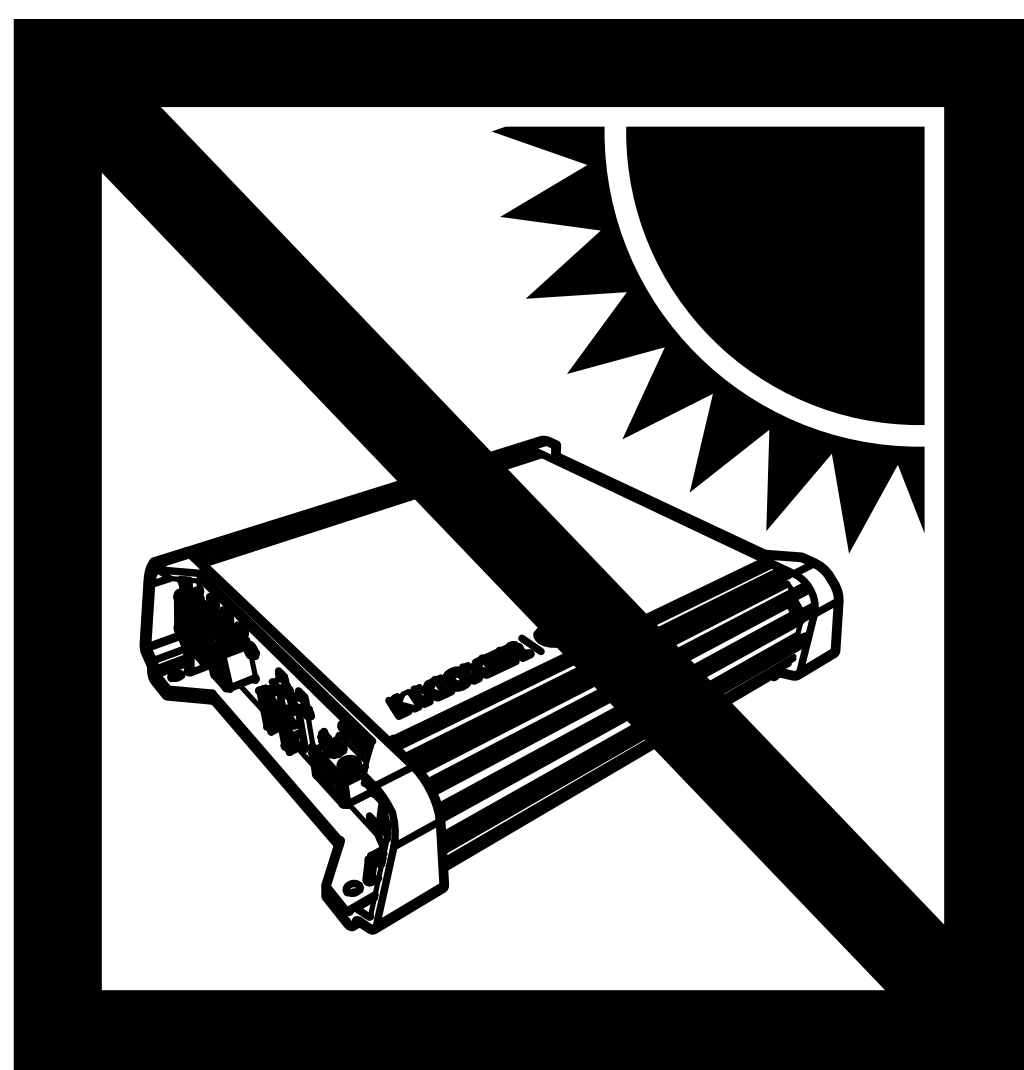
With a simple, step-by-step detection and calibration process, your aftermarket installs are about to get a lot easier, with results you can hear!

Specifications

Model:

