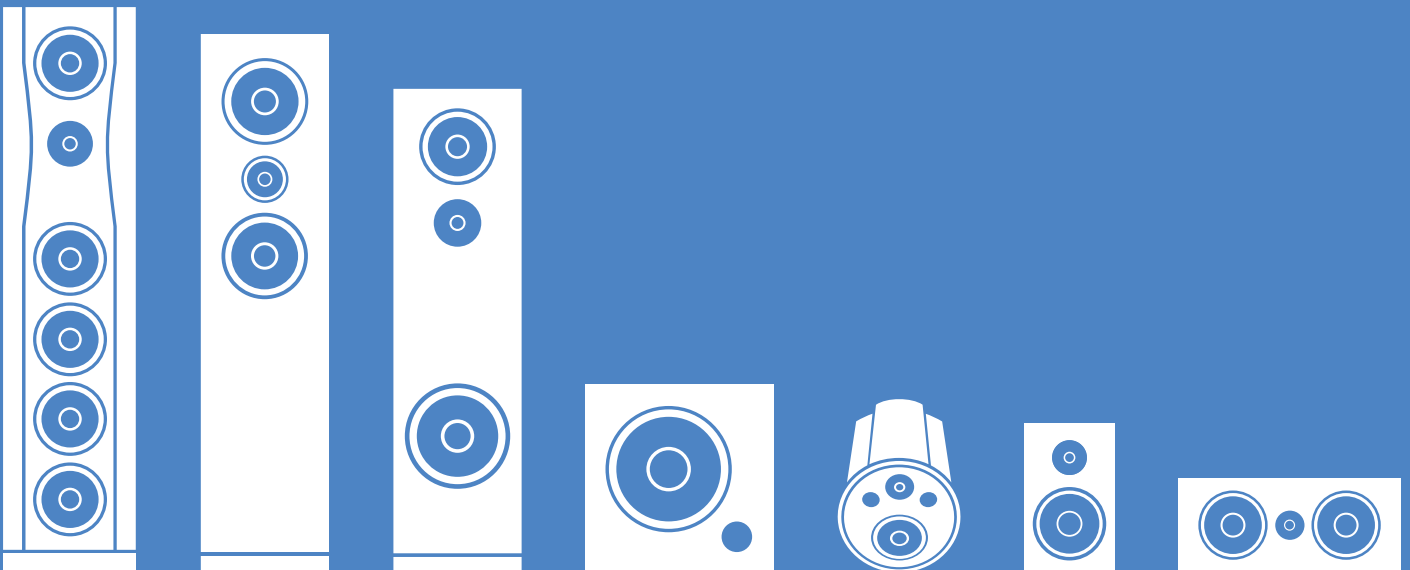


Owner's Manual

Seismix 3 and Seismix 5



Congratulations on choosing Krix

The Seismix 3 and Seismix 5 active subwoofers will complement existing Stereo or Home Theatre systems producing an increase in low frequency performance for a deep experience. The Seismix 3 and Seismix 5 are compatible with a variety of small to large sized, sealed or vented, main/satellite speakers.

Your subwoofer contains an amplifier of the highest electronic standards. Krix have introduced In Circuit Serial Programming (ICSP), meaning the microcontroller within the amplifier can be upgraded via the serial interface located internally on the amplifier module. This means as future features are developed your subwoofer can be upgraded. You would simply need to return the amplifier module to Krix, where the upgrade would take place.

