



## **EC20B**

*3-Way Electronic Crossover  
with Remote Subwoofer Level Control*

**Congratulations on your purchase of a Planet Audio Crossover.**

It has been designed, engineered and manufactured to bring you the highest level of performance and quality, and will afford you years of listening pleasure.

Thank you for making Planet Audio your choice for car audio entertainment!

## **USER'S MANUAL**

### *page* CONTENTS

<b>2</b>	How this crossover is used
<b>2</b>	Product architecture
<b>2</b>	Important features
<b>3</b>	Installation
<b>3</b>	Mounting the equalizer
<b>3</b>	Turning on the power
<b>4</b>	Input, output, remote and power connections
<b>5</b>	Front and rear channel controls
<b>6</b>	Subwoofer channel controls
<b>7</b>	Electrical and remote level controller connections
<b>8</b>	System diagrams
<b>12</b>	Troubleshooting
<b>12</b>	Specifications

## How this crossover is used

The Planet Audio EC20B 3-way electronic crossover is a high-fidelity signal processor that allows you to customize the low level output of your input source (e.g., a car radio), so that the signal can be applied to an amplifier or amplifiers as a part of a 2-way or 3-way mobile audio system.

It is intended for use in a car audio system which includes amplifiers in the signal path AFTER the crossover, and provides Front, Rear and Subwoofer LOW LEVEL outputs via RCA connectors.

## Product architecture

This crossover accepts the low level (RCA type) input signal from the following types of head unit outputs:

- a) 2-channel (L/R) only
- b) Front (L/R) and Rear (L/R)
- c) Front (L/R), Rear (L/R) and Subwoofer channel (mono)
- d) Front (L/R), Rear (L/R) and Subwoofer channel (L/R)

By making proper switch settings, any of these types of head unit outputs can be utilized as a signal source from which the EC20B can derive a few different kinds of system configurations. Examples of these are shown in diagrams in this manual.

## Important features

The EC20B incorporates several key features which greatly expand the ways in which it can be used in a mobile audio system.

### Parallel input selection

The EC20B is optimized for head units which provide outputs for Front (L/R), Rear (L/R) and Subwoofer (L/R) channels. But what if your head unit only provides a single pair of stereo (L/R) outputs?

By setting the Parallel Input selector control to OUT, the signal applied to the Front (L/R) EC20B inputs will also be routed to the Rear channel. This eliminates the need for external y-adaptors, which can sometimes add noise to the system. Now you can provide custom processing to the Rear channel independent of the settings you apply to the front.

### Front channel crossover multiplier

By providing a way for you to select a frequency from either a Mids/Highs range or a Tweeter range for the Front channel crossover, we give you the choice to use this crossover in different applications. For example, you can use the Front channel as a stereo Tweeter channel by setting the Crossover Frequency Multiplier to the higher 800Hz-8kHz range, and Rear channel can serve as the Mids/Highs channel -- for a 3-way stereo system. Or you could create a 4-channel system, with Front and Rear channels reproducing the Mids/Highs.

### Subwoofer input mix option

Many head units also lack a subwoofer channel output. In this situation, by setting the Sub Input control to MIX, the EC20B sub channel controls will be delivered a mix of L Front/Rear to the Subwoofer Left Channel and a mix of the R Front Rear to the Subwoofer Right channel. This eliminates the need for external Y adaptors and mixer devices.

## Installation

Before installing your new Planet Audio crossover, please become familiar with all the information contained in this manual.

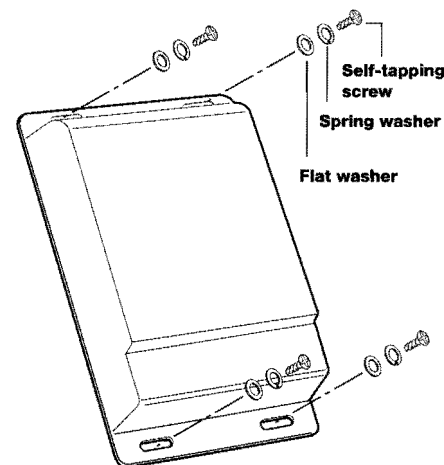
Choose a mounting location where the unit will not distract or otherwise interfere with the driver's ability to control the vehicle.

Use only the installation parts and hardware provided with the unit to ensure proper installation. Using other parts can cause malfunction and possible damage to your Planet Audio crossover.

Avoid installing the unit in a location which is subject to high temperatures, direct sunlight, hot air from such sources as heaters or exhaust lines, or where it will be subject to contact with dust, dirt, moisture or excessive vibration.