KEYLOC

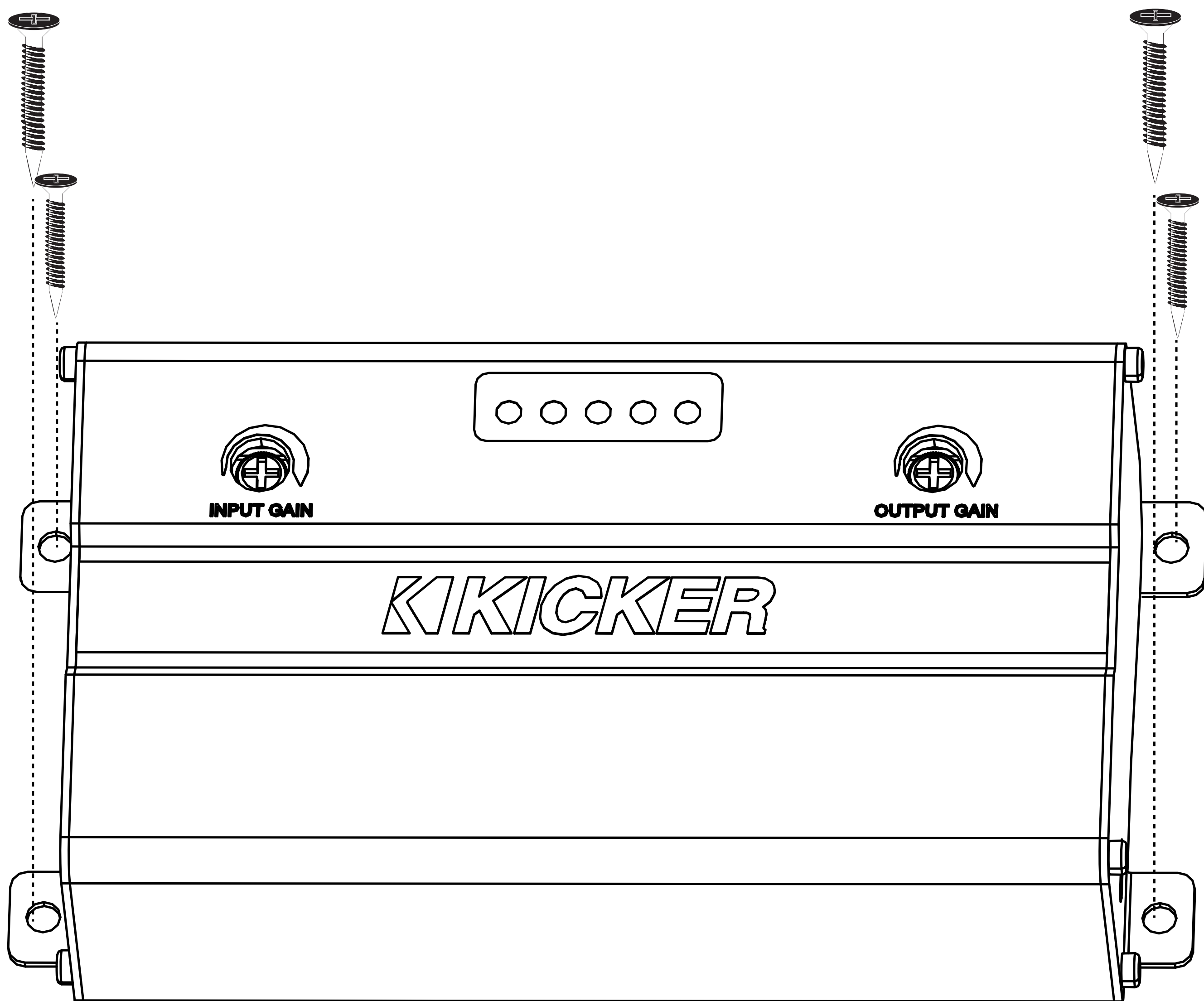
Rated Output per channel 1KHz @ 14.4V, $\leq 1\%$ THD+N	10V
Length [in, cm]	5-1/2, 14
Height [in, cm]	1-3/8, 3.5
Width [in, cm]	2-3/4, 7.1
Frequency Response	20Hz–20kHz
Signal-to-Noise Ratio	>90dB, A-weighted, re: rated power
Input Sensitivity	Lo: 250mV–10V - Fixed 60 Ω Load Hi: 1V–40V



Installation

Mounting

Choose a structurally sound location to mount the KEYLOC. Make sure there are no items behind the area where the screws will be driven. If possible, mount the KEYLOC behind the dash or in the climate-controlled passenger compartment. Drill four holes using a $7/64$ " (3mm) bit and use the supplied #8 screws to mount.



Wiring

Disconnect the vehicle's battery to avoid an electrical short. Then connect the ground wire to the KEYLOC. Make the ground wire short, 24" (60cm) or less, and connect it to a paint-and-corrosion-free, solid, metal area of the vehicle's chassis. Keep the audio signal cable away from factory wiring harnesses and other power wiring. If you need to cross this wiring, cross it at a 90 degree angle. Connect your source units speaker outputs to the KEYLOC speaker inputs. When interfacing into factory speaker wires it is recommended to splice and solder, If you need to use wire taps make sure you use proper sized wire taps to ensure a solid connection.

