



## Home MiniWoofer™ User's Guide



The Home MiniWoofer is an accessory subwoofer system for stereo televisions and shelf systems. It provides a high quality subwoofer solution for smaller rooms in apartments, bedrooms and offices where a complete home theater system is inconvenient. The Home MiniWoofer is easier to install, can easily be set up unobtrusively on a shelf, and

requires no additional user controls after set-up.

The Home MiniWoofer lets you hear deep, natural and undistorted bass response to about 40Hz similar to large home theater subwoofers. It is against the Laws of Physics to create 40Hz bass from such a small, light weight and low power product, but the Home MiniWoofer lets you hear bass frequencies down to 40Hz by using an acoustic illusion based on the psychoacoustic Phenomenon of the Missing Fundamental. This is conceptually similar to perceiving a full color spectrum from only red, green and blue pixels on your television display,

Waves, the world leader in signal processing tools to audio professionals has extensively researched how to optimize this process and patented its MaxxBass® psychoacoustic bass extension. This technology has been used in top music recordings for many years and now it is available in consumer electronics.

The Home MiniWoofers are designed to be an accessory subwoofer for existing stereo audio systems in televisions and shelf systems. It is easy to install with one or two RCA cables. Once set up, you do not need to change any settings or have additional remote controls. It automatically turns on and off when an audio signal is detected.

The Home MiniWoofers product is less sensitive to room modes than a traditional subwoofer. Subwoofers are generally recommended to be placed on the floor in the corner of a room, and ideally it should be positioned to minimize room modes.

Since the Home MiniWoofers uses psychoacoustic bass, it can be positioned similar to a traditional speaker. It is generally recommended to be placed on a shelf near the TV or shelf system. It is not recommended to place the Home MiniWoofers directly on top of CRT TVs since the power speaker magnet is not shielded.

## Home MiniWoofers Connection Options

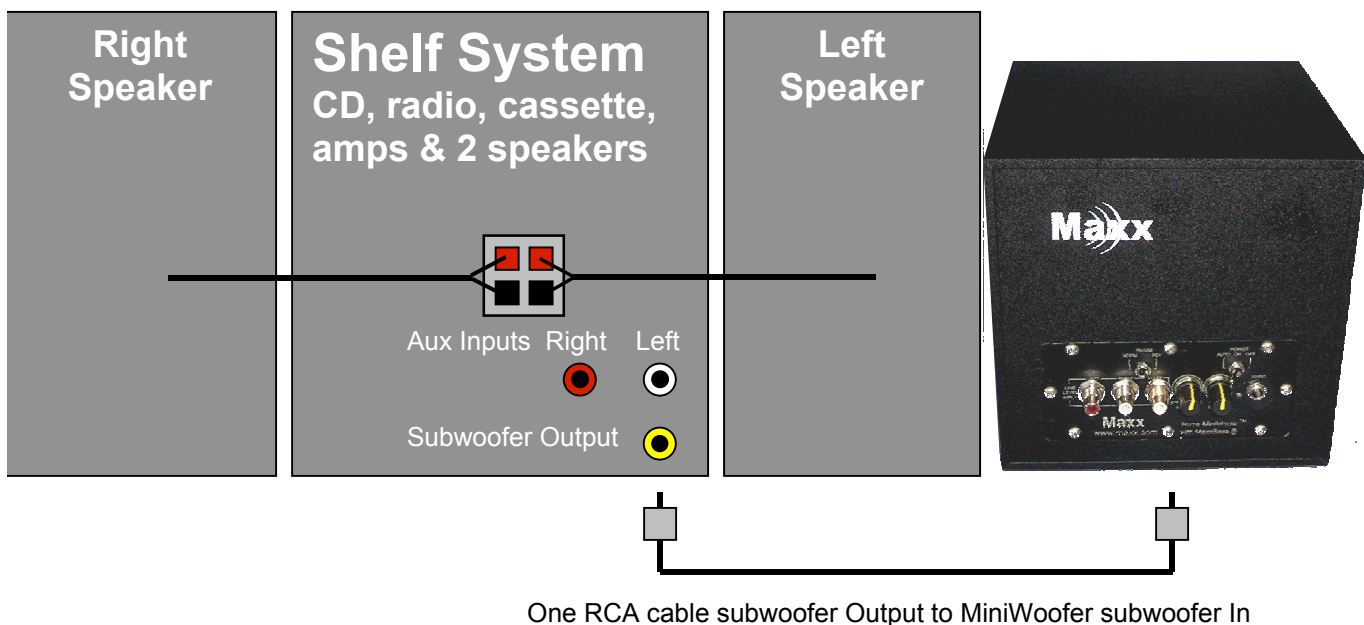
The Home MiniWoofers can be used in several different configurations.

