BAREFOOT SOUND



MiniMain12

Owner's Manual

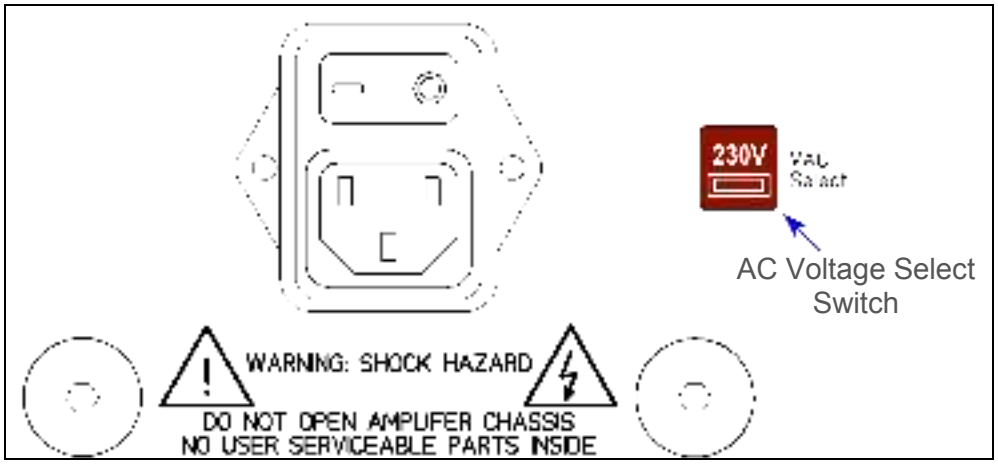
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Warnings!

The Mains Voltage Select switch (VAC Select) on the rear panel must be in the 230V position for AC power line voltages over 132 VAC. Connecting the power cord to AC power line voltages over 132 VAC while the VAC Select switch is in the 115V position will damage the amplifier. Such damage is NOT covered under warranty.

Rear panel VAC Select switch location



Please read and follow the safety information below:

- Do not remove the rear amplifier panel. There is a risk of electric shock. No user serviceable parts are inside. Please refer service issues to a qualified technician.
- Do not operate this device with an ungrounded mains power cable or a mains connection that is ungrounded. This may result in personal injury.
- Do not place open flames such as lighted candles on or near this device .
- Do not expose this device to water, rain or high humidity. Do no place objects filled with liquids, such as vases, on or near this device.
- This speaker requires adequate airflow to maintain proper cooling. Do not obstruct airflow around the speaker. Do not run the speaker upside down (mains power connector on top).
- Do not operate this device in ambient temperatures above 30°C (85°F). Over-temperature may cause device failure.

Caution! This speaker is capable of producing sound pressure levels in excess of 85dB which may cause permanent hearing damage. Always verify that input signal levels are attenuated before powering on the speaker.

1. Description

The MiniMain12 is a four-way active loudspeaker capable of nearfield, mid-field and far-field operation. The seven drive units are all housed in sealed enclosures. The DSP controlled four-way power amplifier module can deliver 1200 Watts continuously. The system accepts either analog or 24 bit/192 kHz digital audio signals. Cutting edge Speaker Emulation technology enable the MiniMain12 to mimic frequency, phase, and transient responses, dynamic compression and distortion signature of classic studio monitors.



2. Startup

1. Verify that AC Voltage select switch on the rear panel is in the correct position for the AC voltage in your facility (see warnings on pervious page for details) then pug in grounded mains power cable.

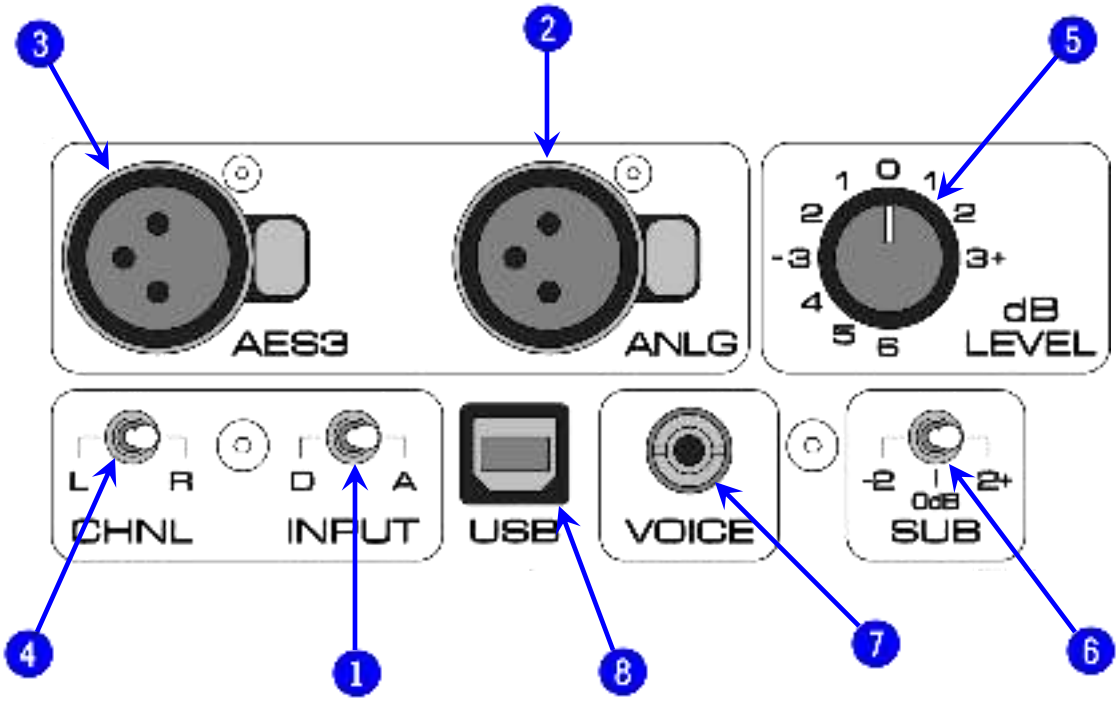
2. Set Input toggle switch to either analog (A) or digital (D) depending on the type of source signal you are using. For digital signals also set the Channel toggle switch to left (L) or right (R) in accordance with the speaker position.