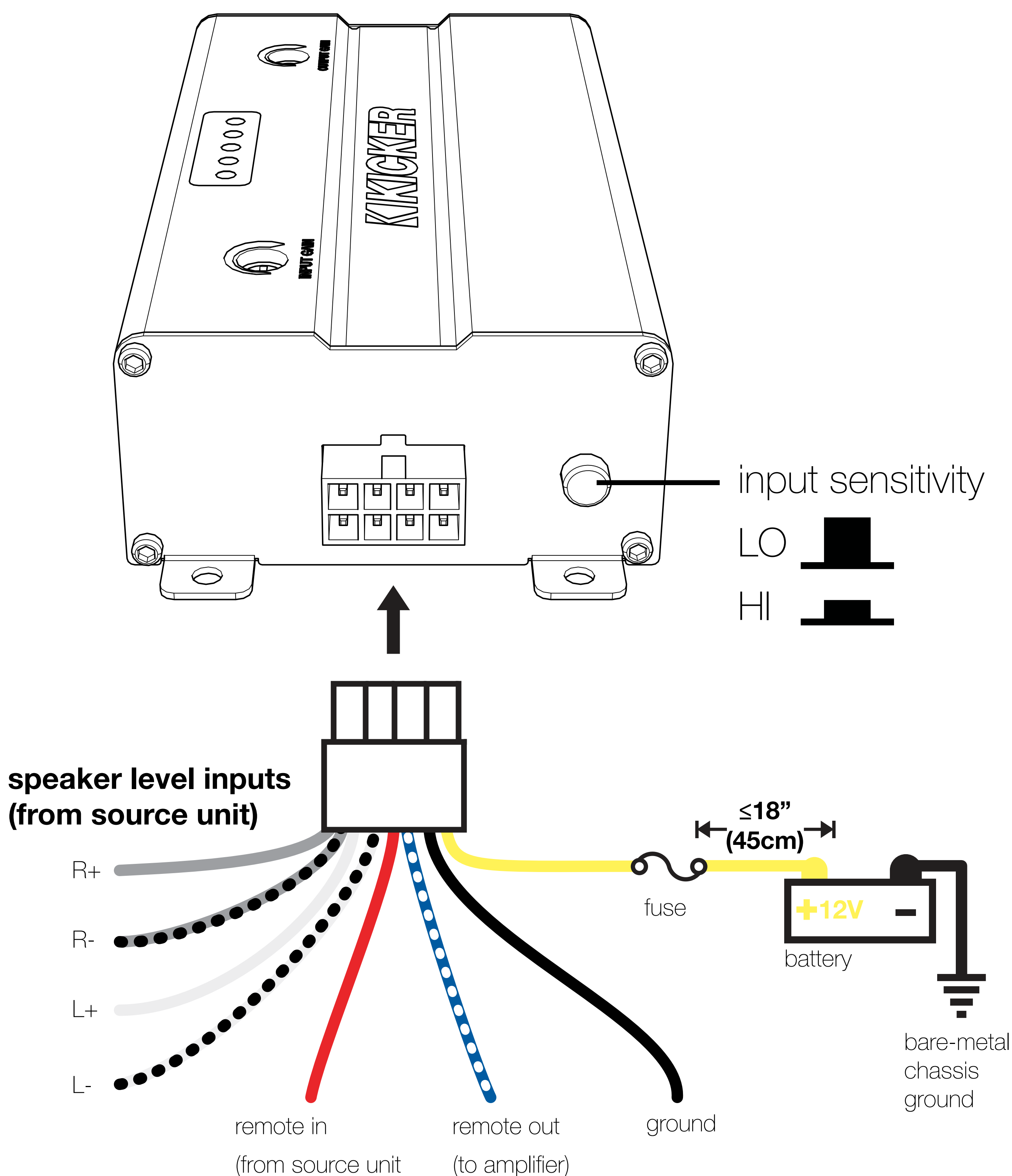
If your head unit has a remote output you can connect this to the remote input of the KEYLOC. If your head unit does not have a remote output, the KEYLOC can use the DC offset that is present on the speaker outputs of most factory head units. To measure for DC offset, connect your multimeter's negative lead to the vehicle's chassis ground, the positive lead to the speaker wire you are interfacing with, and set the multimeter to 'DC volts'. When the source unit you're using is on, you should see DC voltage from between 2.5V–6V. The KEYLOC will sense this DC offset to turn on, and output 12V on its own remote output (up to 100mA) to turn on your aftermarket amplifier(s).

