

OWNER'S MANUAL



HYPER SOUND[®] MONO/STEREO SYSTEM directional audio speakers

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1. IMPORTANT SAFETY INFORMATION

1. Read all documentation prior to operating your equipment.
2. Follow all instructions carefully.
3. Keep these instructions.
4. Before making any connections to the HyperSound system, ensure you disconnect the unit from the mains power supply.
5. Only use power outlets that conform to the power requirements.
6. Use HyperSound Amplifier and supplied power source only.
7. Unplug the system during electrical storms or when unused for long periods of time.
8. Do not block any ventilation openings.
9. Keep system away from high heat or moisture producing items and/or devices.
10. This product is approved for indoor use only in normal operating temperatures.
11. Protect the power cord from being walked on or pinched, especially at plugs or anywhere the power cord connects to the system.
12. To reduce the risk of electronic shock, do not remove cover. There are no user serviceable parts inside.
13. CAUTION - Do not operate the apparatus with the front grill of the emitter removed.
14. Do not allow any foreign objects to pass through the emitter grill face or touch the emitter.
15. Do not spill water or other liquids into or on the unit.
16. System should be installed by a trained professional only.
17. Research indicates that levels of ultrasound used in HyperSound devices are not harmful.

SAFETY REGULATIONS

For commercial and professional use only

WARNING

To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

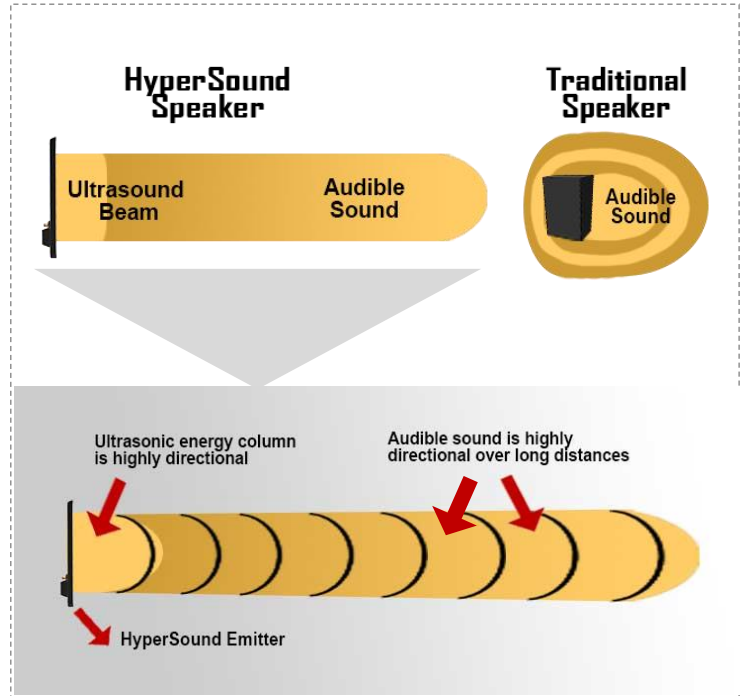
Note: Any modifications to the system not expressly approved by the manufacturer and/or compliance representative could void the user's authority to operate the equipment.

2. PRODUCT DESCRIPTION

HyperSound is a uniquely effective solution for creating audio zones. The technology generates audible sound along an ultrasonic beam that is highly directional and maintains sonic clarity and intelligibility over longer distances than traditional loudspeakers.

By beaming sound with the same precision as a flashlight, messages only reach the intended target. Because audio can be tightly directed to a specific area it provides individuals in that area the benefit of audio without disturbing others.

Since the HyperSound directed audio speaker delivers sound precisely, less volume is necessary to project sound where it is needed. Since ultrasound is highly directional, the audio sound placement is precise. Directional sound is pointed to the target listener(s) or intentionally reflected off a surface.



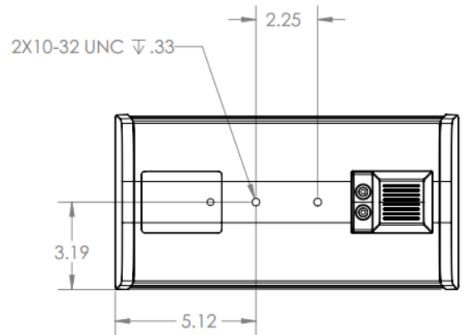
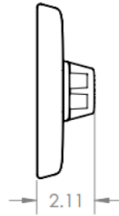
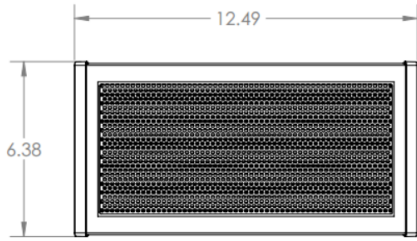
Key Features	Benefits
Small speaker size, lightweight	<ul style="list-style-type: none"> • Easy integration into commercial applications • Multiple mounting options, easy to mount, very thin and flat
Highly directional	<ul style="list-style-type: none"> • Creates tight audio zones • Isolates sound to a specific region or person • Diminishes sound bleed and noise pollution • Communicate audio over longer distances while maintaining intelligibility • Effective in high ambient noise environments
Can act as a virtual audio source	<ul style="list-style-type: none"> • Sound can be projected from surfaces
Ability to target each ear individually	<ul style="list-style-type: none"> • Produces 3D audio effect
Patented DSP processing	<ul style="list-style-type: none"> • Innovative techniques generate low distortion and enhanced frequency response to support a multitude of directed audio applications