### 1) Subwoofer Input Connection

The Home MiniWoofers includes a Subwoofer input on a single line-level RCA connector. This is the simplest connection method for the Home MiniWoofers and generally the best performing since the output volume will scale more consistently with the volume control of the existing satellite speakers in the television or shelf system.

Connect a single cable from the subwoofer output of your existing system to the sub input of the Home MiniWoofers. This is shown in the diagram below for a typical shelf audio system.

**Subwoofer Input Connection Diagram**



One RCA cable subwoofer Output to MiniWoofers subwoofer In

The Sub input is a direct subwoofer input without any low pass filtering. Use this input if your television or shelf audio system has a subwoofer output, which provides this functionality.

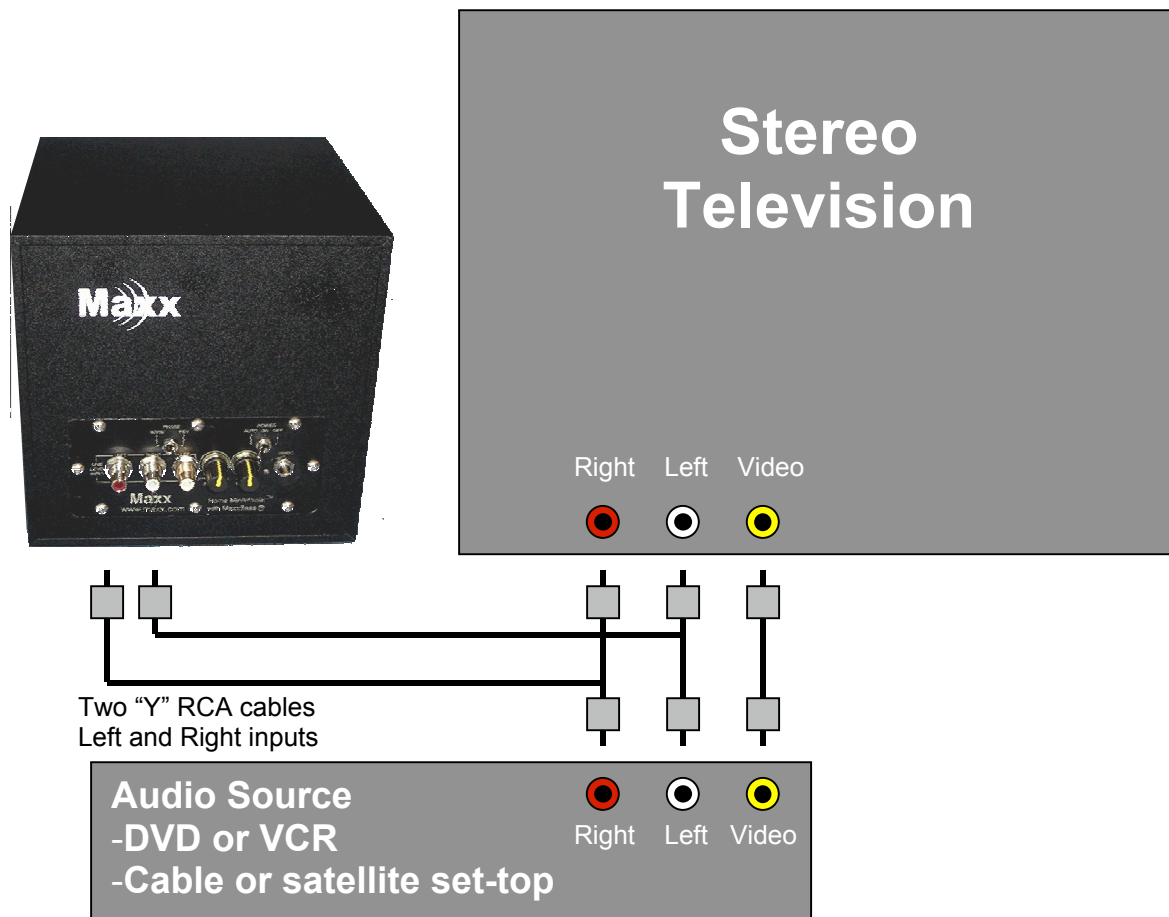
Plug in the external power supply to an AC outlet and to the rear of the MiniWoofer labeled 15VDC. Proceed to the Settings section for one time set-up of controls on the rear of the system.