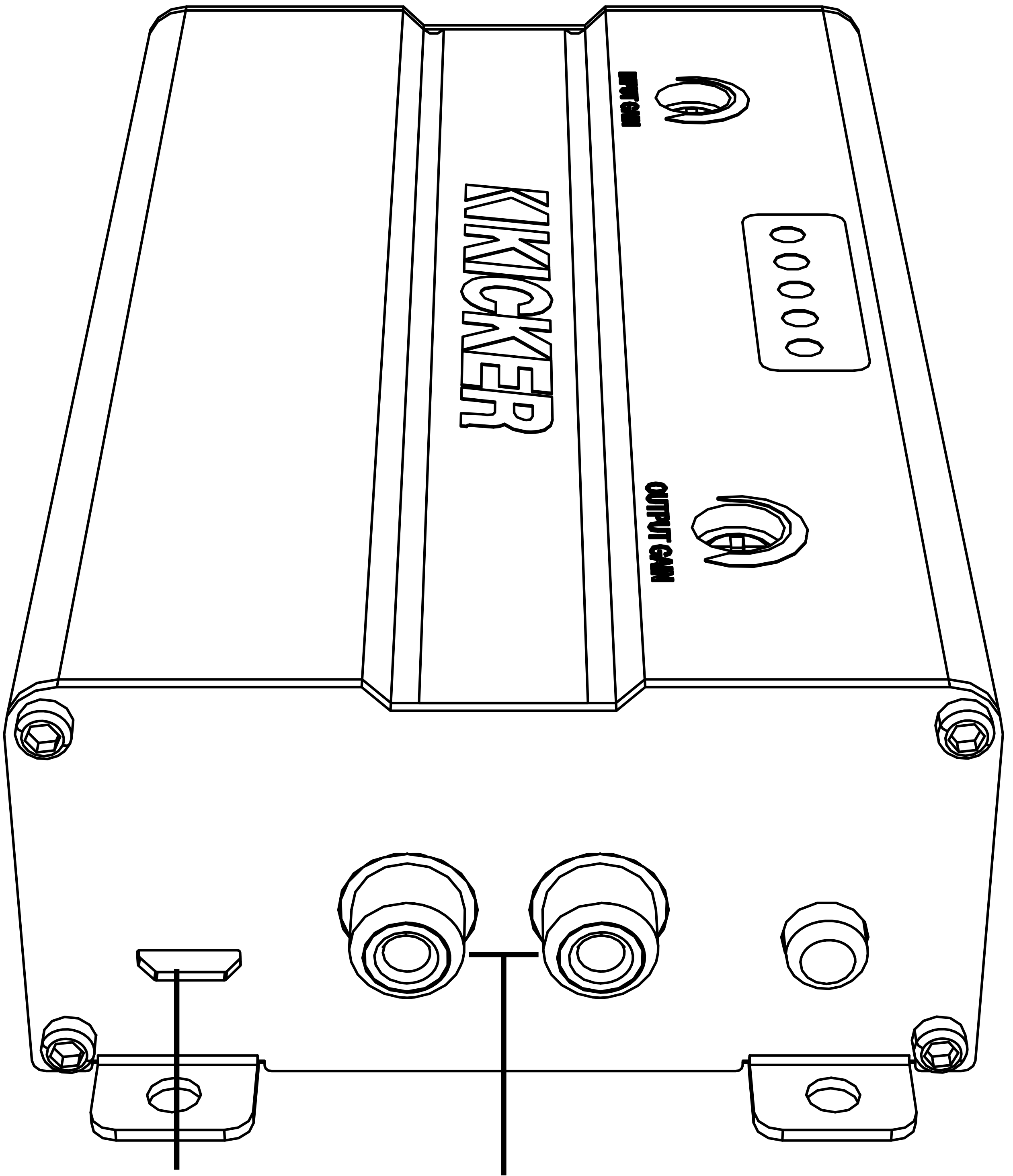
Test the output voltage of the audio source before selecting the input level setting. In general, if your input signal is coming from the source unit, use the LO Level Input Sensitivity setting. If your input signal is coming from a factory amplifier, use the HI Level Input Sensitivity setting. The LO range can accept

125mV-10V. The HI range can accept 1V – 40 V. The KEYLOC can output up to 10V of preamp RCA level output, adjustable with the Output Gain knob.

In the LO range, there is a 60Ω load for use with newer smart radios that shut off their outputs if they do not detect a speaker. If there is a need to load a source unit that has an output voltage greater than 10V, please use the KISLOAD products instead of the KEYLOC's built in load resistors.

Install a 2A fuse between the KEYLOC and battery. The fuse should be within 18" (45cm) of the power source and in-line with the harness' yellow power cable, which is connected to the KEYLOC. Connect the preamp-level RCA outputs to your amplifier.





USB for internal use only

RCA Outputs (to amplifier)

Operation

The KEYLOC is a 2-channel DSP based active line output converter with the following features.

Automatic Turn-on: DC offset remote input turn-on, and remote output turn-on (100mA) to turn on other products.

Frequency Response Correction: Smooths frequency response of two channels from your source unit via EQ correction. It can fix EQs with Qs ranging from 0.5-10 with up to +/- of 12dB of boost or cut.

Factory Time Delay Defeat: Ranging from .06mS – 10mS, the algorithm is accurate down to .06mS.

ALL-Pass Filter Defeat: The KEYLOC can correct up to three all-pass filters on one channel. The All-pass filters can have a Q ranging from 0.5–3.5, as long as they do not interact with the other All-Pass filter's phase.

Passive Frequency Detection: Before running the KEYLOC setup process, it is in passive frequency detection mode. You can use this mode to detect what band of frequencies are available on the given speaker outputs that the KEYLOC is connected to.

