INNERSOUND

Isis

OWNERS MANUAL

TABLE OF CONTENTS

SETTING UP YOUR SPEAKERS 1

POSITIONING 1

FEET 1

ELECTRICAL CONNECTIONS 2

ESL/WOOFER BALANCE 3

ADVANCED POSITIONING TECHNIQUES 4

CLEANING / MAINTENANCE 6

TROUBLESHOOTING 7

SPECIFICATIONS 8

WARRANTY 8

SETTING UP YOUR SPEAKERS

POSITIONING

- ✓ All speakers sound best when they are equidistant from you. Because the *Isis*' imaging is so much more precise than conventional speakers, they will reveal errors in equidistant placement more than conventional speakers. The section of this manual called "Advanced Positioning Techniques" will assist you in obtaining the exact positioning needed.
- ✓ Aim InnerSound speakers *directly* at your listening location — do not place them parallel to the wall.
- ✓ The *Isis* is designed to have a hard, reflective wall behind them — this will disperse the high frequencies throughout the room. Do not put damping material on the wall behind them.
- ✓ The speakers are designed so you can position them close to a wall — any wall, side or rear walls work equally well. You do not have to place them out in the room, although you may if you wish.
- ✓ Corner placement exaggerates undesirable bass and room resonances — avoid corner placement for all speakers.

FEET

There are two types of feet supplied with your new speakers:

- Smooth feet
- Spikes

The smooth feet are for use on floors, while the spikes are for use on carpet. Speakers are not stable on carpet, so spikes can be used to reach through the carpet and rest firmly on the floor below. You may prefer to install the smooth feet first, even on carpet, so you can easily move the speakers around to find the location you prefer — then install the spikes.

Both types of feet screw into three steel inserts on the bottom of the speaker (two at the front and one at the back) and can be adjusted by rotating them in or out to get the speaker level and stable. Note that the speaker is designed so that when the bottom is level, the front of the speaker will tilt back slightly.

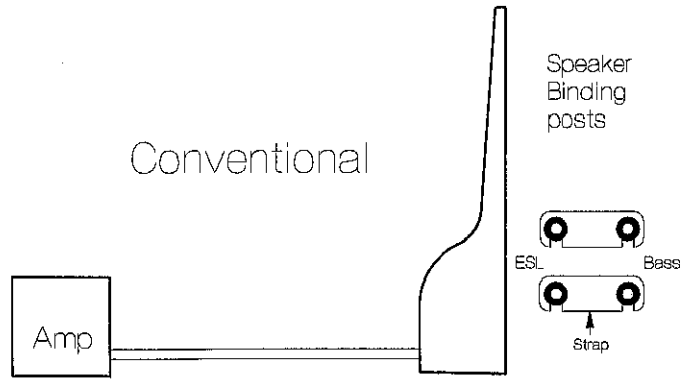
Lock nuts are provided to insure the feet or spikes won't shift position or rattle. Put them on the threaded shaft of the foot or spike before screwing it into the bottom of the speaker. Once you have the feet or spikes adjusted to your satisfaction, tighten the nut against the bottom of the speaker to lock the foot or spike into position.

ELECTRICAL CONNECTIONS

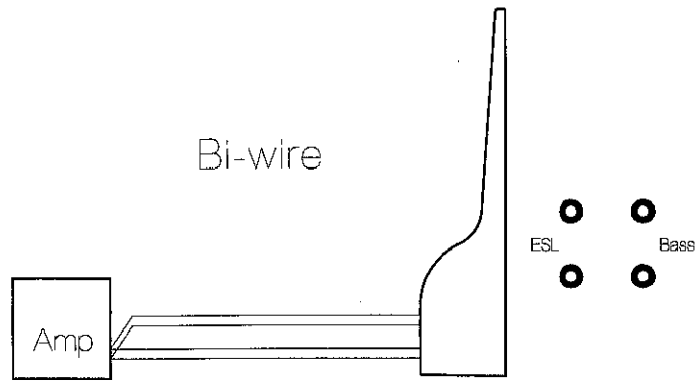
Isis speakers have dual speaker terminals so that you have the flexibility of connecting them in one of three ways:

- Conventional wiring
- Bi-wiring
- Bi-amping

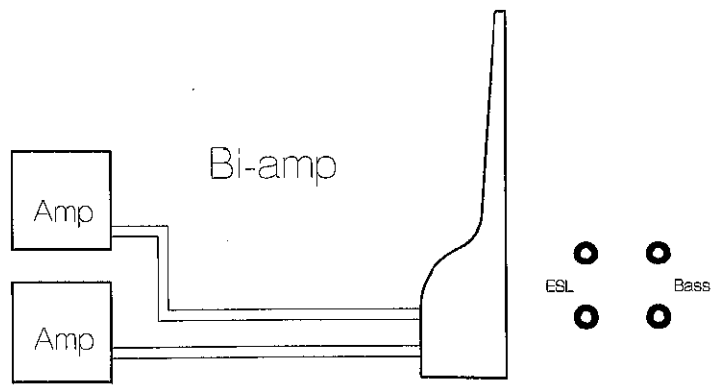
The drawing shows the wiring for each type. For conventional wiring, connect one speaker cable from your amplifier to the red and black Bass speaker binding posts. Leave the shorting straps in place and be sure they are solidly connected.



To bi-wire, connect a separate speaker cable to the ESL and Bass binding posts, and connect the other ends to your amplifier. Remove the shorting straps.



To bi-amp the system, use two speaker cables as in bi-wiring, but instead of connecting them to one amplifier, use two amplifiers. *Be certain you remove the shorting straps.*



ESL/WOOFER BALANCE

The knob on the back of the speaker allows you to adjust the balance between the woofer and tweeter. Getting the correct balance between these is important. *There is no "correct" position* for this control. The numbers are there for you to use as a reference. You should adjust this control so the speaker best matches your room and listening preferences. The following suggestions will help you optimize this critical adjustment.

Think of the bass level control as a MIDRANGE balance adjustment, not a bass control!

Most listeners tend to adjust the bass level too high. The midrange will not be clear if the bass level is excessive.

Surprisingly, the best way to find the right bass level is by listening to the *MIDRANGE* — not the bass. Think of the bass level control as a "midrange balance adjustment" rather than a bass control.

Adjust the woofer level so the midrange is full; but completely clean, clear, and detailed. If there is even a suggestion of lack of definition or muddiness in the midrange, you have the woofer level too high. The idea is to get the speakers to have the full, rich sound of the best magnetic speakers, but with the superior detail, imaging, and delicacy of electrostatics. Conversely, these speakers do not have the thin and anemic sound of many electrostatics. If the midrange sounds distant or weak, or the sound generally is too bright, increase the woofer level.

The type of source material you use for this adjustment is important. Good recordings of male voice or symphonic orchestra work well. Highly processed or electronic music is not suitable because such music doesn't exist in nature, so you don't know what it should sound like. Unfortunately, it is rare to find source material that is recorded so naturally that you can rely on it as your sole reference. It's best to listen to many different recordings initially, then make slight adjustments over time as you become more familiar with your new speaker system.

Although InnerSound speakers are designed to have plenty of bass, keep in mind that you probably have been listening to a woofer system that has a pronounced, mid-bass resonance in it. The transmission line woofer system used in InnerSound speakers is linear — it doesn't resonate. So initially it may sound just a little thin . . . until some really deep, powerful bass comes along. So if at first the bass seems a bit light, the best thing to do is just leave it that way and listen for a few hours. You will soon appreciate that InnerSound transmission line is accurate and that the other woofers were flawed.

Remember that the speakers are designed to be placed near a wall. If you move them out away from the wall, the bass will be less full. Why? Because all woofer systems are omni-directional (they radiate 360°). When against a wall, the bass radiation is confined to 180° — which doubles bass output (an increase of 3 dB).