## **2) Left and Right Input Connections**

The Left/Right Input Connections should be used with stereo televisions that do not provide line-level subwoofer outputs.

The Home MiniWoofer provides Left and Right RCA connectors for line-level (2Vrms) input, which are common on DVDs, VCRs and cable/satellite set-tops boxes. Simply connect both Left and Right line-level outputs from these audio source components using two RCA "Y" cables (not provided) connected to the both the Home MiniWoofer and your television.

### **Left/Right Input Connections with Stereo Television**



The Left and Right line-level inputs include a 100Hz Low Pass Filter, so that the Home MiniWoofers only reproduce the audio content at 100Hz and below, which is not normally heard on most televisions with built-in speakers.

Connect external power supply to AC outlet and 15VDC connection on the rear of the system. Proceed to Settings sections for adjusting rear controls.

### **3) Multiple Home MiniWoofers**

The Home MiniWoofers provide sufficient bass sound to fill a moderated sized room such as in an apartment, bedroom or office; however, if you want even more bass performance, it is simple to connect more than one Home MiniWoofers into an audio system. This is best to do with the Sub Input connection.

The user will need to purchase additional RCA Y connectors to connect all the Sub Inputs to a single Subwoofer line-level output.

## **Home MiniWoofers Settings**

After the input and power cables have been connected, set the Intensity and Level controls to mid-point so that both yellow lines point up. It is best to use music with strong bass content to adjust the controls.

For proper performance, it is important to set or tune the settings on the Home MiniWoofers. This section recommends initial settings, after which you can adjust these settings further for optimal listening.

### **1) POWER switch**

Turn the power switch to AUTO. The power LED will be green when the Home MiniWoofers is active. The LED will turn red if the Home MiniWoofers goes into power-down mode. This occurs if no audio signal has been received for several minutes. The system will activate automatically from power-down once a signal is received, so there is no reason to turn off the Home MiniWoofers manually.

### **2) LEVEL control**

This control is a signal attenuator for input as well as an output volume/level control. Turn up the music or movie to the volume at which you normally listen. Set the LEVEL control to an appropriate level so that the subwoofer level matches the main speaker outputs.

#### **Note:**

The Home MiniWoofers can also accept low-level signals (1Vrms) from PCs and portable CD/DVD players. Most home audio equipment provides 2Vrms output, so that the

maximum LEVEL setting with home audio equipment may create clipping. If the sound is distorted, reduce the LEVEL setting.