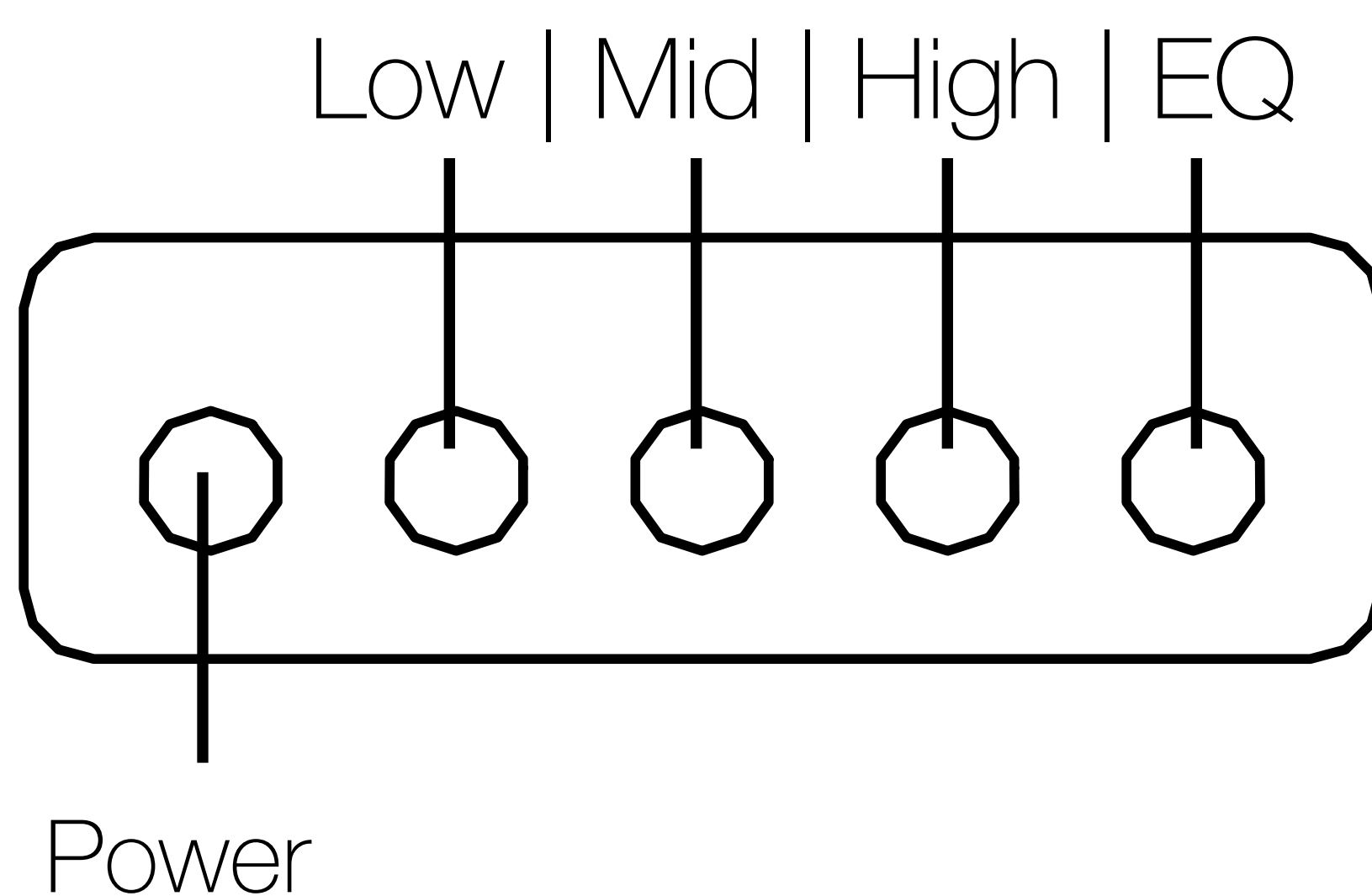
Signal Identification

The KEYLOC will help you identify the correct OEM wires to which you should connect using the following steps:

1. Turn the Input Gain on the KEYLOC all the way down.
2. Turn the audio source up to at least 1/2 volume.
3. Play the Pink Noise track from
4. Turn the Input Gain up slowly until Low, Mid, and High LEDs begin to light up.

The Low, Mid, and High LEDs will turn on to indicate the frequency range that has been detected. They will alternately blink for left and right channels every half second. If both channels are the same, the LED(s) will be solid. The LED that lights up first will be the best application for the signal you are currently receiving. The more gain you must add to light up the remaining LEDs, the less signal is available for those applications.