## Mounting the crossover

The EC20B is designed to be installed securely to a flat surface in your vehicle using the screws and washers provided. Install the unit according to the diagram below.



## Turning on the power

Before powering up for the first time:

1. Carefully check all electrical and audio connections.
2. Set all level controls to their minimum positions.
3. Set all switches to the settings appropriate for your installation.

*The EC20B has internal ON/OFF circuitry which responds to turning ON or OFF the head unit of your car audio system. This requires that your head unit have a remote turn-on lead available on the rear panel (which most head units have).*

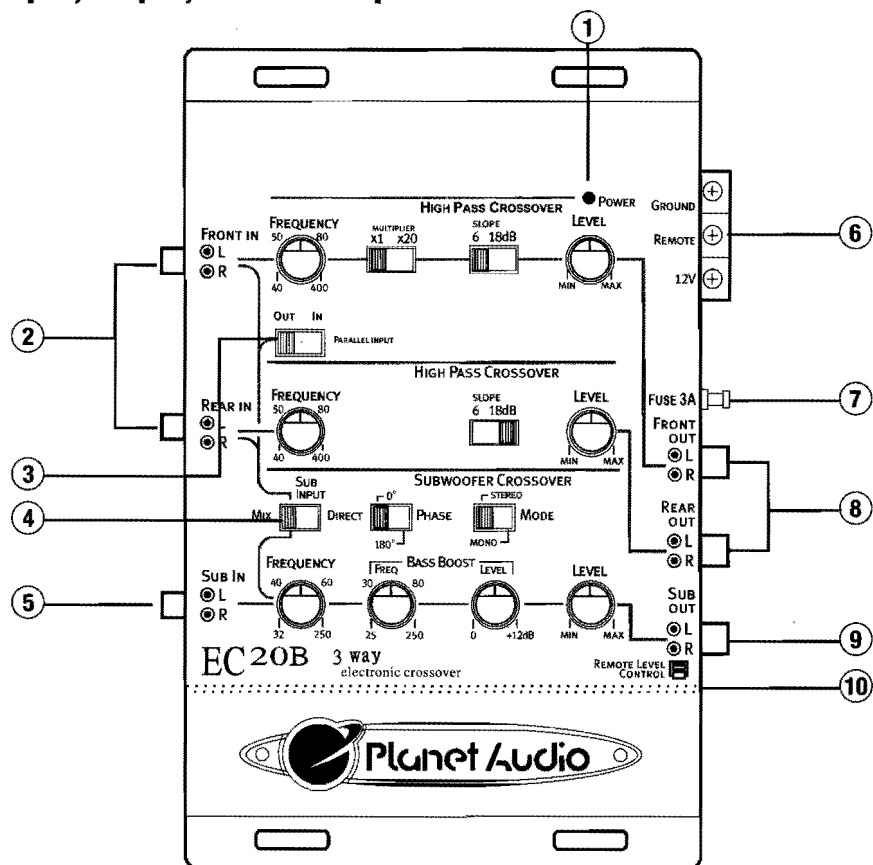
*With this convenient remote turn-on/off feature, you never have to worry about turning off the power to the equalizer when you shut off the audio system.*

When you are confident all connections have been made correctly:

1. Power up your audio system by turning on the head unit.
2. Set the volume control on the head unit to about 3/4 volume, and adjust the input level control for each channel to just below the level of distortion.

Further fine tuning of the controls on the EC20B and the input levels of the connected amplifiers may be necessary to obtain satisfactory results. If you are unsure about how to fine-tune the system, please consult with your Planet Audio dealer.

## Input, output, remote and power connections



### 1 POWER LED

### 2 FRONT AND REAR L/R INPUTS

Connect the outputs of your head units to these connections and be sure to place the Parallel Input selector in the IN position. If only front outputs are available, see "Parallel Input Switch," below.

### 3 PARALLEL INPUT SELECTOR

If your audio source only has one pair of RCA inputs, placing this switch in the OUT position allows the signal source connected to the front inputs to also be routed to the rear channel of the EC20B.

### 4 SUB INPUT SOURCE SELECTOR

If your audio source lacks a subwoofer channel output, placing this switch in the MIX position will apply a mix of the front and rear channel of each of the left and right inputs to the EC20B sub channel input.

### 5 SUBWOOFER CHANNEL INPUT

Connect the subwoofer channel of your head unit to these connectors and place the Sub Input selector in the DIRECT position. If no sub channel outputs are available, see "Sub Input Source Source," above.