Figure 1 Back panel of subwoofer

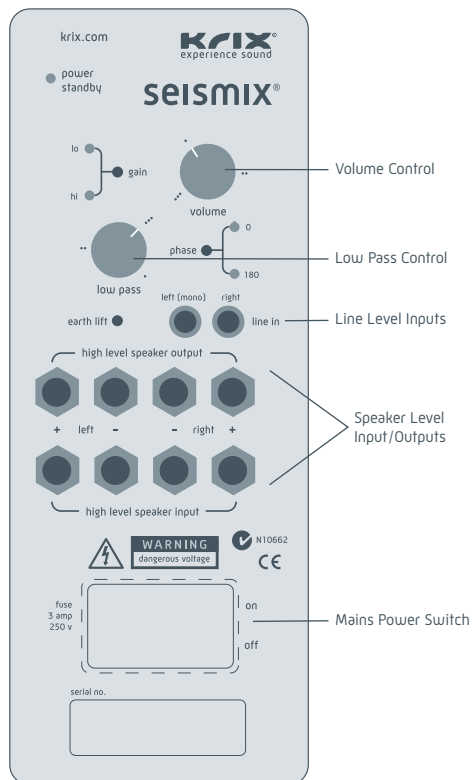


Figure 2 Connection using Line Level signal

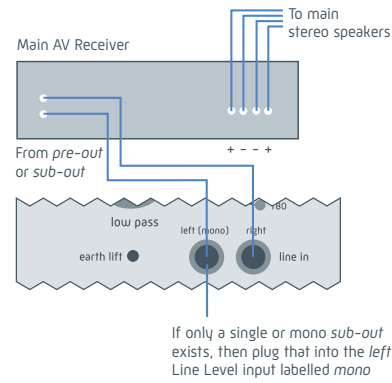
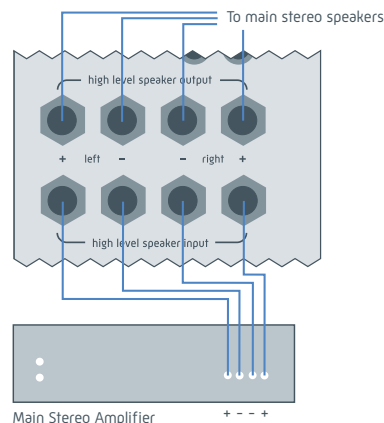


Figure 3 Connection using Speaker Level signal



connection

1. Ensure the main power switch is off and connect the mains power cord.
2. There are two methods which you can use to connect the Seismix subwoofer, either via the line level inputs which will require your stereo amplifier / AV receiver to have a subwoofer output facility (mono or stereo outputs) or via the speaker level inputs.

Method 1: Line Level Connections

It is recommended that you use *Line Level* connections for home theatre applications. Connect the SUB OUT socket(s) on your AV receiver to the *Line Level* input(s) which are a pair of RCA sockets located in the middle of the rear subwoofer panel (see figure 1). The SUB OUT socket on your AV receiver is usually mono which can be connected to the Seismix with one lead to the 'Left (mono)' input. If your AV receiver has stereo SUB OUT sockets then use dual leads, connecting these to the 'Left and Right' inputs. Refer to figure 2 for connection using *Line Level* signal.

Method 2: Speaker Level Connections

For stereo applications connect the *Speaker Level* outputs on your main amplifier to the *Speaker Level* inputs on the rear panel of the Seismix (see figure 1). Then connect the *Speaker Level* outputs on the rear panel of the Seismix to each of your left and right speakers. Be sure to maintain correct phasing for each set of speaker leads, red (positive +) to (+) and black (negative -) to (-). Refer to figure 3 for connection using *Speaker Level* signal.

3. Before turning the Seismix on, ensure the volume control is turned down and set the *Low Pass (Hz)* control to the middle position (see figure 1). Turn on the unit with the power switch located at the bottom of the rear panel, the subwoofer will activate and the blue *Power / Standby* LED will light up. Begin by playing music with bass content and slowly increase the volume dial on the subwoofer to a moderate level.

features

Automatic on / off circuit

Standby Mode

Symetrix Vent

Clipping protection

- Opto-compressor with fast attack to prevent overload
- Soft limiting to prevent amplifier clipping

Multi-layered fault protection

- DC Detect Sensor
- Thermal Sensor
- Mains Fuse

Electronic filtering

- Earth lift switch to eliminate ground loops
- 2nd order low pass filter adjustable from 60Hz to 150Hz
- Adjustable Hi / Lo gain setting
- 0°/180° phase switch
- Fixed 2nd order high pass filter to reduce driver excursion below 30Hz

Independent adjustable gain control

Heavy duty, high efficiency long throw paper cone drivers designed for high level sound reinforcement

High current low noise amplifier

Automatic On / Off Circuit

For the auto circuit function to operate, the power switch on the back of the subwoofer needs to be left on (and can be done so safely, see figure 1). The *Auto Circuit* monitors both the speaker level or line level inputs and powers the amplifier in the subwoofer. When a signal is present the blue *Power / Standby* LED at the top of the rear panel will remain lit. When a signal is not present, the power will remain on for approximately 15 minutes and will then automatically switch itself to standby mode. In standby mode the blue *Power / Standby* LED will flash.