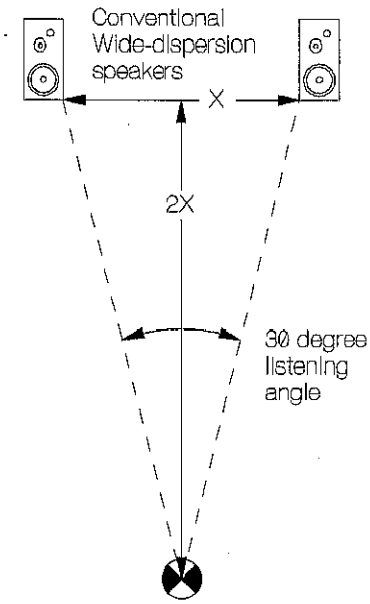
You can use this fact to "tweak" the bass to your satisfaction (remember that you should not use the bass level to adjust the bass because it affects midrange balance). For example, if the bass seems a little excessive in your room, you can move the speaker away from the wall to reduce it. Conversely, moving the speaker against the wall will increase the bass.

ADVANCED POSITIONING TECHNIQUES

This section is to help you position InnerSound speakers so they produce incredibly precise images — far more precise than any other type of speaker. To do this, the speakers must be placed exactly equidistant from you so that the sound from each speaker arrives at your ears at ***exactly*** the same time. Also, each speaker needs to be aimed at your preferred listening location. This "sweet spot" or "focus" is where the sound will be best, although it will be satisfactory anywhere in the room.

The following suggestions can help you achieve precise positioning. Although not essential, an assistant will be very helpful during this process.

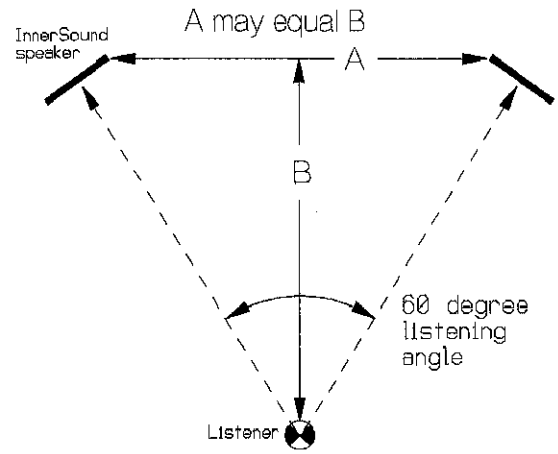
Place the speakers about where you want them and connect the speaker cables. The exact speaker position and geometry are critical and can be disturbed by connecting the cables. So connect the cables now — before you finalize speaker position.



Begin by adjusting the listening angle. How wide should the listening angle ("sound stage") be? Most speakers can only fill a listening-angle about 30° wide — their distance from each other can only be about half their distance from you. If wider, they will produce the well-known fault where there is a "hole-in-the-middle" of the sound image.

Because InnerSound speakers are phase-coherent and have a dipole dispersion pattern, they can be placed much further apart than most speakers and still completely fill the sound-stage.

The picture shows the speakers and the listener forming an equilateral triangle. This is produces a nice wide sound stage — *but this is* ***not*** *a requirement.* Place the speakers at any width you like.



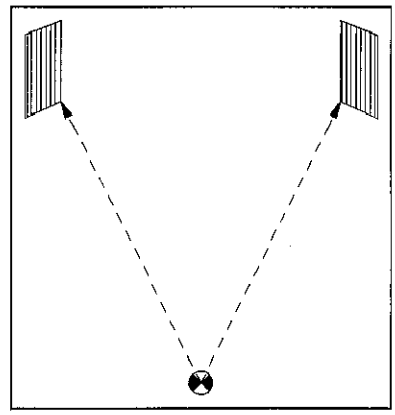
InnerSound speakers are deliberately made to be directional so that the sound quality is the most realistic possible. It is three-dimensional and has a "holographic" quality.

Wide-dispersion speakers send most of their sound away from you into the room where it reflects off room surfaces before reaching you. You are actually listening to the room more than the speakers. Because these reflections travel varying distances before they reach you, they are delayed by varying amounts. When the speaker produces a transient sound (and music is mostly transient in nature), you hear the sound from many directions and at slightly different times. This "smears" the transient and produces "muddy" sound and a poor image.

InnerSound speakers direct the sound directly to you instead of throughout the room. You hear the speaker instead of the room. This is why InnerSound speakers sound more clear than even very good conventional speakers.