3. ITEMS INCLUDED

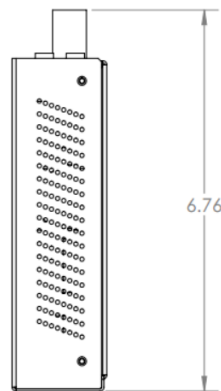
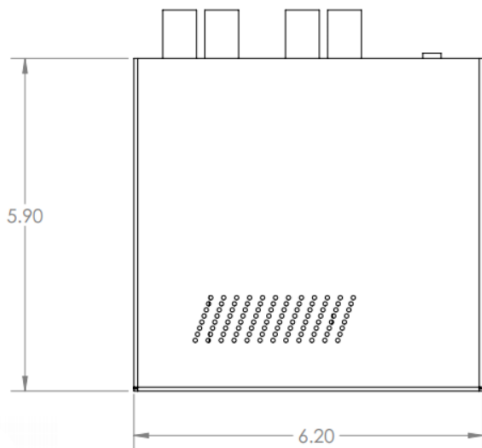


	MONO SYSTEM	STEREO SYSTEM
A	1 HyperSound Speaker	2 HyperSound Speakers
B	1 Set of red & black speaker cables with banana connectors 1 Audio cable	2 Sets of red & black speaker cables with banana connectors 1 Audio cable
C	1 Amplifier	1 Amplifier
D	1 30 volt DC power supply	1 30 volt DC power supply

4. PRODUCT ILLUSTRATIONS



TITLE: 6x10 Emitter Full Assembly		
SIZE B	DWG. NO. 13-0001-00-00	REV A



TITLE: Amplifier Full Housing		
SIZE B	DWG. NO. 13-0101-00-00	REV A

5. PRODUCT SPECIFICATIONS

MODEL HSS-3000

Electrical:

AC power cord length:
1.5 meters (5 feet)
Speaker cord length
(14AWG):
2 meters (6.5 feet)
Universal power supply:
Input: 100V-240V-50/60
Hz
Output: 30V DC @ 1.5
amps

Mechanical:

Speaker dimensions:
12.5 x 6.375 x 2.125
inches
Amplifier box:
6.25 x 6.75 x 1.875 inches
Unit Weight:
7.4 pounds (3.4 kg)
(per complete system)

Colors:

Black - Standard
White - Standard

Environmental:

Operating temperature:
10°C to 40°C (50° to
104°F)
Storage temperature:
-20°C to 50°C (-4°to
122°F)
Operating humidity range:
0 to 95% (non-
condensing)
Storage humidity range:
0 to 95% (non-
condensing)

System:

Max audio SPL output:
(single speaker) 89dB
@ 1.5 kHz/2 meters

Audio:

Impedance: 10k Ohms
Input connectors: 1
RCA style connector
(per channel)
Speaker cable
connectors:
2 banana style
connectors (per
speaker)
Powered subwoofer
output:
1 RCA style

System configuration:

Stereo 2 channel or
mono
Max input for max
output: 160 mVrms per
channel
Frequency response:
300 Hz to 18kHz

Ultrasonic and DSP

Processing:

Carrier frequency:
Proprietary in range of
40 kHz
Modulation method:
Proprietary and patent
pending processing

Ultrasonic Speaker

Type:

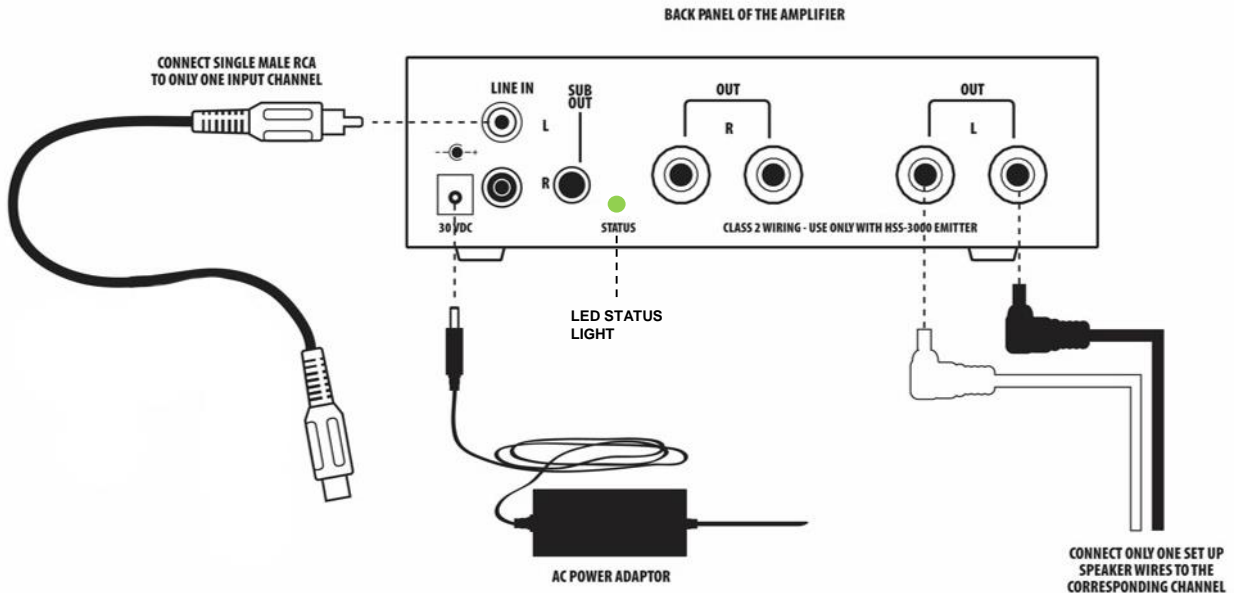
HyperSound proprietary,
patented and patent
pending monolithic film
transducer

Power Amplification:

Amplifier type:
Customized Class D
digital Amplifier power
output: 15 watts

Specifications are subject
to change without notice.

6. CONNECTIONS: MONO SYSTEM



NOTE: Unplug equipment while configuring all audio and power connections.

STEP 1: SPEAKER CABLE CONNECTIONS

Connect only one set of cables with red and black banana connections to the back of the speaker and the corresponding ends to the back of the amplifier as shown to the L – left channel.

STEP 2: RCA CABLE CONNECTIONS

Take the dual female RCA cable with the single male RCA cable at the other end, and connect the single male RCA to only the L (left) input channel. Connect the other end to your audio source (iPhone, iPad, PC, MP3 Player, TV, etc.) The input impedance is approximately 10k Ohms.

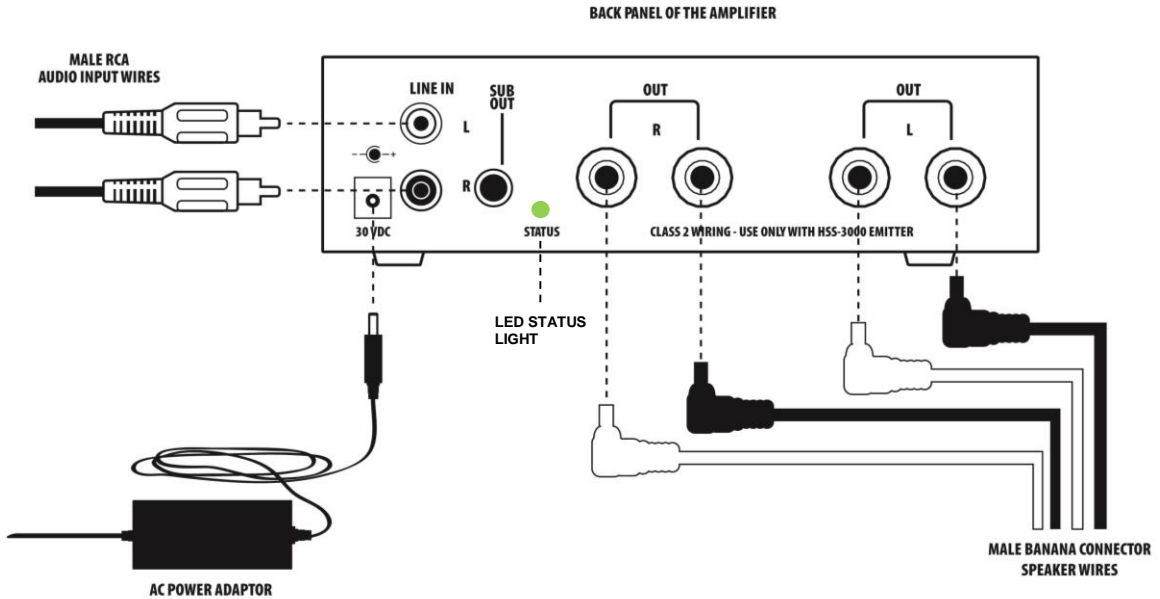
NOTE: Upon applying power to the system, the volume will slowly ramp up taking up to 1 minute to reach full volume. Wait for this time to be exceeded before adjusting the input level to the amplifier.