Warning: it is recommended that the unit is turned off at the mains power if being left unattended for any extended periods.

Standby Mode

Krix have included an energy saving device when the unit is in *Standby* mode, meaning the Seismix draws a meagre 3 watts (costing approximately AUD\$5.00 for 1 year to run).

Symetrix Vent

The Seismix subwoofer enclosure features Symetrix bass reflex venting, with the vent exhibiting the same flare radius both internally and externally. This lowers subwoofer distortion and serves to reduce vent turbulence or "chuffing" at high drive levels.

Clipping Protection

There are several layers of protection in the electronics of the Seismix to prevent clipping damage.

Opto-compressor: When faced with a signal peak which is in excess of what the Seismix can accurately reproduce, a compressor circuit activates to reduce the level of the signal once it passes the preset threshold. This permits the Seismix to perform at high level with only a mild reduction in the signal's dynamic content.

Soft Limiter: If severe overdriving of the amplifier continues to place a strain on the compressor circuit, a soft limiting circuit activates. The soft limiter circuit monitors the Seismix's amplifier power supply voltage and prevents a direct current (DC) signal from reaching the bass driver, causing damage.

Fault Protection

The mains fuse protects against any major electrical faults or short circuits and incorporates an inrush current limiter to eliminate power surges when using the main on / off switch. The Seismix uses an ATMEL MEGA16[®] microcontroller which is the integrated circuit responsible for the advanced fault protection features of the Seismix amplifier. A microcontroller is a small single chip computer optimised for hardware control that runs a program stored in flash memory on the chip. The construction of the Seismix amplifier utilises surface mount technology (SMT), which results in a more compact design, high resistance to mechanical vibration and higher circuit performance. The filter capacitor bank present in the Seismix amplifier features many low Equivalent Series Resistance (ESR) capacitors allowing lower supply impedance and greater instantaneous power delivery to the loudspeaker load.

DC Detect Sensor: Clipping is severe square wave distortion that contains a direct current (DC) component often responsible for loudspeaker damage. In the event of an abnormal function the amplifier will not only shut down, but all LED's will flash. If this happens turn the subwoofer off and contact your nearest Krix retailer for further assistance.

Thermal Sensor: The Seismix has a generously sized heat sink, permitting normal operation in high ambient temperatures. A thermal sensor internally connected to the heat sink is monitored every 20 seconds by the microcontroller. In the unlikely event that the amplifier's temperature reaches above 65 degrees celsius the microcontroller will reduce output by 1dB every 20 seconds until the temperature is 65 degrees celsius or below. The microcontroller will return the amplifier to normal operating settings by increasing the output by 1dB every 20 seconds.

Earth Lift

The *Earth Lift* button ensures the Seismix can be connected to a wide range of stereo amplifiers / AV receivers. Should a humming noise be evident when the Seismix is connected, push the *Earth Lift* button (see figure 1) which interrupts the current that may be circulating from the subwoofer's signal ground through the mains earth wiring (see figure 4). *Note: The Earth Lift button does not break the mains earth connection to the subwoofer, only the connection between the subwoofer's signal ground and the mains earth. To guard against electric shock NEVER disconnect the mains earth from any appliance.*

Low Pass (Hz)

The *Low Pass* control (see figure 1) adjusts the total bass content from the Seismix. This control allows you to adjust the upper limit of the Seismix's frequency range between 60 – 150 Hz. The higher the selection, the broader the range of bass information heard. This setting can be adjusted for personal taste and integration with your main speakers.