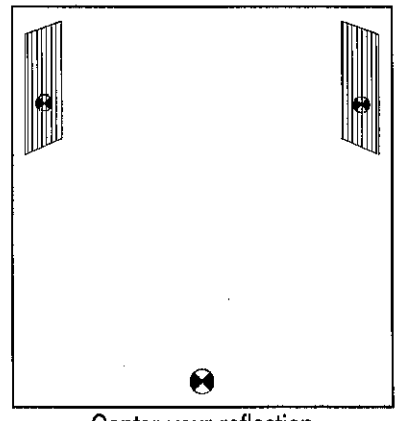
Sound clarity and image quality is a function of timing and distance. So to get the best performance, you will need to get your speakers precisely positioned. This requires that you have both speakers an equal distance from you and that they are pointed directly at you. To avoid reflections from the wall behind you, it is best that your listening chair be well-away from the wall or that the wall has an absorbent surface in the area directly behind your head.

This may seem like extra effort that is unique to InnerSound speakers, but this is not true. All speakers perform best when they are accurately positioned. Because wide-dispersion speakers confuse the sound from the speakers with the sound from the room, they are



Equidistant inner corners

Position the base of each speaker equidistant from your ideal listening location. You can use a tape-measure, string, or thread to gauge the distance from your chair to each speaker. Use the center of the back or seat of your chair as one reference point and the inner edge of each speaker as the other. You can have an assistant at your chair hold one end of the tape or string while you check the distance to each speaker. If you don't have an assistant, you can use a pin to hold the end of the string by sticking the pin in the center or back of your chair and tying the string or thread to it. ***The anchor point must be solid and stable*** to get accurate measurements!

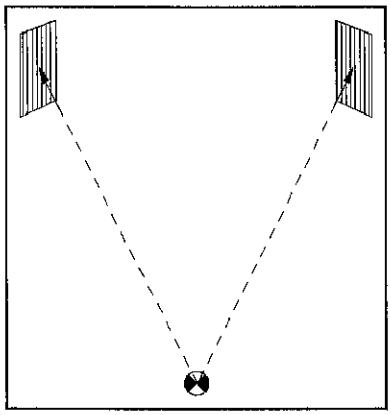


Center your reflection

Next, adjust each speaker so it is pointed directly at your chair. Although you can do this by obtaining identical measurements to both lower corners of each speaker, an easier and more precise way to do this is to observe the reflection of a flashlight in the ESL diaphragms. Hold the flashlight just above your head while you search for its reflection — be sure you are looking at its reflection rather than just the light on the front of the speaker. The reflection is much easier to see if the ambient light in the room is low. It is hard to see if there is bright light behind the panel.

Get your reflection in both speakers centered from side-to-side while sitting in your listening chair. To avoid altering the previous measurement, pivot the speakers on their inner corners — the one you used as the reference point.

When your reflection is centered side-to-side in both speakers, check to see that it is at the same height in both speakers. It doesn't have to be centered from top to bottom, but the reflection of your ears should be at least a foot from the bottom edge of the ESL. Some listeners find the vertical angle of the speaker affects the sound. You may like to experiment. Make this adjustment with the speaker's feet.



Equidistant to reflections

The speakers should now be correctly positioned, but it is a good idea to double-check by measuring from your chair to your reflection in each speaker's electrostatic cell. How precise should you be? The wavelength of a 10 KHz tone is about one inch. An error of $\frac{1}{2}$" will place this frequency a full 180° out-of-phase — just like you had reversed the wires to one speaker! So ideally, the speakers should be within a quarter wave — for 10 KHz, this would be a quarter inch of being equidistant from you.

NOTE: If your speakers do not sound balanced (left to right), the most likely reason is that they are not equidistant from you. An error of one just inch will ruin left/right balance.

CLEANING / MAINTENANCE

The speakers do not require any maintenance. You may dust them as you would any fine furniture. The finish does not require furniture polish/wax. *Never spray any substance into the electrostatic cells,* as the electrostatic diaphragms could be damaged. If the electrostatic cells are extremely dusty, you may gently wipe them with a damp sponge or vacuum them as described below.

Before cleaning, unplug the speakers and let the speakers sit for an hour so most of the high voltage charge will dissipate.