3. Ensure that the audio signal is fully attenuated (AES3 signal requires digital attenuation) then plug in the signal XLR cable to the appropriate input.

4. Power on the speaker with the rocker switch located on the rear panel above the mains connector. The LED indicator on the front of the speaker will illuminate Red for a couple of seconds then turn Aqua.

5. Turn up the audio signal and enjoy!

3. Inputs and Controls



1. [INPUT] Toggle switch selects between the analog (A) and digital (D) inputs.

2. [ANLG] XLR connector is designed to receive analog balanced line level audio signal from sources such as preamplifiers, sound cards, monitor controllers and mixing consoles. Pin 1 is tied to chassis ground. Pins 2 & 3 are fully floating differential inputs. Pin 3 must be referenced to ground for single ended input signals. The analog signal is converted to 24bit/192kHz digital audio via a precision, ultra-high-fidelity analog to digital converter section inside the MiniMain12.

3. [AES3] XLR connector is designed to receive digital AES3 standard audio signal from sources such as sound cards and digital audio workstations. The digital signal must be attenuated at the source ("In The Box"). Non-attenutated digital audio will produce very high sound pressure levels that can damage your ears and potentially the speakers.

4. [CHNL] Toggle switch selects between the left (L) or right (R) channel inside the AES3 data signal.

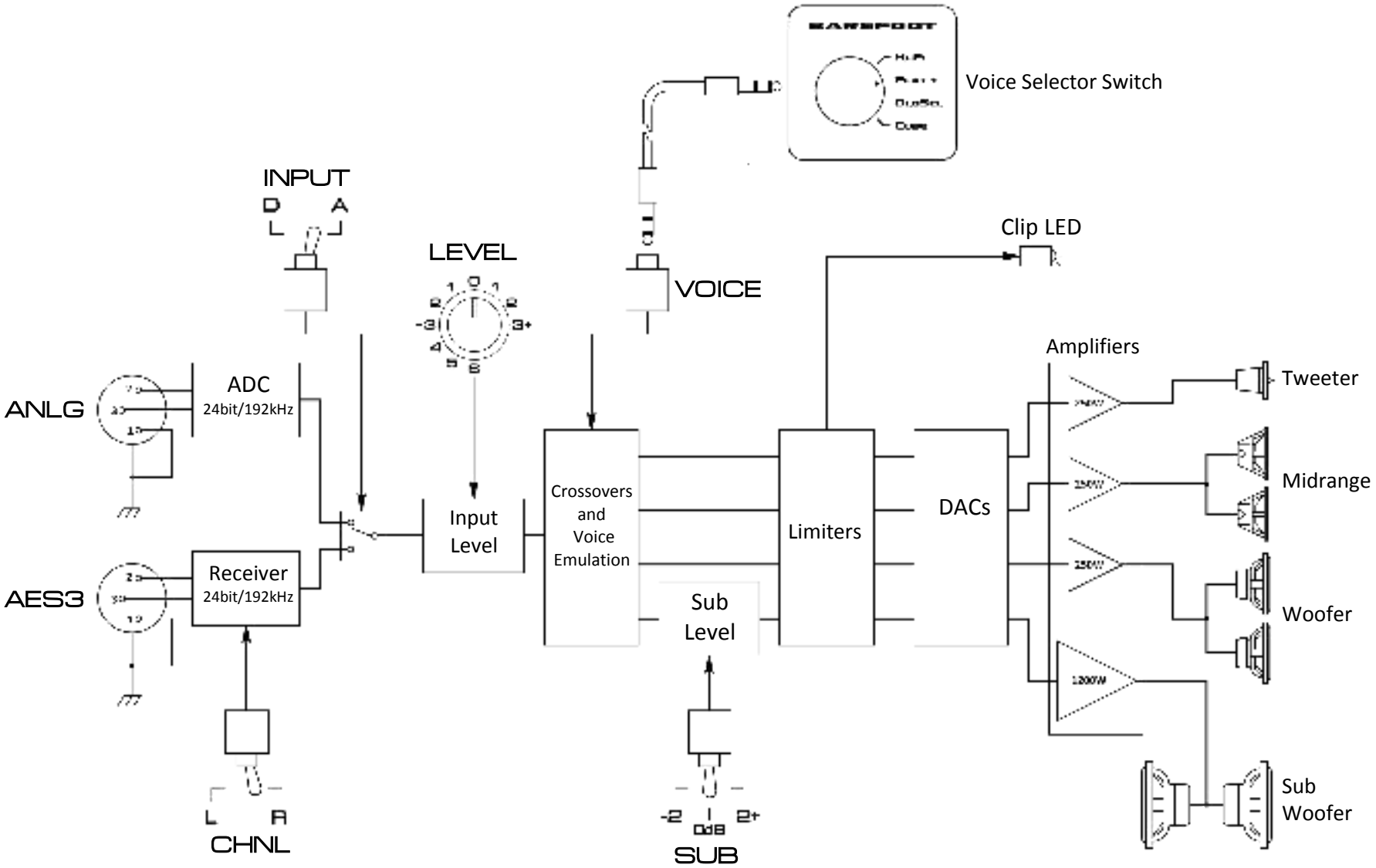
5. [LEVEL] Eight position rotary switch adjusts the level of both the Analog and Digital inputs in precise 1dB increments from +3dB to –6dB.