Figure 4 Earth lift button

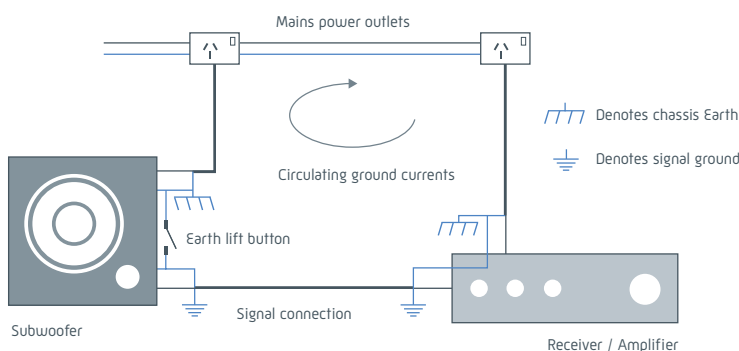
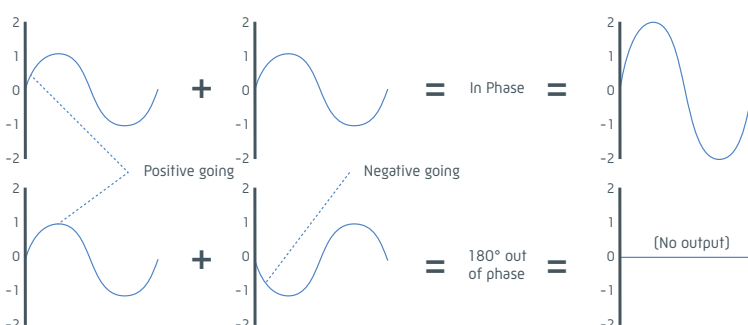


Figure 5 Phase



Hi / Lo Gain

The *Hi / Lo Gain* button (see figure 1) is positioned below the blue Power / Standby LED, this button allows you to increase or decrease the sensitivity of the subwoofer without adjusting other settings. In the 'Lo' gain position, a much higher input signal is required, and you will need to increase the main volume control to reach maximum output.

In the 'Hi' gain position the output of the subwoofer is increased by approximately 20dB, requiring a lower input signal, meaning you will not need to increase the main volume control to achieve the same amount of output.

Phase

Signal phase can be left at '0°', or shifted 180° (inverted), by pressing the *Phase* button (see figure 1). This applies to the output of the subwoofer compared to its input.

To get the most from all of your speakers they must be operating in *Phase*. That is the signals must all be positive going or negative going simultaneously. If this is not the case and one signal is positive going and the other is negative going the result will be a cancellation of signal and the sound at those particular frequencies will be perceived as quite 'empty' sounding and lacking potential impact.

The setting of the *Phase* button (ie. 0° or 180°) and the resulting sound is dependant on where the subwoofer is positioned in relation to the main speakers. The best way to find the correct setting is through trial and error during set up by comparative listening tests. In most cases the effect will be subtle and there won't be a complete lack of bass. If no difference can be heard, the position of the button is not crucial.

The effect of phase can best be shown with the representation of a sine wave (see figure 5). The effect shown in the lower diagram is with the signals 'out of phase' and this can be rectified by changing the position of the *Phase* button. This will invert the negative going signal and the result will be the same as the first, 'In Phase', example.

Line Level Inputs

Line level inputs (see figure 1 or 2) need to be connected to the 'PRE OUT' or 'SUB OUT' from your stereo amplifier / AV receiver. The line level stereo input performs a summing function adding the left and right signals where applicable, to give a mono (L+R) signal. This mono signal is filtered and then amplified before being sent to the subwoofer driver.

Speaker Level Inputs

The speaker level stereo inputs combine the signal going to the main left and right speakers providing a mono (L+R) signal to the subwoofer driver. This mono signal is filtered and then amplified in the same way as the line level input signal before being sent to the loudspeaker. Two pairs of terminals are provided so that the speaker level signals can "pass through" the subwoofer on the way to the main speakers (see figure 1 or 3).

Volume

The volume control will adjust the volume of the subwoofer only. The control can be set for the subtleties of the lower octaves in musical performances or increased for the earth shattering explosions and effects on movie sound tracks. The volume control on your main amplifier / AV receiver controls volume for your overall system (see figure 1).

positioning

The procedure for setting up any subwoofer can be time consuming, requiring numerous minor adjustments to get the desired result. There is no definitive 'correct' way to set up a subwoofer. Given different listening environments different people's tastes and different speakers, there are a number of variables that have to be taken into consideration.

It is up to the individual listener to adjust the Seismix for the character and strength of bass that is preferred for whatever type of source material is being reproduced.

It is beneficial to select music that is familiar to you when carrying out listening tests and setting up procedures and as a suggestion play recordings that use wooden instruments such as acoustic guitars, oboes, cello etc. These instruments exhibit a strong resonant characteristic in the low to mid bass region and will highlight unpleasant 'woody' or 'chesty' sound qualities suggesting there is too much overlap in the bass information between the subwoofer and main speakers.