Status LEDs



Frequency Detection

Low

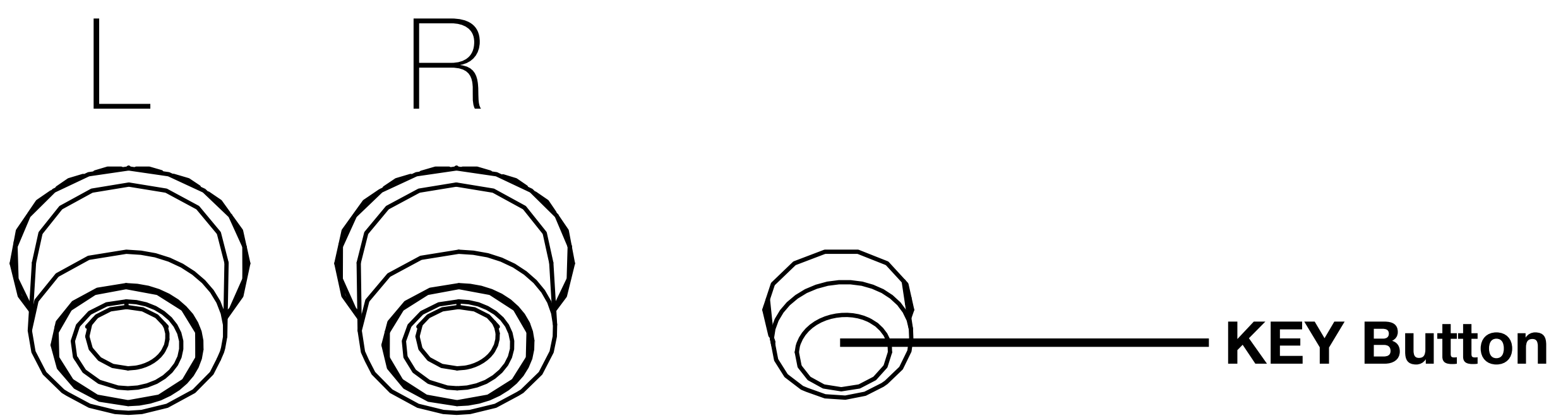
20Hz–200Hz

Mid

200Hz–2kHz

High

2kHz–20kHz



Signal Restoration

Once the KEYLOC has been wired and mounted, you're ready to analyze and repair the signal from your source unit. These are custom audio files that, when played from your source unit to the KEYLOC, will allow the KEYLOC to determine what frequency, coloration, and staging corrections to make.

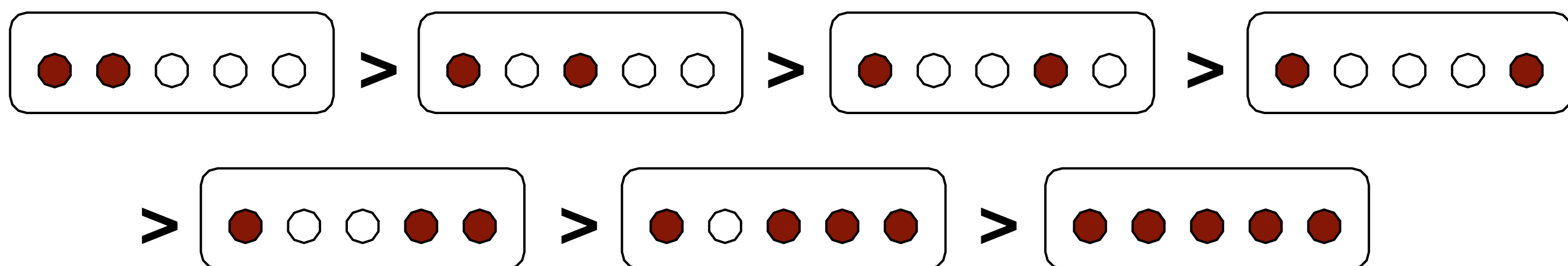
During the key process if you accidentally push the KEY button before playing the NOISE FLOOR track, the KEYLOC will have an error and all LEDs will flash. You must then press the KEY button to exit the KEY process. You will need to re-enter the KEY process to start again if you do this.

Automatic Setup:

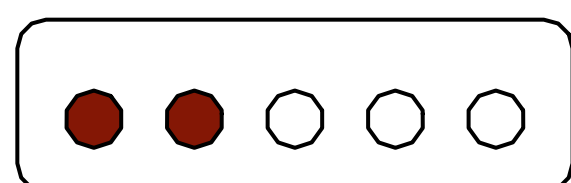
1. Verify the input gain of the KEYLOC is turned all the way down. Set the source unit between $\frac{1}{2}$ and $\frac{3}{4}$ volume, or just before it starts to clip. Make sure all tone controls (Bass, Mid, Treble) are set to flat. *It is very important that the source unit's audio outputs are not being clipped for the KEYLOC to properly flatten the EQ. DO NOT USE A 0dB SINEWAVE TEST TONE.* The GainMatch track will sweep frequencies from 20Hz–20kHz. Watch the wave form on the oscilloscope to see if your source unit is clipping. As the GainMatch track sweeps, slowly turn the source unit up until you see any clipping on the oscilloscope. Turn the source unit down until you no longer see any clipping (KICKER has observed factory source units that exhibit clipping at as low as $\frac{1}{3}$ volume at certain frequencies). This will be the loudest unclipped volume level available from the factory source unit. If you do not have an oscilloscope and you do not get the desired flattening results from the KEYLOC after you run the setup process, turn the source unit down $\frac{1}{4}$ from where you started and run the setup again.

2. Press and hold the KEY Button for 8 seconds. You will see the LEDs sweep from 1 – 4 and then 4 – 1. Release the KEY Button and LED 1 will light up, LEDs 2 – 4 will be off.