6. [SUB] Three position toggle switch adjusts the level of the subwoofers from 0dB to +2dB or –2dB.

7. [VOICE] 3.5mm stereo phone jack for connection to Voice Selector Switch. See Section 7 for Voice Emulation setting details. The default setting with no switch connected is Flat.

8. [USB] The universal serial bus connector is for factory adjustments and calibrations. This connector is not an audio input.

4. Signal Flow Diagram



5. Protection

Limiters

Peak Limiter

The Subwoofer, Woofer, Midrange and Tweeter channels have individual Peak Limiters designed to protect each driver from large, short duration audio input signal spikes that might cause damage due to over excursion of the voice coil. These limiters are implemented digitally within the DSP in such a manner that they have zero effect on the audio signal below their thresholds. The front LED indicator light will flash RED when a Peak Limiter on any of the driver channels is triggered. The duration of such events is only a fraction of a second. Therefore, the LED flash may appear pink or orange as the eye naturally blends the normally aqua-blue color of the LED with the red.

RMS Limiter

The Subwoofer, Woofer, Midrange and Tweeter channels have individual RMS Limiters designed to protect each driver from long duration audio input signals that might cause thermal damage due to the voice coil. These limiters are implemented digitally within the DSP in such a manner that they have zero effect on the audio signal below their thresholds. The front LED indicator light will flash RED when a RMS Limiter on any of the driver channels is triggered.

Caution: Signals large enough to trigger any of the limiters can generate very high sound pressure levels that may result in permanent hearing damage.

Over Current

In the event of a large audio input signal that might damage the amplifiers or power supply due to current overload, the power supply is designed to enter into Over Current protect mode. This state typically results from a large, broadband input signal burst that flat lines the limiters on all four channels simultaneously. While the fault persists the amplifier power rails shut down, the speaker goes quiet, and the front panel LED turns red. Once the audio input signal is turned down the speaker should reboot within a few seconds. If the speaker fails to reboot or the LED light goes out completely, disconnect the audio input cable and power cycle the speaker. Verify the signal level is attenuated before reconnecting audio input cable.

Caution: Signals that cause Over Current protection to trigger can generate very high sound pressure levels that may result in permanent hearing damage.

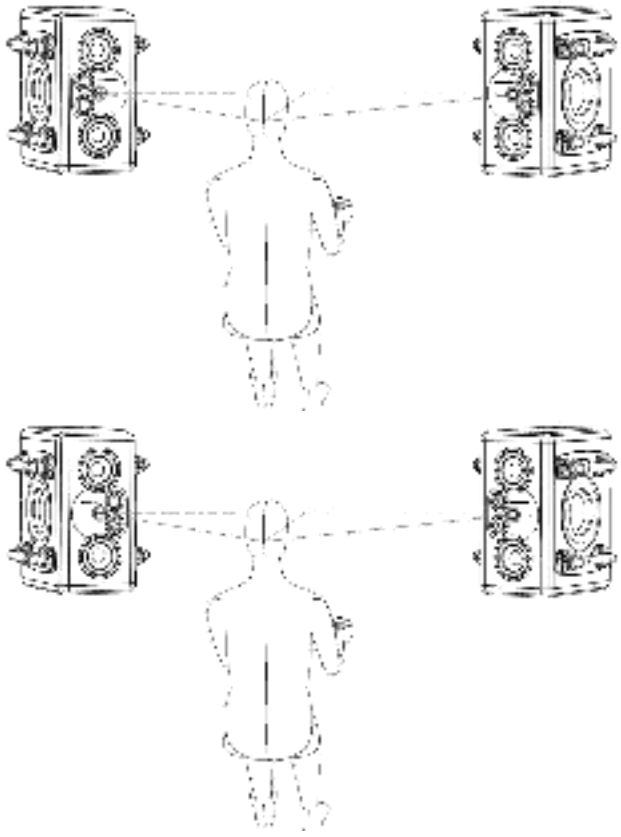
6. Positioning

The acoustic center of the MiniMain12 is located at the center of the tweeter. The MM12 is designed to work equally well as a nearfield, mid-field or far-field monitor. The minimum recommended listening distance is 1 meter (39.4”). While speaker positioning can be highly room dependent, a good starting point is to create an equilateral triangle between the two speakers and the listening position. The speakers should be angled inward approximately 30 degrees so the tweeter axes aim towards the listener’s ears, crossing a few inches behind the head.

The speakers should be arranged symmetrically with the midrange drivers oriented to the outsides or insides of both speakers.