STEP 3: AMPLIFIER POWER CONNECTION

- Plug the amplifier power cord into the 30v DC Supply located on the back of the amplifier
- Plug the amplifier power supply into a properly grounded AC outlet

NOTE: The unit does not have a power switch. It will automatically turn ON when AC power is established. After connecting to the AC power outlet, a small LED light located next to the DC power receptacle will glow green, indicating the unit is on.

7. CONNECTIONS: STEREO SYSTEM



NOTE: Unplug equipment while configuring all audio and power connections.

STEP 1: SPEAKER CABLE CONNECTIONS

Connect cables with red and black banana connections to the back of each speaker and the corresponding ends to the back of the amplifier as shown.

STEP 2: RCA CABLE CONNECTIONS

Plug the dual RCA Jack end of this cable into the amplifier. Connect the other end to your audio source (iPhone, iPad, PC, MP3 Player, TV, etc.) The input impedance is approximately 10k Ohms.

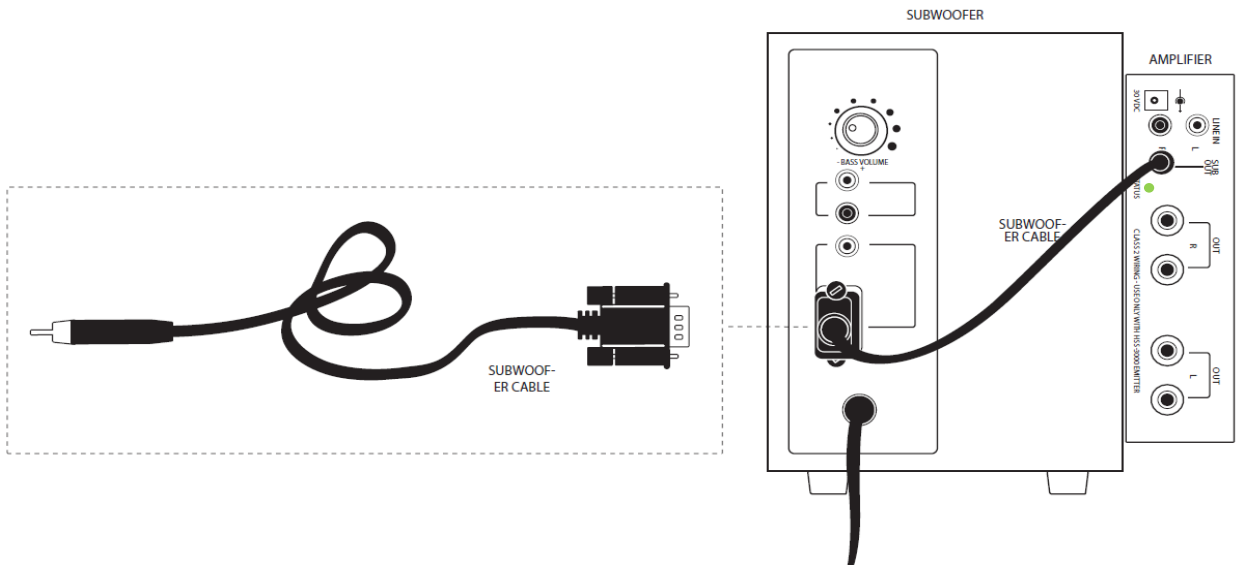
NOTE: Upon applying power to the system, the volume will slowly ramp up taking up to 1 minute to reach full volume. Wait for this time to be exceeded before adjusting the input level to the amplifier.

STEP 3: AMPLIFIER POWER CONNECTION

- Plug the amplifier power cord into the 30v DC Supply located on the back of the amplifier
- Plug the amplifier power supply into a properly grounded AC outlet

NOTE: The unit does not have a power switch. It will automatically turn ON when AC power is established. After connecting to the AC power outlet, a small LED light located next to the DC power receptacle will glow green, indicating the unit is on.