Press



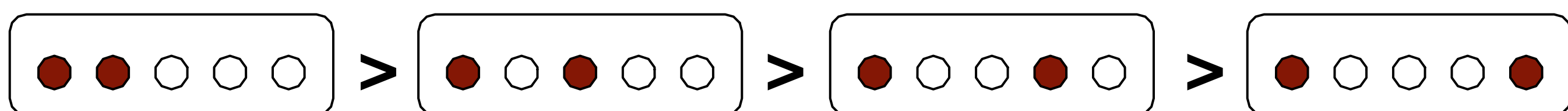
Release



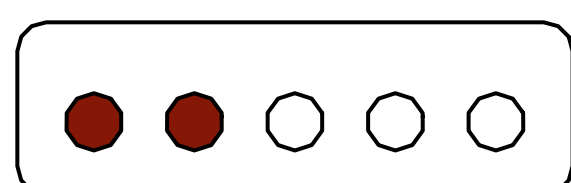
3. Play track: GainMatchSweep from the source unit.
4. Turn the KEYLOC input gain knob up, watching LEDs 3 and 4, until either starts to blink.
5. Turn the KEYLOC input gain knob down until both LEDs stop blinking. Wait for 10 seconds to verify the LEDs have stopped blinking.
6. Stop track: GainMatchSweep, then play track: Noise floor
7. Press the KEY Button. LED 1 will begin to blink. When the Noise floor is detected, LED1 will stop blinking and LED2 will start blinking.
8. Play track: FullTest. While the track is running you will see the LEDs progress from LED1 to LED4. The FullTest track is 22 minutes long, however most corrections will only take between three to eight minutes.
9. The LEDs will begin to flash once the KEYLOC has collected enough data and is processing the test results.
10. The LEDs will sweep back and forth when the algorithm has completed, and audio will begin passing. Press the KEY button to exit the set-up mode.
11. LED4 will turn on to indicate the available frequency ranges. To toggle the EQ correction ON/OFF, press the KEY button once. If LED4 is ON, EQ correction is on. If LED4 is OFF, EQ correction is off.

To reset to factory: Enter the main menu by pressing and holding the KEY button for 6 seconds. You will see the LEDs sweep from 1 – 4. Release the KEY Button and LED 1 will light up.

Press



Release



Click the KEY button until LED 3 is illuminated, then hold the KEY button until all LEDs are illuminated. Release the KEY button and the unit will restart. Your KEYLOC is now reset back to factory.

Error Codes:

If the power LED and any combination of LEDs begin to blink, it indicates an error in the setup process. Press the KEY button to reset the device.

LEDs 1, 2, 3, 4 - ON

Unable to find the noise floor. This indicates there is too much signal, or it is too noisy. This usually happens when the Noise Floor track is not playing before beginning Step 7.

LEDs 2, 3, 4 - or 1, 3, 4 - ON

Unable to interpret frequency response. This usually indicates the input is clipping or it is too noisy.

Navigating the Menu:

After the Auto setup process has completed, you'll be able to navigate the KEYLOC menu using the KEY button and LEDs. To enter the menu, press and hold the KEY button for 4 seconds. You will see the LEDs sweep 1-4 - release the KEY button. Quick-press the KEY button to cycle through the menu options:

LED1 - Allpass or Time-Delay defeat ON/OFF

Solid: Time-Delay correction is active

Blinking: Time-delay/allpass defeated

Press and hold the KEY button for 2 seconds to toggle defeat ON/OFF

LED2 - Gain Match Status

LED 2 indicates Left/Right Channel gain matching status.