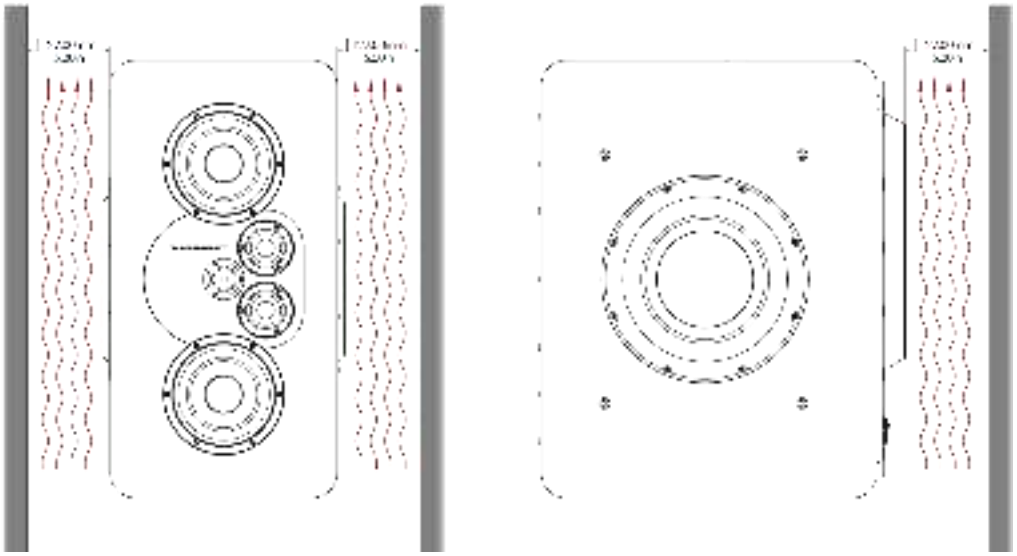
Soffit mounting the MiniMain12 is not recommended .

Example: Symmetrical stereo arrangements.



Cooling

While the Hypex amplifier modules that drive the MiniMain12 are a very efficient, the speaker still generates a significant amount of heat that must be dissipated. This heat is transmitted to the air via the rear amplifier plate, heat sink and the driver cones. In order to ensure proper airflow, a minimum of 5” (127mm) clearance should be maintained between the speaker and any large obstructions. An ambient temperature below 30°C (85°F) should be maintained. Over-temperature may cause speaker to overheat and shut down.



7. Voice Emulation

With the MM12, you can box up your secondary reference monitors for good. Despite the advantages of high-resolution monitors, many engineers still rely on their NS-10s and Auratones as secondary references. These speakers have long traditions and people find them familiar and useful for focusing in on certain aspects of their mix. However, it's also a fact that crowding your console with those extra boxes degrades the sound field of the primary reference monitors. Not to mention, they are no longer manufactured, need amplifiers, require cable runs, and consume more studio space. To offer an elegant solution, while streamlining the studio at the same time, the MM12 has the ability to sound and translate like those classic speakers.

Voices:

FLAT - Optimal setting for accuracy, transparency and outstanding translation. Setting has a flat frequency response and extremely fast transient response. This is the default voice when the Voice Selector Switch is not connected.

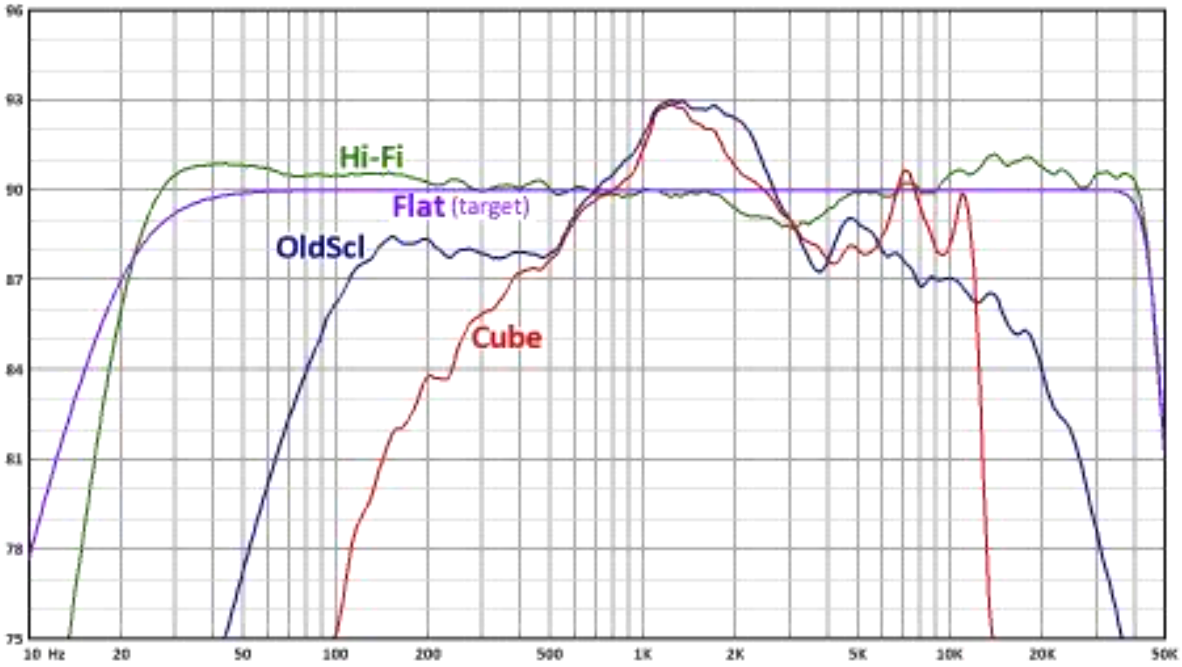
HI-FI - While it does not emulate any one speaker in particular, this setting is indicative of "hi-fi" in the colloquial sense of the term. The midrange is a bit scooped and highs are little accentuated. The bass response is altered to have less damping yielding a hybrid character somewhere between the fast, tight, articulate sound of a sealed cabinet and the slower, fatter sound of a ported speaker. At touch of tube amplifier warmth has also been added. The result is a sweeter more forgiving sonic character.