### 6 +12V, GROUND AND REMOTE TURN-ON TERMINALS

Use this control to select the highest frequency to be sent to the subwoofer channel. Choose a frequency between 32Hz and 250Hz.

### 7 FUSE CONNECTOR

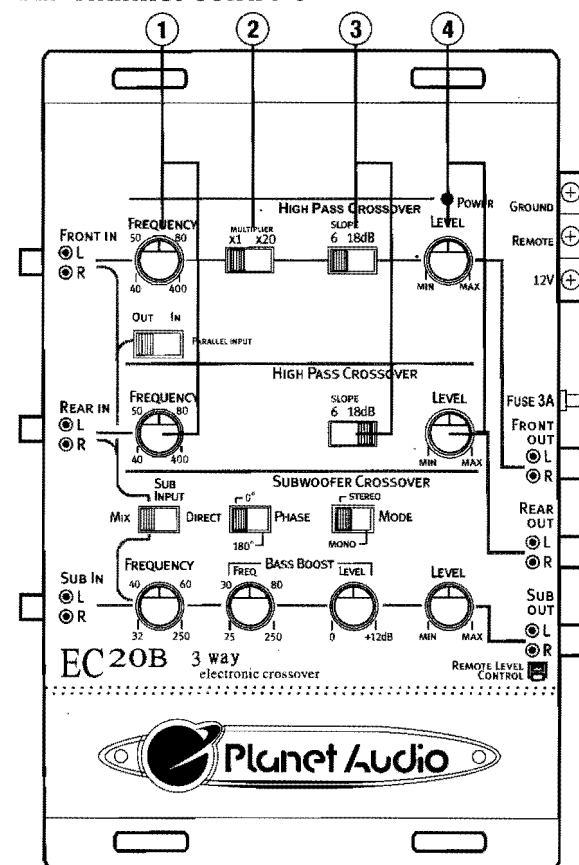
Use only fuse with 3A rating.

### 8 FRONT AND REAR L/R OUTPUTS

### 9 SUBWOOFER L/R OUTPUTS

### 10 REMOTE LEVEL CONTROL CONNECTOR

## Front and rear channel controls



*Please note: Since signal processing for Front and Rear Channels is nearly identical, only Front Channel controls are described here. The only difference between the controls for Front and Rear is that due to the addition of a crossover frequency multiplier selector on the Front Channel, the high pass crossover setting on the Front channel can be made in either the 40Hz-400Hz range or 800Hz-8kHz range, while the Rear channel high pass crossover is limited to the 40Hz-400Hz range only. This allows the Front Channel to be used as a crossover for either mids or tweeter range.*

### 1 HIGH PASS CROSSOVER

Use this control to set the lowest frequency which will pass through the Front (or Rear) Channel of your system.

### 2 HIGH PASS CROSSOVER FREQUENCY MULTIPLIER (Front channel only)

This selector sets the frequency range for the high pass crossover. Choose the x1 position for 40Hz-400Hz range, or x20 for 800Hz-8kHz range.

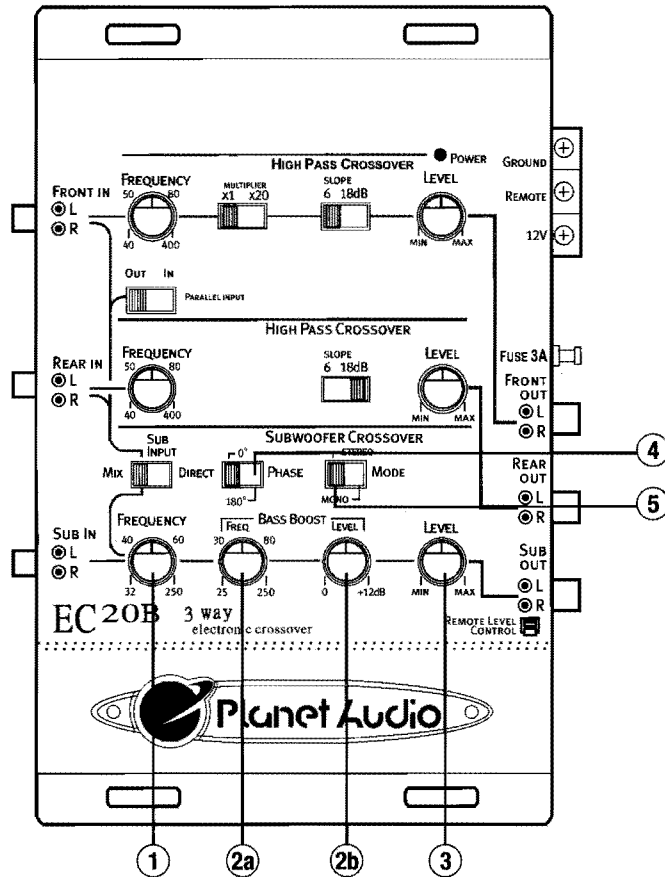
### 3 CROSSOVER SLOPE

Crossover slope determines how rapidly the dropoff in sound level, measured in decibels/octave, occurs at the frequency selected by the crossover. One octave is equal to one-half of the currently selected frequency. For example, if you set the crossover to 80Hz and the slope to 18dB, the level at 40Hz to be 18dB lower than at 80Hz.