8. CONNECTIONS: WOOFER COMBO BOX CONNECTIONS (OPTIONAL SET-UP)

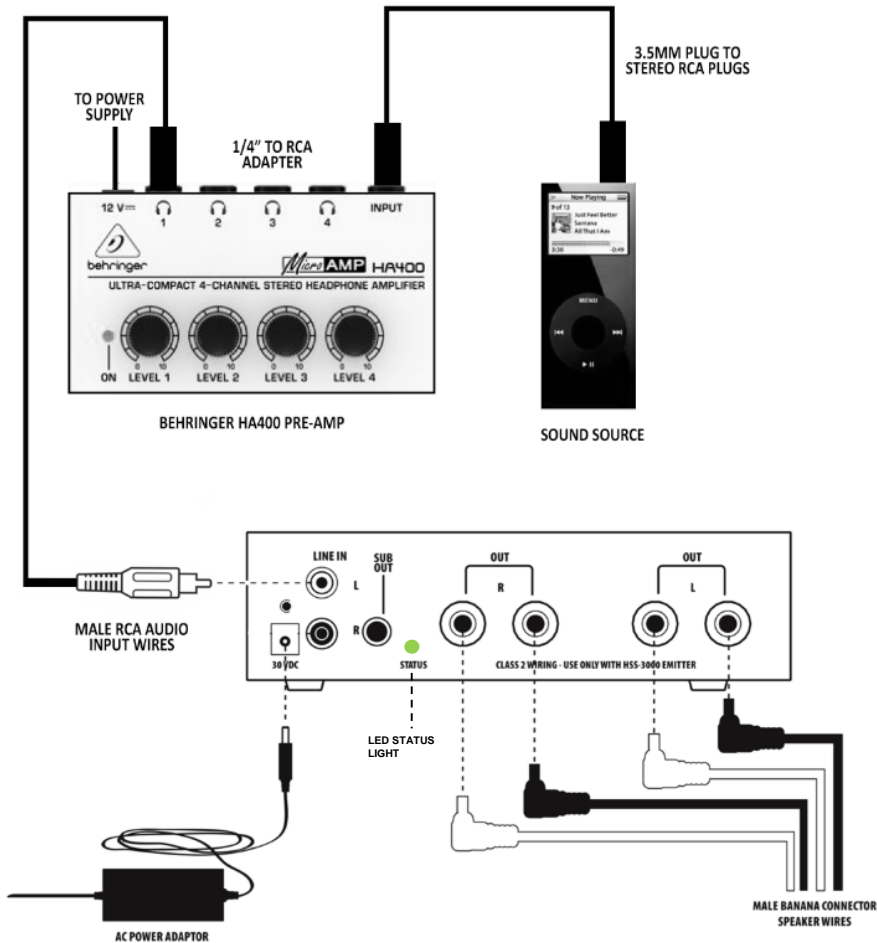


WOOFER CABLE WITH ONE MALE RCA AND DB9 CONNECTION

STEP 1: Connect Male RCA connection to Sub Out connection on the back of the Amplifier.

STEP 2: Plug the DB9 Connector to the Female DB9 Connector on the back of the woofer.

9. CONNECTIONS: BEHRINGER PRE-AMP CONNECTIONS (OPTIONAL)



WHEN TO USE A BEHRINGER PRE-AMP

If you decide to use a media player that has low output levels, the HyperSound amplifier may not be sufficient for achieving desired loudness from the emitters.

In this case, we recommend using a Behringer Pre-Amp, which will provide the signal boosting needed for optimal results.

NOTE: Unplug equipment while configuring all audio and power connections.

STEP 1: SPEAKER CABLE CONNECTIONS

Connect cables with red and black banana connections to the back of each speaker and the corresponding ends to the back of the amplifier as shown.

STEP 2: RCA CABLE CONNECTIONS

- Plug the dual RCA Jack end of this cable into the amplifier. Connect the other end to The Behringer Pre-Amp.
- Plug a 3.5MM RCA Jack into the Pre-Amp's Input, and the other end to your sound source.

NOTE: Up to 4 HyperSound Amplifiers can be connected to the Behringer HA4000. Connect to Outputs 1 – 4.

STEP 3: BEHRINGER POWER CONNECTION

- Plug the Behringer HA4000 12vdc power cord into the 12vd DC Supply located on the back of the Behringer Amplifier.
- Plug the Behringer amplifier power supply into a properly grounded AC outlet.

NOTE: To make adjustments, start with the Behringer HA4000 level at 0 and turn clockwise until you reach desired output level. If status light on HyperSound Amplifier flashes, you are over-driving the input and should reduce the input level until light is solid.

10. MAKING SOUND

Volume is controlled by the audio source device. HyperSound is highly directional, which allows for precise sound placement. Directional sound is pointed to the target listener(s) or intentionally reflected off an object. It is imperative to adjust the volume to a low enough level that is above the ambient noise level, yet loud enough to hear comfortably.