### 3) INTENSITY control

The INTENSITY control provides an input to the patented MaxxBass algorithm on the level of the effect. Increase the INTENSITY control until you obtain the desired level of bass effect. When the INTENSITY control is set at the minimum position, the MaxxBass function is bypassed.

### 4) PHASE control

The PHASE control allows the subwoofer waveform to be inverted. You can set it in either position for optimal listening.



## Why use MaxxBass?

MaxxBass allows a small, low-power subwoofer to provide similar acoustic performance of larger, more expensive subwoofer systems. With the Home MiniWoofer, you can add subwoofer performance to any television or stereo system to dramatically improve the emotional impact of music, movies and games. It is easy to set up and use and provides a home theater experience without the cost and complexity of a large home theater system.

## Why is MaxxBass Better?

MaxxBass is NOT a traditional bass boost technology. Bass boost technologies try to compensate for lack of bass frequency range by equalizing or increasing the relative volume of the frequencies near the speaker limit. This increases amplifier and speaker excursion limits, which can damage the system at high levels and destroys the intended frequency balance of music.

MaxxBass uses proven psychoacoustics effects on how you perceive sound to allow you to hear more bass without having the audio system physically generate it.

- It provides up to 1.5 octaves of increased bass range.
- It does not change the frequency balance of the music, and sounds more natural than large bass boosts.
- It does not require more amplifier power and speaker excursion.
- It has been used for many years in professional audio recording.

## What is MaxxBass?

MaxxBass is a patented audio technology that is dramatically changing consumer audio products by allowing “more bass from less space.” It extends the bass frequency range by allowing listeners to perceive bass frequencies more than an octave below the physical limitations of speaker systems. In the Home MiniWoofer, the physical low frequency roll-off is 90Hz, but with MaxxBass, you can hear bass frequencies below 40Hz.

This is accomplished using the science of psychoacoustics. By building audio systems optimized for how you perceive sound, performance is improved significantly. This is analogous to televisions which only display red, green and blue dots. When you view these displays, your visual perception combines these dots to make a full color spectrum without needing to reproduce all the necessary color frequencies.