### 4 OUTPUT LEVEL CONTROL

This control allows you to independently set the output level of the channel.

## Subwoofer channel controls



**1 LOW PASS CROSSOVER**  
Use this control to set the highest frequency which will pass through the Subwoofer Channel of your system.

**2a BASS BOOST FREQUENCY SELECTOR**

**2b BASS BOOST LEVEL SELECTOR**  
These two controls are used together to help you fine tune the bass boost added to the Subwoofer Channel signal. The Frequency Selector is used to identify the center frequency for the boost (i.e., where the Bass Boost effect will be most pronounced). The Boost Level is used to set how much the level is increased around that frequency, up to +12dB.

**3 OUTPUT LEVEL CONTROL**  
This control allows you to independently set the output level of the channel.

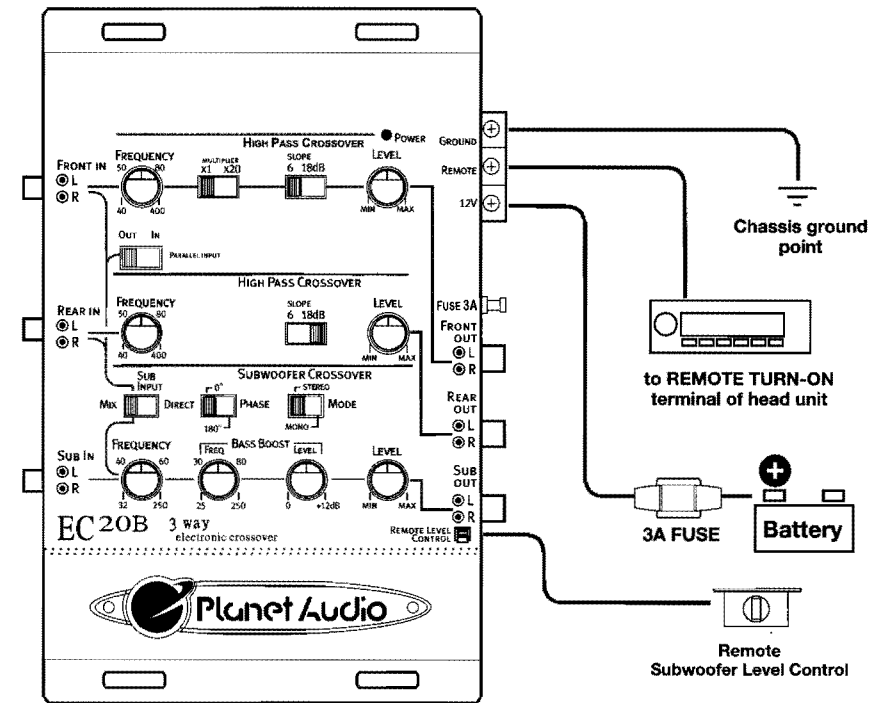
**4 PHASE SELECTOR**  
Use this switch to select the output phase of the Subwoofer channel to provide the best time alignment and stereo imaging for your system.

**5 SUBWOOFER CHANNEL OUTPUT MODE**  
If your system only includes one subwoofer, you will probably want this to receive a mono signal derived from the L/R input signal. In this case, place the switch in the MONO position. For dual subwoofer systems, the choice of mono or stereo subwoofers is a matter of personal taste, although the directionality of low frequency signals is difficult for the human ear to detect, so the difference between the switch settings may be inaudible.

## Electrical and remote level controller connections

Using 16GA minimum wire connect the EC20B as follows:

- Connect the shortest possible wire to a clean, unpainted chassis ground point. Connect this wire to the Ground connection of the EC20B.
- Connect the +12V terminal directly to the vehicle battery, using a distribution block near the crossover, if desired. Be sure to install a 3A inline fuse within 18 inches of the battery terminal.
- Connect the Remote terminal of the EC20B to the remote turn on lead from your head unit.