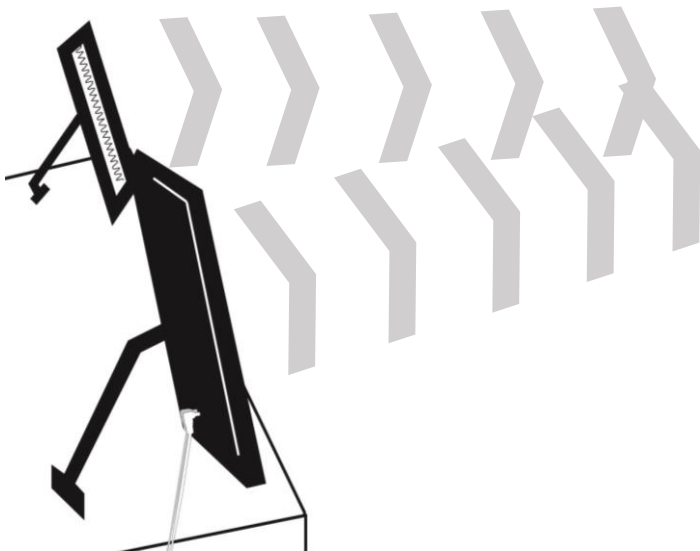
Note: Often when setting input or making adjustments, the volume is set too loud because the person adjusting the volume level and the person listening are not within the actual audio foot print, or intended listening zone. For best acoustic performance it is recommended that you maintain a > 3 feet distance between the emitter and the listener.

SETTING THE INPUT LEVEL

- a) Turn the unit on with all audio connections made.
- b) Wait 1 minute for the amplifier volume to stabilize.
- c) Using the green LED at the rear of the unit as a guide, increase the volume from the audio source until the green LED flashes at times.
- d) Set the audio input level to just below the point where the green LED flashes.
- e) This represents the maximum input level. Using above this level will generate excessive distortion.

PLAYING TEST TRACKS

- a) Connect the 3.5mm jack of the audio cable into your audio player device (iPhone, iPad, MP3 player, PC, TV, etc.)
- b) Play the desired audio track



11. COMMERCIAL INSTALLATION GUIDELINES

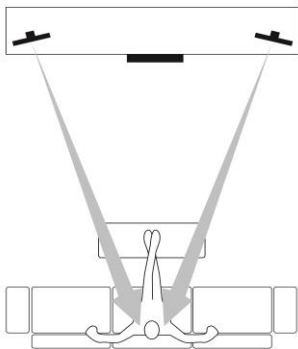
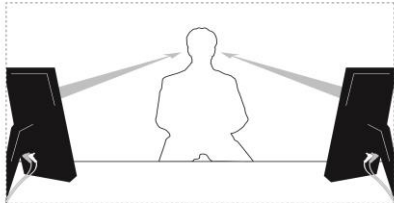
DESIGN OBJECTIVES

HyperSound is a uniquely effective solution for environments in which directionality is important. Other circumstances include the need for:

- Sound zone(s) or sound isolation
- Clear, intelligible audio
- Immersive listener experience(s)

When designing HyperSound into projects, keep in mind the system's main objective is to improve application performance without sound bleed and without adding to distracting background noise.

Audio footprint (zone) size depends on height and orientation of the system. If speakers are not able to provide sufficient sound pressure level, intelligibility, or cover the intended space, additional speakers may be used.



CHOOSING THE RIGHT MEDIA

One of the most important considerations is selecting media that can be heard clearly over any ambient noise.

For optimal playback, it is best to select audio files with the following attributes:

- Close, or within, human speech frequencies (300-7000 Hz)
- Does not contain high-contrasting content (numerous low volume sections and high volume sections within the same track)

If there is a requirement for numerous sound zones, each playing different media content, then each feed requires its own audio source and amplifier.

CREATING 3D AUDIO APPLICATIONS

You can create 3D audio experiences by setting-up HyperSound stereo speakers so that directed sound targets each ear individually.

- To ensure they are placed properly, first set them side-by-side.
- Direct the left speaker toward the Listener's left ear, and the right speaker toward the Listener's right ear.
- Adjust the speakers so that they are at equal angles.
- The speakers must be set at the exact same angle from the Listener to achieve the optimal level of highly targeted sound.
- The Listener should hear the sound equally from each speaker.

NOTE: If the Listener feels the audio is not balanced, adjust the speakers by turning them in or out until the Listener reports that the sound is centered.

12. REFLECTIVE SURFACES

REFLECTIVE SURFACES

Although HyperSound's audio beam is very narrow, it still will reflect from surfaces. Just like a mirror reflects light from a flashlight, HyperSound will reflect audio in a similar manner. It's important to understand that sound reflects from all hard surface materials, and will act differently when it hits other types of surfaces.