You may clean the cells with a vacuum cleaner fitted with a soft brush. When cleaning, be gentle, and avoid sticking the brush's bristles through the holes in the speaker and into the diaphragm. Start vacuuming from the edge of the cell and continue in a smooth motion all the way across the speaker and beyond the other edge before stopping. Do not stop or start in the middle of the cell because this may push bristles into the diaphragm.

The rear of the speaker is a bit more difficult to vacuum because the enclosure blocks you from passing the brush freely beyond the cell. Instead, start from the top and pull the brush away as you near the bottom of the cell. Go back to the top to make another pass.

TROUBLESHOOTING

The speakers are rugged and reliable, and problems are rare. This section is included to just make it easy to correct problems if they arise.

HISSING, FRYING, or POPPING SOUNDS — are caused by foreign material such as an insect or dirt getting trapped inside the ESL. It is ***normal*** for an ESL occasionally to do this. Sometimes the output level of the speaker will be lower than normal until the object is removed.

Usually the noise will just disappear after several minutes or hours, but you usually can cure it immediately by blowing the object out of the speaker, or by vacuuming it. By listening carefully you usually can locate the offending particle. Or, you can examine the speaker in a darkened room where you might see a blue haze that will reveal the object's location. The object will be on the rear of the cell, not the front. Just blow it away.

CHOOSING TUBE AMPLIFIER OUTPUT IMPEDANCE — is important. The rule is simple. Use the 4Ω taps. If your amplifier has lower impedance taps (like 2Ω), they may work even better. There is a trade-off here. The lower impedance taps will produce the best for high frequency response, but will have the lowest overall output. Usually you won't notice the difference in output, but you will notice if the high frequencies are limited. So use the lowest taps you have available.

MOMENTARY AMPLIFIER SHUT-DOWN — is caused by inappropriate activation of an amplifier's protection circuitry. You may experience this problem when playing music loudly and the amplifier completely shuts down for several seconds, then returns to normal operation — only to trip off again a few moments later. It will repeat the cycle as long as you try to play music loudly. Usually the amplifier will not be harmed by this, but it prevents you from obtaining high output.

The problem here is that the amplifier is of low quality (usually an inexpensive receiver) and is not designed to drive low impedance loads. The solution is to use a higher quality amplifier. An alternative solution to this problem is to add series resistance between the amplifier and the speaker. A $\frac{1}{2}$ to 1 Ω resistor rated at ten watts usually will work, but will reduce the high frequency response of the speaker slightly.

SPECIFICATIONS

Speaker dimensions	11.5" x 14" x 62" (29 x 36 x 158 cm)
Speaker net weight	54 pounds (25 KG)
Speaker shipping weight	65 pounds (30 KG)
ESL size	10 x 39"
Power handling	250 watts
Impedance	4Ω nominal, 2Ω minimum @ 20 KHz
Bass driver	8"
Woofer impedance	4Ω
Bass design	Transmission line
Sensitivity	90 dB/2.83 volts/meter
Frequency response	34 Hz to 27 KHz ±2 dB

WARRANTY

Isis loudspeakers are warranted by Innersound LLC to be free from defects in material and workmanship for a period of five (5) years from the date of purchase. During this period, InnerSound will, at its option and without charges, either repair any part or assembly of parts that is found to be defective in material or workmanship, or replace the product with a product of comparable quality, subject to the following limitations and exclusions:

This warranty extends to the original consumer purchaser only and is not assignable or transferable. This warranty shall not apply to any product which has been subject to misuse, abuse, negligence, or accident.

All warranties implied by law including any warranty of merchantability shall be of a duration of 5 years from the date of purchase. The warranties herein are expressly in lieu of all other expressed warranties including the payment of consequential or incidental damages for the breach of any warranty.

Some states do not allow (a) limitations on how long an implied warranty lasts or (b) the exclusion or limitation of incidental or consequential damages so the above limitations or exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which vary from state to state.

To obtain performance of the warranty obligations, the original purchaser is urged to contact an InnerSound dealer through whom warranty repair will be performed. Alternatively, the original purchaser may have InnerSound Corporation perform the warranty obligations by calling (404) 696-1998 to obtain a return authorization number. A dated proof-of-purchase will be required. The purchaser must prepay all shipping/delivery costs to the repair facility.

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