## Input and output connections

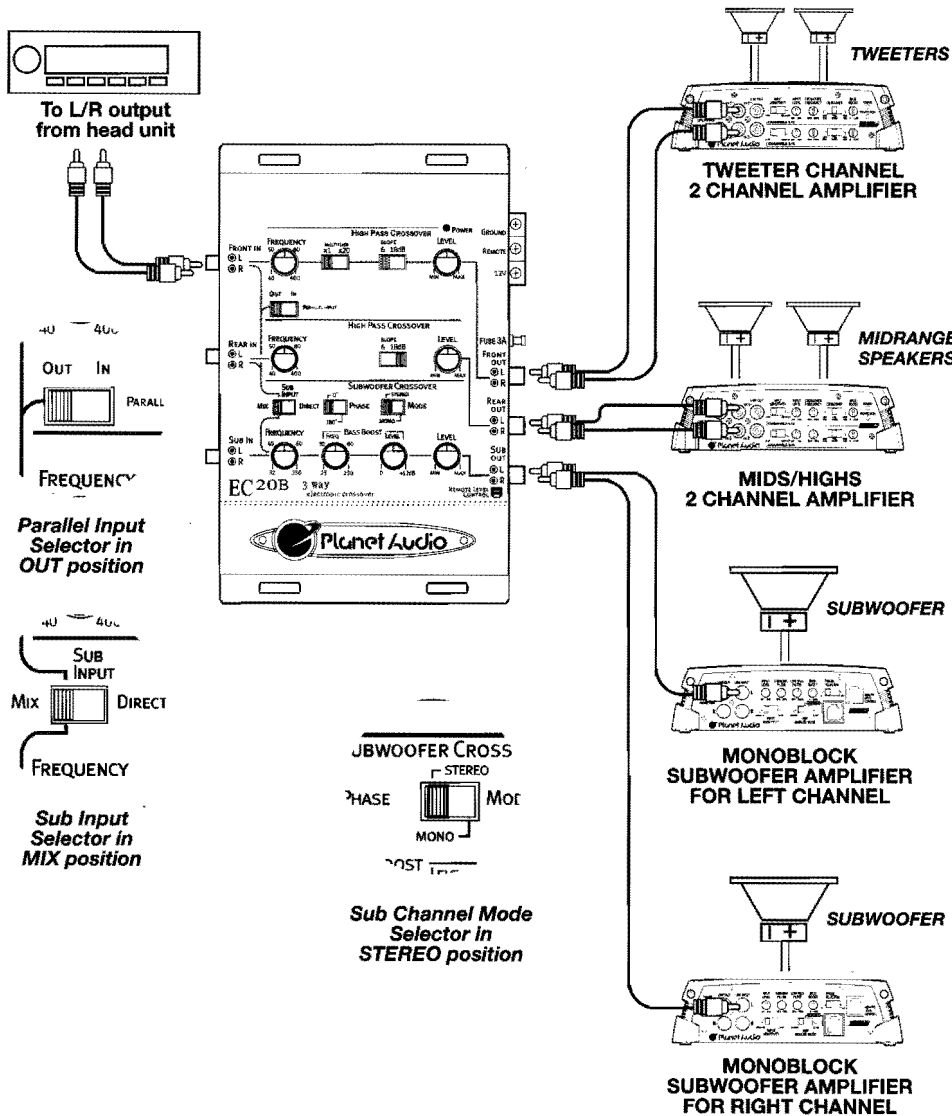
Input and output connections vary depending on the system application. Examples are shown in system diagrams on the pages which follow in this manual. Always use high quality RCA cables for input and output connections.

## System #1: 2 channel input/3-way system

Head unit input: 2 channel

EC20B output: 3-way stereo system: **Tweeter L/R channels**  
**Mids/highs L/R channels**  
**Subwoofer L/R\* channels**