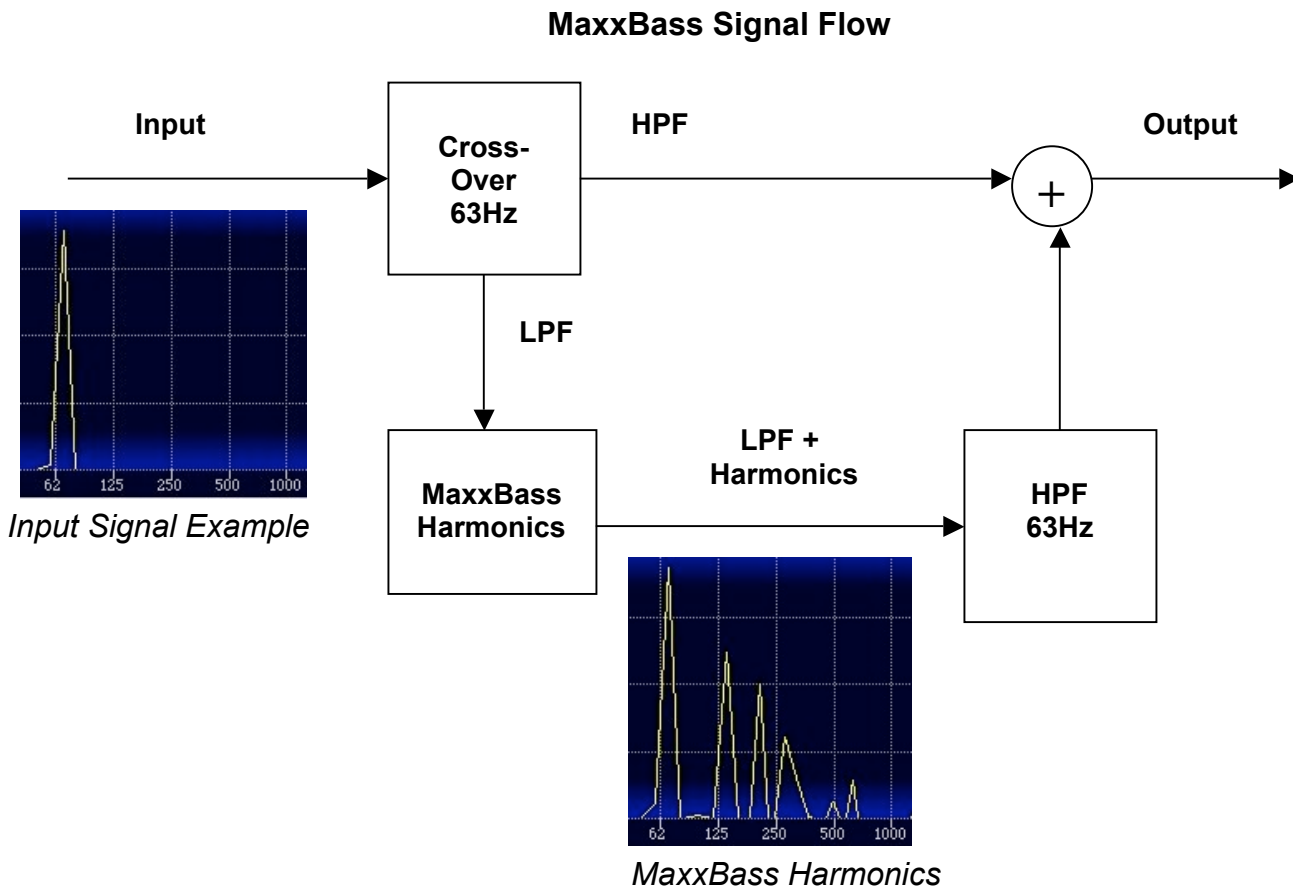
Unlike other bass technologies, MaxxBass delivers more perceived bass while simultaneously reducing the likelihood of damaging speakers and amplifiers. MaxxBass also delivers this extended bass without any perceived distortion. MaxxBass technology has been used for years by professionals who mix and master the world’s most popular music.

## How does MaxxBass work?

MaxxBass utilizes a psychoacoustic phenomenon called the Missing Fundamental effect, which takes advantage of how your hearing works in perceiving sound. MaxxBass generates a precise harmonic content so your ear believes it is hearing lower frequency sounds than are physically present.

MaxxBass first implements a crossover at the MaxxBass Frequency. The Home MiniWoofer uses a MaxxBass Frequency of 63Hz. The low pass filter (LPF) output of the crossover provides the bass signal, which is below the bass frequency response of the system. This is the signal to be reproduced psychoacoustically, and only this signal receives the MaxxBass processing. Unlike bass boosts, MaxxBass does not add or change the processing of higher frequencies that can be reproduced by the system. MaxxBass does not change the artist's sound mix.

MaxxBass uses a patented digital signal-processing algorithm to calculate precise harmonic content information, which is added back into the LPF signal. The combined LPF and harmonics output is high pass filtered, removing the original bass signal. The signal is then added back into the original HPF signal, and the final output provides a signal that sounds like the original, but no longer has unreproducible low frequencies.



## Home MiniWoofer Features

- Similar acoustic performance to moderate home theater subwoofers
- Small size and light weight allow convenient positioning
- Simple connections to existing TV and stereo systems
- No need for additional remote controls
- Automatic power up and power down

## Home MiniWoofer Specifications

Physical Low Frequency Response	90 Hz
Perceived Low Frequency Response	<40Hz
Loudness (SPL C-weighted)	>100 dB
Dimensions (speaker only)	8 x 8 x 8 inches
Weight (with external supply)	< 10 lbs
Peak Power	57 Watts

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