Solid: On

Blinking: Off

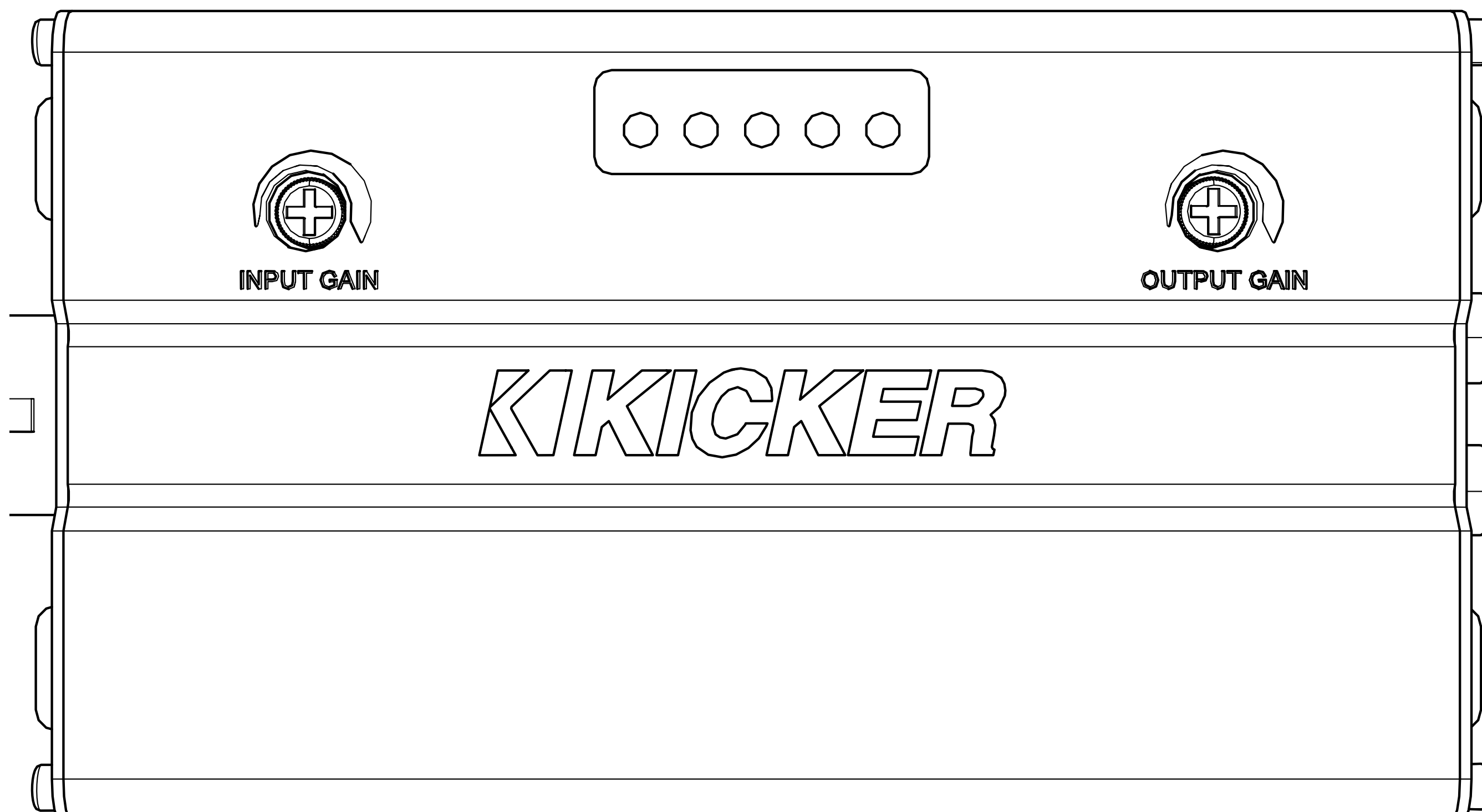
LED3 - Reset KEYLOC

Hold the KEY button for 10 seconds

LED4 - Exit the Menu

Hold the KEY button for 1 second to exit the menu

Line-Output Conversion



After Auto Setup is complete, use the Output Gain to match the output voltage of the KEYLOC to the input sensitivity voltage of your amplifier. If you're not using gain match capable electronics or a voltmeter/multimeter, listening for audible distortion is always the next best way to set your gain.

Sending a high voltage signal to your amplifier when possible is always the best practice. To set the Output Gain, turn the KEYLOC Output Gain and the input gain of your amplifier all the way down. With audio playing, turn the KEYLOC Output Gain up until you have achieved your desired volume level or you begin to hear distortion, then reduce the Output Gain until it's gone.

Troubleshooting

If the KEYLOC becomes frozen or stuck during algorithmic calculation, does not appear to be working, or gives an error code, check the obvious things first such as blown fuses, poor or incorrect wiring connections, incorrect setting of gain controls, etc.

Tips for SETUP:

1. If you have issues getting a smoothed EQ response on an Real-Time Analysis, go back and verify that the **INPUT GAIN** match of the KEYLOC is set correctly. If there are tall peaking filters in your analysis, it can take two or three sweeps of the **GAIN MATCH** track to ensure proper gain matching (It's recommended to wait 10 – 15 seconds to make sure the gain match LEDs are not flashing). If there's still an issue where the frequency response is not being fully corrected, it is suggested to turn the input gain down ¼ of a turn and run the KEYLOC setup process again.

2. If the issue persists, it is very likely that the output of your source unit is being clipped. Use the **GAIN SWEEP** track and an oscilloscope on the output of your source unit to verify that the signal coming from the source unit is not clipping. If there is any clipping, slowly turn down the volume on the source unit until all clipping is eliminated.

3. In most aftermarket systems in which you will not be using a fully active DSP after the KEYLOC in the signal chain, you will likely want to turn off the All pass/Time delay defeat for the best stereo imaging. [See page 13.](#)

4. To keep the noise floor (hiss) low, we have designed the KEYLOC to not add more than 18db of gain to any one frequency. In most applications, this should correct the frequency response to a nearly linear response of +/- 1.5dB in the frequency bands available.

5. During the KEY process, if you accidentally push the KEY button before playing the NOISE FLOOR track, the KEYLOC will error out and all LEDs will begin to flash. You must then press the KEY button to exit the KEY process. Re-enter the KEY process to start again.

No power? With a Volt Ohm Meter (VOM) check the following: **1**+12 volt power terminal (should read +12V to +16V) **2**Remote turn-on terminal (should read +12V to +16V) **3**Check for reversed power and ground connections **4**Ground terminal, for proper conductivity.

Power on, no signal? Check the following: **1**RCA connections **2**Test audio source signal, either with a “known good” output device or other means.

No or low output? **1**Check the balance and fader controls on source unit. **2**Check the RCA (or speaker input) and speaker output connections. **3**Check the volume level on your source unit, to include the volume level of any connected phones or MP3 players.

KEYLOC frozen or stuck in operating procedure? ❶ Cycle the power
❷ Reset the remote ❸ Reset the KEYLOC

Alternator noise-whining sound with engine's RPM? ❶ Check for damaged RCA (or speaker input) cable ❷ Check the routing of RCA (or speaker input) cable ❸ Check the source unit for proper grounding ❹ Check the gain settings and turn them down if they are set too high.

CAUTION: When jump starting the vehicle, be sure that connections made with jumper cables are correct. Improper connections can result in blown fuses as well as the failure of other critical systems in the vehicle.

Learn more about equalizers and processors we have.