To fine tune the integration of the Seismix into your Hi-fi system, start with both the *Low Pass (Hz)* and *Volume* at the middle setting. Gradually adjust the setting of the *Low Pass (Hz)* either up or down (see figure 1). This will vary the amount of overlap from the sub to the main speakers and increase or decrease the level at those frequencies. The effect is a strengthening or weakening of the upper bass region. You might reach a point where the sound develops a 'boxy' or 'chesty' quality which is not desirable. This could indicate there is too much overlap from the sub to the main speakers and is remedied by turning the *Low Pass (Hz)* back. Adjust the *Volume* level to suit your personal taste.

trouble shooting

Symptom	Probable Cause	Treatment
No noise from the subwoofer when main power is on	Auto switch circuit has not operated due to no signal	Play source material and gradually increase the volume from the main Hi-fi amplifier
	<i>Volume</i> turned down	Increase <i>Volume</i> on the sub
	Signal has no bass content	Play source material with sufficient bass content
Very little bass coming from the subwoofer	Apart from the source material having little bass content, the settings on the sub may need adjustment	Increase setting of the <i>Low Pass (Hz)</i> control
		Try changing position of the <i>Phase</i> button
		Increase <i>Volume</i> on the sub
Bass content is too strong and uncomfortable to listen to	Settings on the subwoofer may need adjustment	Change gain button from 'Lo' to 'Hi'
		Decrease the setting of the <i>Low Pass (Hz)</i> control
Subwoofer emits a humming sound	Current may be circulating from the subwoofer's signal ground through the mains earth wiring.	Decrease the <i>Volume</i> on the subwoofer
		Activate the <i>Earth Lift</i> by pushing the button which will break the current loop

If you have any queries regarding the Seismix, the set up procedure or any other KRIX product, please contact your nearest Krix retailer or Krix direct. Contact details are on the back cover of this booklet.

warranty

5 years warranty applies to the cabinet and speaker

1 year warranty applies to the amplifier and related internal electronics

(Refer to the details on the warranty card supplied)

Seismix 3: specifications

Drivers

Bass Driver	Nominal 255mm (10") diameter paper cone driver developed for high level, low frequency reinforcement
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Electronics

Amplifier Power	200 watts RMS into the nominal 4 ohm driver Maximum instantaneous power 400 watts
Amplifier S/N	>70dB
Distortion - Input to Speaker	<0.1% - @ 80 watts RMS
Line Level Inputs	Left Input (mono) Lo – 900mV RMS for maximum output Hi – 100mV RMS Left + Right Input (stereo) Lo – 450mV RMS for maximum output Hi – 50mV RMS

General

Frequency Range	22Hz - 150Hz (-6dB) in room response
Output	120dB maximum SPL in room response
Auto Power On / Off	15 minute delay before switching to standby after no input signal
Phase Select	0° or 180° (relative to input signal)

Cabinet

Enclosure Type	Bass reflex, front vented
Dimensions	415mm high x 360mm wide x 390mm deep
Material	17mm MDF
Finish	Vinyl or lacquered timber veneer
Weight	18kg

Due to continued development specifications may change without notice

Seismix 5: specifications

Drivers

Bass Driver	Nominal 305mm (12") diameter paper cone driver developed for high level, low frequency reinforcement and large linear cone travel
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Electronics

Amplifier Power	400 watts RMS into the nominal 4 ohm driver Maximum instantaneous power 800 watts
Amplifier S/N	>70dB
Distortion - Input to Speaker	<0.1% - @ 80 watts RMS
Line Level Inputs	Left Input (mono) Lo – 900mV RMS for maximum output Hi – 100mV RMS Left + Right Input (stereo) Lo – 450mV RMS for maximum output Hi – 50mV RMS

General

Frequency Range	16Hz - 150Hz (-6dB) in room response
Output	122dB maximum SPL in room response
Auto Power On / Off	15 minute delay before switching to standby after no input signal
Phase Select	0° or 180° (relative to input signal)

Cabinet

Enclosure Type	Bass reflex, front vented
Dimensions	460mm high x 395mm wide x 440mm deep
Material	19mm and 25mm MDF
Finish	Vinyl or lacquered timber veneer
Weight	30kg

Due to continued development specifications may change without notice

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