\* can also be set to Mono Sub channel

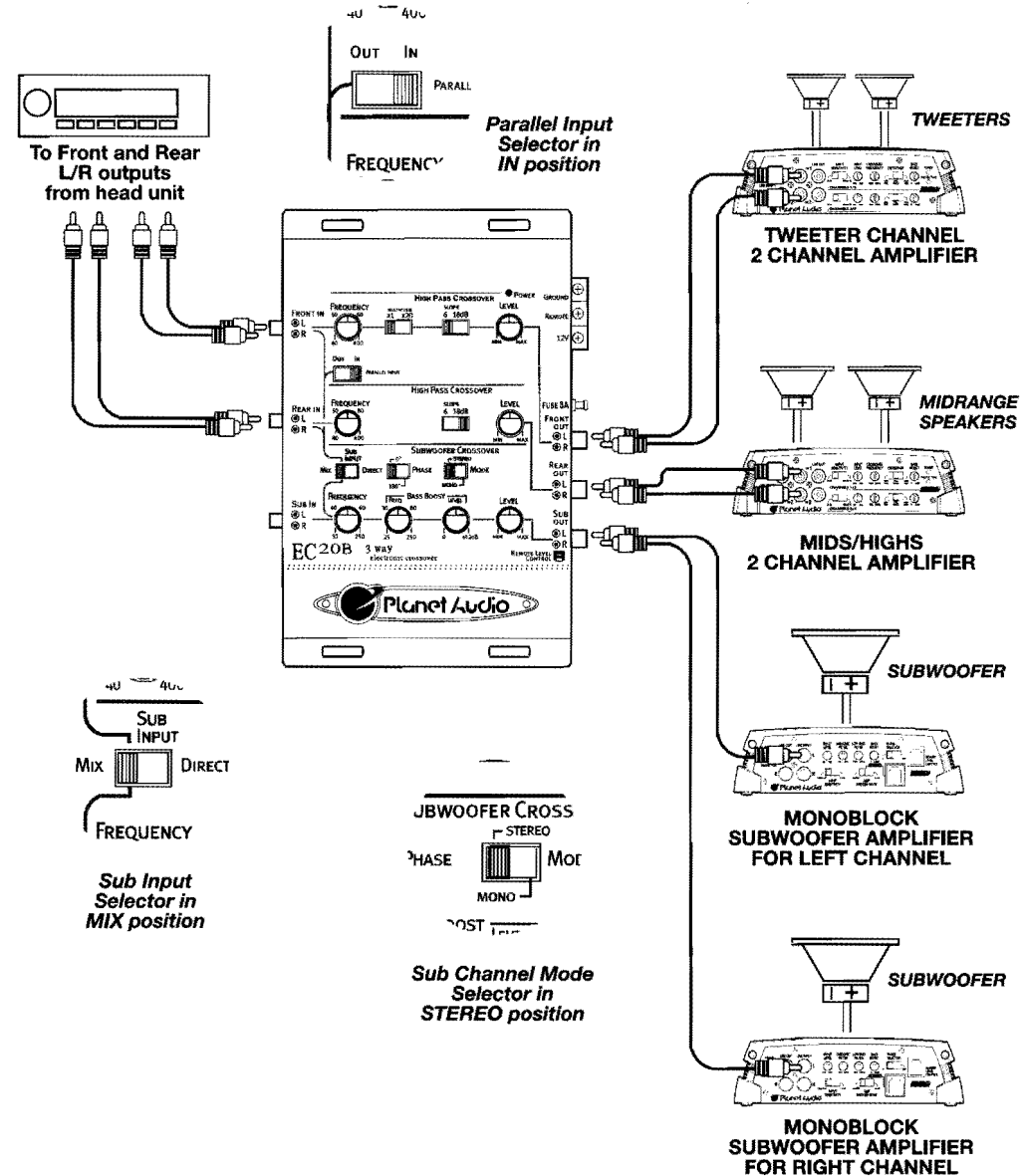


## System #2: 4 channel input/3-way system

Head unit input: Front L/R channels, Rear L/R channels

EC20B output: 3-way stereo system: **Tweeter L/R channels**  
**Mids/highs L/R channels**  
**Subwoofer L/R\* channels**