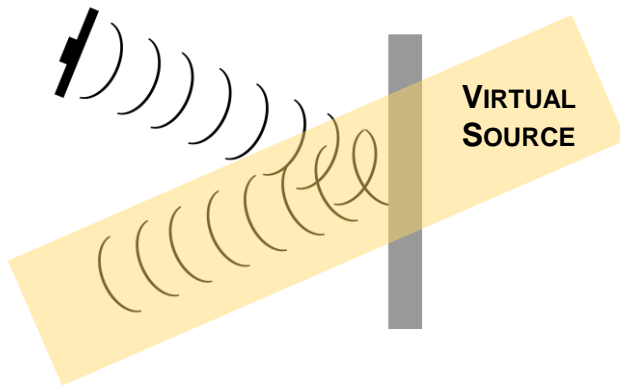
Tips:

- In order to avoid unwanted reflections, which spread the sound to wanted areas it is recommended that volume level should not be set any higher than necessary.
- If you have wood or vinyl flooring, try placing an area rug to help absorb some of those harmful reflections.

USING SURFACES FOR PROJECTION

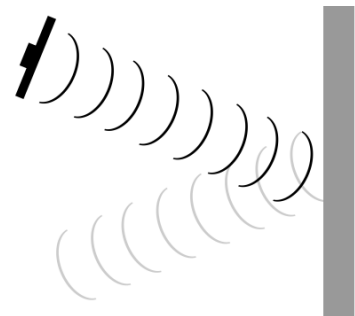
One of HyperSound's unique features is that it can leverage reflective surfaces to act like a virtual audio source. If the listener is not in the sound beam (standing off to the side or behind the HyperSound speaker) and the beam strikes a hard surface, the sound will be reflected back into the environment. By directing the sound beam against a surface that is reflective (such as wall or table), audible sound is created at the point of impact, which can create a powerful virtual speaker effect. It is also important to note that the beam will reflect with very similar directivity, so you should ensure beam stays within the intended listening area.

HS SOURCE



REFLECTION & VIRTUAL SOURCE

HS SOURCE



ABSORPTION

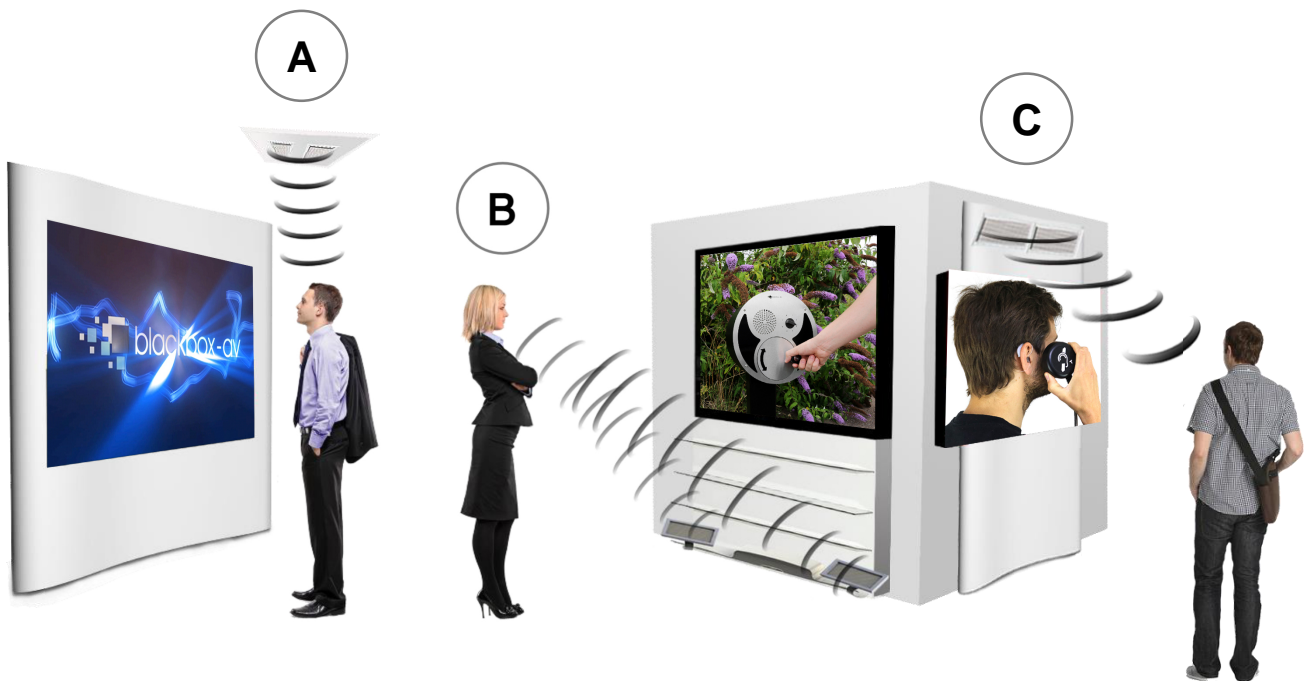
Note: Wherever you see your speaker reflected in the mirror, that's a point of reflection that should receive absorptive, or in some cases, diffusive acoustic treatment. Applying absorptive material to walls and other reflective surfaces is the primary method for taming unwanted reflections.