OLDSCL - This setting emulates the frequency, phase, and transient response, along with the dynamic compression and distortion signature for the NS-10M paired with a "3B" type amplifier.

CUBE - This setting emulates the frequency, phase, and transient response, along with the dynamic compression and distortion signature for the Auratone 5C paired with a "3B" type amplifier.

Voice Emulation Frequency Responses:

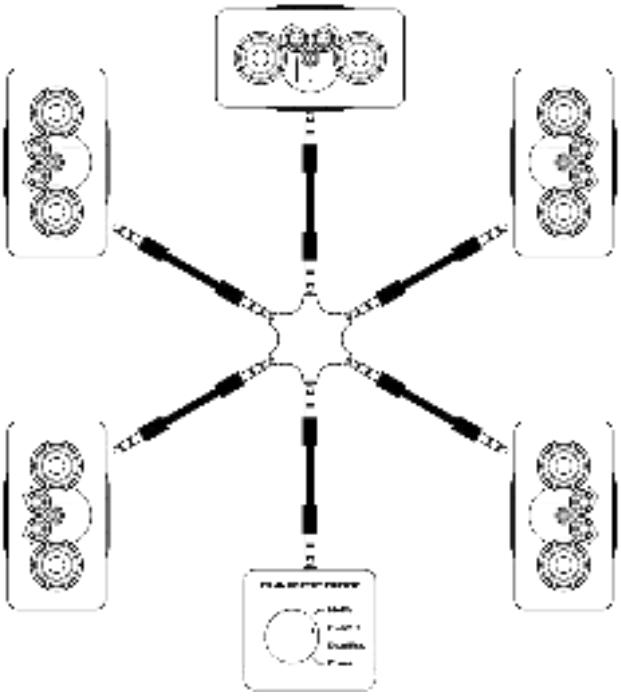
dB SPL at 1 meter, -15 dBV input (attenuator = 0db)



Voice Selector Connection:

The Voice Selector switch box is connected to the Voice jack of the speaker via any standard 3.5 mm stereo phone cable. The included 6-way splitter can be used to control the Voice Emulation of up to 5 speakers. However, the input impedance of the Voice jack is very high. So, additional splitters can be daisy chained in order to control virtually any number of speakers.

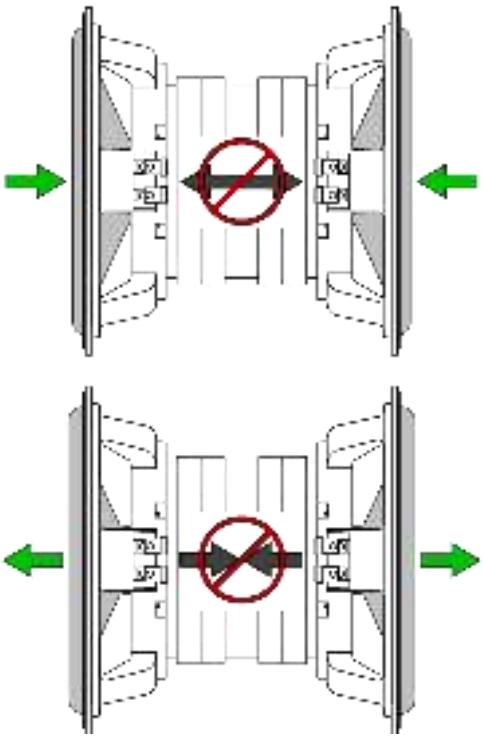
Caveat: Plugging the speaker into different mains outlets can potentially cause erratic behavior in the Voice control. The safety grounds of different outlets can sometimes have ground potential differences of a few volts of more. The resulting voltage spread between the grounded chassis of various speakers can cause the Voice control inputs to read incorrect settings or become unstable. Care must be taken with the studio mains power and safety ground layout. If this is a concern, please consult a qualified electrician.



Example: 5 channel Voice Emulation control layout.

8. Force Cancellation

Cabinet vibrations are a significant source of distortion and coloration in most loudspeakers. The primary mechanism that generates cabinet vibrations is simple Newtonian action and reaction. As the driver motor (magnet and voice coil) forces the cone to move back and forth in order to generate sound, the cone exerts an equal and opposite force on the motor. This force is transmitted through the driver frame to the cabinet, vibrating the cabinet walls and coloring the sound emitted by the cone. This effect is most especially prevalent in the low frequency drivers where the cone motion is greatest.