\* can also be set to Mono Sub channel

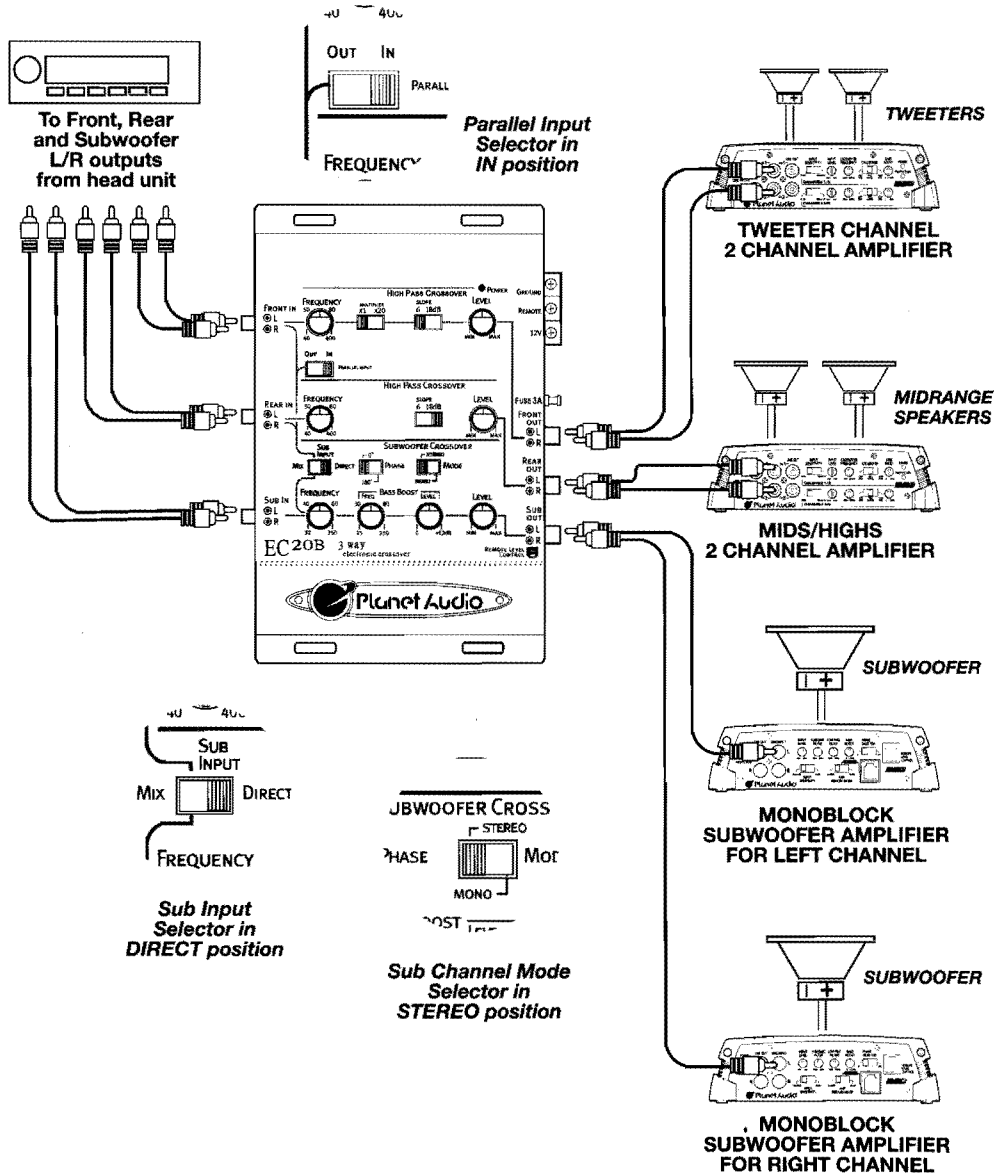


### System #3: 4 channel + 2 channel sub input/3-way system

Head unit input: Front L/R channels, Rear L/R channels, Subwoofer L/R channels

EC20B output: 3-way stereo system: **Tweeter L/R channels**  
**Mids/highs L/R channels**  
**Subwoofer L/R\* channels**