13. PLACEMENT

Important considerations when deciding on mounting/placement of your system:

- Speakers should be directed towards intended listeners only as to not disturb nearby employees or patrons.
- Amplifiers and speakers can be mounted separately, for example, into a separate room/cabinet where other components such as content players. We recommend the distance between the amplifier and speaker not to exceed 25 feet.
- For the best results, we recommend (refer to the diagram below):
 - a) Mounting the system directly above the listener
 - b) Mounting the system on the floor facing upwards toward the listener
 - c) Mounting the system on a wall facing downward at an angle toward the listener

NOTE: The customer is responsible for the correct selection and use of mounting hardware that will ensure the proper and safe wall-mounting of the speakers. Mounting and suspension of speakers should be done only by qualified professionals. Unsafe mounting can result in serious injury and equipment damage.



14. MOUNTING & POSITIONING

A.) TABLE & WALL-MOUNTING

Mounting hardware must position the system at the optimum height with appropriate angle adjustment capability.

B.) CEILING INSTALLATIONS

HyperSound does well in high ceiling applications since it generates a clearly focused sound beam without bleed. Custom ceiling box fixtures can be fitted directly into paneled ceilings for seamless audio integration. Whether the listener is standing or sitting - must also be taken into account. Recommended height range is when the speaker is positioned within 10 – 20 feet away from the intended listener's ear.

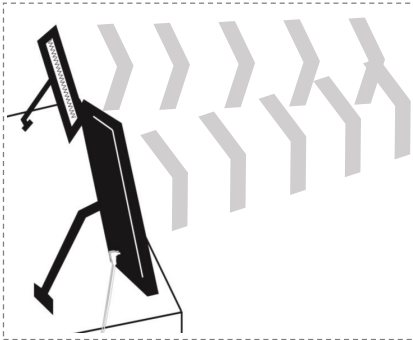
C.) FLOOR & KIOSK INSTALLATIONS

Lightweight speaker design and slim form factor make floor applications easy. Customizable floor modules are a simple solution for adding HyperSound to kiosk environments. The speakers blend easily into the building architecture and do not draw attention.

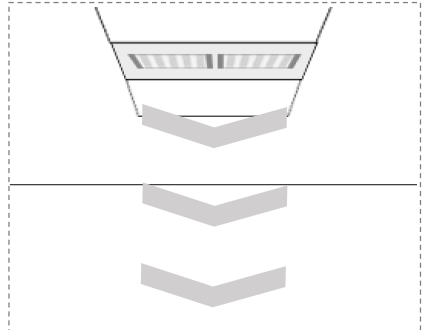
D.) TWIN SPEAKER ASSEMBLY

Create side-by-side HyperSound configurations with custom speaker brackets.

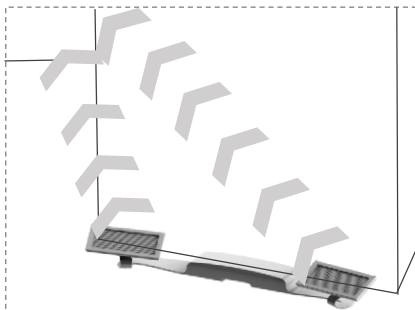
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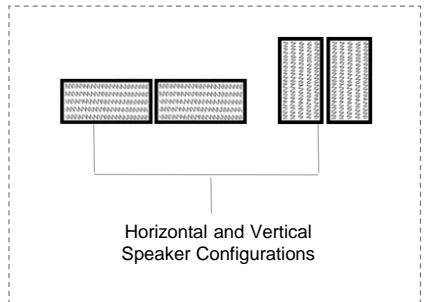
C



B



D



15. TROUBLESHOOTING

If there is little or no sound from your speakers, check these settings:

- Make sure a signal source is connected and producing sound.
- Make sure speakers are aimed at the target listening area.
- Make sure the power cord is plugged in and the green LED is illuminated at the rear of the unit.
- Check to ensure the amplifier is turned on and connected to the speaker(s).
- Make sure none of the speaker wires are damaged (frayed, cut, etc.).
- Make sure no wires are touching other wires/terminals (can create short circuit).
- Experiment with different locations and/or angles for optimal audio placement.