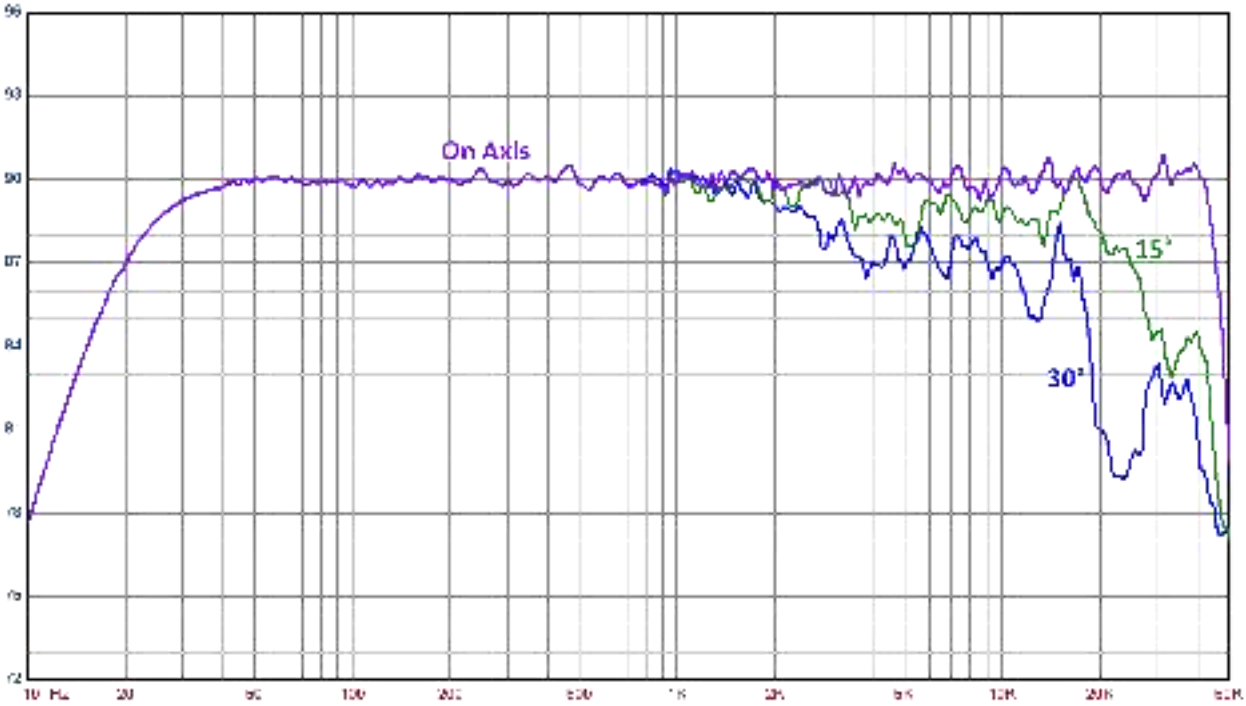
While, the MiniMain12 is built with a massive and well braced cabinet, we also tackle the problem at its source by eliminating vibrations before they even begin. This is achieved through our innovative force cancellation design. The low frequency drivers are mounted on opposing sides of the cabinet and their motors are locked together. As the cones are driven in and out in opposite directions the forces exerted on the motors cancel one another. The vibrations never make it to the cabinet because they are not allowed to develop in the first place.

This layout has further benefits. Since the drivers are locked together, the motors and frames function as a massive internal metal cabinet bracing. And because the wavelengths generated by the subwoofers are much larger than the speaker cabinet dimensions, the subs radiate as if they were a single point source located on axis with the tweeter.

8. Specifications

Analog Input	XLR female, Pin 1 ground, Pin 2 positive, Pin 3 negative Input Impedance = 100k Ohms Input Sensitivity (1m) = 90 dB @ -18 dBV (pass band)
Analog to Digital Conversion	Word Length: 24 bit Sample Rate: 192 kHz Oversampling = 128x Signal/Noise ≥ 125 dB
Digital Input	XLR female AES/EBU (AES3 standard) Input Impedance = 110 Ohms Word Length: 16,18, 20 or 24 bit Sample Rate: 32 kHz to 192 kHz Signal/Noise ≥ 133 dB
Frequency Response	20 Hz - 45 kHz (+/- 3 dB), 28 Hz - 40 kHz (+/- 1 dB)
Bass Response	-3 dB @ 20 Hz Q = 0.707 Slope = 12 dB/octave
Cabinet	90 liters total internal volume Sealed subwoofer, woofer and midrange enclosures Machined aluminum baffle plate Aluminum subwoofer frames function as lateral cabinet bracing Long fiber wool acoustic damping throughout
Crossover Frequencies	80 / 800 / 4000 Hz
Tweeter	1" ring radiator with Advanced neodymium motor Rear waveguide chamber Amplifier: 250W Hypex
Midranges	2 x 2.5" aluminum cone with Advanced neodymium motor +/- 2 mm linear excursion Amplifier: 250W Hypex
Woofers	2 x 7" aluminum cone with Advanced Geometry motor +/- 13 mm linear excursion Amplifier: 250W Hypex
Subwoofers	2 x 12" aluminum cone with Advanced Geometry neodymium motor +/- 25 mm linear excursion Amplifier: 1200W Hypex
Power	Mains Voltage Input: 115 or 230 VAC selectable Idle Power Consumption = 50W Maximum Power Consumption = 1500W
Weight	Speaker: 132 lbs each (54 kg) Shipping: 135 lbs each (61 kg)
Dimensions HxWxD	Cabinet: 26.0 x 13.5 x 20.0 inches (660 x 343 x 508 mm) Overall: 26.0 x 14.4 x 21.9 inches (660 x 366 x 556 mm)

MiniMain12 Frequency Response:



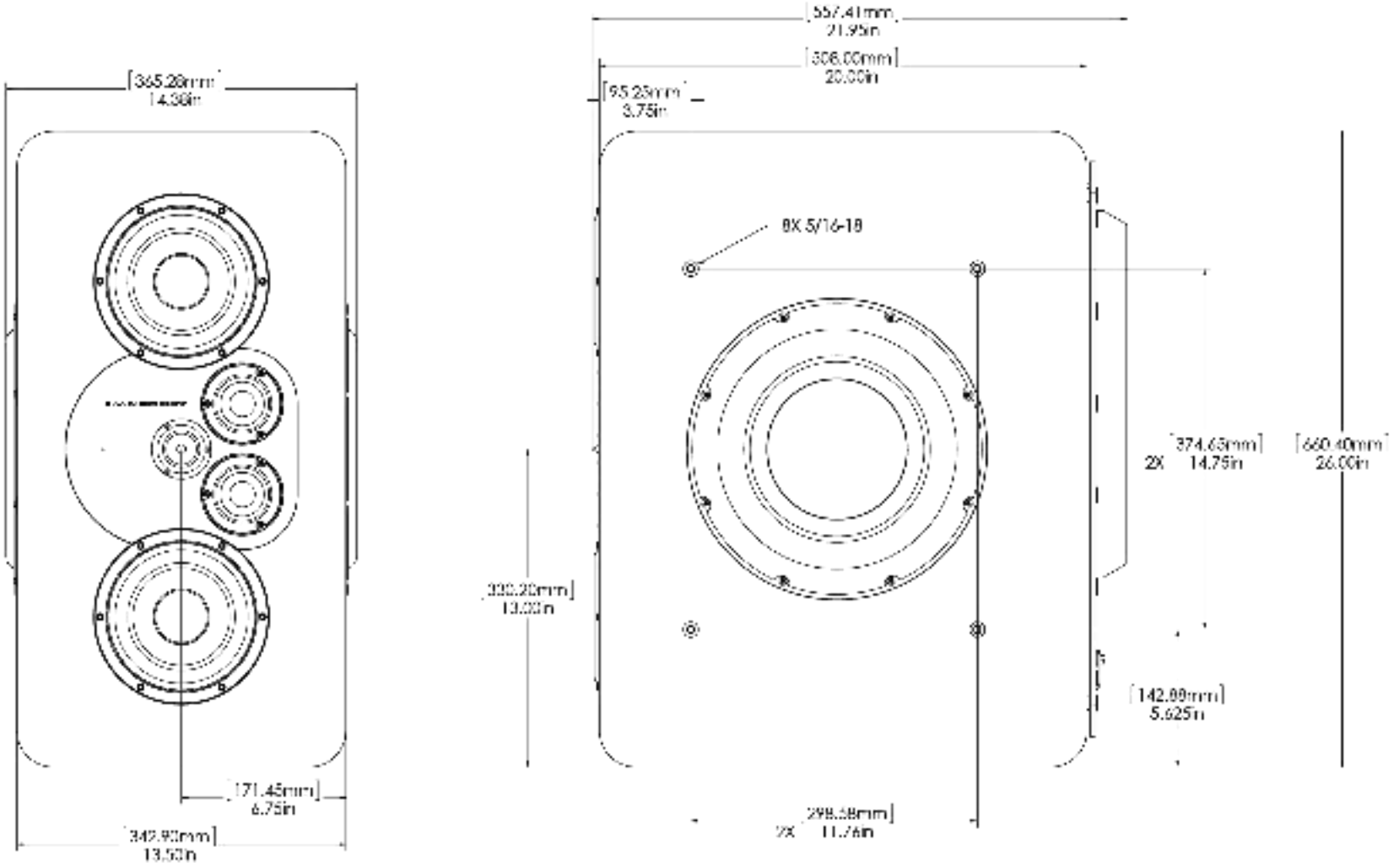
dB SPL at 1 meter, free field, -15 dBV input (attenuator = 0db)

9. Maintenance

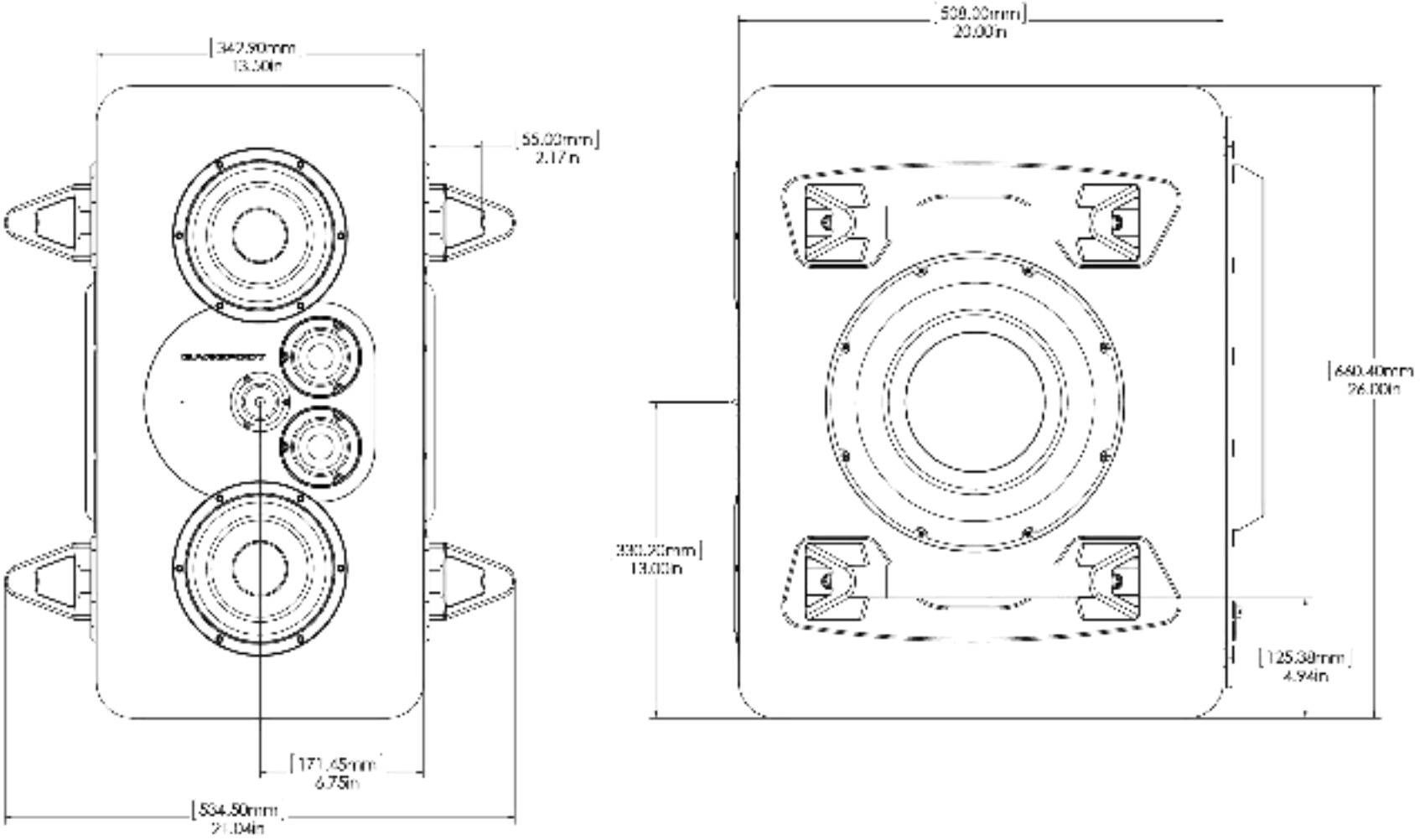
Products may be cleaned using a non-abrasive cloth lightly damped with water. Disconnect the mains power cable when cleaning to avoid risk of electric shock. Do not use alcohol-based cleaners.