\* can also be set to Mono Sub channel

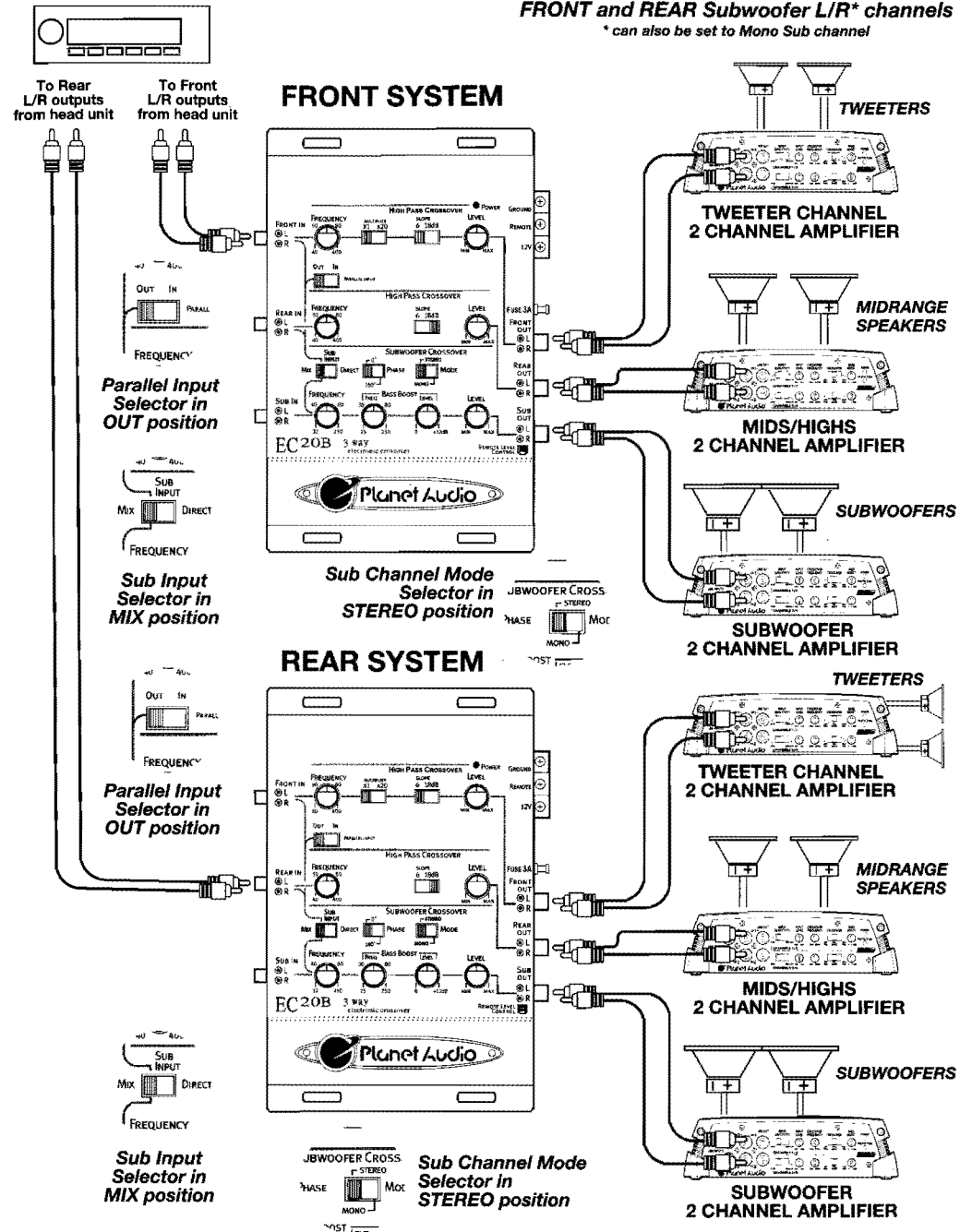


### System #4: 4 channel input/Dual crossover 3-way system

Head unit input: Front L/R channels, Rear L/R channels

EC20B output: Dual 3-way stereo system: **FRONT and REAR Tweeter L/R channels**  
**FRONT and REAR Mids/highs L/R channels**  
**FRONT and REAR Subwoofer L/R\* channels**

\* can also be set to Mono Sub channel



## Specifications



### EC20B

3-Way Electronic Crossover with Remote Subwoofer Level Control

---

<b>Crossover center frequency ranges</b>	FRONT(high pass): 40-400Hz or 800Hz-8kHz REAR (high pass): 40-400Hz SUBWOOFER (low pass): 32-250Hz
<b>Crossover slope, front and rear</b>	selectable 6dB/octave or 18dB/octave
<b>Crossover slope, sub channel</b>	18dB/octave
<b>Bass Boost center frequency range</b>	25-250Hz
<b>Bass Boost level adjustment</b>	0-+12dB
<b>Signal-to-Noise Ratio</b>	110dB
<b>THD</b>	0.01%
<b>Channel separation</b>	80dB
<b>Input impedance</b>	20k Ohms
<b>Output impedance</b>	100 Ohms
<b>Output gain</b>	1:2 (+6dB)
<b>Power supply</b>	PWM type
<b>Output voltage</b>	8V maximum
<b>Dimensions (W x D x H)</b>	5-1/8" x 8-1/4" x 1-3/4"

---

All specifications subject to change without notice.

## Troubleshooting

If you experience operation or performance problems with this product, compare your installation with the electrical wiring diagram on the previous pages. If problems persist, read the following troubleshooting tips which may help eliminate the problems.

<b>SYMPTOM</b>	<b>POSSIBLE REMEDY</b>
<b>Crossover does not power up.</b>	Check to make sure you have a good ground connection. Check that the Remote Input (Turn-On) has +12VDC. Check that there is battery power on the (+) terminal. Check all fuses, replace if necessary.
<b>Low sound level.</b>	Check to see if wiring is loose or any cables are misconnected or disconnected. Replace RCA cables if faulty.
<b>Background noise is very high.</b>	Check to see if wiring is loose or any cables are misconnected or disconnected. Replace RCA cables if faulty.