Repairs, maintenance, or other servicing of this product when its interior compartment is exposed should only be performed under specific advice of Barefoot Sound by a qualified technician or by the Barefoot Service Center. There are no user-serviceable parts inside this product.

9. Drawing


[365.28mm]
14.38in
[171.45mm]
6.75in
[342.90mm]
13.50in
[557.41mm]
21.95in
[508.00mm]
20.00in
[95.25mm]
3.75in
8X 5/16-18
[374.65mm]
2X 14.75in
[660.40mm]
26.00in
[330.20mm]
13.00in
[142.88mm]
5.625in
[298.58mm]
2X 11.76in

Drawing (with handles)



10. Warranty

This product is under limited warranty as described in the following conditions. The warranty period commences on the date of purchase from the authorized dealer. Barefoot Sound reserves the right to request your original purchase receipt as proof of the date of purchase. The warranty follows the product and is transferable to any subsequent owner(s) as long as a copy of the original purchase receipt from the authorized dealer can be provided.

Electronic components and cabinetry of the product are warranted for a period of three (3) years against manufacturing defect, covering parts and labor for necessary repairs.

Moving speaker components are warranted for a period of one (1) year against manufacturing defect.

The manufacturer's warranties are limited to physical defects in the materials, parts and workmanship used in making the product. Misuse, incorrect installation, connection or handling, repairs or modifications performed by unauthorized persons, abnormal conditions, deliberate abuse, damage due to accidents such as power surges, water, fire, or any other are excluded from any warranty claims. In addition, faulty or unsuitable ancillary equipment, accessories, or options are fitted at owner's risk.

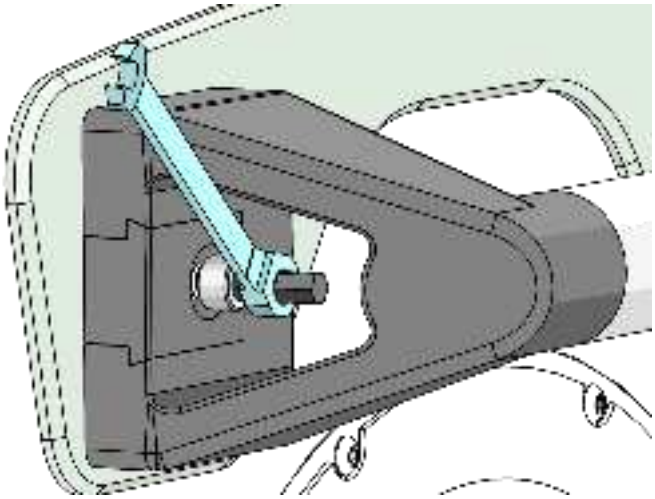
Barefoot Sound warrants all service repairs and replacements for 180 days from the date of return to the customer/owner. This warranty specifically excludes unrelated additional defects or failures. Otherwise the same general provisions of the limited product warranties apply.

Technical Support and Service

For warranty service and assistance, contact the original authorized dealer/distributor to arrange for return and/or repair of the product. Barefoot Sound will strive to satisfy all service requests in the fastest manner possible. Under the warranty, Barefoot Sound will repair, or at its discretion, replace the product at no charge, provided it is returned (postage paid) to an authorized Barefoot Sound service center. Any shipping or duties incurred are the customer's responsibility. Products should be returned suitably packaged to protect from shipping damage, or in their original packaging. Barefoot Sound shall be the sole and final authority to determine the validity of all warranty issues. All non-warranty repairs for current products will be charged according to the service repair pricing schedule. Repair prices will either be based on a flat fee for repair or replacement, or will be estimated depending on the repair deemed necessary.

11. Handle Attachment

A second pair of hands is helpful for attaching the optional handles. There are two handle plate types, one for the top half of the cabinet and one for the bottom. See the drawing on page 13 for the correct orientations. Align the handle holes with the cabinet holes. Hold the handle in place and insert the supplied 5/16-18 bolts with washers. The supplied ratchet wrench has a double sided hex bit attached. Insert one end of the bit to tighten the bolts. The other end will loosen. Find the correct orientation of the wrench and tighten the bolts until they are snug. Do not over tighten!





Barefoot Sound LLC
http://barefootsound.com
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